ISEEP-2017

VIII. INTERNATIONAL SYMPOSIUM ON ECOLOGY AND ENVIRONMENTAL PROBLEMS

ABSTRACT BOOK

4-7 October 2017

Çanakkale Onsekiz Mart University

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ÇANAKKALE ONSEKİZ MART UNIVERSITY
FACULTY OF SCIENCES AND ARTS
BIOLOGY DEPARTMENT

VIII. INTERNATIONAL SYMPOSIUM ON ECOLOGY AND ENVIRONMENTAL PROBLEMS

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ISEEP 2017
ÇANAKKALE - TURKEY

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The **VIII. International Symposium on Ecology and Envionmental Problems** hosted by our university allows for the exchange of ideas between academicians from domestic and foreign countries who are interested in environmental problems and ecology and institutions and organizations working on this field.

The rapid progress of technology from the time human beings have settled down to agriculture and have begun to cultivate has led to a significant increase in environmental problems. Today, these environmental problems pose a danger to many life forms, including humans. It is very important for scientists from different countries to come together and identify these problems and discuss them scientifically.

Our university, which has environmental awareness, provides the opportunity to work in all its units for a sustainable environment.

As Çanakkale Onsekiz Mart University we are happy to welcome valuable scientists who have contributed to this symposium in our university.

Prof. Dr. Yücel ACER
Rector
Çanakkale Onsekiz Mart University

Molecules, cells, tissues, organs, organ systems, organisms, populations, communities, ecosystems, the biosphere. These are the architectural systems of life, assembled in increasingly complex ways over the past 3.5 billion years. We are latecomers to this immense biological building program. Yet, during the relatively short span of 10.000 years, we have been restructuring the stuff of life at all levels – from recombining DNA of different species to changing the nature of the land, the oceans, and the atmosphere.

It would be presumptuous to think we are the only organisms that have ever changed the nature of living systems. In the present as well as the past, competitive adaptations have assured the rise of some groups, whose dominance has assured the decline of others. Thus, change is nothing new to this biological building program. What is new is the accelarated, potantially catalysmic change being brought on by the human population. We now have the population size, the technology, and the cultural inclination to use energy, and modify the environment at frightening rates.

Humans have placed dramatic pressures on the planet's natural resources – nearly 50% of the land surface has been transformed by human action, half of all freshwater is appropriated for human use, more than 50% of the world's wetlands have been lost, approximately half of all marine food resources are fully exploited, and extinction rates are increasing sharply around the world. Additionally, the 21st century will be characterized by increasingly severe climate change and energy scarcity.

As noted by an Ecologist "God may have created the world, but humans have made modern ecosystems what they are". Modern economies encourage overconsumption, habitat degradation and pollution, disparity in wealth, and indefinite population growth.

Balancing human needs with the ability of ecosystems to provide the resources that we all depend on is a fundamental formula for the global sustainability transition. This is especially true in a world where energy scarcity will limit the range of responses at the same time that climate change will impose additional demands on both natural ecosystems and society. Although it will be a substantial challenge, equilibrium can be attained either by increasing these goods and services or by reducing our consumption of them, or in today's world, both! But it is unlikely that ecosystem goods and services can be increased significantly. Furthermore, demographic shifts and new patterns of settlement have placed unprecedented pressures on human well-being, ecosystem functions, and the interactions between them.

We have already put the world of life on dangerous grounds because we have not mobilized ourselves as a species to work toward self-control. Our survival depends on designing and constructing ecosystems that are in harmony not only with what we define as basic human values but also with the biological models available to us. Human values can change; our expectations can and must be adapted to biological reality. For the principles of energy flow and recource utilization, which govern the survival of all systems of life, do not change. It is our biological and cultural imperative that we come to terms at last with these principles, and ask ourselves what our long-term contribution will be to the world of life.

This symposium, in which ecology and environmental problems are evaluated in many disciplines, presents our respects with the hope that it will be a stimulus that emphasizes the important points that we can leave proudly to future generations and initiates solutions-generating processes.

Prof. Dr. Bülent Gündüz
Chairman of Organizing Committee

Keynote Presentations

KEYNOTE PRESENTATION

Meeting the Challenge at Nezahat Gokyigit Botanic Garden of Producing Floristic Information in Turkish and its Dissemination to Society.

Adil Güner

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Until now, the Turkish flora has only been available in either Latin, Flora Orientalis, or in English, The Flora of Turkey and the East Aegean Islands. Although contributing towards core information about the Turkish Flora, data in Turkish was sparse.

To have a Flora in Turkish was a distant dream when the Nezahat Gökyiğit Botanic Garden (NGBB) was started in 2001 but throughout the Garden's initial establishment, botanical illustration courses were organized to train artists to illustrate a new Turkish Flora. A Checklist of the Flora of Turkey was published in 2012, importantly suggesting a unique Turkish name for each of the 10,000 vascular plants.

The challenge, now, is to produce core floristic information in Turkish making it available and appealing for Turkish people. An ambitious 28 volume illustrated Flora in Turkish is planned with the first volume published in 2014. Key to accessing data, a Turkish Scientific Plant Names System has been developed also used for the publications of Checklists of Bryophytes and Lichens (in press). The Garden has initiated a Turkish electronic scientific botanical periodical along with information disseminated via three websites with NGBB the central hub for all contributors.

The hope is now that the botanical knowledge contribution made by the Nezahat Gökyiğit Botanic Garden to the Turkish people will encourage and inspire them to use their rich floristic heritage wisely.

Key words: Botanic garden, flora, information, NGBB.

KEYNOTE PRESENTATION

KEYNOTE PRESENTATION

Freshwater Fish Biodiversity and Invasive Freshwater Fishes in Anatolia

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Turkey is located in an area of transection of 3 biodiversity hotspots of world and have a significant diversity and endemism, holding a unique ichthyofauna containing distinct European, Asian and even African elements. Among the countries in Mediterranean basin, Turkey has the richest freshwater fish fauna with more than 360 species about one-third of which are endemics. During the last decades, water extraction, dams and reservoirs, pollution, climate change and severe weather conditions have resulted in habitat degradation, fragmentation and loss in many freshwater environments in Turkey and the habitat of many fish species has been altered severely. Besides these effects, overfishing and invasive species have also threatened the freshwater fish biodiversity. Many of the freshwater fish species in Anatolia are assessed in the Red List of IUCN. The extinction of 4 endemic species, following the introduction of translocated fish species, is also a dramatic example of how non-native fish species are becoming one of the most important threats for the freshwater fish diversity in Turkey.

More than 30 species have been introduced into the freshwater ecosystems during the last decades in Turkey. Many exotic fish species are able to survive and establish sustainable populations in the new habitats, especially in the absence of their predators and other population limiting factors. Invasive species are also more successful competitors than native and local species for habitat and resources, so they can rapidly expand their distribution area and invade new environments. In this study, it is aimed to present freshwater fish biodiversity and the adverse effects of non-native and translocated fish species on the native ichthyofauna of Turkey.

Key words: Biodiversity, freshwater fish, invasive species, endemics, Turkey

Oral Presentations

Oral Presentation 1

Ecotourism Activities of Local People in Gediz (Kütahya/Turkey)

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This study was conducted in order to determine the potential of ecotourism activities in Gediz / Kütahya. In terms of ecotourism, important information about thermal tourism potential, important plants, historical and cultural places, local bazaars, handicrafts, highland tourism of the region was collected from the local people. In line with the information gathered, the contribution of ecotourism activities of the local people and ecotourism of the region was investigated. The possible further ecotourism activites were investigated in this study. The contributions of local people to the income of their family and their city were searched.

Key words: Gediz, ecotourism, Kütahya, Turkey

Oral Presentation 3

Evaluation of Cultural Values by Ecotorism

Turan Akkoyun

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Any individual or social event related to human beings; attitudes, and thoughts on history, it also includes projects for a sustainable world, environment and culture. Assessment of the cultural strengths of the main strengths of "ecotourism" societies covering different characteristics, it allows them to benefit from them.

In the universal sense, tourism has brought the environment to the fore in the last thirty to forty years. Turkey, which cannot develop effective policies in this direction, has a highland, nature walk, winter, thermal, believe, historical tourism potential that can be easily realized in rural areas.

Ecotourism, also referred to as "ecological tourism" or "rural tourism", is defined as "an approach or attitude that protects and maintains the social and cultural integrity of the earth, while securing the sustainability of the natural resources of the earth as well as supporting the economic development of the local people" Has become a reliable type within the industry. Individuals, institutions, cities and countries with environmental awareness; First discover natural and cultural riches.

Ancient, Hittite, Roman, Byzantine, Seljuk, Ottoman and Republican periods of unrecognizable cultural artifacts; It will contribute ecotourism.

Afyonkarahisar, Emirdağ, Bolvadin, Sandıklı, Dinar, Çay, Şuhut, Sinanpaşa, Bayat, Kocatepe, Dumlupınar and the weather; It is historical as much as it is economical to cultivate the cultural heritage of the country in ecotourism.

It aims to draw attention to sustainable cultural works, which are prepared by using archive documents, travel names, newspapers, magazines, memoirs and researches.

Key words: Ecotourism, cultural riches, Afyonkarahisar, Kocatepe, Dumlupınar.

Oral Presentation 4

Associating the Region of the Great Offensive with Ecotourism from the Point of History View

Songül Keçili

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Most of the Greek Army were put out of action on the first five days of the Great Offensive starting on the morning of the 26th of August 1922. This successful offensive on Kocatepe, Büyükkalecik, Afyonkarahisar, Sinanpaşa and Dumlupınar, has been crowned with the Battle of Dumlupınar. The Turkish Army chasing the Greek Army have moved forward the region until Izmır. The Great Offensive, which plays an important role in Turkish History, has occurred in the region between Kocatepe and Dumlupınar.

Ecotourism is a form of responsible travel regarding of the environment to the natural area that provides socio-economic benefit to local people. It is a socio-cultural activity which is usually preferred by people with a high level of income and middleclass consumers. It also provides educational opportunity by developing a point of view regarding of ecotourism, and receiving appreciation of visitors. Moreover, it aims raising environment-friendly individuals by dealing with different ideas and research which reveal yield of the local economy. Ecotourism, including battlefield tourism, will also support both local-national and moral-material benefits via the touristic activities which will be organized from Kocatepe to Dumlupınar.

The aim of this paper is to suggest an interdisciplinary scientific research based on history, tourism and other sciences related to the topic. The organization of the paper is composed of archival resources, laws, periodicals, memories and copyrighted works. With this paper, the importance of the Great Offensive regarding of ecotourism will be presented to the scientific community.

Key words: The Great Offensive, Afyonkarahisar, tourism, ecotourism, environment

Oral Presentation 5

The Effects of Humic Acid on CuO Nanoecotoxicity to *Chlorella vulgaris*

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CuO nanoparticles (NPs) have known toxicity and have attracted increasing attention over their environmental risk. In aquatic environments, algal species are a good indicator for NP exposure and toxicity. However, the current data on ecotoxicity of CuO NPs on algal species are still limited. For most metal oxide NPs, their toxicity could be caused by both released metal ions and the particles themselves. The mechanism of toxicity caused by CuO NP itself remains poorly understood. Moreover, some studies Show that organic content (i.e. humic acids) of the water body and ambient conditions may influence the NP distribution and as well as NP-algae interaction.

In this study, the effect of different concentrations of CuO NPs prepared in synthetic surface water samples with different water quality parameters and humic acid on algae *Chlorella vulgaris* was examined. We have shown that cellular membranes were significantly compromised under ambient light radiation and nano-CuO concentrations. The results suggest that adverse effects are not necessarily only attributable to individual particles smaller than 100 nm but also to low concentrations of larger, naturally agglomerating CuO NPs under the influence of humic acids. The endpoints are also shown in EC50 of the communities, and in microscopy images. Our findings indicate a high sensitivity of algae to levels of NP concentration that are to be expected in the surface water environment. However, to understand the long-term effect of ENPs on the ecosystem, substantial information is required regarding their persistence and bioaccumulation.

Key words: Algae, ecotoxicity, CuO nanoparticles, synthetic surface water, humic acid

Oral Presentation 6

The Effects of Polyvinyl Chloride Microparticles on the Apoptotic Process in Zebrafish (*Danio rerio*) Embryos

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Pollution caused by plastics is seen as an increasing risk factor for aquatic ecosystems in recent years. Once they are entered to aquatic environment, plastics gradually break down into smaller fragments, and form microparticles (<5 mm in size). These particles are persistent in the environment and cause pollution for a much longer period of time considering their volume and distribution surface. However, the studies about the effects of microplastics on fish are still limited.

In whole of the life stages of all metazoan animals, apoptosis is a sine qua non process of tissue homeostasis that requires a sensitive balance between cell renewal and controlled cell death. Although the effects of so many chemicals on apoptosis on zebrafish embryos were widely studied, no report was recorded on the effects of polyvinyl chloride (PVC) microparticles on controlled cell death. For that purpose, zebrafish embryos were exposed 96h to three different concentrations (3, 6, 9 ppm) of PVC microplastics. Acridine orange stain was specifically used to identify the apoptotic cells, and the whole embryos were examined by fluorescein microscopy. Apoptotic cells identified in different parts of embryos were calculated and compared. It was revealed that the effects of PVC microplastics were depended on increased concentrations.

Key words: PVC microparticle, apoptosis, zebrafish, embryo, acridine orange

Oral Presentation 7

Chromium-induced Histo-architectural Alterations in Female Small Indian Mongoose (*Herpestes javanicus*) Inhabiting Tannery Areas of the Kasur District, Pakistan

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In leather tanning industry, chromium (Cr) metal is a basic component in the tanning process. Many studies conducted on human population have highlighted chromium as a reproductive toxicant, however, studies focusing on wild animals inhabiting the Cr-contaminated environment are scare. In the current study, we investigated the reproductive toxicity of chromium in female small Indian mongooses inhabiting tannery areas of Kasur District, Pakistan. Adult female specimens were live trapped from February 2015 to January 2016 and euthanized to obtain their blood and ovarian tissues along with kidney and liver samples. The waste water and sludge samples were also collected simultaneously from the area. Cr level in soil, water, blood and tissues of mongooses were quantified. The ovarian histological analysis was performed along with quantification of steroids (Estradiol and progesterone) and peptides (FSH, LH) hormone concentrations to assess ovarian dysfunction. The Cr concentrations were found elevated in the environment (soil and water samples), and in the blood and body tissues of the animals from experimental area compared to control samples. Histological analysis revealed decreased follicle numbers inside ovaries along with reduced ovarian weights. The hormonal analysis showed decrease in progesterone and estradiol concentrations, while FSH and LH levels were found increased. We conclude that chromium discharged from the tanneries into the environment is up taken by inhabiting wild animals, leading to ovarian tissue damage and potential impairment of reproductive functions.

Key words: Chromium, toxicity, small Indian mongoose, ovary, follicle damage, histology.

Oral Presentation 10

The Effects of Solid Waste Usage on Stored Product Pests

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As well as supplying the nutritional needs of the rapidly increasing world population and achieving a productivity increase in the face of declining agricultural land, the preservation and conservation of the harvested crop is also very important. Storing products such as grains and legumes can be preserved for many years without deterioration by the storage process which is carried out in order to save the product for a longer period by minimizing the deterioration of the products. These products are gaining in importance due to long-term nutritional needs of countries in the face of special conditions such as long-term consumption and war. For this reason they have to be stored in suitable conditions. However, environmental and plant health should not be neglected in doing so. In recent years, residual risks in agricultural products have brought many problems and alternative methods are being explored to prevent these problems. In this study, where we use solid wastes to help environmental health, the effects of three different dosages of orange peel extracts on *Tribolium confusum* and *Acanthoshelides obtectus* from storage pests under normal conditions were investigated and the results were shared.

Key words: Environmental health, orange peel, storage, residual, cereals

Oral Presentation 11

Morphologic and Elemental Differences in Cultivated a Natural Population of Sarıkız Herbal Tea (*Sideritis trojana* Bornm.)

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Sarıkız tea (*Sideritis trojana* Bornm.) is an endemic plant which is special to Kazdağı summit. The plant is evaluated as herbal tea so it is collected by the villagers and sold in the local markets. This situation creates pressure on the population. Sarıkız tea has begun to be cultured by some villagers. In this study, the natural and cultivated sarıkız tea plants collected from villagers were compared in terms of morphological characteristics and plant nutrients. Three repetition and ten plants were used for experiments. Flowers and stem samples were dried evaluated morphologically and prepared for elemental analyses. Plant nutrient contents were determined by ICP-MS.

While the natural gathered plants were superior in terms of plant length and stem dry weight. There was no difference in the potassium (K) and Zinc (Zn) content of the cultivated and natural populations. Plant calcium (Ca) content was higher in flowers than stems because Ca is an immobile plant nutrient. Plant phosphorus (P) and magnesium (Mg) contents were high in flowers because they are mobile nutrients. Molybdenum (Mo), magnesium (Mg) and iron (Fe) contents were higher in summit samples could be rich in soil. Copper (Co) and boron (B) elements were high in flowers while manganese (Mn) and iron (Fe) contents were high in stem. Plant iron and aluminium contents showed a significant highness in summit samples. It should be worked hazards of usage as herbal tea.

Key words: Endemic, Ida Mountain, Medicinal, Aromatic, Plants

Oral Presentation 12

Assessment of Total PAH Concentrations in Mussel Tissue After the Largest Oil Spill in İzmit Bay (the Marmara Sea)

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İzmit Bay (the Marmara Sea) is a semi-enclosed basin has a length of 49km, widths of 2-10km and a surface area of 310 km². The bay has eastern, central and western basins. Regeneration capacity of the bay is known as insufficient to compensation and equilibration. In January 2017, an oil spill has occurred in the border of eastern and western basins the Bay during two days. This incident was the largest oil spill in İzmit Bay and considering to official records around 90-100 tons of fuel oil flowed into the bay. By the help of winds and water movements, fuel oil spread through the bay. Contaminated water reached eastern basin as well as southern coast of the bay and the Marmara Sea. Water surface had a dark brown to black appearance through the coastline. A week after the oil spill, mussel (*Mytilus galloprovincialis*) samples were collected from Tavşancıl, Hereke, Derince and Seka sites, located in the central and eastern basins of İzmit Bay. Polycyclic aromatic hydrocarbon (PAH) analysis were performed on muscle and gill tissues. Modified EPA 8100 and 8082 methods were used to GC-FID analysis. Total PAH concentrations ranged between 0.18 and 414 mg/kg in the gills and 0.17 and 174 mg/kg in the muscle tissues of *M. galloprovincialis*. Higher accumulation occurred in the gills compared to muscle tissue. To our knowledge these total PAH concentrations was the highest levels ever recorded in the soft tissue of mussel in İzmit Bay.

Key words: İzmit Bay, the Marmara Sea, total PAH, oil spill, environmental pollution, mussel

Oral Presentation 13

A Preliminary Study on Marine Litter Distribution and Composition in the Sea of Marmara, Turkey

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Marine debris is a huge problem on a marine environment. The presence of large cities, tourism areas, maritime activities, are primary factors that effects debris input in a marine environment. In this study, we aimed to share our first findings deal with marine litter on these a floor along the Sea of Marmara, Turkey. Litter data was obtained by the bottom trawl survey conducted at 34 stations from whole the Sea of Marmara, on March 2017. The trawl tows were conducted between 35 and 169 m depth, and the mesh size of the net was 55 mm. By multiplying the haul duration between shooting and hauling the net (h), the haul speed (knots), and the horizontal net opening between the wings (m), the total swept area (km2) was obtained. Distribution density was evaluated by quantity per unit swept area. Litter components were classified into 9 categories based upon Medit's Instructional Manual: nolitter, plastic, rubber, metal, glass/ceramic, cloth (textile), wood products, paper, other and unspecified. According to results, 59% of the stations were contained marine litter. Sea floor litter density varied from 0 to 294 n/km2, with a mean of 12 n/km2 and 30 kg/km2. The most abundant type of litter was plastic (52 n/km2; 70%) followed by metal products (12 n/km2; 16%). A great majority of plastic litters were arised from plastic bags (39%) and plastic bottles (31%). Northeastern side of the Sea of Marmara seemed to have more litter where close to urbanization and industrialization.

Key words: Marine litter, trawl, sea floor, Sea of Marmara

Acknowledgements: This research was financially supported by TAGEM (General Directorate of Agricultural Research Policy), Turkey (TAGEM/HAYSUD/2014/05/01).

Oral Presentation 14

Investigation of Ammonium Saturation and Desorption Conditions of Clinoptilolite Type Zeolite in Aquarium Conditions

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In this research, we aimed to determine the adsorption, saturation reaching and desorption effects of ammonium, which is one of the parameters that should be kept in control for aquarium life, by clinoptilolite type zeolite which is a natural filtration material. In the aquarium water, Z1: 20 mg/l TAN and Z2: 40 mg / l TAN concentrations were determined to have adsorption up to Z1: 10 mg / l TAN and Z2: 24 mg / l TAN concentration at the end of the experiment period. After this phase, where zeolites had reached saturation, desorption system was created, and 2 groups were formed with 5-liter research aquariums and 3 repetitions. During the five-day test, water parameters were determined daily and at the same time of day (10.00). At the beginning of the experiment, mean values of 0,4 ± 0,00 mg / l TAN in Z1 and Z2 groups were determined at the end of the experiment as 1,55 ± 0,176 and 2,153 ± 0,27 mg / l TAN in Z1 and Z2 groups, respectively. When the data obtained in this study were evaluated, zeolite was determined to make desorption periodically in proportion with the amount of retained ammonium, when it reached the saturation. In intensive aquaculture systems or aquarium conditions, backwashing of zeolite for necessary periods is recommended to be performed by considering these data.

Key words: Aquarium, zeolite, ammonium, adsorption, desorption

Oral Presentation 15

Saprolegniosis On Gilthead Seabream (*Sparus aurata*) In Brackish Water Conditions in Turkey

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Saprolegniosis is a serious fungal disease that effect mostly freshwater fish species and eggs. Cotton wool-like appearance on the body of fish is characteristic for amphibians, crustaceans, several fish species. Infected gilthead seabream (*Sparus aurata)* were subjected to clinical, microbiological, parasitological and pathological investigation. On the infected skin samples, grey-white cotton like patches, erosion on skin and scale affusion were detected. Lesions covered the whole body of *S. aurata* in advanced stages. Bacterial growth and paracytic symptoms weren't observed from microbiological examination. Microscopic examination showed hyphaes and they carry cysts that are shown long and branched. From scanning electron microscopy overviews fungal zoospore was viewed. With histopathological observations, in skin sections erosive-ulcerative dermatitis and mycelium of *Saprolegnia parasitica* was seen among the muscles. And the gene sequence based identification was resulted as *Saprolegnia parasitica. S. parasitica* has not been detected so far from *S. aurata.* The brackish water salinity caused Saprolegniosis on sea bream in this case.

Key words: *Saprolegnia parasitica*, fungal disease, *Sparus aurata*, fish disease, sea bream

Oral Presentation 16

Comparison of the Oral and Cloacal Flora of Two *Natrix* Species in the Biga Stream

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The fresh water-dependent species like *Natrix* species are negative affected by fresh waters pollution. There are many investigations on microbial flora of free-living reptiles. But there is no information about the study on comparison of microbiological parameters of two *Natrix* species in Turkey. In this study, oral and cloacal bacterial flora isolated from *Natrix natrix* and *Natrix tessellata* populations in the Biga stream (Canakkale, Turkey) were investigated and compared between two species. Antibiotic resistance and heavy metal susceptibility tests were also performed for the cloacal and oral samples bacterial flora from two species. Several members (total=70) of the Enterobacteriaceae, Vibrionaceae, and Pseudomonadaceae were isolated from the 16 animals studied (8 *N. tessellata* and 8 *N. natrix*). Bacteria likely to cause infection such as pathogens *Salmonella* sp. and *Aeromonas hydrophila*, which are detected more considerably in species *N. natrix*. It was also determined that the bacteria isolated from species *N. natrix* also had higher antimicrobial and heavy metal resistance. According to these results, the significant occurrence of bacteria in the internal organs of snakes, with a high incidence of resistance against antibiotics and heavy metals, may risk aquatic animals and the public health. These data appoint the importance of epidemiological surveillance and microbiological monitoring.

Key words: Biga Stream, Microbiology, *Natrix natrix, Natrix tessellata,* Antibiotic - Heavy Metal Resistance

Acknowledgements: This study was funded by the Scientific and Technological Research Council of Turkey (TUBITAK Project No. 113Z098). We are grateful to TUBITAK.

Oral Presentation 22

Elimination of Suspended Solid Particles in Irrigation Water with the Help of Granular Media Filters

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Suspended materials in irrigation water play an important role in the economic life of micro irrigation systems. This study was done to analyze the effectiveness of granular media in removing suspended solids from irrigation water. In the study, sand-gravel and pumice media passed through 0.05-2 mm and 2-4 mm sieve openings were used. Raw water with a sediment concentration of 250 ppm was passed through the granular media filters under the operating pressure of 1 atm. For each ton of filtered water, the discharge velocities and sediment contents were determined. At the end of the research, it can be conclude that the discharge velocities and sediment contents decreased as the total amount of treated water increased in both sand-gravel and pumice media filters. Layers composed of small size were more effective at removing the solid particles. Based on the quantity of solid particles trapped at the sediment outlets of the treated water, sand-gravel medium was found to be more effective than the pumice medium.

Key words: Irrigation water, Pumice, Sand-gravel, Media filter, Suspended solids.

Oral Presentation 23

The Problem of Plastic Pollution: Occurrence and Distribution of Macro, Meso and Microplastics in Sediments of a subtropical floodplain lake

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Plastic pollution is considered a top environmental problem and it is identified alongside climate change as an emerging issue that might affect biological diversity and human health. However, relatively little studies have focused on freshwater systems. The aims of this study were: i) to determine abundance and characteristics of macro, meso and microplastic fragments in beach sediments of a floodplain lake; and ii) to establish spatial distribution patterns of them. Food wrappers (mainly polypropylene and polystyrene), bags (high– and low–density polyethylene), disposable Styrofoam food containers (expanded polystyrene) were the dominant macroplastics recorded in this study. But beverage bottles (polyethylene terephthalate) were the heaviest fraction of them. Otherwise, an average of 25 mesoplastics (mainly expanded polystyrene) and 704 microplastics particles were recorded per m2 in beach sediments. Comparisons with other studies from freshwater and marine beaches indicated similar relevance of plastic contamination, demonstrating for the first time that plastic pollution is a serious problem in the Paraná River floodplain. Contrary to other studies, herein macroplastic items surveys would not serve as surrogates for microplastic items. This is a disadvantageous since surveys of macroplastics debris can be relatively easily conducted. This study is also socially significant, since plastic waste is generally ignored as a pollutant problem.

Key words: Plastic Pollution, Freshwater Environments, Beach Sediments, Floodplain Lake, Argentina.

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Oral Presentation 25

Is *Ambrosia artemisifolia* Pollen an Important Threat for Ankara Province?

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Ambrosia artemisiifolia L. is a not only noxious invasive species that is important weed in agriculture and but also a source of highly allergenic pollen. It is native to North America but has been introduced to many Northern parts of Turkey. There are some modellings that showing *Ambrosia* pollen could be enter our country from abroad, especially through West Black Sea region. In this study, it is aimed to answer the questions about the source of *Ambrosia* pollen in Ankara province by monitoring *Ambrosia* pollen and Amb a 1 allergens. Pollen were collected from Burkard pollen and spore trap and counted daily. Amb a 1 sampling was carried out between July-October during 2015-2016 by using BGI900 Cascade High Volume Air Sampler (900L/min.). PM>10 and 10>PM>2.5 filters were analyzed separately. Concentrations of Amb a 1 were measured by ELISA technique. HYSPLIT modelling system was performed to calculate backward trajectories to analyse the path of air masses on peak days of both pollen and Amb a 1 during two years. The sum of seasonal *Ambrosia* pollen indexes were 42.6 for 2015 and 4.5 for 2016. Total allergen levels were measured as 5,61x10-3 U/m3 in 2015 and 3,95x10-3 U/m3 in 2016. The highest allergen concentration was measured on 29/08/2015 and on 17/08/2016. The backward air mass trajectory analysis showed that the main sources of *Ambrosia* pollen was seemed to be Crimea region. However, the antibodies that have been used in this study may react with other pollen proteins such as Art v 1 from *Artemisia vulgaris* which show high sequences homology with Amb a 1. *A. artemisifolia* plant has not been observed in Ankara yet. Therefore, it is not possible to say clearly that allergen levels recorded in Ankara atmosphere may originate completely from *Ambrosia* pollen.

Key words: Amb a 1, *Ambrosia*, invasive, pollen, Ankara, Turkey.

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Oral Presentation 26

The Pollen Preferences of Honeybees in April-May Period Which are Selected Stations in Çanakkale

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In order to identify the pollen preferences of honey-bees, six stations have been chosen including Gökceada, Lapseki, Biga, Eceabat, Ezine and the city center in Çanakkale. In this study covering April to May, pollen preferences of honey bees have been investigated.

The honey-bee pollen samples were taken from the beekeepers who are associated with the Beekeepers Union of Çanakkale. The honey-bee pollens of each station have been classified according to their colors. The preparates of the pollen loads, which are divided by their colors, was made by the Wodehouse method and analyzed at the Leica DM25000 light microscope.

The families preferred by honeybees at six different localities can be listed as follows: Brassicaceae, Cistaceae, Papaveraceae, Rosaceae, Asteraceae, Oleaceae, Salicaceae, Boraginaceae, Liliaceae, Pinaceae, Apiaceae. *Cistus*, *Raphanus*, *Trifolium*, *Papaver*, *Taraxacum*, *Sinapis*, *Jasminum*, *Diplotaxis*, *Salix*, *Medicago*, *Phacelia* are also preferred taxa in genera level. *Raphanus* spp., *Trifolium* spp., *Cistus* spp. and *Papaver* spp. have been commonly preferred in all stations and therefore they are the important sources for the bees.

Çanakkale's having a rich flora makes it an important source for the beekeeping activities. Thus, the protection of the flora and the organization of the fields for beekeeping are very important for the beekeepers to determine where to leave their beehives. Therefore, the identification of the types of pollens would contribute to the beekeepers and to the economy of Çanakkale.

Key words: April-May, Çanakkale, Honeybees, Pollen load, Pollen preference.

Acknowledgements: We thank the Union of Beekeepers of Çanakkale for supporting our project. This project is supported by Çanakkale Onsekiz Mart University Scientific Research Foundation (Project Number: 2017/1115).

Oral Presentation 27

Pollen Morphology of genera *Salix* L. (Salicaceae) in Turkey

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Salix L. a widespread genus that consists of about 500 species, is distributed throughout temperate and arctic zones and includes trees, shrubs, ground covers. 33 species of the genus *Salix* L. in our country shows the natural distribution and four of them are endemic. This study includes a detailed pollen morphological analysis of 25 taxa of *Salix,* which are distributed in Turkey. Pollen micromorphological features of these taxa were studied by using Light Microscopy (LM) and Scanning Electron Microscopies (SEM). It was found that pollen grains are radially symmetrical, isopolar, tricolpate and ornamentation is generally suprareticulate. *S. anatolica* and *S.pseudomeii* pollen have 98% suprareticulate and 2% retipilate ornamentation. *S. wilhemsiana* has 98% suprareticulate and 2% reticulate ornamentation. The pollen shape varies from subprolate, prolate-spheroidal, spheroidal and oblate spheroidal with the polar axes 12.5-28.1 µm and the equatorial axes 15.12-27 µm. The taxa were grouped using the clustering analysis method (UPGMA) according to pollen morphological characters. Taxa are basically divided into two groups in the dendogram. There is 70% similarity between the *S. aegyptiaca* and *S. alba* taxa in the first group whereas the remaining 23 taxa are in the second group. The second group is also divided into 2 groups with 65% similarity. According to pollen morphological characteristics, *S. pseudomedemii* - *S. amplexicaulis* taxa have maximum (90%) similarity to each other, *S. cinerea* - *S. babylonica* and *S. rizeensis* - *S. elaeagnos* taxa are also found quite similar.

Key words: *Salix*, pollen, morphology, LM, SEM, Turkey

Acknowledgements: This research was financially supported by Ankara University-BAP (Project no: 13B4240010)

Oral Presentation 28

An Investigation on Seed Surface Micromorphologies of Some *Silene* L. (Caryophyllaceae) Species Grown in European Turkey and in Anatolia by using SEM Technique

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Caryophyllaceae includes 86 genus and 2200 species. The genus *Silene* L. which are belonging to subfamily Silenoideae of Caryophyllaceae has 700 species on earth. In Turkey, *Silene* L. is represented by 165 species which are divided into 31 section. Seed micromorphologies of most of the *Silene* species in Turkey are investigated by SEM. In this study, seed surface micromorphologies of *Silene fabaroides* Hausskn. grown in European Turkey and *Silene lazica* Boiss. and *Silene muradica* Schischk which are grown in Anatolia are reported for the first time by the study of scannning electron microscopy. SEM micrographs taken with 2500× magnitude by Zeiss ESEM microscope. Because seed surface morphologies are very important for the plant systematical analizes, this study is meaningful for the definations of new *Silene* species. In this study all results are compared with the other SEM studies on the seed micromorphologies of the other *Silene* species.

Key words: Anatolia, European Turkey, SEM, *Silene*, seed

Oral Presentation 29

Karstic or Volcanic Caves? The Preference of Bats in Turkey

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Caves are underground spaces of different shapes and sizes. Diversity in caves can vary according to the ecological requests of each cave-dweller species. Cave-dwelling bats regarded as subtroglophile, have important places in the cave ecosystem, and known as keystone species. Until recently, various authors have noted that most of the 39 bat species distributed in Turkey, preferred karstic caves for maternity roosts and hibernaculum. In addition, most underground ecological and biological studies of bats were done only in karstic caves. This study is based on the bat species encountered in volcanic caves in the Mediterranean region of Turkey between the years of 2014 and 2016. Each caves were visited at least twice, once in summer and once in winter. *Rhinolophus mehelyi*, *R. blasii*, *Myotis capaccinii,* and *Miniopterus schreibersii* existing as large hibernating colonies were examined in lava tunnels for the first time. As a conclusion, the volcanic caves provide appropriate temperature, relative humidity and other abiotic factors as karstic caves for those species. Local people also utilize the caves for protection, obtaining water and food, health, tourism and guano mining.

Key words: Limestone caves, lava caves, Rhinolophidae, Vespertilionidae, the Mediterranean Region

Oral Presentation 30

A Preliminary Studies on Some Bioecological Features of *Canis lupus* (L., 1758) in Turkey

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Mammals of the World are represented by 5416 species. Order Carnivora has only two wolf species belonging to the familia of Canidae. One of these, *Canis lupus* represented by 10 subspecies in Palaearctic Region and 5 subspecies in Nearctic Region. The other species is *Canis simensis* ranges only Ethiopia in Ethiopian Region. Up to date, only the distribution, some biological and ecological information concerning *Canis lupus* in Turkey has several times been noted. It has noted that wolf distributes in every region of Turkey. Although it is forbidden, it is not possible to prevent hunting wolves because they are regarded as harmful for some domestic animals. In this preliminary study, conducted between April 2015 and April 2017, it was examined some of the bioecological features of the wolf. This research based on 17 *Canis lupus* specimens obtained from different localities of Turkey by a protocol made with the Ministry of Forestry and Water Affairs, General Directorate of Nature Conservation and National Parks. Diagnostic characters, habitat features, fur color and some measurements of *Canis lupus* were recorded. Wolf dens detected in the field were examined and habitat features of wolf were recorded. The wolf is a carnivorous animal living solitary or within a group. The wolf in the last step of the food chain hunts mainly brown hare, roe deer, deer, wild sheep, wild goat and wild boar. Sometimes there are bird and rodent species in the food diet of wolf. Wolf is listed in LC category according to IUCN criteria and it is also listed in Annex II of the Bern Convention. Measures must be taken to prevent the illegal killing of wolf protected by national and international legislation.

Key words: Wolf, Taxonomic status, Bioecogical features, Distribution, Turkey

Oral Presentation 31

A Contribution to the Knowledge of Insect-Food Plant Associations on Rosaceae from Edirne Province (European Turkey)

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This study examines the associations between insect herbivores and rosaceous food plants during their larval or adult stages. Field and laboratory studies were performed 2013-2014 period in Edirne province of European Turkey. Herbivorous insects were collected from the field in their immature or mature stages and reared in laboratory. In total, 124 herbivore-food plant associations belonging 53 insect and 11 plant species were identified. Among these associations, 45 were recorded as new associations meaning that 45 new food plant records for the related herbivore species were determined. Moreover, four species and one genus were determined as new records for the European part of Turkey, and one species was determined as a new record for fauna of Turkey. During the study, some other biological observations were also recorded.

Key words: Rosaceous Plants, Herbivores, Host Plants, Trophic Association, Biocontrol

Oral Presentation 32

Diversity of Paraonidae (Annelida: Polychaeta) in the Sea of Marmara

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The family Paraonidae has a wide distributional pattern in the world's ocean. They have representatives in shallow-water and also deep-water environments. This family is represented by 6 genera 48 species in the Mediterranean Sea and 23 species on the coast of Turkey. In the present study, a plenty of benthic samples were taken by a box core and quadrates at several stations between 0 and 1200 m depths in the Sea of Marmara in 2012 and 2013. Twenty-five species belonging to 4 genera (*Aricidea*, *Cirrophorus*, *Levinsenia* and *Paradoneis*) were found in the area. Among genera, *Aricidea* ranked first in terms of the numbers of species and individuals, followed by *Paradoneis* and *Levinsenia*, respectively. In the shallow-water benthic habitats, *A. pseudoarticulata*, *P. lyra*, *A. catherinae* and *A. assimilis* were the most dominant and frequent species. *Aricidea wassi* and *A. annae* are new records for the fauna of the Sea of Marmara, and *A. mirunekoa* is new record for the Mediterranean fauna.

Key words: Species diversity, Annelida, Polychaeta, Paraonidae, Sea of Marmara

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Oral Presentation 33

Seasonal Changes of Soil Characteristics in Floodplain and Terrestrial Forests

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Soil characteristics are the second factor effecting plants distribution after climate. Therefore, to understand the differentiation of soil variables seasonally is important to extend our considerations on the structuring of plant communities. In this study, we aimed to determine and compare some soil variables between floodplain and terrestrial forests seasonally. These two forests are adjacent to each other in Aksaz Wetland (Sinop, Turkey). Soil samples were collected in February, May, August and November 2016. Sampling was made triplicate for each forest. Total nitrogen, ammonium, nitrate, phosphorus, potassium, organic matter, saturation, pH, electrical conductivity, salinity, calcium carbonate, calcium, magnesium, natrium and cation exchange capacity were determined in each soil sample. ANOVA and MANOVA were used to evaluate the differences within and between forests annually and seasonally. Statistical analysis were made by SPPS v21. According to annual means, soil moisture, total nitrogen, phosphorus, potassium, organic matter, pH, electrical conductivity, salinity, calcium carbonate, calcium and natrium were significantly higher in floodplain forest than terrestrial one ($P<0.05$). In spring and autumn, more variables differed between forests, while only soil moisture, total nitrogen, pH, salinity and natrium were different significantly between two forests in summer. pH, calcium carbonate and cation exchange capacity were different between seasons in terrestrial forest ($P<0.05$), while total nitrogen, ammonium, nitrate, phosphorus, pH, calcium and cation exchange capacity changed significantly in floodplain forest ($P<0.05$). The obtained result showed that differentiations in soil between different forests could become more important according to seasons rather than annual means.

Key words: Soil, Floodplain, Terrestrial, Forest, Nutrient cycle, Aksaz, Wetland.

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Oral Presentation 34

The Influence of Plant Growth Regulator Concentrations on Somaclonal Variation in Regenerated Plants of *Silene bolanthoides* Quézel, Contandr. & Pamukç.

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In this study, flow cytometry and cytological analyses were used to evaluate the influence of plant growth regulator (PGR) concentrations on somaclonal variation in regenerated plants of *S. bolanthoides*. For *in vitro* propagation, nodal explants were excised from seedlings grown in sterile conditions and cultured MS medium supplemented with (2.2, 4.4 µM) BA and (0.54, 2.69 µM) NAA. Shoots were subcultured for shoot multiplication. Propagated shoots were rooted on MS medium without PGRs. Rooted plantlets were separately transferred to the pots containing a mixture of peat and perlite (3:1 v/v) and acclimatized successfully in a growth chamber. Nuclear DNA content of regenerated plants was determined by flow cytometry and compared with seed-derived plants (2.58±0.02 pg/2C). Chromosome counts were done on slides made according to acetocarmine squash protocol. Flow cytometric analyses revealed that the nuclear DNA content ranged from 2.57 to 2.62 pg/2C and there was no significant difference the genome size of propagated plants on MS medium with different concentration of BA and NAA. Cytological analyses showed that all regenerated plants had the same chromosome number as seed-derived plants of *S. bolanthoides* (2n=24). According to our results, plant growth regulator concentration used in this study did not cause somaclonal variation at any regenerated plants.

Key words: catchfly, endemic, flow cytometry, regeneration, somaclonal variation

Oral Presentation 37

Assessment the Threats of the Vulnerable Species Urmia Lake Newt, *Neurergus crocatus* Cope, 1862 in its Distribution Range

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Neurergus crocatus is known as Urmia Lake Newt or Azerbaijan Newt and listed as "vulnerable-VU" by the IUCN Red List of Threatened species. This newt inhabits in southeast of Turkey, northern Iraq and northwest of Iran. Despite the significance of its conservation, there is almost no data about its life history, exact distribution range, ecology and population status. This may be attributed mainly to geographic inaccessibility, permanent ethnic tensions, and decade-long military conflicts.

Extensive field surveys carried out across the potential range of *N. crocatus* in three country and data about habitat and microhabitat variables, water quality, and population size/density were collected to identify the threats.

Anthropogenic destruction of habitat is a major threat to species survival and significant cause of species extinction all around the world. The most notable threat to this species is habitat loss through divergence of stream for irrigation of cultivated lands, drainage and water conduit for close local peoples' communities, pollution, road construction works, drought and flood. All these single threats when combined might lead to the decline and extinction of these species populations throughout its distribution range.

Key words: Threats, Anthropogenic destruction, Conservation, Urmia Lake Newt, *Neuregus crocatus*

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Oral Presentation 38

Effects of Red-eared Slider Invasion in Beytepe Campus (Hacettepe University), Ankara

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The global introduction of non-native vertebrates species to far out local ecosystems has a significant increase through the past 150 years. Reptiles take an important percentage among all vertebrate groups; especially turtle introductions from North America to Europe have a substantial role. Commercial trade is the main factor of these non-native turtle's expansion to local ecosystem dynamics. Millions of red-eared sliders (*Trachemys scripta*) have been sold worldwide as pets. As a result, there is considerable evidence that red-eared sliders can negatively affect locally native turtle species. In this study, we discussed red-eared sliders' effects on ponds of Beytepe Campus in terms of anthropogenic impacts and urbanization. The anthropogenic pressure on local ecosystems are getting higher and higher in Beytepe Campus, where is a good example for limited ecosystems that circulate their own dynamics. Our observations from 2008 to now indicate that European pond turtle (*Emys orbicularis*), which is native species in here, gave its dominance to red-eared sliders year by year in Beytepe Campus dramatically. Beside that, while the population size of red-eared sliders has increased significantly up to now, European pond turtles have significantly decreased in the same period. Finally local aquatic insects have been playing a role as "prey" for red-eared sliders in recent years. These findings demonstrate a good case study for introduction of exotic animals with commercial relations not only caused to an expansion of these species but also have been an important threat for local ecosystem dynamics.

Key words: *Emys orbicularis*, *Trachemys scripta*, local ecosystem, anthropogenic impacts, population size, invasive species

Oral Presentation 39

The Metabolic Heating and Its Effect on Feminization of the Green Turtle Hatchlings on Samandağ Beach, Turkey

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Although there is limited research on metabolic heating of green turtle nest on the Mediterranean, it is important to know about metabolic heating of each nesting beach on the most important nesting beaches. In this research, it was aimed that the metabolic heating and its effect on the feminization of the green turtle hatchlings on Samandağ beach, Turkey. The temperatures were recorded using Tiny Talk temperature data loggers (Orion Components, Chichester, UK). Data loggers were programmed to record temperatures at 30-min intervals. The data logger was placed at the centre of each the seven nests, and the same depth was placed to determine the sand temperature of the test site. The mean metabolic heating was calculated as 0.15°C for the first third, as 0.61°C for the middle third and as 1.65°C for the last third of incubation. Mean metabolic heating of the whole incubation period was recorded as 0.8°C (ranged between 0.5 - 1.2°C). The mean sex ratio was estimated as 88.6 % (ranged 73.3 % and 100 %) with metabolic heat for seven nests, and as 79.6 % (ranged 71 % and 86.7 %) without metabolic heat. The feminization effect of metabolic heating was calculated as 9 % for green turtle nests on Samandağ beach. All periods (first, middle, last and total) of metabolic heating during incubation were not correlated with incubation duration, nest depth, total eggs, distance from sea, dead embryo stages. However; the metabolic heating of the last third period was correlated with distance from vegetation. The all results were paralleled with previous studies.

Key words: Metabolic heating, sex ratio, feminizing effect, green turtle, Samandağ

Acknowledgements: This study was supported by the Cumhuriyet Üniversitesi Bilimsel Araştırma Projeler Birimi (CUBAP), and the project coded KMYO-002.

Oral Presentation 40

Osteological description and ecology of the lacertid lizard *Phoenicolacerta cyanisparsa* (Squamata: Lacertidae)

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Phoenicolacerta cyanisparsa is evaluated within the family Lacertidae and is found in rocky habitats with the shrub vegetation in northwest Syria and southeastern part of Turkey. An altitudinal range is from 800 to 1050m asl. It has a restricted population range because of the fragmented population. Data on skeletal morphology are limited for lacertid species, despite their abundance and diversity. Here, adult skeletal morphology of *Phoenicolacerta cyanisparsa* is described and compared with those of other lacertids. These descriptions and comparisons are based on the cleared and double-stained specimens. In comparison with other lacertid species, there are remarkable differences both in cranial and postcranial bones such as the shape of the nasal, parietal, quadrate, dentary and ischio-pubis opening, the number of teeth and the presacral vertebra with ribs. This study is the first detailed model for *P. cyanisparsa* and contributes to understand lacertid osteology for further studies.

Key words: Squamata, Lacertidae, *Phoenicolacerta*, *Phoenicolacerta cyanisparsa*, skeletal osteology.

Oral Presentation 42

Shoreline Change Monitoring in Atikhisar Dam Lake using Remote Sensing and Geographic Information System (GIS)

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The main objective of this study is to monitor shoreline changes of Atikhisar Dam Lake. Remotely sensed (RS) multispectral Landsat satellite images for between the years of 1975 and 2001 and geographic information system (GIS) were used to determine the shorelines. The data is processed and analyzed by RS and GIS software. The satellite images were imported into GIS software and the shorelines were digitized manually in GIS. As a result, it was determined that there was a significant decline in the shorelines of Atikhisar Dam Lake. A decrease of 47% in the perimeter of shoreline was observed and the perimeter declined from 18.844 km to 9.819 km during the period from 1975 to 2001. In conclusion, significant shoreline changes were detected for this period. This change in shoreline can be affected by climate changes, sediment transport, agricultural activities and human interventions around the lake. Both natural and anthropogenic processes can alter the shoreline. Therefore, continuous monitoring is essential for taking due precautions to sustainable management of water resources.

Key words: Geographic Information System, GIS, Remote Sensing, Shoreline Change, Atikhisar

Oral Presentation 44

Linking Morpho-hydrology and Invertebrate Ecology in Meanders and Confluences of a Large Floodplain River (Paraná River, Argentina)

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Interdisciplinary research in the fields of ecohydrology and ecogeomorphology is becoming increasingly important to understand how biological and physical processes interact with each other in river systems. The objectives of this study were 1) to determine changes in invertebrate community due to hydrological stages and inputs of suspended sediments, 2) to link local physical features (flow, sediment and morphological feature) with the ecological structure between and within meanders and confluences, and 3) to determine the existence and the origin of bed hydro-geomorphic patches. Results were discussed in the frame of prevailing ecological models and concepts. Overall results suggested that hydrodynamics was the driving force determining distribution patterns of benthic assemblages. We also found a linkage between physical features and ecology, which caused a dissimilar fauna structure between and within meanders and confluences. Several sandy-patches were recorded in confluences, supported the view of rivers as patchy discontinua, under uncertain ecological equilibrium. With further development of our findings and concepts, river management techniques can improve and river rehabilitation projects can be designed with greater confidence.

Key words: Ecomorphology, Ecohydraulics, Large Floodplain River, Benthic Invertebrate, Patchy Discontinua, Acoustic Doppler Current Profiler (ADCP).

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Oral Presentation 45

The Effect of Some Cultivated Plants Having Allelopathic Effect against Weeds on Microbial and Enzyme Activity of Vineyard Soils under Organic Management

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The objective of this study was to determine the impact of allelopathic plants and conservation tillage on microbial and enzyme activity in vineyard soils under organic management. The study was carried out on *Vitis vinifera* L. cv. Royal grafted onto 110 R rootstock with a spacing of 2.0 x 3.0 m and cultivated with the double cordon training system in Manisa Viticulture Research Station from 2012 to 2016. The experiment design was split-plot with three replicates. Organic plots received farmyard manure (15 t ha-1) every year. As alleopathic plants, Antep radish (*Raphamus raphanistrum* L.) and broccoli (*Brassica oleracea* L. var. *italica*) were chopped and mixed to the soil at a rate of 6 kg vine-1 in May. In the same time, olive mill waste water (OMW) was also applied to the soil at a rate of 6 l vine-1 to create allelopathic effect. Microbiological and chemical soil properties were determined in the soil samples, which were taken one month after the treatments. Microbial and enzyme activities of the experiment soil were positively influenced by allelopathic broccoli whereas OMW applications decreased these activities compared to the control. Soil microbial biomass-C, soil respiration and the activities of dehydrogenase, β-glucosidase, alkaline phosphatase and urease were significantly higher in no-tillage soils applied broccoli. These results showed that soil microorganisms consumed organic substrates from broccoli and did not allow to accumulate to phytotoxic levels of allelochemicals.

Key words: Allelopathy, enzyme activity, microbial biomass, organic vineyard, soil tillage

Acknowledgements: This research was financially supported by General Directorate of Agricultural Research and Policies (Project number: TAGEM /BBAD/17/A08/P08/01) and General Directorate of Vegetative Production (BUGEM).

Oral Presentation 46

Effect of Litter Thickness in Environment on Leaf Litter Decomposition in *Juglans regia* L.

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By litter decomposition mechanism, organic substances are transformed to the simple forms and thus organic matter and carbon cycles are performed. Litter in an environment plays vital role in sustainability of ecosystem and amount of it is important for both organisms and soil. Additionally, litter form a mechanic barrier between soil and fresh litter. So, it was hypothesised that more thick litter layer may cause slow decomposition. This study aimed to determine the role of litter thickness on decomposition rates in time. *Juglans regia* L. leaf litters used as study materials. Litter bag technique was used to examine decomposition. In order to determine the effect of litter thickness on decomposition, litter bags were placed on 0 cm litter layer, 5 cm litter layer and 10 cm litter layer, separately. Decomposition was examined for 6 months. Litter bags were collected monthly and remaining dry weight, mass loss, daily decomposition rate and k value were calculated. Results showed that all the decomposition parameters significantly varied based on litter thickness and time. The maximum decomposition rates were at 0 cm litter layer in all months. The fastest decomposition was determined in first month. The slowest decomposition was determined in March. Results indicated that litter thickness significantly affected decomposition rate. This affect may be due to water supply, microbial activity, nutrient supply, temperature or other ecological factors. Differences in decomposition rate according to time are related with stages of decomposition.

Key words: Environment, *Juglans regia*, litter decomposition, nutrient cycles, thickness.

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Oral Presentation 49

The Effects of Drought and Salinity Stresses on Antioxidant Defense of Single Cell C4 Species *Bienertia sinuspersici*

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Drought and salinity are major environmental constraint to plant growth. Under drought and salinity stresses, plants try to prevent water, which limits gas exchange that comes with a cost in photosynthetic capacity. Some plants developed additional measures to alleviate the effects of reduced CO2 diffusion on photosynthesis. One of these adaptations is the C4 carboxylation pathway. *Bienertia sinuspersici* performs single cell C4 photosynthesis without Kranz anatomy. Peripheral and central cytoplasmic compartments in a single chlorenchyma cell act as mesophyll cells and bundle sheath cells. Development of this specialized mechanism is gradual during plant development. Young leaves perform C3 photosynthesis, while mature leaves have complete C4 cycle. Aim of this work was to investigate changes in redox regulation and antioxidant defense during transition from C3 to single cell C4 photosynthesis in *B. sinuspersici* leaves under drought sand salinity stresses. First we confirmed gradual development of C4 with western blot and qRT-PCR analysis of C4 enzymes. After this activities and isoenzymes of superoxide dismutase (SOD), catalase (CAT), peroxidase (POX), ascorbate peroxidase (APX), glutathione reductase (GR), dehydroascorbate reductase (DHAR) and H2O2 and TBARS and glutathione pool and redox status (GSH/GSSG) were determined in young, developing and mature leaves during transition from C3 to single cell C4 photosynthesis. Activities of SOD, APX and POX decrease, while GR and DHAR was increased under environmental stresses. However, most striking results were the changes in isoenzyme patterns of SOD, CAT and GR which were gradual through transition to C4 photosynthesis under drought stress.

Key words: Antioxidant enzymes, *Bienertia sinuspersici*, C4 photosynthesis, plant cell development, redox regulation, drought, salinity

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Oral Presentation 51

The Effects of Induced Accumulation of Reactive Oxygen Species in Organelles on Antioxidant Defense during Transition from C3 to C4 Photosynthesis in the Genus *Flaveria*

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C4 carboxylation pathway developed in some plants to adapt the harsh environmental conditions. C4 plants fix the CO2 in mesophyll cells and release it in bundle sheath cells and minimize the rate of photorespiration. In present study, the production of organelle originated reactive oxygen species (ROS) was induced by chemical agents specific to mitochondria (rotenone) and chloroplasts (methyl viologen and DCMU) in Flaveria species that evolve to survive in different environmental conditions *Flaveria robusta* (C3), *F. anomala* (C3-C4 intermediate) and *F. bidentis* (C4), to test the response of different carboxylation systems to reactive oxygen species mean by antioxidant system (superoxide dismutase (SOD), catalase (CAT), peroxidase (POX), ascorbate peroxidase (APX), glutathione reductases(GR)) and their isoenzymes, NADPH oxidase (NOX) activity, hydrogen peroxide (H2O2) content and lipid peroxidation levels (TBARS) were also determined comparatively. As a response to organelle originated ROS differences, changes in activities of isoenzymes and also isoenzymatic patterns were observed in all Flaveria species. Plants responded differently to organelle induced oxidative stress, especially from chloroplasts in regards to antioxidant defense. C4 *F. bidentis* was more tolerant to chloroplastic stress as evident by TBARS and H2O2 contents under MV and DCMU treatments, which suggests that C4 species are able to prevent damage caused by oxidative stress by a better induced enzymatic defense (increased SOD, CAT, POX, APX activity).

Key words: Antioxidant defence system, Photosynthesis, ROS, *Flaveria*, C3 and C4 carboxylation pathway, environmental stress

Oral Presentation 52

Lead in Terms of Environmental Toxicology and Medical Pharmacology

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Lead is a heavy metal that can lead to irreversible health problems when taken in the body. Although lead poisoning has been known to mankind since ancient times, the exposure to lead has increased, especially due to industrialization. Exposure to lead can lead to chronic poisoning by acute poisoning tables with rapid high dose intake in a short period of time or by small quantities taking long time slots.

Children are more susceptible to lead exposure. Lead should not be present in the blood but values of 10 µg / dL, which are considered cut-off values as indicator, were found in approximately 9% of children aged 1 to 5 years in the US.

Lead entering the intravascular cavity after the absorption process, rapidly attaches to the red blood cells, blocks 5-aminolevulinic acid dehydratase activity and leads to hemolysis with lipid peroxidation. Lead, accumulates in soft tissues, including the kidneys, the brain, the liver and the bone marrow.

Lead increases the oxidative stress causes damage due to lipid peroxidation, leading to cytotoxicity and apoptosis. Neuropsychiatric findings are present by the effects of cholinergic dopaminergic and glutaminergic systems.

The modulation of cellular thiols for protection against reactive oxygen species (ROS) has been used as a therapeutic strategy against lead poisoning.

N-acetyl cysteine, α-lipoic acid, vitamin E, quercetin and some herbal antioxidants are both pro-active against lead toxicity in vitro and in vivo studies. Chelation therapy provides treatment by increasing urinary excretion of lead. Nanoencapsulation is also one of the new therapeutic strategies.

Key words: Lead poisoning, lead exposure, Antioxidants; Reactive oxygen species, Chelation therapy

Oral Presentation 54

An Ornithological Assessment of Yeniçağa Wetland

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Yeniçağa wetland located in Bolu province is one of the 205 Important Bird and Biodiversity Areas identified in Turkey, and a potential candidate for Ramsar due to high diversity of birds. However, previous ornithological studies in Yeniçağa were generally concentrated on specific months and seasons. In this study we observed the birds of Yeniçağa by point count and line transect method to evaluate the richness, diversity and status of bird species. A total of 184 bird species belonging to 51 families were identified during 23 field surveys between 2015 and 2017. The range of species number per visit was 3 to 65 and per season was 66 to 136, and total abundance varied seasonally from 41 to 1114 birds per visit. The most abundant species was Common Starling *Sturnus vulgaris* in Autumn, Mallard *Anas platyrhynchos* in Winter, Eurasian Coot *Fulica atra* in Spring and Summer. According to our results, we considered 47 species as resident breeders, 48 as migratory breeders, 27 as winter visitors, 28 as passage visitors, 3 as summer visitors and 31 as vagrant species. The range of species diversity (Shannon index) per month was 2,53 for December 2015 to 3,34 for May 2017, the range of probability of interspecific encounter (Gini-Simpson index) per month was 81% for December 2015 to 95% for May 2017, and the range of species richness (Margalef index) per season was 10,05 for winter to 18,98 for spring. Habitat alteration, excessive peat extraction, drying of peatlands and overgrazing have been considered as major threat factors.

Key words: Avifauna, Species diversity, Species richness, Species abundance, Peat extraction

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Oral Presentation 55

Assessment of Waterbirds Diversity in Göller Region

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Waterbirds that is the most important living group in wetlands enhance biodiversity and give ideas of the ecological condition of the ecosystem where they located in. In terms of species diversity, which is a component of biodiversity physical and chemical properties of water resources that compose the wetlands, affect species diversity of waterbirds. Thus, sustainable and productivity of water resources and diversity of waterbirds have importance in terms of ecosystems. This study carried out to determine alpha diversity of the waterbirds using the data of mid-winter water birds census in lake district about 16 natural and 9 artificial lake. In this study, the data of mid-winter water birds census, which acquired in 2015 were used. Species richness with Margalef and Menhinick indices, which based on number of species and individuals were used to determine the alpha diversity. Results of species richness and Margalef indices showed that diversities of Karataş, Eğirdir, Beyşehir and Burdur Lakes were high, but diversities of Gölcük and Karagöl were low. However, in terms of Menhinick indice it was determined that Manavgat and Karamanlı Dam Lakes are the richest areas. In consequence of the comparing of census data with diversity results, it was recognized that Margalef indices is suitable for evaluating about diversity of water birds. As a result, the studies that will carried out periodically for measurement of waterbirds diversity in different districts have importance both measurement of diversities and determining of changing in the areas.

Key words: Waterbird, Diversity, Göller Region, Turkey

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Oral Presentation 56

On Study of the Bird Species of Lake Eber and Its Surrounding Area

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Birds, as indicators, have an importance for the healthy processing of ecosystems. This research was carried out between January 2015 - February 2016 in order to identify bird species of Lake Eber and its surroundings; determine migration status of this species and evaluate the area in terms of bird diversity. Study area was visited 11 times and observations were made from selected 8 different observation points. These points were selected carefully for sampling whole area. According to habitats' conditions, transect and point count methods were applied. As result of observations, 145 bird species belonging to 46 families of 18 orders were recorded. According to the IUCN Red List of Threatened Species (2016), 6 species are at Near Threatened, 2 are at Vulnerable, and 137 are at Least Concern category. This study has an importance because it is the first total diverse ornitho-fauna study. By the obtained data, it was contributed to identify ornithological importance and biodiversity of the area.

Key words: Lake Eber, Bird Diversity, Ornitho-Fauna

Oral Presentation 57

Biodiversity of Gala Lake Nature Reserve

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The area of Gala and Pamuklu, which is an important part of the Meriç delta, within the borders of the provinces of Enez and İpsala in Edirne province, the area of 6087 ha has been declared as "Gala Lake National Park" in 2005. Gala Lake has a rich habitat variety due to its wetland environment, proximity to the sea, large meadows, forest ecosystem and mountainous environments.

In this study, the results of previous reports and field studies from our side revealed the current biological diversity of the area.

In the Gala Lake National Park, a total of 754 species were identified, including 491 vascular plant taxa and 263 vertebrate taxa. Of the 491 vascular plant taxa found, 3 species are endemic. According to the IUCN threat categories; 2 are Endangered (EN), and 4 are Vulnerable (VU). There were 158 species of birds, 44 species of mammals, 27 species of inland fishes, 25 species of reptiles and 9 species of amphibians. There are 6 species (VU), 9 species (NT) of bird species. From the mammals, there are 5 species (VU) and 2 species (NT). 1 species, *Anguilla anguilla* (European eel) is in the Critically Endangered (CR) and 1 species (VU) category in the fishes. There are 8 species (VU), 3 species (NT) from reptiles.

There are threat factors in the natura l park such as bovine and small cattle breeding, grazing, agricultural pesticides, illegal hunting and invasive species.

Key words: Biodiversity, Conservation, Nature Reserve, Gala Lake, Wetland Habitat

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Oral Presentation 58

Qualitative and Quantitative Composition of Airborne Mold Samples in of Çanakkale City, Turkey

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Microbiological aerosols are ubiquitous in the environment and more than 180 airborne mold genera are known to be related to allergies and serious human and animal infections. Aim of this study is to estimate the qualitative and quantitative composition of airborne mold samples in of Çanakkale City, Turkey. Airborne mold spores were collected in 2013-2014 in different towns of the city, namely, Çanakkale-Centre, Lapseki and Can. Airborne mold sample were collected on Dichloran Rose Bengal Chloramphenicol (DRBC) agar by using a single-stage bio-impactor. The most frequent ten fungal genera, including *Acremonium* spp., *Alternaria* spp., *Aspergillus* spp., *Cladosporium* spp., *Fusarium* spp., *Geotrichum* spp., *Penicillium* spp., sterile hyphae, *Trichothecium* spp., and yeast were identified. Our results indicated that composition of the outdoor air in terms of observed mold species varied spatially in each town. Contribution of *Cladosporium* spp. in total mold concentration was the highest and *Cladosporium* spp. accounted for 69% in the Central town, 68% in Lapseki town, and 62% in Can town among the mold genera isolated from the air. However, *Aspergillus* spp. had equal observation frequency (2%) at all sampling locations.

Key words: Airborne Mold, Spatial Distribution, Outdoor air, Mold Genera, Outdoor Fungi

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Oral Presentation 60

Presence of the Chytrid Fungus *Batrachochytrium dendrobatidis* in Populations of the Critically Endangered Frog *Rana holtzi* in Bolkar Mountains, Turkey

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In an effort to assess the current geographic distribution of the critically endangered frog *Rana holtzi* Werner, 1898, we conducted several field surveys in the Bolkar Mountain in Turkey. We surveyed historic localities cited in the literature, and potential new localities in private plateau areas of Bolkar Mountain. *Rana holtzi* was found in seven localities: three historic and four new. Despite several surveys, the species has not found at historic location: Lake Eğrigöl. The fungal pathogen *Batrachochytrium dendrobatidis* (Bd) infects amphibians on every continent where they occur and is linked to the decline of over 200 amphibian species worldwide. However, many of the causes of amphibian declines are still poorly understood in Turkey. Bd was detected in diagnostic skin swabs taken southwestern Anatolia between June and August 2014. In this paper, 91 samples were analysed for Bd, using samples taken individuals of endemic Taurus frogs (*Rana holtzi*) from Bolkar Mountain in Turkey. Bd was determinated using real-time polymerase chain reaction (rt-PCR). We detected Bd on 7 of 91 adult specimens from five of eight localities.

Key words: *Rana holtzi,* Taurus Frog, Endemic species, *Batrachochytrium dendrobatidis*, Turkey

Oral Presentation 61

The Effects of Aroclor 1254 and/or Selenium Status on Testicular and Hepatic Selenoprotein Activities/Levels

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Polychlorinated biphenyls (PCBs) are persistent environmental chemicals, which were used in several fields in industry, mainly as lasticizers, coolants, and lubricants. Aroclor 1254 (A1254) was the most abundantly found PCB congener although the use of Aroclors is now banned. 1254 may have cause hepatic, developmental and reproductive toxicity. Selenium is a trace element of fundamental importance to mammalian biology and is the key component of selenoproteins like glutathione peroxidase (GPx1), thioredoxin reductase (TRxR) and selenoprotein P (SePP). This study was designed to investigate the effects of A1254 on testicular and hepatic GPx1 and TRxR activities and SePP levels in selenium-supplemented and selenium-deficient rats. Three-week old male Sprague-Dawley rats were randomly divided into 6 groups. Selenium deficiency was generated by feeding 3-week old Sprague Dawley rats with ≤0.05 Se mg/kg diet for 5 weeks. Selenium supplementation group was on 1 mg Se/kg diet. A1254-treated groups received 10 mg/kg dose by gavage during the last 15 days of feeding period. Testicular GPx1 (18%) and TrxR activities (19%) as well as testicular SePP (43%) levels of A1254-treated rats decreased markedly vs. control. Hepatic GPx1 activity was not affected by A1254 treatment although A1254 caused significant decreases in hepatic TrxR activity (27%) and SePP levels (21%). Selenium supplementation markedly ameliorated these effects of A1254 while the depletive effects of A1254 were more pronounced in selenium deficiency. Overall results suggest that A1254 can cause a depletion in selenoenzyme activities and SePP levels and inorganic selenium supplementation can be protective against its effects on selenoenzymes.

Key words: polychlorinated biphenyls, aroclor 1254, selenium deficiency, selenium supplementation, selenoenzyme

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Oral Presentation 62

Health Status of Workers Exposed to Pollution Stress

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The aim of the present study is to assess the health status of subjects working in a copper factory. Workmen exposed to copper dust and high temperature (working period of 21.4±5.3 years) were compared to the control group of administrative staff (working period of 24±3.33 years). However, serum transaminases (AST and ALT), cholesterol, triglycerides, glucose, bilirubin, granulocytes, monocytes and lymphocytes levels were estimated. The obtained results have showed a remarkable decrease in glucose and triglycerides levels of the exposed individuals compared to the control. It seems that the significant depletion of the energy supplying molecules may be an indication of cellular stress provoked by the working conditions. Conversely, cholesterol concentration was significantly increased in the exposed subjects. There were no significant variations concerning serum ALT, AST, bilirubin, granulocytes, monocytes and lymphocytes between the exposed workers and the administrative staff. In conclusion, within hot polluted environment, the hepatic functions were unaltered, whereas triglycerides and glucose were significantly reduced. The unaffected hepatic markers could be attributed to copper tolerance and also to the arid environment adaptation.

Key words: Biochemical markers, copper dust, health assessment, thermal stress, workers

Acknowledgements: This work is a part of PhD, it was financially supported by Laboratory of Animal Ecophysiology.

Oral Presentation 64

The Effect of Imbalance Diet Containing Different Carbohydrates on the Immunocempetence and the Development of *Ephestia kuehniella* Larvae

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Feeding on unbalanced diet activates the immune system of the larvae. Phenoloxidase activity is an important component of the innate immune system of insects. Experiments were conducted on two different groups to investigate the effects of imbalanced diets on larval development and immune system. The diets contain arabinose (Ar) and sucrose (S) as carbohydrate sources. A total of 10 artificial diets were prepared and protein carbohydrate ratios of diets are different from each other. The diets are as follows: A (S:P), B (3S:P), C (5S:P), D (S:3P), E (S:5P), F (Ar:P), G (3Ar:P), H (3Ar:P), I (Ar:3P), J (Ar:5P).

In the first group, maximum food consumption (mg) was determined for larvae fed on diet D (100±7.63) and minimum nutrient intake was determined for larvae fed on G diet (7±5.9). The larvae fed on H diet could not be pupae. The larvae fed on I diet have the highest amount of pupae protein (mg) (4,2±0,34), while the larvae fed on the B diet (1,3±0,55) have the lowest amount of protein pupa. In the second group, minimum phenoloxidase level were observed in the larvae fed on D diet, maximum level was observed in the larvae fed on G diet.

Key words: *Ephestia kuehniella*, immunity, imbalance diet, phenoloxidase, feeding

Oral Presentation 65

Micropropagation of Endemic *Liquidambar orientalis* Mill. Through Temporary Immersion System (TIS)

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The propagation studies have great importance in order to prevent biodiversity losses within the scope of biodiversity conservation and management strategies of it. *Liquidambar orientalis* Miller (Oriental sweetgum or Turkish sweetgum) which is a relict endemic species for Turkey and at the same time it has an economic importance because of produced sweetgum oil. However, the spread of this species in our country has been diminishing day by day due to many factors. In this study, it's been aimed to investigate the micropropagation of *Liquidambar orientalis* by the temporary immersion system (TIS) and to establish an appropriate protocol. After surface sterilization the seeds were cultured on ½ Murashige-Skoog medium and 8-week old sterile seedlings' node were used as explant (8-10 mm length). The explants were cultured in RITA® containers on woody plant medium (WPM) without plant growth regulator. The cultures were incubated at 22°C in photoperiodic condition (8 hours dark-16 hours light). In this system immersion period was regulated as 15 minutes in 6 hours and 15 minutes in 8 hours. After 8 weeks, the culture containers were emptied, measured and counted (number of shoot, shoot size, shoot fresh weight) and the best results were obtained in the culture applied for 15 minutes in 6 hours.

Key words: *Liquidambar orientalis* Mill., Micropropagation, Temporary immersion system

Acknowledgements: This research was financially supported by the Mugla Sıtkı Kocman University Scientific Research Projects Coordination Unit, Turkey (15/027).

Oral Presentation 66

How Synthetic Fertilizer Affects Cell Division in *Vicia hybrida*

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Any unfavorable condition or substance blocks plant metabolism, growth and development. Ammonium sulphate [(NH4)2SO4] is one of the first and most widely used nitrogen (N) synthetic fertilizer for crop production. To increase productivity and soil fertility producers use agricultural chemicals and synthetic fertilizers. In this case, plants become prone to fertilizer more and more and soil infertility increases. However, these fertilizers also have caused serious soil, water and air pollution. For these reasons, it is recommended that knowledge of nutrient content of soil and nutrient requirements of crops are carefully balanced with nutrients application. To understand the nutrient requirement and its harmful effects on nucleus of *Vicia hybrida* L., various concentrations (1, 10, 50, 100, 250, 500 and 1000 µM) of ammonium sulphate were used to see its effect on mitotic index and chromosome behaviors. Levels of 1, 10 and 50 µM of (NH4)2SO4 led to a significant increase on mitotic activity. In parallel with concentration increase, cell division decreases depending on the increasing concentration. As a result of cytological studies, chromosome abnormalities were not observed in *Vicia hybrida* L. seeds germinated in distilled water. However, seeds germinated in media containing (NH4)2SO4 showed various chromosome abnormalities. Many chromosome aberrations were identified such as disorderly prophase, fragments, anaphase bridges, lagging chromosomes in anaphase and telophase, fault polarization in anaphase and telophase bridges. This indicates that artificial fertilizers should be used by suitable methods and in recommended doses.

Key words: Ammonium sulphate, Chromosome aberrations Mitotic activity, Synthetic fertilizer, *Vicia hybrida*

Oral Presentation 67

Genetic Structure of *Phoenicolacerta laevis* (Gray, 1838) (Squamata: Lacertidae) Based on Mitochondrial Markers

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The *P. laevis* occurs in Turkey, Syria, Israel, Lebanon and Jordan which is called as The Levant Region is one of the most important harbors for cryptic phylogenetic lineages and hidden genetic diversity. In order to investigate population genetic structure of *P. laevis*, we used gene sequences of two mitochondrial markers (12S rRNA and cytochrome b) for all of 68 specimens: 50 samples were collected via fieldwork from 25 localities in Turkey and 18 samples (in Syria, Israel, Lebanon and Jordan) were retrieved from Genbank. The number of haplotypes, haplotype (*Hd*) diversity, and nucleotide (π) diversity were calculated. FST for determining genetic structure and differentiation of *P. laevis* and neutrality statistical tests among groups for searching traces of population expansions with Tajima's D and Fu's FS were measured. A total of 24 and 30 haplotypes were found for 12S and cyt b, respectively. Haplotype diversities were 0,931 and 0,963 for 12S and cyt b, respectively. To test phylogenetic relationship among populations, we constructed Neighbor-Joining Tree (NJ). Our results from NJ revealed that mitochondrial DNA supported the presence of two major clades exhibiting high genetic variation. Our results suggest that the southern west populations in Turkey can be transported from the southern east ones considering genetically relationship among samples. In addition to this, Amanos Mountain can be one of reasons for high genetic diversity within Turkey's *laevis*, whereas it is not for between major clades.

Key words: *Phoenicolacerta laevis*, Lacertidae, 12S rRNA, cytochrome b, population structure.

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Oral Presentation 68

Using of Microarray Technology in Ecological Studies

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The scientific analysis and study of interactions among organisms and their environment is called ecology (nature science). Ecology researches physiology of organism, species interactions, population organization and ecosystem functions. For this reason, ecology has an important place in the evolutionary process of organisms. Molecular methods could be used to examine the phenotypic characteristics which affected by genotype and environment and their interactions. As a matter of fact, organisms constantly transmit the genetic information recorded from one generation to another by DNA. Using this information, the origins and existence of species; in other word, the ecological basis is better understood.

Microarray (gene chip or DNA chip) technology is used in ecological and evolutionary studies in molecular biology. A large number of gene activities can be monitored at the same time in genetic and medical research, comparing gene activities in patients and healthy cells, and the diseases can be classified into subgroups with DNA microarray technology.

In this study, the molecular tools and methods utilized for the formation, diversification and understanding of genetic bases in the evolutionary adaptation to complex environmental conditions at molecular level will be briefly introduced.

Key words: Ecology, Microarray, Molecular Biology, Genetic, DNA

Oral Presentation 69

Determination of Factors Affecting Bird Diversity; Çandır District Example

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Birds species affected by environmental and climate variables are the most important indicator species for the sustainability of the ecosystems. Sustainability of ecosystems is only possible by determining the diversity within the ecosystem and the variables that affect it. In this respect, bird species diversity, which has an important role in the ecosystem, is in interaction with many factors. At the same time, it is important to note that Turkey is both located at the crossing point of the continents and has bird diversity. This study was carried out periodically on 43 sample plots in order to determine the factors effecting bird diversity in Çandır district, in 2016. Bird observations were made at each spot using point-counting techniques from direct observation techniques and coordinates of the same areas were taken. In addition, maps of slope, aspect, elevation, topographic position index, sunshine durations, rugedness index, roughness index, radiation index, solar radiation index, heat index and 19 climate variable were produced using Arcgis. In this study, the direct species richness (alpha diversity) values in the fields were calculated and significant factors were determined by the correlation analysis with site factors. Significant correlation (p=0.05) was determined between the values of species richness and both elevation and climatic variables. A negative correlation was found between elevation and BIO4, BIO7, BIO14 and a positive correlation was found between BIO1, BIO5, BIO6, BIO8 BIO9, BIO10, BIO11. As a result, it can be said that for Çandır district, species richness is relatively low in the highs and the arid-cold areas, but in the areas where the precipitation and humidity are higher. Besides, It should be noted that the dam lake in the region is effective in the distribution of species richness. In general terms, knowing the factors affecting the diversity of birds, which are the most sensitive species of ecosystems, is of great importance for the detection and monitoring of future changes. Because of these reasons and the results obtained, it is thought that it will be a good example in terms of the studies in the Çandır district and other areas where the studies are carried out.

Key words: Bird density, Ecosystem, Çandır, Alpha density, Corelation

Oral Presentation 70

Solar Energy Systems from an Ornithological Perspective

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Of the 174 petawatts energy radiated from sun 10 is reflected back from the atmosphere, 35 from clouds, and 7 from the earth's surface. 33 PW of the remaining energy is absorbed by the atmosphere, and 89 PW is absorbed by oceans and land masses. The first known application of solar energy belongs to Archimedes, who burned the ships surrounding Syracuse in 215 BC by focusing sunlight onto approaching Roman ships. The world's first modern solar collector was created by Saussure in 1767.

The only way to be relieved from the dependence on external energy sources is by using renewable energy. Despite having potential alternative sources such as wind, solar and geothermal energy, our country cannot adequately utilize this. The most common hybrid system that efficiently utilizes the sources is the use of wind turbines and solar panels in combination. The dissemination of these systems will ensure a sustainable energy capacity.

It is known that the environmental impact of the construction and destruction phases of facilities, and the light reflections from installed facilities negatively affect birds and their migration. However, the extent of these effects is not fully understood. Periodic field work is required to better understand these negative factors and to contribute to the conservation of species.

Key words: Birds, Alternative energy resources, Turkey, Bird Migration.

Oral Presentation 71

Population Density of Some Bird Species in Kırıkkale

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Today, there are 10,064 birds living in the world, and 2193 of them are in danger. About 500 bird species have been recorded from Turkey. This research is based on some analyzes of the population structure of the bird species detected in the mezzanine of Kızılırmak River within Kırıkkale borders. Field studies were carried out in five stations between 2010 and 2012. A total of 178 field studies were carried out to determine 263 species of 16 order. Some of these assessments were based on frequency, dominance, similarity, diversity indices, cluster analysis and negative effects of environmental factors. Thus, current approaches to populations of species have been identified and possible risks identified. A total of 225 bird species were detected in five stations in the first year. 131 species in the first station, 132 species in the II. station, 104 species in the III. station, 108 species in the IV. station and 146 species in the V. station were detected. In the second year, a total of 231 bird species were identified at all stations. 132 species in the first stage, 152 species in the II. station, 126 species in the III. station, 105 species were detected in the IV. station and 156 species in the V. station. III. station with the most diversity stations between in both years. As a result of the investigations, it has been determined that species are rare (1-20%). In this study, birds were seen to be directly or indirectly affected by various human applications and their populations gradually weakened. Thus, current approaches to populations of species have been identified and possible risks identified.

Key words: Frequency, Dominance, Similarity, Diversity, Kırıkkale, Kızılırmak Valley, Turkey

Oral Presentation 72

Some Bioecological Features of *Sus scrofa* (Mammalia: Artiodactyla) in Turkey

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Wild boar, *Sus scrofa* is a species widely distributed in Palaearctic and Oriental regions. This species is a member of the order Artiodactyla belonging to the classis Mammalia and an omnivorous animal. It is also one of the species with a wide distribution area in Turkey. This research is based on some field studies carried out in Turkey between 2001 and 2017, some morphometric data of wild boars and camera traps records from Kırıkkale province. The external and cranial measurements of the wild boar hunted were evaluated as the main material. While wild boars are fed on some plants, invertebrate and vertebrate animals, and mushrooms, they are generally hunted by lynx and wolf. In this research, some biological characteristics, habitat features, population size, conservation criteria of wild boar and human-wild boar conflict are discussed. Examined twenty-one specimens from Kırıkkale Province, indicates that wild boars represent the nominative form. Ages of the specimens were determined using head skeletal and dental structure properties. It generally produces its young in April and May. Activities of wild boars within one year were evaluated with camera trap records. Camera trap records had shown that they visited large areas depending on the nutrient diversity seasonally. The data of our samples were compared to the literature. Hunting areas and seasons for wild boar are decided by the Central Hunting Comission for every year. For the natural balance, wild boar should be protected in its natural habitats.

Key words: Wild boar, *Sus scrofa*, camera trap, population size, Turkey

Oral Presentation 73

The Use of Agro Environmental Method for Determination of N Nutrient on Orchards

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Nitrogen plays a key role in the plant life cycle. Therefore, the determination of nitrogen has become vital importance for optimization of fertilizer. But traditional nitrogen analyses as Kjeldahl method causes the environmental problem. Thus, intense research needed due to its environmental and economic impact.

This aim of the study was to predict the N deficiency in some trees (pear, cherry, peach, and apricot) using a combination of visible near infrared methods and spectro-radiometric measurement. An experiment was designed in nutrient-controlled containers. Plant leaves samples were simultaneously collected. The reflectance values of plant leaves were measured using Handheld Field spectrometer without any chemical usage. Their nutrient contents were determined in the laboratory. Afterward, a statistical analysis performed to the comparison between the reflectance values and laboratory analysis results for establishing the significant wavelengths.

Prediction of N status for trees species can be possible using VNIR wavelengths with the different models. These models were provided to enough accuracy using HandHeld spectrometer for prediction of nitrogen status. In addition, it can be concluded that for extensive use, ecologically based and environmentally interactive models need to be developed for each other species.

Key words: Orchards, handheld field spectroradiometer, nitrogen status, reflectance

Oral Presentation 74

Soil Contamination Near a Municipal Solid Waste Disposal Site in Kastamonu, Turkey

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The most common method of waste disposal is dumping on land, because it is the cheapest method of land waste disposal. The land disposal of municipal and industrial solid waste is potential cause of soil and groundwater contamination. The aim of this present study was to investigate the effects of Kastamonu Municipal solid waste disposal site on heavy metal contaminations in soil. Soil samples were collected from three directions (east, north and south) and 6 different distances (center, 100 m, 200 m, 300 m, 400 m and 2 km) on each direction. The soil samples were taken from 4 different soil depths (0-5cm, 5-10 cm, 10-15 cm and 15-20 cm) and analyzed for soil pH, soil texture, bulk density and heavy metal concentrations; lead, chromium, arsenic, zinc, cadmium, copper, mercury, and nickel. The results showed that there were significant ($P<0.001$) variations in soil pH, sand, clay and silt contents and the heavy metal concentrations with the distances. In general, soil pH, sand and silt contents decreased with the distances, whereas clay content and the heavy metals generally showed an increase with the distances. This could be attributed to the fires seen at the solid waste disposal site. This burning could have been the main reason to carry the heavy metals by strong wind and accumulate them in the soil. Compared to Turkish and EU (European Union) Department of the Environmental Trigger Concentrations for Environmental Contaminants, the heavy metal concentrations in the soil were so much higher than the required level.

Key words: Solid waste disposal site, Pollution, Soil contamination, Heavy metals, Kastamonu

Oral Presentation 76

Variation in Soil Properties and Soil Organic Carbon and Total Nitrogen Stock Capacities with Forest Tree Species and Soil Depths

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Main aim of this study was to assess the differences in soil properties, soil organic carbon and total nitrogen contents and stock capacities between tree species using Beech, Scots pine and Black pine forest ecosystems growing under the same site conditions in Daday, the north-west of the Kastamonu province. Soil samples were collected from six soil depths (0-5 cm, 5-10 cm, 10-15 cm, 15-50 cm, 20-25 cm, 25-30 cm) at the altitude of 1189 m. The soil samples were analyzed for soil pH, soil texture, bulk density, soil organic carbon (SOC) and total nitrogen (TN) contents and stock capacities. Results showed that soil bulk density, moisture and soil pH were significant ($P< 0.01$, $P< 0.05$ and $P< 0.05$ respectively) between the three tree species. The black pine stands had the highest mean SOC (4,42%), followed by the Scots pine (3,11%) and beech stands (3,08%). Mean TN content was also highest in the black pine stands (0,246%) followed by the beech (0,180%) and Scots pine stands (0,125%). Mean SOC and TN stock capacities were highest for black pine (234 Mg C ha-1 and 8,83 Mg N ha-1), followed by beech (102 Mg C ha-1 and 5,84 Mg N ha-1) and Scots pine (80 Mg C ha-1 and 3,24 Mg N ha-1). In conclusion, this study has demonstrated that soil properties, soil organic carbon and total nitrogen content and stock capacities under similar site conditions are significantly influenced by tree species and soil depths in the northwest of Turkey.

Key words: Soil organic carbon, Total nitrogen, Beech, Black pine, Scots pine

Oral Presentation 77

Environmental Conditions in Gökçeada Salt Lake Wetland and Their Effects to the Distribution of Benthic Macroinvertebrates and Epipelic Algae

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Although wetlands have perfect hydrodynamic perspectives, human activities which are the one of major environmental concerns on the aquatic environments affect the natural balance of these sensitive structures negatively. In this study, environmental conditions of Salt Lake Wetland of Gökçeada (Çanakkale/Turkey) and their effects to distributions of benthic macroinvertebrates and epipelic algal flora were examined. For this aim, a total of 5 different stations which one of them is located in the stream feeding the Salt Lake and the others in the lake were sampled in the year 2016 at seasonal intervals. While some physicochemical variables of the water columns were measured during the field studies, the including of pesticides, heavy metals and some ions in the sediments of sampling stations were also analysed.

A total of 23 benthic macroinvertebrate taxa and 37 benthic epipelic algae taxa were identified in the stations. According to the Shannon-Wiener index, the station located in the stream was found to have the highest diversity in both benthic macroinvertebrates and epipelic algae (H'=0.81 and H'=1.18 respectively). While the Bray-Curtis similarity index was used to determine the similarities between the sampling stations for the taxa, the results were also supported by Correspondence analyses. According to this, the station located in the stream was found to be the most different from the others by <10% similarities. Also, it was found meaningful relationships by Spearman correlation between the benthic macroinvertebrates and some environmental conditions like salinity, TDS, conductivity, dissolved oxygen, pH, COD ($r>0.8$; $p<0.05$). In the end of study, pesticides and some heavy metal findings in the lake were also discussed and some suggestions were made to sustainable usage of the wetland.

Key words: Gökçeada, Salt Lake, zoobenthos, epipelic algae, environmental variables

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Oral Presentation 78

Seasonal Distribution of Gelatinous Macrozooplankton in Hamsilos Bay, Sinop, Southern Black Sea

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The extreme increase in the amount of jellyfish organisms, which occasionally occurs in the sea, directly or indirectly affects tourism, fisheries and the marine ecosystem. Hamsilos Bay is one of the most important regions on the Black Sea Coast of Turkey. This region is within a natural protected area in the first and second degree. In this respect, determining the abundance and biomass distribution of gelatinous macrozooplankton in relation to physical parameters was the aim of the present study. Gelatinous macrozooplankton samples were collected monthly from four stations between July 2015 and June 2016 using a plankton net with a 112 µm mesh size and 50 cm diameter mouth opening. In this study, four species were identified: *Aurelia aurita* (Linnaeus, 1758), *Mnemiopsis leidyi* A.Agassiz, 1865, *Beroe ovata* Bruguière, 1789 and *Pleurobrachia pileus* (O.F.Müller, 1776). The abundance and biomass values of gelatinous macrozooplankton increased in the summer and autumn months. The maximum mean abundance value was recorded in August 2015 (6.15 ind. m-2). However, the highest mean biomass value was found in April 2016 (36.95 g.m-2). The species that made the highest contribution to the total abundance of gelatinous macrozooplankton were *A. aurita* (45%) and *P. pileus* (43%). The abundance and biomass of *M. leidyi* was well correlated with temperature ($p<0.05$). The mean gelatinous macrozooplankton abundance and biomass values showed no statistically significant differences ($p>0.05$) among the stations.

Key words: Southern Black Sea, Hamsilos Bay, seasonal distribution, gelatinous macrozooplankton

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Oral Presentation 79

Investigation of Microbial Abundance in the Çakalburnu Lagoon (İzmir Bay)

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Çakalburnu Lagoon which is a coastal wetland on the southern coast of the Bay of İzmir has narrow connection with the sea. It has an eutrophic condition due to its closed environment, its shallow depth and limited water circulation. In the lagoon, investigation of viruses and picoplankton (*Synechococcus* spp. and bacteria) that the most abundant component of all ecosystems, is important for the understanding of microbial nutrient loop and biogeochemical cycles. Picoplankton represents a significant part of plankton biomass and has a large impact on ecosystem. Viruses can cause significant marine microbial mortality, and have an effect on marine biogeochemical and ecological processes, bacterial community dynamics and algal bloom control. In this study, winter and summer changes of picoplankton and virus abundance (using epifluorescence microscopy) and the relations with environmental variables (temperature, salinity, pH and chlorophyll-a) were investigated at eight sampling stations in Çakalburnu Lagoon. Based upon the minimum and maximum values; the viral, *Synechococcus* spp. and bacteria during the sampling period were found lowest in winter and highest in summer. Viral abundance ranges were determined as 5x106-9.9x108 cells/ml. Minimum, maximum values of *Synechococcus* spp. and bacteria's are 2.7x103-6.7x104, 8.3x105-2.1x107, cells/ml respectively. Via Pearson Correlation test; a positive relationship was found between the abundance of microbial parameters and temperature, chlorophyll-a. Consequently, microbial organism plays important roles in aquatic systems and for this reason; it should be included in the monitoring parameters regularly.

Key words: Çakalburnu Lagoon; bacteria, *Synechococcus* spp. virus; environmental parameters

Acknowledgments: This study was supported by The Scientific and Technological Research Council of Turkey (Project number: TUBITAK 115Y406).

Oral Presentation 80

Ecological Observations on *Bufotes variabilis* (Laurenti, 1768) Distributed in Bozcaada (Çanakkale, Turkey)

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Bozcaada is one of the Aegean islands and is located in the northeast of the Aegean Sea and in the southwest of the Çanakkale Strait. There is no natural water source, consists of small streams in the spring. Nevertheless, the aquatic herpetofaunas are very rich. This paper presents habitat chooses and ecological observation for *Bufotes variabilis* in Bozcaada (Çanakkale, Turkey). Within the scope of ecological observations, feeding biology, breeding time and breeding areas in Bozcaada were determined. As a result, *B. variabilis* specimens were observed in rocky, bushy, agriculture, and forest habitats in Bozcaada. They lay eggs in seasonal water deposits in these areas. When the stomach contents were examined, it was determined that they fed with Arthropoda (84.62%), Mollusca (13.85%), and Annelida (1.54%) respectively.

Key words: *Bufotes variabilis*, Bozcaada, Ecological observations, habitats

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Oral Presentation 81

Genetic diversity of haemosporidian parasites in the Anatolian avifauna

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The diversity of avian malaria parasites in Anatolian populations has been a central theme in avian haemosporidian studies. Though much research has investigated factors shaping the abundance and geographical distribution of avian malaria in different continents, the vast territories of Asia have received little attention. Moreover, the distribution of haemosporidians remains poorly known in Turkish birds. Here, birds were caught in seven localities throughout the Anatolia. The distribution and genetic diversity of the haemosporidian parasites, *Plasmodium, Haemoproteus, and Leucocytozoon,* was characterized by analyzing partial sequences of the mitochondrial cytochrome b gene. Avian haemosporidian parasites showed geographic structuring in Anatolia. Several undescribed haemosporidian haplotypes were found among populations of the bird species in Turkey. Our results show that the level of the genetic diversity of haemosporidian parasites in the Turkish avifauna is comparable to other, well-studied regions.

Key words: Aves, Anatolia, haemosporidian parasites, mitochondrial DNA

This study was supported by MAKU BAP.

Oral Presentation 82

First Report of Sphaeromyxa sevastopoli and Zschokkella iskovi (Myxozoa) from Gaidropsarus mediterraneus in Sinop Coasts (Turkey)

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Myxozoans are among one of the most diverse parasitic groups of fish worldwide and many species have been reported to be the reason for serious economic losses. To date, over 68 species of genus *Zschokkella* that have been described from fishes, amphibians and reptiles. On the other hand, only 38 species have been reported from the genus *Sphaeromyxa.* All members of both genera are coelozoic in marine fish hosts. Studies on myxosporean parasites of fishes in Turkey are very limited. Thus far, 69 myxosporean species have been reported in the Black Sea fishes and none of these was belonged to *Zschokkella.* In the present study, specimens of shore rockling *Gaidropsarus mediterraneus* were collected by angling in Sinop coasts of the Black Sea and then, they were investigated for myxosporean parasites by conventional methods. Gills, fins, skin, urinary bladder, kidney, gall bladder, intestine and gonads were examined using a phase contrast Olympus microscope (BX53) equipped with a digital camera (DP50) and DIC attachment. *Sphaeromyxa sevastopoli* (Sphaeromyxidae) and *Zschokkella iskovi* (Myxidiidae) were the identified in the gall bladder of *G. mediterraneus.* The prevalence of infection and the intensity of each parasite species were calculated. Their morphometric characteristics were measured and photos of each species were taken.. *Zschokkella iskovi* was represented a new parasitic myxosporean record for Turkish parasite fauna, on the other hand, *S. sevastopoli* was found for the first time in the gall bladder of shore rockling *G. mediterraneus.*

Key words: *Sphaeromyxa sevastopoli*, *Zschokkella iskovi*, myxosporean parasites, Black Sea.

Oral Presentation 83

Biological Control Possibilities in *Asphodelus aestivus* Dominated Rangeland Ecology of Çanakkale Province: *Capsodes infuscatus* (Hemiptera: Miridae) A Prominent Example

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Rangelands are such areas that meet the 70% forage need of livestock and the 16% of the world's food production. 18.8% surface area of Turkey is covered with rangelands and pastures that fulfill an approximate of 30.1% fodder needs of livestock animals. It has been shown an increase of weed plants there that affect the quality and yield of grasslands as well as animals' activities, health and production. *Asphodelus aestivus* (Brot.) is one among those unwanted plants that commonly found in the rangelands of South and West Anatolia in Turkey. This weed plant makes complicate the economic use of rangelands and grazing of animals due to its widespread characteristic and inclusion of toxic compounds. In present time, only the chemical control method is being commonly used along with cutting, pulling and the application of artificial fertilizer practices to overcome this weed in our country despite of naturally presence of the biocontrol agent of this weed in the rangelands of our country namely, *Capsodes infuscatus*. This is a monophagous bug. The nymphs and adults voraciously feed on flowers, leaves, stems and seed pod saps of *A. aestivus* with their piercing-sucking mouth parts. In this review work, our main target is to find the most appropriate and suitable methods of rearing of this monophagous insect under laboratory conditions, increase an effective bug population and then effectively release its egg, nymphal and adult stages to the rangelands of our country as a biocontrol agent against the high population density of *A. aestivus* so that to minimize the application of different pesticides, decrease artificial fertilizer costs, save time and energy by doing cutting and pulling practices, provide a wide range for grazing to our livestock animals and improve the quality and yield of the rangelands.

Key words: Biological control, *Capsodes infuscatus*, Rangeland ecology, *Asphodelus aestivus*, Çanakkale

Oral Presentation 84

Reporting on an Extraordinary Wildfire: Propagation and Behavior of Çamburnu-Sürmene Fire in the Eastern Black Sea Region

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The 7 January 2017 wildfire of Çamburnu, Sürmene in the north-eastern Turkey burned over 25 ha of forest land, driven by extremely dry fuel and gusty winds. Çamburnu-Sürmene fire influenced mostly mature and degraded *P. sylvestris* stands. The objective of this study is to report on fire propagation and behaviour of Çamburnu-Sürmene fire. This fire occurred as a result of weather, topography and fuel interactions in the absence of fire suppression activities. Fire perimeter and fire intensity classes were assessed with extensive field survey studies after the suppression of fire. According to field survey studies, degrees of fire severity and unburned areas were determined and mapped. High intensity fire was determined in degraded steep sloping areas. Low and medium intensity surface fire occurred in mature and degraded *P. sylvestris*. Results of this study will be important for post-fire and fire ecology studies, giving invaluable perception of forest fire phenomenon in the Eastern Black Sea region where fires usually occur in the late autumn and early spring.

Key words: Forest fire, Fire weather, *Pinus sylvestris*, Black Sea, Turkey

Oral Presentation 85

Achieving GSPC Objective 1: Herbarium NGBB of the Nezahat Gökyiğit Botanic Garden (İstanbul, Türkiye)

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Herbarium NGBB of the Nezahat Gökyiğit Botanic Garden is the youngest registered herbarium in Turkey. Currently the collection has estimated from 7.500 to 10.000 herbarium sheets of vascular plants, especially rich in specimens from the Central Anatolian, Black Sea Region territories and East Mediterranean areas. Currently the NGBB collection has 1721 plant taxa and covers 13% of Turkey national flora. The families with the largest number of herbarium specimens are Asteraceae, Amaryllidaceae and Iridaceae. A total of 512 herbarium sheets are digitalised and are accessible online throughout NGBB Herbarium database http://herbarium.ngbb.org.tr/en. The particular interest of NGBB collection are 56 type specimens of recently described new taxa to science from Turkey. Of important value in NGBB herbarium are specimens of rare and endemic plants (511 sheets) out of which 221 belong to endemic taxa, which is 18% of total recorded Turkey endemic taxa. In total 1254 sheets of ethnobotanical specimens and 31 invasive species are stored in herbarium. NGBB collection contains more than 54 sheets of different specimens of agricultural important traditional cultivars.

Key words: Conservation, Collections, Digitalization, Herbarium specimens

Oral Presentation 86

Documentation of Unexplored Plant Resources of Historical Kalash Valley, Hindukush Range, District Chitral, Pakistan

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Kalash valley is famous all over the world for its inhabitants having indigenous culture, religion, language and considered to be the descendants of Alexander the Great living in this rigged mountainous series of Hindukush range. Frequent field visits were carried out during years 2013-2016 for the collection of plant resources and documentation of related data. The plants were then properly pressed and identified with the help of different volumes of Flora of Pakistan and other available literature. The study showed 389 species belong to 237 genera and 88 families including 62 dicots, 11 monocots, 7 pteridophytes, 4 bryophytes, 3 gymnosperms and one fungus families. Species distribution indicated 307 dicots, 55 monocots, 12 pteridophytes, 10 gymnosperms, 4 bryophytes and one fungi species. Asteraceae was dominant (49 Spp.) family followed by Poaceae (36 Spp.), Brassicaceae (25 Spp.), Lamiaceae and Rosaceae (22 Spp. each), Fabaceae (16 Spp.) and Apiaceae (13 Spp.). The remaining families had 12 or less species. The life form classes indicated 205 therophytes, 56 geophytes and 46 hemicryptophytes species while Nanophylls (178 Spp.) mesophylls (72 Spp.) and leptophylls (53 Spp.) were dominant leaf spectra classes. The present study is 1st ever record of floristic diversity of Kalash valley and includes some new reports. The findings will be helpful in future detail studies on plant resources of the area.

Key words: Floristic diversity, ecological characteristics, Kalash valley, district Chitral, Pakistan

Oral Presentation 87

A New Rare Myxomycetes (Mycetozoa) Record from Hatay Turkey

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Myxomycete samples were collected from Hatay Province of Turkey on various occasions during 2016. Myxomycetes, also known as myxogastrids or plasmodial slime molds, a monophyletic group of amoeboid protists, which are found in almost all terrestrial ecosystems. Mycetozoa contains 64 genera and 964 species. Turkish myxobiota are still incomplete, there are 46 genera and 259 known species. As a result of field studies, a new myxomycetes species was reported for the first time from Turkey. This species is *Reticularia intermedia* Nann.-Bremek. *Reticularia intermedia* sporocarps aethalia, pale brown tinted with pink, red-brown, 0.5-2 cm. Peridium thin, fragile, Cortex thin, evanescent, with a slightly bullate surface. Pseudocapillitium profuse, delicate throughout, minutely warted in parts, branching frequently. Spores free, pinkish brown in mass, pale yellow by transmitted light, delicately reticulate over most of the surface, smooth on the small remaining area, globose to subglobose, 7-9 µm in diameter including the reticulate border. *Reticularia intermedia* differs from *R. lycoperdon* in its smaller size range, the completely thread-like pseudocapillitium lacking the basal plates, the extremely fragile cortex and the more nearly complete reticulation of the spores. *R. intermedia* is reported on dead wood and on rotten wood, in our study reported on *Quercus* sp. wood. The distribution of this species is scattered across Great Britain but nowhere common. Recorded from Netherlands, Great Britain, Greece, Bahamas, and North America. Morphological, chorological and ecological characteristics of this species were comparatively analyzed.

Key words: Myxomycetes, New records, Hatay, Turkey

Oral Presentation 88

Chorology of *Haplophyllum* A.Juss. and *Ruta* L. (Rutaceae) Genera Growing in Turkey

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Abstract: This study aims to give a detailed account of Chorology of *Haplophyllum* and *Ruta* genera growing in Turkey. In Botanical trips, many plant specimens were collected in 2011-2015. All of the plant specimens were collected from difference localities in Turkey. At least one sample for each taxon was prepared according to common herbarium techniques. These specimens were identified and by using Flora of Turkey and neighbor floras. Distribution of Each taxa also were showed on the map. In consequence of this study, Chorologies of *Haplophyllum* (20 taxa) and *Ruta* (2 taxa) in Turkey were determined based on the field and herbarium studies, and their distribution maps were given.

Key words: Chorology, *Haplophyllum*, *Ruta*, Rutaceae, Turkey.

Acknowledgements: We also thank to Selcuk University, BAP (Project no: 13201023) for financial support and the curators of AEF, ANK, E, G, GAZI, HUB, ISTE, ISTF, K, KNYA and LE who allowed us to study their *Haplophyllum* and *Ruta* specimens.

Oral Presentation 89

Seasonal Variation of Fish Assemblages on Artificial Reefs Deployed at Aegean Sea Coast of Turkey

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Artificial reefs have been used along the coast of Aegean Sea, Turkey since 1990's. The aim of this study is to determine the fish assemblages and the seasonal variation of fishes associated with artificial reefs. The study was carried out between 2013 and 2015 in the Edremit Bay, Northern Aegean Sea. It consists of 215 sites each of 30 concrete blocks in seven different fields, with the aim to promote small-scale fisheries and protect marine biodiversity. Rapid visual census was used to determine fish species, number of individuals and size estimation. Species' diversities for the seasons were calculated by the Shannon–Wiener index (H'). Differences between seasons, species composition and abundance were determined by the Mann-Whitney U test. A total of 46 species from 21 families were recorded. By far the most abundant observed families were Sparidae, Labridae and Serranidae respectively. 35 species were classified as of commercial value and carnivores were clearly dominant. Diversity index (H´) values changed between 2.54 and 3.56 according to seasons. While the highest H´value was in the summer, the lowest value was in the autumn. Bray-Curtis similarity analysis observed the highest similarity (86.3%) between spring and winter. Artificial reefs are considered a tool for protection marine biodiversity, and also increasing marine productivity. However, fisheries should be managed for protection of biodiversity in artificial reefs.

Key words: Artificial reefs, Biodiversity, Edremit Bay, Aegean Sea

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Oral Presentation 90

Biological Aspects of the Smooth-hound Shark, *Mustelus mustelus* (Linnaeus, 1758) in the North-Eastern Aegean Sea

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Mustelus spp. are generally regarded as locally common, although they are not very abundant. They are occasionally taken by demersal trawl, trammel nets, gill nets and longlines in the Mediterranean. *Mustelus mustelus* have important shark species their longer life spans, slower growth rate, lower fecundity and late attainment of sexual maturity. These factors make them susceptible to changes in the ecosystem. *Mustelus mustelus* is currently assessed as "Vulnerable" globally and listed in the IUCN Red List. The smooth-hound shark is part of an important commercial fishery on the Turkey coasts. The meat of *M. mustelus* are smoked or salted or marketed fresh as whole carcasses for export. However, very few studies have been performed on the length-weight relationships, reproduction biology and feeding habits of these sharks in the Saros Bay, the Northeastern Aegean Sea. In this study, a total of 75 *M. mustelus*, comprising 50 males and 25 females were collected between March 2005 and August 2008 from the Saros Bay. The overall F:M ratio was 1:2. Females ranged from 47 cm to 152.2 cm in total length (TL) and males from 46.8 cm to 148.3 cm. The total length-weight relationships was TW=0.0029*TL3.02. Each sex showed positive allometric growth (b>3). A total of 18 embryos were obtained from pregnant individuals in February and April. The length range of embryos were measured between 30-36.8 cm. The relationship between egg diameter (Do) and mass (Mo) was also determined and it was found that eggs increase in weight exponentially (r2=0.97). Males with calcified claspers were observed starting at 110.0 cm TL. Hepatosomatic index values for males ranged between 0.01-9.74% and for females ranged between 2.09-6.21%. The stomachs contained mainly Crustaceans.

Key words: *Mustelus mustelus*, reproduction, feeding, length-weight relationship, Saros Bay

Acknowledgements: This research was financially supported by the TUBITAK Research Project 106Y035.

Oral Presentation 91

European Pilchard (*Sardina pilchardus* Walbaum, 1792) Eggs and Larvae Distribution in Izmir Bay During the Last Three Decades

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Variations of the eggs-larvae abundance and distribution of European pilchard (*Sardina pilchardus* Walbaum, 1792) in Izmir Bay during the last three decades have been investigated. The ichthyoplankton material was collected seasonally at 29 stations which were distributed over the whole Izmir Bay between the years of 1989 and 2017during the long-term oceanographic monitoring surveys carried out by the R/V*K.* Piri Reis operated by the Institute of Marine Sciences and Technology of DEU. Samples were hauledvertically from bottom to the surface using a WP-2 type 250 µ mesh size net. However, the number of stations reduced to 11 after the 2015 monitoring studies. Abundance calculations were done according to "Smith & Richardson (1977) vertical haul formula" and distribution maps were prepared by "Surfer 10" software.

Izmir Bay has been found to be one of the important spawning grounds for the European pilchard in the Aegean Sea. The reproduction period of European pilchard in the İzmir Bay extends from the end of September to the beginning of June (Cihangir, 1996). Main pilchard spawning ground is located at the outer bay (between Foca-Karaburun) but time to time spawning also takes place in the Inner Bay. Pilchard larvae were found to be mainly concentrated in the area between South Eastern part of Uzunada and Gediz River delta which is another important spawning ground in the bay. European pilchard eggs-larvae constitutedalmost 20% of the total ichthyoplankton composition in İzmir Bay. It is the second abundant species after anchovy, which made about half of the total ichthyoplankton (Çoker,2003). The highest pilchard egg numbers (eggs/m^2) were found as follows: April 1994 (3961), January 1998 (1376), March 2004 (1220), February 2005 (1200), February 2002 (906). The highest pilchard larvae numbers (larvae/m^2) were determined as follows: May 2003 (4314), February 2002 (1102), April1998 (757), January 1994 (529), October 1998 (529).

Key words: European pilchard, İzmir Bay, Ichthyoplankton, Abundance and Distribution.

Oral Presentation 92

Studies on the Use of Erdemir Steel Slag as Agricultural Amendments

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The agricultural soils on Black Sea are acidified to some extent due to the relatively high rainfall. These soils are very sensitive to acidification due to sandstone parent materials. Several thousand tons of slags are obtained as waste material from the Ereğli steel industry that contain large quantities of silicates and carbonates as well as some oxides of Ca and therefore have a relatively high acid neutralizing capacity. The fertilizer value of slag has been evaluated because it contains iron-silico phosphates and significant amounts of iron.

This research was carried out on both head lettuce (*Yates dale cv*) and leaf lettuce (*Green wave cv.*) in the province of Yalova in Turkey. Lettuce plants were grown in 5 different potting media containing various proportions of some substrates. The experiment was conducted in randomized plots experimental design each treatment consisting of three replicates. The experiment showed that the plants generally dried and died in the 40 and 20% slag treatments after one or two month after sowed or transplanted because of the soil compaction. The plants have continued to live in the 5 and 10% slag treatments. The 5% slag additives (at low rates) of the growing medium as a volume can be used for acidic conditions for liming material.

Key words: Basic slag, head and leaf lettuce, growing media

Oral Presentation 99

Metal Removal from Synthetic Acid Mine Drainage Using Modified Fly Ash with Ultrasound Mechanical Effect

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In this research, fly ash, a relatively abundant and inexpensive material compared with activated carbon, was selected as an adsorbent for removal of various metals from synthetic acid mine drainage. Fly ash particles (pH>11) were obtained as a coal combustion by-product from fluidized bed thermal power plant in Canakkale province, NW Turkey. For modification of fly ash, ultrasound process was conducted at low frequency (20 kHz) to increase surface area and decrease particle size of fly ash at 90 W for 30 minutes. Synthetic acid mine drainage was prepared in the laboratory closely resembling acid mine drainage from the Etili open pit coal mine (NW Turkey) by doping with various concentrations of metals in the form of their respective containing salts. The metal removal efficiency of Al, Fe, Mn and Zn from synthetic acid mine drainage using fly ash and modified fly ash were determined at various parameters such as ash dosage (5, 7.5, 10 and 20 g), contact time (0 to 360 minute) and pH (3, 5, 7 and 9). The residual concentration of the metal ions in the supernatant was determined by ICP-MS analysis. The removal of metal ions from synthetic mine drainage increased with increasing adsorbent dosage and contact time. According to the obtained results, ultrasound-assisted modified fly ash provides more successful results in a shorter time and with smaller ash dosage for metal removal from synthetic acid mine drainage when compared to original fly ash at neutral pH.

Key words: Synthetic acid mine drainage, Ultrasound, Modified fly ash, Metal removal, Adsorption

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Oral Presentation 102

Conservation Status of Threatened Endemic Flora of Yüksekova Nehil Marshes in Southeastern Turkey

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The present paper reports the findings of field surveys conducted over period (2013-2015) in 40 localities of South-East Turkey for assessing the diversity of phanerogams. No comprehensive floristic studies have been carried

out in line with standard methods and internationally accepted criteria of IUCN for categorization of threat level. A total of 1321 specimens were collected comprising of 235 taxa belonging to 39 families and 137 genera. In total 32 (14%) of the species were assessed as threatened. Assessment carried out for 32 species showed that 4 (12.5%) of the species were Critically Endangered (CE), 2 (6.5%) were Endangered (EN), 8 (25%) were Vulnerable (VU), and 18 (56.5%) were Near Threatened (NT). The remaining 56 species fell in the Least Concern (LC) category. Four of the CE species had less than 10 species in their respective area of occupancy (AOO). The major threats to plant biodiversity in the study area are: collection for medicinal use, over-grazing, use, below extreme low tide, land clearing, The study concludes that the dangers to species survival are 'clear and present'. The CE species require immediate attention keeping in view the human environment of poverty, illiteracy and subsistence farming.

Key words: Conservation Status, Endemic, Hakkari, Marshes

Oral Presentation 103

An Investigation on Myxomycetes Diversity and Their Ecology of Middle Amanos Mountains Hatay-Turkey

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Myxomycetes samples collected from Middle Amanos Mountain - Belen, İskenderun and Kırıkhan-Hatay during 2013-2016. As a result of field and laboratory studies, we reported 59 species belonging to six ordo, eleven family and twenty five genus. Twelve myxomycetes were collected only from fields, twenty four myxomycetes were developed in moist chamber culture and twenty-three myxomycetes appeared in both natural habitat and moist chamber culture in the laboratory. 345 taxa was obtained from the moist chamber culture; 337 taxa was obtained from dead substrates; 71 taxa was obtained from fallen substrates and 5 taxa was collected from living substrates. *Echinostelium minutum, Arcyria cinerea, Arcyria incarnata, Comatricha ellae* and *Comatricha nigra* were the most common species in our investigation, and they consitued the 47.5% of all samples. The most common genera in our investigation were *Arcyria, Comatricha, Didymium, Physarum* and *Stemonitopsis*. They formed the 70% of all samples. In our investigation, the most common families were Stemonitidaceae, Arcyriaceae, Didymiaceae and Physaraceae with 17 genera, 35 species and 363 samples. They formed the 81.8% of all identified species. The percentage of Lignicolous and Corticolous Myxomycetes were 70%. The myxobiota of study area was observed to be very rich because of the suitable humidity and temperature. In addition, due to the civil war in Syria, we had difficult times collecting samples along the border. In sum, since myxomycetes are the essential units of forests and wild life, more research should be conducted to better understand and explore the ecology, chorology and distrbution of Myxomycetes in Mediterranean regions.

Key words: Myxomycetes, Diversity, Chorology, Hatay

Oral Presentation 104

Comparative Micromorphological Floral Features as Regards 3 Sections of *Acantholimon* Boiss. (Plumbaginaceae) Genus from Turkey

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Aim of the study: *Acantholimon* genus belongs to Plumbaginaceae family and includes about 200 species in the world. This genus is a complex taxon with interesting flowers and prickly and flapy leaves. Because of that reason, it is hard to separate them at the field without their flowers. This study is made to compare the floral structures as regards 7 taxa of *Acantholimon* Boiss. section, 3 taxa of *Tragacanthina* Bunge section and 52 taxa of *Staticopsis* section, which of 38 are endemic collected from Turkey, in a detailed way by using scanning electron microscope (SEM). Floral micromorphology of the spikelets, calyx, calyx tube, outer bracts and hair forms were found to be taxonomically important for infrageneric delimitation of *Acantholimon* genus. In conclusion, variation according to flower micromorphology, sculpturing pattern and other features like stoma and hair types have systematical importance particularly at sectional and species delimitation. The results of this study support the morphologically distinction between the 3 sections so far determined in Turkey. All the determined characters concerning surface ornamentation and hair types of all investigated taxa were important and taxonomically valuable to use in the identifying key for the genus.

Key words: *Acantholimon* sections, flower, micromorphology

Oral Presentation 105

Evaluation of Some Ecosystem Changes and Effects on Fishery in Different Two Reservoirs in Gediz River Basin

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Demirköprü Dam Lake and Marmara Lake are the two reservoirs which are located in Gediz River Basin that has 17.500 km2 of drainage area and 1.95 billion m3 of surface water potential and which have different structures in terms of the catchment area, water waiting period and lake morphology. Having 6 m of the deepest point, Marmara Lake has been turned into irrigation reservoir since 1953 while it was an alluvium set lake. Having 50 m of the deepest point, Demirköprü Dam Lake was completed by building a set on river bad in 1960 with the aim of gaining energy, irrigation and preventing the flood control. Fisheries activities are found in both reservoirs. Fishery is maintained by 82 certified commercial fishers with 38 licensed boats in Marmara Lake and by 75 certified commercial fishers with 47 licensed boats in Demirköprü Dam Lake. With this study, it is aimed to describe some ecosystem changes affecting the fishery in Demirköprü Dam Lake and Marmara Lake.

In both reservoirs, water pollution and eutrophication are the primary ecosystem changes. Trophic level of lakes is eutrophic by the phosphate phosphorus value and is hypertrophic by chlorophyll-*a* value. Having excessive periodical increase in Demirköprü Dam Lake, Cyanobacteria species cause a potential danger for fish population. In Marmara Lake, the developments of aquatic macrophytes cause the decrease in fishing areas and obstruct the operations. The other changes in ecosystem affecting the fishery are the existence of invasive species and the fluctuations in water level because of irrigation and reduce of rainfall.

Key words: Demirköprü Dam Lake, Marmara Lake, Water pollution, Eutrophication, Invasive species

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Oral Presentation 106

Postfire Mortality of Eastern Spruce Trees in Low- and Moderate-Severity Portions of the Çamburnu-Sürmene Fire in the Trabzon

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The Çamburnu-Sürmene Fire, located coastwise in the Eastern Black Sea, burned mostly at low to moderate intensity in the late autumn and early spring of 2017. Following the Çamburnu-Sürmene Fire, eastern spruce (*Picea orientalis* (L) Link.) trees, greater than or equal to 50 years old and between 10-45 cm diameter at breast height (DBH), were tracked for post-fire mortality. Trees were measured for height of crown scorch, crown length, live crown height, height of bole scorch and bark thickness within several weeks of the fire in the spring 2017. Age, DBH, and location of each tree were recorded. The direct sampling of the cambial tissue to quantify cambium kill was used to determined mortality rates of eastern spruce trees. After 6 months, more than half of the trees were died, although other trees appeared in poor condition with contributing especially bark beetles. Logistic regression was used to develop models to predict probability of mortality. Independent variables were DBH, percent live crown height, percent live crown volume, and bark thickness. For all trees, height of crown scorch was one of the best predictor of mortality. These results will be provided quantitative information for the assessment of post-fire tree mortality. Also, these will fill a gap in ecological studies of fire from Black Sea region of Turkey, which is absent from the literature for many species.

Key words: Eastern Spruce, *Picea orientalis* (L) Link., tree mortality, surface fire, logistic regression

Oral Presentation 107

Catch composition of the Beam Trawl Shrimp Fishery in the Sea of Marmara

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The purpose of this study was to determine species diversity and catch composition of the beam trawl shrimp fishery in the Sea of Marmara. We aimed to reveal the differences on species diversity in seasonally, regionally and vertically. Sampling was carried out on monthly basis between October 2011 and February 2014 with beam trawler vessel operating in the Sea of Marmara. The physical parameters (temperature, salinity, oxygen and ph) of seawater measured and associated with species diversity. The Sea of Marmara was examined in 6 regions: Erdek, Tekirdağ, Marmara Island, Kapıdağ and Yalova. The biodiversity indices were estimated seasonally, regionally and vertically. In order to assess the catch composition diversity, Margalef richness index (d), Shannon diversity index (H') and Pielou's evenness index were calculated. Bray-Curtis similarity diagrams were drawn according to season, region and depth. As a result, the catch composition consisted of 91 species belonging to six groups including Osteichthyes (42 species), Chondrichthyes (7), Crustacea (12) Mollusca (8), Cephalopoda (5), Echinodermata (10) and other invertebrates (7). Maximum values of the indices were calculated in the winter periods. Among the regions, maximum values were calculated for Erdek and Kapıdağ, whereas the minimum value was estimated for Silivri. According to the seasons and regions, similarity at species diversity were found highly compared to vertical species diversity.

Key words: Biodiversity, Richness, Evenness, Beam trawl, Sea of Marmara

Acknowledgement: This research was financially supported by TAGEM / HAYSÜD project no: 2011/09/02/04

Oral Presentation 108

First Report of Pseudobacciger harengulae and Lecithaster tauricus (Digenea) in Anchovy Engraulis encrasicholus ponticus off Sinop Coasts of the Black Sea

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The anchovy is a small planktivorous pelagic fish with a wide distribution range comprising the Atlantic coast of Europe and western Africa, the Mediterranean Sea and the Black Sea. *Engraulis encrasicolus ponticus*is, which is consumed as human food, both the most abundant species in the black sea and commercially important in the Turkish region of black sea. The present study aimed to determine the metazoan parasites of the anchovy collected from Sinop coasts of the Black Sea. The fish samples were collected by fishermen off Sinop coasts of the Black Sea in the period between June 2016 and February 2017. A total of 269 fish specimens were examined for parasites. Collected fish were transferred to parasitology laboratory at the Faculty of Fisheries and Aquatic Sciences in Sinop and examined for metazoan parasites under a dissecting microscope. Fish samples were examined to be both fresh in a few days and defrosted afterwards. Site and infection rates were recorded of detected metazoan parasites. The taxonomic classification and identification of the parasites observed were done on the basis of respective literature for each parasite group. Three parasite species were identified; they were *Pseudobacciger harengulae* (Yamaguti, 1938), *Lecithaster tauricus* Pigulewsky, 1938 and *Hysterothylacium aduncum* (Rudolphi, 1802). The infection prevalence (%) and mean intensity values as well as microhabitat preferences of all parasite species are detected. *Pseudobacciger harengulae* and *Lecithaster tauricus* are new parasite records for Turkey.

Key words: *Engraulis encrasicholus ponticus*, biodiversity, metazoan parasites, Sinop, Black Sea

Acknowledgement: Authors are pleased to acknowledge that this study was supported financially by The Scientific and Technological Research Council of Turkey (TÜBİTAK) with the project number of 215O224

Oral Presentation 109

The Experimental and Numerical Assessment of Saturation Effect on Rocks

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As the adverse effect of water on geological materials is main reason of rock and soil failures, which create major environmental problems (landslides, sinkholes, failures of foundation rock or soil), in this study the influence of water on some geomechanical parameters (uniaxial compressive strength, Young's modulus and Schmidt hammer rebound number), which controls directly or indirectly the mechanical behaviour of rock, has been studied. While the uniaxial compressive strength and Young modulus are key parameters for design of different rock structures, the rebound values obtained by Schmidt hammer tests give also valuable information about the prediction of geomechanical properties of rocks. In this study an attempt was carried out to evaluate the relationship between Young's modulus and Schmidt rebound values under dry and saturated conditions and to explain the effect of excess pore pressures developed through the rock material on the failure mechanism of rocks by numerical simulations. Experimental studies indicate that general decreasing trends due to saturation are valid for Schmidt rebound values, Young's modulus and uniaxial compressive strength. However the quantitative differences obtained by laboratory tests referred a requirement to produce a reliable relationship considering the degree of saturation. Therefore a comprehensive statistical analyses, which include both simple and multivariate regression analyses, have been performed and the relationships produced by statistical analyses have been determined as reliable and statistically significant. Numerical simulations expressed that the excess pore water pressures are primarily responsible on degradation of geomechanical properties due to saturation.

Key words: Environmental problems, Saturation, Young's modulus, Pore water pressure, Multivariate regression

Oral Presentation 110

The Olive Oil Production and Olive Mill Waste Water Problem in Çanakkale

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Olive has been made cultural and breeded for the first time by Samies. 98% of the total olive growing area in the world is located in countries bordering the Mediterranean Sea. 7.4% of world olive production is provided by Turkey. When viewed in this context Çanakkale province; with regard to olive fields is one of the most important provinces in Turkey. In 2013, 16.874 tons of oil were produced and in 2014 it became 29.353 tons. One of the biggest problems in the olive oil production is that enterprises engaged in territorial waters. Wastewater, extracted with water present in the olive fruit is added to hot water extraction represents the total fat. When processing a ton of olive presses in classic black water leaves about 500 liters. Modern (continuous) system in the territorial waters revealed more than 1,000 liters. The combination of blackwater (wastewater) 83-96 % water, 3.5% and 15 % organic matter and mineral salts are in the ratio of 2.0% from 0.2%. Wastewater contains both useful and harmful elements. Production facilities in Çanakkale causes huge amount of blackwater issues. This problem can be reduced to a minimum by taking some precautions occurs.

Key words: Çanakkale, Olive mill, wastewater/Blackwater, Environment, Pollution

Oral Presentation 114

A Phytosociological Study of Steppe and Steppe Forest in the Vicinity of Cappadocia, Central Anatolia, Turkey

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The steppe and steppe forests are the main vegetation types of Central Anatolia. The treeless steppe is dominated by cushion-forming, gramineous plants, and dwarf shrubs, whereas steppe forests are dominated by *Quercus* L. and *Juniperus* L. and they are also blended with the steppe vegetation in Central Anatolia. These are the important ones within terrestrial ecosystems and therefore, these communities in Central Anatolia need to be paid more attention to conservation and sustainability. Hence, this study aims to contribute to a syntaxonomic classification of the Central Anatolian steppe and *steppe* forest vegetation. The study area is among Güzelyurt, Narköy, and Bozköy (Niğde) in the east of Aksaray province. The vegetation of the area was analyzed according to the Braun-Blaunquet approach with TWINSPAN method in JUICE 7.0. The relationship between the communities and environmental factors were examined by Detrended Components Analysis in CANOCO 4.5. Three new association, one subassociation, and one plant community were described in the study area. The steppe association was included in the *Phlomido armeniacae-Astragalion microcephalii* Akman, Ketenoğlu, Quézel, Demirörs, 1984 and in the *Onobrychido armenae-Thymetalia leucostomi* Akman, Ketenoğlu & Quézel 1985. The steppe forest-association was classified in the *Quercion anatolicae* Akman, Barbero & Quezel 1979 in the *Querco cerridis-Carpinetalia orientalis* Quezel, Barbero & Akman 1980 in the *Quercetea pubescentis* (Oberd. 1948, Doing-Kraft 1955) Scamoni & Passarge 1959. The riparian association was also classified in the *Alno glutinosae-Populetea albae* P. Fukarek & Fabijanic 1968 and in the order *Populetalia albae* Br.-Bl. ex Tchou 1949 and in the alliance *Populion albae* Br.-Bl. ex Tchou 1949.

Key words: Irano-Turanian region, steppe, plant community, riparian vegetation, syntaxonomy.

Acknowledgements: This research was financially supported by Aksaray University, Scientific Research Projects Coordination Unit, Turkey (2016-036).

Oral Presentation 116

First- and Second-Order Adaptation to Salinity and Water Logging: Case of Coastal Embankment in Satkhira District, Bangladesh

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Coastal Embankment Project or locally known as Polder projects in Satkhira district of Bangladesh were initiated in 1960s as an adaptation measure to solve the problems of tidal flooding, salt water intrusion and sedimentation. However, this huge structural first order adaption measure finally proved fatal and enhanced water logging and salinity which led to large scale environmental, social and economic degradation. In this paper, selected adaptation measures to water logging and salinity are critically examined with respect to the current potential hazardous situation as well as additional adaptation needs and changes within socio-ecological systems. This study also examines the feasibility of the concept of first-and second-order adaptation process under different coping and adaptation measures e.g., floating garden, cage aquaculture, seed variety, pit system gardening, crab fattening and coconut plantation. The observation and empirical work were conducted at Kakshiali Khal area and Shehara village adjacent to two Polder areas in Satkhira District. The findings of this study might help to understand adaptation process with the local or regional context, help to understand how stabilization process is influenced by adaptation measures and show the ways and means to cope with unexpected climatic hazards.

Key words: Adaptation, Climatic hazards, Salinity, Water logging, Bangladesh

Acknowledgements: This is an independent research work and we did not have any financial support from any sector as they are hardly available in a poor country like Bangladesh.

Oral Presentation 117

Biosorption of Uranium (VI) by *Cystoseira barbata*

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Radioactive wastes can arise as a result of medical, metal surface coating, industrial, and mining and fuel applications. Once the wastes spread to the surrounding area, they threaten groundwater, and consequently human health. Various physical / chemical treatment techniques are used to remove these radioactive substances from the water. Uranium, which has a long half-life period, is a weak radioactive heavy metal and it is found at low levels in all rocks, soils and water. Uranium usually occurs in the hexavalent form as a mobile, hydrated uranyl ion. In the present work, the biosorption of U (VI) was investigated using dried *C. barbata* biomass as the biosorbent material. Brown alga *C. barbata* (Stackhouse) C. Agardh was collected from the Dardanos Campus of Çanakkale Onsekiz Mart University. For biosorption experiments, stock U (VI) solution (1000 mg/L) was prepared from $UO_2(NO_3)2.\ 6\ H_2O$ and different concentrations of U (VI) solution (5, 10, 20, 50, 100, 150 mg/L) were prepared from stock solution using distilled water. The pH (2,3,5,7,9), contact time (10,25,50,100,150,200,300 min.) and different initial metal concentration of U(VI) ion effects onto biosorption were also investigated. The results show that, *C. barbata* can be used as a biomaterial for the removal of U (VI) from aqueous solution.

Key words: Biosorption, Uranium, *Cystoseira barbata.*

Acknowledgements: This research was financially supported by the Çanakkale Onsekiz Mart University Scientific Research Projects Coordination Unit, Turkey (FHD-2016-968).

Oral Presentation 119

The Oxidative, Apoptotic and Genotoxic Effects of Monocyclic Aromatic Amine Metabolites in Different Mammalian Cells

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Bladder cancer is the most common urological disorder. Smoking and other tobacco use, exposure to chemicals like monocyclic aromatic amines, particularly to alkylanilines (i.e. 3,5-dimethylaniline, 2,4-dimethylamine, 2-ethylaniline) and radiation are the most common causes. Humans are ubiquitously exposed to different alkylanilines from the environment and also from workplaces. 3,5-dimethylaniline is used in the production of azo dyes, permanent hair dyes, pharmaceutics, antioxidants, antiozonants, gasoline, detergents, wood preservatives and textiles. Upon ingestion, 3,5-dimethylaniline is metabolized to 3,5-dimethylaminophenol (3,5-DMAP), which has toxic effects on mammalian cells. In this study, we aimed to determine the oxidative, genotoxic and apoptotic effects of 3,5-DMAP on Chinese hamster ovary (CHO), human urothelial and in non-small cell lung cancer cells. We have observed that 3,5-DMAP significantly affected selenoenzyme (glutathione peroxidase and thioredoxin reductase), catalase and superoxide dismutase activities and expressions. 3,5-DMAP also caused increases in p53, Bax, Bad and cytochrome c expressions, indicating its apoptotic effect. 3,5-DMAP also caused increases in both caspase 3 and caspase 8 activities with a decrease in pro-caspase 3 expression. Moreover, it caused DNA strand breaks in high throughput Comet assay. Our results show that 3,5-DMAP can lead to intracellular oxidation, as evidenced by high levels of intracellular reactive oxygen species (ROS) and ROS can cause changes in cellular antioxidant enzymes. In addition, oxidative stress caused by this alkylaniline metabolite can lead to apoptosis and DNA damage. Further experiments are needed to determine the toxicity mechanism of alkylanilines/ their metabolites and their association with cancer.

Key words: 3,5-dimethylaniline, 3,5-dimethylaminophenol, oxidative stress, genotoxicity. apoptosis

Oral Presentation 120

The Determination of Antibiotic Susceptibility of *Staphylacoccus aureus* Isolated from Seafood

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According to the data from the Ministry of Health, the number of bacterial food poisoning reported in 2005 was recorded as 26,298 in Turkey. In addition, about 1.9 million people die from food poisoning in the world every year. *Staphylacoccus aureus* is one of the pathogenic bacteria that transmit to humans through seafood and cause intoxications. Although *S. aureus* is highly susceptible to all applications, particularly heat treatment, for the reduction of microorganism, the presence of these bacteria, especially in ready-to-use products, pose a risk to consumer health. The present study was performed in order to evaluate the rates of raw and ready-to-eat seafood-isolated *S. aureus* that was resistant to some of the antibiotics normally used in clinical therapy. Strains of *S. aureus* were obtained from raw and ready-to-eat seafood purchased from supermarkets and bazaar in the Izmir (Turkey). 50 seafood samples that were analyzed microbiologically. *S. aureus* isolated from Baird Parker agar was confirmed by gram reaction, catalase and coagulase test. The antibiotic resistance of *S. aureus* isolated from seafood was tested using 15 different antibiotics including penicilin, vankomisin, oksasilin, tetrasiklin, gentamisin, ceftriaxone, levofloksasin, linezoid, methicillin, sefalotin, ofloksasin, rifampisin, klindamisin, nitrofurantoin, siprofloksasin, ceftazidime, amikacin, amoxicillin-clavulanicacid, polimiksin. Antimicrobial sensitivity was monitored with the disk diffusion assay. Antibiogram tests have shown that most of the isolated *S. aureus* are resistant to penicillin, clindamycin and methicillin.

Key words: Seafood, *S. aureus*, Isolation, Antibiotic resistant, Pathogen

Oral Presentation 121

The wild fish diversity around the sea cages in the Turkish Aegean Sea

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Pelagic fish are known to be strongly attracted to floating structures, including coastal cage farms, sometimes in dense aggregations. Distinctly, floating fish cages, adopted as a sort of fish aggregating devices (FADs) attract fish. Although, occurring of wild fish communities around the sea-cage farms are well-known, this phenomenon is not documented in Turkey by now. Thus, this study presents the wild fish diversity around the some sea-cage farms along the Turkish Aegean Sea for the first time. The present study was carried out at 6 fish farms located Izmir (3 farms) and Muğla (3 farms) in the Aegean Sea between July 2015 and June 2017. Up to now, a total of 42 species were determined beneath the sea-cages by underwater rapid visual census (RVC) method. Additionally, Mediterranean monk seal (*Monachus monachus*) and swordfish (*Xiphias gladius*) were also observed and photographed around the sea-cages. Four fish species, *Belone belone, Boops boops, Dicentrarchus labrax* and *Scomber japonicus* were existing in the whole stations. Four Lessepsian fish, *Pempheris rhomboidea, Siganus luridus, S. rivulatus* and *Stephanolepis diaspros* were observed only M2 and M3 stations in the southern Aegean Sea. We concluded that if the SCUBA diving beneath the sea-cages will have been continued in these stations and/or other sea-cage areas, it can be expected the much more increasing the fish diversity. As a significant point, sea-cage farms play important role on protecting the wild fish communities with their approach zone with 200 m circumference. However, as a "closed fishing zone" near the sea-cage farms should be controlled and monitored against to artisanal and recreational fishermen.

Key words: Fish diversity, Rapid visual census, Sea cage farms, Aegean Sea

Acknowledgement: The authors thank the Scientific and Technological Research Council of Turkey (TUBITAK) for the financial support [Project number: 114Y584].

Oral Presentation 122

Length-Weight Relationship and Condition of the Mediterranean Toothcarp, *Aphanius fasciatus* (Valenciennes, 1821) from İzmir Coastal Waters

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In this study, it was aimed to determine the length-weight relationship and condition factors of *A. fasciatus* collected from three different localities in İzmir province coastal waters, namely Çamaltı Salt Lake, Gülbahçe Bay and Homa Lagoon. A total of 800 individuals, 580 females and 220 males, sampled seasonally were investigated between March 2016 and February 2017. Total length and weight values of the samples were distributed from 1.60 to 6.40 cm and 0.042-4.531 g in females; and 2.30-5.00 cm and 0.161-1.872 g in males respectively. Length-weight relationship parameters are calculated separately for each locality and sex. According to the result of growth type test, it was determined that female individuals were positive allometric growth in all localities, while male individuals were isometric in Çamaltı and Homa, and allometric growth was in Gülbahçe. Condition factor values varying between 0.67-2.35 are seasonally calculated for each locality and sex.

Key words: *Aphanius fasciatus*, Mediterranean toothcarp, LWR, condition, İzmir

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Oral Presentation 123

Fish fauna of some inland water bodies of Kocaeli Province, Turkey

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Densely populated Kocaeli Province, Turkey, which surrounded the Black and Marmara Seas, has several artificial reservoirs for irrigation, flood prevention and drinking water supply. Numerous large and small streams flow into these basins. Freshwater fish samplings were performed in 13 different locations across reservoirs and streams of Kocaeli Province. 12 species, (9 Cyprinidae, 1 Poeciliidae, 1 Salmonidae and 1 Centrarchidae) were identified during the study. Three invasive species (*Gambusia holbrooki, Carassius gibelio* and *Lepomis gibbosus*) were identified in several sampling locations. *Squalius cephalus* was recorded for the first time with the present study from inland water bodies of Kocaeli Province. Excessive stream water usage for irrigation is suspected to be the reason for several fish death sightings which encountered during the surveys.

Key words: *Carassius gibelio*, Freshwater Fish, Invasive species, Kocaeli Province, *Squalius cephalus*,

Oral Presentation 125

Identification of Aquatic Plant Species of Kamilet Valley using rbcL, matK and ITS Genes for DNA Barcoding

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In almost every study dealing with the ecological process, species identification is the most important necessity. Identification of species using morphological characteristics in widely divergent groups such as plants needs both a significant sampling effort and taxonomic expertise. In order to conserve and utilize the biodiversity, identification of plant species is critical but the lack of taxonomic expertise hinders the efficiency of scientific studies. The most reliable molecular approach on species identification, known as DNA barcoding, has provided great convenience on this process for the scientists. The Consortium for the Barcode of Life (CBOL) Plant Working Group recommended a barcode including fragments of two plastid coding regions, *ribulose 1,5-bisphosphate carboxylase* (*rbcL*), *maturase* (*matK*) and one non-coding region, *trnH-psbA*. Recently *internal transcribed spacer (ITS)* was also recommended as a new plant barcoding region.

In this study, 57 species were collected from four stations in Kamilet Valley (Arhavi, Artvin) and identified to species level using DNA barcoding. Molecular part of study includes extraction of DNA from collected samples using EURx Plant&Fungi DNA Extraction Kit, PCR amplification of rbcL, matK and ITS genes and generating first official DNA barcode records after DNA sequence analyses of these PCR products. Lowest PCR success was detected using MatK region. Besides that, rbcL has resulted in a PCR success of almost 99%, higher than the other regions. The results are highlighting the rbcL region as a powerful barcode region for species identification of aquatic plants.

Key Words: DNA Barcoding, ITS, Kamilet Valley, matK, rbcL.

Acknowledgements: This research was financially supported by the Evolutionary Genetics Laboratory (eGL), Department of Fisheries and Aquaculture, Agricultural Faculty of Ankara University, Ankara, Turkey.

Oral Presentation 126

Estimating Diversity and Relative Abundances of Fish Species in Manavgat River Using Environmental DNA Metabarcoding

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High-throughput sequencing technologies allow detection of trace amounts of DNA in a given sample and enables integration of new methods for bulk identification of biodiversity. Those are referred as environmental DNA metabarcoding approaches and increasingly being used for identification and quantification of marine and freshwater macroorganisms in the last decade.

In this study, we collected surface water samples from two locations on Manavgat River and one from river discharge to Mediterranean Sea. After collection, samples were filtered and stored in preservation buffer. Molecular analyses were performed using Illumina MiSeq platform. Raw sequencing reads were quality filtered and processed by using two different pipelines and compared both with a local reference database and a global database for taxonomic identifications.

Manavgat River is a popular touristic region and contains several salmon farms across its basin. In accordance with the expectations, around 20% of the reads from all samples were identified to *Oncorhynchus mykiss* species. We were able to identify around fifteen freshwater and marine fish species, demonstrating for the first time in Turkish waters that metabarcoding approaches can be used as a fast and reliable method for bulk identification of aquatic species and estimating their biodiversity.

Key words: eDNA, metabarcoding, freshwater, marine, fish

Oral Presentation 127

Locational Nuclear DNA Content Variation in *Brachypodium hybridum* L.

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Brachypodium hybridum (2n=30) is an allotetraploid species evaluated from *B. distachyon* and *B. stacei*. Several studies have determined its genomic differences from *B. distachyon* and *B. hybridum*. The identification of this species as a new model for polyploid species has created remarkable interest among scientist. Many investigations using broad geographical sampling are helpful to estimate the genetic diversification and adaptation of polyploid species. It is still a contradictory question whether nuclear DNA content variation is affected by geographical and environmental conditions. We tested this hypothesis using *261 B. hybridum* individuals from 34 geographically different locations throughout Turkey. We estimated DNA content value (pg) and determined correlations between genome size and elevation, latitude and longitude using statistical approaches. To determine the variation of nuclear DNA content, we used flow cytometry. 2C nuclear DNA content (± SD) of *B. hybridum* was estimated to be 1.41 ± 0.02 pg on ANOVA ($P< 0.005$) test. Then, to test the correlations with nuclear DNA content and geographical gradients (elevation, latitude and longitude) of *B. hybridum* we were used elevational levels from 16 to 1085 meters. Due to obtained results, K-means clustering, Sperman's rho correlations ($P< 0.001$), principal component analysis and factor analysis, no correlation was found between genome size and elevation and latitude. However, we have found a significant positive correlation between genome size and longitude. So, genome size of the collected individuals of the species from Western to Eastern part of Turkey may tend to increase depending on longitudinal increases.

Key words: Altitude, *Brachypodium hybridum* L., Flow cytometry, Latitude, Longitude, Nuclear DNA content

Oral Presentation 128

Bibliometric Analysis of Top 100 Most Cited Articles on Nanotechnology in Environmental Engineering

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The bibliometric analysis has been used to evaluate research trends over the years for many disciplines of science. The method is mainly quantitative; however, it is used to obtain information about the current state of research areas and allows researchers to identify and to make pronouncements about qualitative pictures of those scientific activities.

This paper provides information regarding nanotechnology research trend in environmental engineering. Publications from 1970 to 2016 were obtained from Web of Science Core Collection database (WoS). Topic search was used for the word "nanotechnology". Top 100 cited and "Environmental Engineering Department" addressed articles were downloaded and transferred to Endnote X6, and data were analyzed using Microsoft Excel. The dataset was categorized and analyzed using publication years, authorship pattern, publication types, citations, keywords, affiliated organizations, core subject areas and journals. According to the results, American Universities are by far dominant organizations. Environmental Science and Technology, Journal of Nanoparticle Research and Water Research are favorable journals. Most frequent keywords are nanotechnology, nanoparticles and nanomaterials respectively. There is an upward trend on nanotechnology publication after 2000 and on citations after 2005. All articles are published on journals with relatively high impact factors as expected.

Key words: Bibliometric Analysis, Environmental Engineering, Most Cited, Nanotechnology, Web of Science

Oral Presentation 129

Investigation of Presence of Endofungal Bacteria in *Rhizopus* spp. Isolated from the Soil Samples from Rice Fields in Different Regions in Turkey

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Mycotoxins are secondary metabolites of molds that affect plant, animal and human health negatively through infections and food deterioration. In previous studies, it was known that mycotoxins were produced only by the fungi. However, in recent studies, it has been observed that mycotoxins are produced by endosymbiotic bacteria living in fungi. Some strains of *R. microsporus*, a filamentous fungus belonging to Zygomycetes, have been detected to have symbiotic relationship with bacteria. These bacteria have been shown to be the members of the genus endosymbiont *Burkholderia* living in *Rhizopus* species. *R. microsporus* causes serious diseases affecting rice seedlings in Asia. For this purpose, the organism secretes rhizoxin toxin. Rhizoxin binds to β-tubulin and blocks mitosis in eukaryotic cells. In the present study, *Rhizopus* species isolated from the soil samples from rice fields in Tosya-Kastamonu, Ezine-Çanakkale and Biga-Çanakkale. Then, the presence of endofungal bacteria in the isolated *Rhizopus* colonies was investigated. *Rhizopus* strains harbor the endofungal bacteria were identified by phenotypic and genotypic methods. And also, endosymbiotic bacteria were identified by polymerase reaction isolated from fungal hyphae. In order to prove the presence of endosymbiont in fungal hyphae, mycelium was stained SYTO® Green-Fluorescent Nucleic Acid Stains. Green fluorescence indicates that bacteria are live. In the present study, 26 *Rhizopus* isolates were isolated. Of them, eight bacterial endosymbiont were isolated. According to the our results, we found that *Pseudomonas fluorescens* was detected in fungal hyphae. Previous studies show that gene for the biosynthesis of the rhizoxin (*rhi* gene) was found on *P. fluorescens* Pf-5 genome. So *P. fluorescens* can produce derivates of the rhizoxin.

Key words: *Rhizopus* spp., endofungal bacteria, *Pseudomonas fluorescens,* rice, rhizoxin

Oral Presentation 131

DNA Methylation Patterns of Cadmium, Lead and Silver-Tolerant Bacteria Isolated from the Surface Mucus of Freshwater Fish

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Adaptation of bacteria to heavy metals is common for protection against their deleterious effects. The relationship between epigenetic modifications and environmental stressors has been reported, previously. In this respect, we measured DNA methylation levels in environmental bacteria specifically *Gordonia*, *Acinetobacter* and *Microbacterium* sp. which were tolerant to toxic concentrations of cadmium (Cd), lead (Pb) and silver (Ag). These bacteria were previously isolated from the surface mucus of freshwater fish captured from Mogan Lake (Ankara, Turkey). We measured significant decrease in the methylation status of DNA in all tolerant groups compared to the controls. Methylated DNA's were found as 0.48%, 0.45% and 0.42% in non-tolerant *Gordonia*, *Acinetobacter* and *Microbacterium* sp., respectively. For Cd, Pb and Ag-tolerant groups of *Gordonia* sp. we measured 0.27%, 0.17% and 0.18% of DNA methylation, respectively. However, Cd, Pb and Ag-tolerant groups of *Acinetobacter* sp. demonstrated 0.23%, 0.21% and 0.22% of methylated DNA's, respectively. Furthermore, Cd, Pb and Ag-tolerant groups of *Microbacterium* sp., exhibited 0.20%, 0.24% and 0.25% of DNA methylation, respectively. Our findings hint that bacteria have much more stored information enabling them to better deal with stressors than we have thought of so far. Epigenetic changes can affect flexibility of the metabolism making bacteria superbly adaptive. Apparently, the stored information is expressed through epigenetic memory of bacteria to thrive under challenging conditions.

Key words: DNA, Methylation, Environmental bacteria, Heavy metals, Mogan Lake

Acknowledgements: This study was funded by TUBITAK (Grant No: 113Y515)

Oral Presentation 132

Determination of Filamentous Bacteria from Municipal Wastewater Treatment Plant

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It is important to determine microbial community structure in biological wastewater treatment. The reason for that, understanding the relationship between microbial community and wastewater treatment efficiency is crucial for operational success and parameters. In particular, filamentous bacteria lead to many difficult problems such as sludge bulking and foaming in wastewater treatment systems so for successful operation, types and numbers of these bacteria must be detected. Although many filamentous morphotypes have been reported in wastewater, it is difficult to obtain full profiles by techniques such as microscopic methods, FISH, q-PCR. Nowadays, new generation sequencing techniques are an extremely important and effective method for typing bacterial community structure. Therefore, the population of filamentous bacteria in a municipal wastewater treatment plant has been examined in this study. Different operational units of treatment plant and different two time intervals were evaluated. The results showed that filamentous microorganisms such as *Microthrix*, *Leptothrix*, *Sphaerotilus* and *TM7* members were dominant.

Key words: Foaming, sludge bulking, filamentous bacteria, next generation sequencing, microbial community

Acknowledgements: This work was supported by Anadolu University Research Foundation Grant No: 1504F169

Oral Presentation 134

A Research on the Level of Organochlorine Pesticides Residue at Some Birds and Mammals Tissues in Turkey

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The using of organochlorine pesticides (OCPs) considerably decreased in worldwide and was banned in most of country. However, the negative effects of OCPs still continued on the living things. OCPs had been used in agricultural and public health field in Turkey. But, there are not comprehensive studies in related to OCPs residue level on wildlife especially birds and mammals. The purpose of our study reveal the OCPs residue level on wild animals from different regions of Turkey. The feather samples of five bird species from five region and the hair samples of four mammal species from four region were collected in scope of study. A method was built in GC – MS for scanning 25 different OCPs. 200mg samples from every specimen accurately weighed and extract before scanning in OCPs method in GC–MS. According to analyse results, dichlorodiphenyltrichloroethane (DDT) and hexachlorocyclohexane (HCH) and their derivation found out in all samples. Eight different OCP were determined in all species. Although OCPs have not been used over years, their residues reach a critical level at bird feather and mammals hair. The other important point of our study, feather and hair are suitable for residue analysis of OCPs.

Key words: Pesticide, residue, organochlorine, bird, mammals.

Oral Presentation 135

Protective Effects of DTPA, NAC and Taurine against Cytotoxicity Induced by Mixtures of ZnO and CuO Nanoparticles in Mouse Fibroblast Cells

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Zinc oxide (ZnO), and copper oxide (CuO) nanoparticles (NPs) are good examples to widely used metal oxide NPs, and their cytotoxic effects have been shown in different in vitro systems. However, studies on their combined effects are few. The aim of the present study was to investigate the possible cytotoxic effects of these metal oxide NPs either alone or in combination on mouse fibroblast cell (L929) cultures. The cultured cells were incubated with various concentrations of ZnO, CuO NPs and mixtures of them for 96 h, and cytotoxicity was evaluated by 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) assay. When the cell cultures incubated with 11 or 12 different concentrations of ZnO or CuO NPs between the ranges of 0.1- 800 μg/ml, respectively, concentration-dependent decreases were noted generally for both NPs. Similar results were also observed with binary mixtures of these NPs, especially between the ranges 0.1:0.1- 25:25 μg/ml. Pretreatment of cells with two different concentrations of diethylenetriaminepentaacetic acid (DTPA, 2.5, 5 μg/ml), N-acetyl cysteine (NAC, 0.5, 1 mM) or taurine (0.5, 1 mM) for 4 h provided protection against cytotoxicity induced by the mixtures of these NPs. Protective effects were more pronounced with higher concentrations of DTPA, NAC or taurine. The results of this study might suggest involvement of reactive oxygen species in the mechanism of cytotoxicity of these NPs.

Key words: ZnO nanoparticles, CuO nanoparticles, Mixtures, Cytotoxicity, Mouse fibroblast cell cultures.

Acknowledgements: This study was supported by Hacettepe University Research Foundation (014 D12 301 001-830). TEM images were obtained in Central Laboratory of Middle East Technical University (METU) in Ankara, Turkey.

Oral Presentation 136

In Quest of Non-Toxic DNA Dyes: Phthalocyanines Containing α-Napththolbenzein Groups on the Peripheral Positions

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Ethidium bromide is commonly used as a non-radioactive marker for identifying and visualizing nucleic acid bands in electrophoresis. Because ethidium bromide can bind with DNA, it is highly toxic as a mutagen. It may potentially cause carcinogenic or teratogenic effects. Therefore, alternative non-toxic agents must be found. In this work, phthalocyanine compounds containing α-naphtholbenzeinunits have been synthesized. Mutagenicity, antimicrobial activities and DNA binding properties of the compounds were investigated by Salmonella/Microsome Assay and spectrophotometer. According to the results of the preliminary range finding tests, the compounds gave no toxic effect to all tester strain *S. typhimurium* TA98 and TA100 in the presence and absence of S9, respectively. This study showed that all compounds exhibited efficient DNA-binding activity. Alfa naftol Zn against *K. pneumonia* and *Y. pseudotuberculosis*, and Alfa naftol Co against *Y. pseudotuberculosis*, *B. cereus*, *A. baumannii* with the MIC value of 312 μg/mL. But it was observed that there were significant anticandidal activities. In conclusion, these non-toxic compounds may be used as effective DNA dyes for molecular biology studies. Based on the results obtained, slight modifications of the structures might produce potent and potential compounds which could be used as anticandida drugs.

Key words: Antimicrobial, Dna dye, Mutagenicity, Phthalocyanine, Toxicity

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Oral Presentation 137

The Effect of Lead on Germination and Seedling Growth of Some Forage Crops

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The aim of this study is how to clean the lead from the soil, which is one of the most important pollutants or how can be evaluated lead polluted soil. For the purpose, *Trifolium alexandrinum*, *Bromus inermis, Agropyron cristatum* and *Lotus corniculatus* plants were studied. In order to determine the effect of germination and early development stage, a total of 7 lead concentrations, one of which was a control, were used (0, 800, 1400, 2000, 2600, 3200 and 3800 ppm). In this study, germination times, germination rates, shoot lengths, root lengths, fresh weights and dry weights of plants were measured. Non-Linear regression analysis was applied to the measured values. According to this analysis, r values and regression curves are determined.

The highest r^2 value were taken from fresh weight of *T. alexandrinum* (r^2=0.964) and the lowest value from dry weight (r^2=0.524) of *B. inermis*. As a result, germination rates were not generally affected. In *T. alexandrinum*, it was observed that dry matter accumulates as the dose increases. In the *A. cristatum*, a decrease was observed at dry weight as doses increased.

Accordingly, it is thought that *T. alexandrinum* is likely to contain the lead in the environment. It has been observed that *B. inermis* and *A. cristatum* can be germinated at higher concentrations. From this, it is thought that even though we cannot clean the lead in the environment, we can evaluate with *A. cristatum* and *B. inermis*, which we think will not be affected by that environment.

Key words: Lead, heavy metals, forage crops, germination properties, phytoremediation

Oral Presentation 138

The Role of Exogenous Folic Acid on Mitosis under Salt Stress in *Hordeum vulgare*

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Salt stress is one of the most serious factors limiting the productivity of crops, with harmful effects on germination, plant development and crop yield. To cope with stress on plant productivity, plant growth regulators and hormones has been used against detrimental effects of stress. Used as a plant growth regulator 'Folic acid', also called as vitamin B9, enables plants to regulate their DNA functions. To understand the effects of exogenous folic acid on mitotic activity and chromosome behaviour in *Hordeum vulgare* L. cv. 'Bülbül 89' seeds germinated under different salt concentrations (0.25, 0.30 and 0.35 M) were studied. Mitotic activity decreased in parallel with salt concentrations rise as compared to those of control samples. Mitotic index of barley seeds with folic acid pretreatment alone remarkably decreased as compared to control group and the frequency of mitotic abnormalities increased approximately 32%. After treatment with folic acid, mitotic index of seeds germinated in different salt concentrations was lower than the mitotic index of seeds germinated in saline media alone. However, the mitotic index of folic acid treated seeds germinated in different salt concentrations relatively increased as compared with its control group (by folic acid alone). Folic acid pretreatment (50µM) revealed to a successful performance in ameliorating of the negative effect of salinity in higher salt concentrations (0.30 and 0.35 M), except 0.25 M salinity. In addition, it was not observed any chromosome abnormality in seeds germinated in distilled water and all of mitotic phases identified as a normal.

Key words: Chromosome aberrations, folic acid, *Hordeum vulgare*, mitotic index, salt stress.

Oral Presentation 139

Heavy Metal Content of Cultivated and Natural Population of Sarıkız Tea (*Sideritis trojana* Bornm.)

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Sarıkız tea (*Sideritis trojana* Bornm.) is an endemic plant and it has an economic value at local markets. It is used for antioxidant and antimicrobial purpose. Some villagers have an average income collecting and selling Sarıkız tea who live in piedmont of İda mountain. This situation creates a pressure on this endemic plant's population. Because of some restrictions sarıkız tea has begun to be cultured by some villagers. In this study, the natural grown and cultivated sarıkız tea was compared in terms of heavy metal contents. Three repetition and ten plants were used for experiments. Flowers and stem samples were ground after dry, prepared by the wet digestion method and plant nutrient contents were determined by ICP-MS.

Mercury (Hg), cadmium (Cd) and silver (Ag) were not determined in none of these plants. Nickel (Ni) was observed only in summit stem samples. While tin (Sn) was higher in summit flowers than stems; cobalt (Co), antimony (Sb), chrome (Cr), arsenic (As) and lead (Pb) contents were higher in stems than summit flowers because of immobility. All heavy metals were observed higher in natural population than cultivated ones. In conclusion toxic elements aluminium (Al), lead (Pb) and arsenic (As) accumulations were determined in stem and flower very high level in natural population solely, it should be analyzed on hazardous for drinking long period. It is possible that bedrock of summit is rich in heavy metals. In a next study reason of these toxic elements accumulation should be examined.

Key words: Endemic, Ida Mountain, Medicinal, Aromatic, Plants

Oral Presentation 140

Mg Deficiency Changes Isoenzyme Pattern of Reactive Oxygen Species Related Enzymes and Regulates NADPH-Oxidase Mediated ROS Signaling in Cotton

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Aim of this work was to investigate changes in redox regulatory components during Mg deficiency and Mg starvation in cotton. Especially changes in isoenzyme patterns of enzymes related to reactive oxygen species (ROS) detoxification such as superoxide dismutase (SOD), catalase (CAT), peroxidase (POX), ascorbate peroxidase (APX), glutathione reductase (GR), glutathione-S-transferase (GST) are not known. Moreover, we also aimed to elucidate how a ROS producer enzyme, NADPH oxidase (NOX), that is vital for ROS signaling responds to changing Mg levels. These data are also supported with photosynthetic measurements. Cotton plants were grown with different concentrations of MgSO4 in hydroponic medium to create nutrient deficiency. Enzyme activities were measured spectrophotometrically, while isoenzyme activities were determined with native-PAGE. Photosynthetic performance of plants was measured with an infrared gas analyzer. Activities of SOD, CAT, POX, APX, GR and GST were increased with Mg deficiency, while NOX activity was decreased. Most striking results were the changes in isoenzyme patterns of SOD, NOX, POX and GST. Photosynthetic rates in cotton were decreased with Mg starvation. Cotton plants adapt to Mg deficiency with changing the intensity of existing isoenzymes or induce new ones. In addition, ROS production via NOX decreases under Mg deficiency or starvation.

Key words: antioxidant enzymes, cotton, *Gossypium hirsutum*, magnesium deficiency, magnesium starvation, NADPH oxidase, redox regulation.

Oral Presentation 141

eDNA Biomonitoring of Aquatic Environments: Challenges & Pitfalls

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Biomonitoring of target species from various ecosystems is challenging when it comes to rare species or species with low population densities. Environmental DNA as a tool in molecular ecology resulted in promising success with detection in higher precision rates and easier field protocols compared to traditional field surveys. Moreover, after the enhanced progress in the next generation sequencing technologies, bioassessment of entire species from related habitats from single or pooled PCR yield also becomes available without any prior knowledge on the species inhabiting the environment. However, eDNA, as a molecular tool, also offers some challenges depending on sampling, storage, molecular pipeline and bioinformatics afterwards. The main challenge in eDNA studies is that the DNA extracted from potentially inhibiting agent rich environmental sample are mostly short and degraded fragments and thus requiring protocol adjustment accordingly.

In this study, results of 9 different eDNA case studies carried out in freshwater and marine environments were evaluated and information related to challenges such as effects of sampling, filtration, storage conditions, extraction method, primer design/using universal primers, PCR (conventional, quantitative or digital) and sequencing (Sanger, pyrosequencing, next generation) was discussed and potential solutions were overviewed. Comparison of methods were pointing out sampling volume, sampling method, filtration technique, type of PCR application, primer design and DNA sequence analyses approaches have a direct impact on the results.

Key words: Environmental DNA, eDNA, Metabarcoding, Next Generation Sequencing, Molecular Ecology

Acknowledgements: This study was funded by TUBİTAK Projects 114R003 and 115Y181; also EU COST Actions TD1209: Alien Challenge and CA15219: DNAqua-NET.

Oral Presentation 145

Genotoxic Effects in Levant Vole (*Microtus guentheri* - Danford and Alston 1880) from The Korkuteli-Antalya, Turkey

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The environmental effects of industrial and agricultural activities are needs attention. These human activities cause pollution by releasing heavy metals or different chemicals to the environment and serve an ecotoxicological risk. For this reason, the monitoring of the genotoxic effects in the environment required the selection of representative organism like small rodents. The objective of this study was to determine the genetic damage of blood lymphoctes from wild rodent *Microtus guentheri* from natural region which is near mine and stone quarry activities in Korkuteli-Antalya. At least 5 voles specimens from 6 area (5 polluted area and for control 1 unpolluted area) at Korkuteli-Antalya in one season (2017, spring) collected by means of Sherman traps and then collected blood samples for genetic damage analyses with Comet Assay. This is the first study for reveal the genotoxic effects in *Microtus guentheri* caused by human activities in The Korkuteli. Comet assay is a highly sensitive, relatively inexpensive and rapid way to determine the genetic damage in environmental aspects. Statistically descriptive parameters were calculated (mean, standard error) for DNA Tail % and Tail Moment in blood lymphocytes of *M. guentheri* and ANOVA (df1;2=5; 3194 and p<0,0001) was used for statistical analysis. Results showed that both DNA tail % and tail moment significantly increased in the sampling polluted areas according to sampling control areas (FTailDNA%=15,721 and FTailMoment=14,002). Comet assay with *M. guentheri* blood lymphocytes serve a bio-monitoring model for ecotoxicological studies. The heavy metal pollution from mines (etc. marble and stone) began at the vicinity of Korkuteli and poses an ecotoxicological risk for wild species.

Key words: Genetic damage, Comet Assay, ecotoxicology, *Microtus guentheri*, biomonitoring

Acknowledgements: This research was financially supported by the Akdeniz University Scientific Research Projects Coordination Unit Turkey (FDK-2016-1421)

Oral Presentation 147

The Effects of Polyvinyl Chloride Microparticles on Zebrafish (*Danio rerio*) Gills, Skin and Intestine Histology

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It is well known that all of the aquatic systems are under threatened by massive plastic production that has been increased rapidly since 1950s. Small plastic pieces less than five millimeters are called as microplastics, and formed through the breakdown of macroplastics, or sourced from the great variety of abrasive agents. Moreover, they can enter to water sources by leaching of plasticizers. Due to the consequences of microplastic pollution for fish are only just emerging, it was aimed to investigate the histopathological effects of polyvinyl chloride (PVC) microparticles on the gill, skin and intestine of adult zebrafish. Forty adult, male specimens were randomly divided into one negative control and three experimental groups that were exposed to three different concentrations (3, 6, 9 ppm) of PVC microparticles for 96h. All of the fish were anaesthetized and dissected. After staining by routine histological procedure, they were investigated by light microscope. When compared to controls; prominent hyperplasia, hypertrophy, lamellar dysplasia and fusion were identified in primer and seconder lamellae of gills. Abrasive effects of PVC microparticles were also observed in epidermis and dermis. Prominently hypertrophic Goblet cells, hemorragie, necrosis and lifting were recorded in epithelial cells of gastrointestinal tracts, while muscularis mucosa and muscularis externa were deformed. All of the histopathological effects are seemed to be related with increasing concentrations of PVC microparticles. It is clear that more research is necessary to understand the potential harmful effects of microplastic on fish, when it is considered that little is known about the fate of increasing plastic degradation in the freshwater, and/or seawater environment.

Key words: PVC microplastic, zebrafish, gill, skin, intestine, histopathology.

Oral Presentation 148

A Research on Lethal Concentration 50 (LC50) Value of the Pesticides with Active Substances Like Avermectin- Bisamide in Juvenile Carp (*Cyprinus carpio* Linnaeus, 1758)

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The utilization of pesticides due to intense agricultural activities in parallel to increasing world population has become an important issue faced by many countries all over the world. One of the biggest disadvantages of pesticide implementations is their negative effects on ecosystem. Pesticides with active substances as avermectin (abamectin), bisamide (chlorantraniliprole) are used against insects and mites in fruit and vegetables. In this study, acute toxicity of insecticides with active substances of avermectin + bisamide on juvenile *Cyprinus carpio* Linnaeus, 1758 is analyzed. This research is conducted in triplicate way and the fish is exposed to four different concentrations (12+30, 14+35, 17+42,5 and 20+50 µg/L) of avermectin + bisamide for 96 hours. The obtained results are evaluated with EPA Probit analysis programme and the lethal concentration value 50 (LC50) of toxicant for juvenile *C. carpio* is found as 49,84 µg/L (the lethal concentration value 50 (LC50) for avermectin and bisamide is found as 14,24 and 35,60 µg/L, respectively). As a result of literature review, it is revealed that LC50 values of both avermectin and bisamide determined in various studies on aquatic animals are much higher than the values found in the current study. As a conclusion, it is determined that avermectin and bisamide show a synergetic influence and their joint toxicity is much higher than their separate toxicity levels. It is also observed during experiment that when concentration of the toxicant increases, pigmentation of the fish is deformed and their gills bleed more.

Key words: *Cyprinus carpio,* lethal concentration 50, pesticide, avermectin, bisamide

Oral Presentation 149

Crustaceans Associated with *Posidonia oceanica* (L.) Delile in İzmir Bay (Aegean Sea, Eastern Mediterranean)

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Posidonia oceanica is a seagrass endemic to the Mediterranean Sea. The complex rhizome networks and long leaves of this seagrass provide shelter and food for many marine organisms. Among the invertebrates living in *P. oceanica*, crustaceans are represented by high species diversity, abundance and biomass. This study was carried out to determine crustacean species associated with *P. oceanica* meadows in Izmir Bay. Samples were sampled randomly by hand at four stations (0-10 m) between May and June 2016 by scuba diving and snorkeling. A total of 73 species belonging to 5 orders were found in the area. Amphipoda had the majority of species (47 species, 64.4%) in the area. *Ampithoe ramondi* (23.9%) was the most dominant species in the *P. oceanica* meadows, followed by *Chondrochelia savignyi* (20%), *Ericthonius punctatus* (8%) and *Ericthonius argenteus* (6%), respectively. In the meadow, 15 species were constant, 15 species were common and 43 species were rare. *Janira maculosa* and *Limnoria* sp. were found to be bioeroder species in *P. oceanica* sheaths. Brief descriptions of crustacean species with their distributional and ecological properties were given.

Key words: Crustacean, *Posidonia oceanica*, ecology, distribution, İzmir Bay.

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Oral Presentation 150

Biodiversity in the Functional Feding Groups of Benthic Macroinvertebrates of Two Independent Running Waters in a Large Scale: Pınarbaşı Limnocrene Spring and Karamenderes River

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Benthic macroinvertebrates have long been used in biomonitoring studies to asses of the habitat quality. Heterogeneous river bank structure in river ecosystem is with the habitat diversity is manifested by species diversity. The benthic composition of the rivers is shaped by intra and interspecific relations as well as physicochemical parameters. In particular, the diversity of functional feeding groups and species diversity within each group is important in terms of the stable and balanced system. Functional diversity and species diversity in a river ecosystem has a fluctuation along river. However, in a large scale different running waters may have different diversity both in functional and intra-functional. Continuity in the functional feeding groups of benthic macroinvertebrates have also vital importance reflecting the health of the ecosystem. In this study the functional and species diversity in benthic macroinvertebrates were compared in Karamenderes River and Kırkgözler spring. Benthic macroinvertebrates are composed of 24 taxa for both study groups (Kırkgözler and Karamenderes) having 7 functional feeding groups. The ratios of functional feeding groups obtained from the Kırkgözler spring are %41 of gatherer-collector (GC), %33 of scraper (SC), %7 of shredder (SH) and predator (PR), %4 of omnivore (OM), filter-gatherer (FG) and filter-collector (FC). The ratios of the functional feeding groups in Karamenderes are %44 of GC, %19 of SC, %11 of PR and FG, %7 of FC and OM and %4 of SH. As can be seen in the data above, there has been a slightly difference between ratios derived from the two data set, but this variation is statistically insignificant ($p=0.5$). In conclusion, functional group of GC is dominant in both stations. Functional diversity of both stations are found similar each other.

Key words: Benthic macroinvertebrates, functional feeding groups, stream ecology, Ecosystem health.

Oral Presentation 151

Sponge diversity of the Black Sea

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The sponge fauna of the Black Sea is poorly studied up to date. The examination of the existing literature on the Black Sea sponges showed that the number of species known from this area is around 80. Most of these species have been recorded by old studies in the early 20th century. Thirteen species seem to be endemic to the Black Sea and five species are actually considered to be *nomen nudum*. Sponges were mainly collected from shallow-water hard bottom habitats, but species in caves were also taken into account in a few studies. The majority of sponge species reported in the Black Sea are of Atlanto–Mediterranean origin. The studies on sponges in the Black Sea were mainly concentrated in the northern part. Only 18 species have been reported up to date from the Turkish coast, mainly off the pre-bosphoric region. The check-list of the Black Sea sponges is presented and discussed.

Key words: Sponges, Porifera, biodiversity, distribution, Black Sea

Oral Presentation 153

Updated Nest Numbers and Nest Features of *Formica pratensis* (Hymenoptera: Formicidae) in Edirne

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Wood ants (*Formica rufa* group) are keystone species in boreal and mountain forests of Europe and Asia and is represented in Turkey with two species; *F. rufa* exclusively distributed in Anatolia and *F. pratensis* in Turkish Thrace. The current available data about the conservation status of *F. pratensis* in Turkey indicated that the species is considered as vulnerable in Turkish Thrace and as critically endangered for the country as a whole. We investigated 75 localities in Edirne for presence of *F. pratensis* and 15 nests were determined in 12 localities. Recent monitoring studies in these nest-bearing localities showed that 8 nests in 8 localities were no longer active. The mound volumes of all nests were measured during the inventory and monitoring studies to determine if the colonies are enlarged in time or not. The measurement data showed that nest sizes varied with 0.008 m3 as the smallest and 0.82 m3 as the highest volumes and 7 of the active nests were enlarged by various degrees. The former and current nest inventory indicates that the reduction in nest number is a clear indication of the risk that the species is exposed to. Distributional and ecological data on *F. pratensis* will help to awareness raising about the species which in turn will help to provide a basis for conservation of the species in the region. We conclude that a conservation program needs to be urgently implemented to define the current status of *F. pratensis* in red list of threatened species.

Key words: *Formica pratensis*, European Red Wood ant, species conservation, red list of threatened species, biodiversity.

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Oral Presentation 155

Determinants of Intraspecific Aggression of the European Red Wood Ant *Formica pratensis* (Hymenoptera; Formicidae) in Turkish Thrace

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In the present study, we tested the level of aggressive behavior of the monodomous and polydomous colonies of the European red wood ant *Formica pratensis* (Hymenoptera; Formicidae) with a behavioral assay in nature and laboratory conditions to test whether the ants from neighboring colonies are more tolerant or more aggressive to each other than those from greater distances. The effect of context (nature and laboratory conditions) on aggression was also tested. The results showed that the monodomous colonies were highly aggressive to all conspecifics in nature, either neighboring or non-neighboring, meaning that the level of aggression in monodomous colonies was irrespective of the spatial distance. The polydomous colony showed no aggression towards neighboring conspecifics but the level of aggression increased with increasing spatial distance between the colonies. The significantly low levels of aggression in laboratory conditions showed that aggression in *F. pratensis* is context dependent. A DNA barcoding technique based on mitochondrial COI gene sequencing was applied to determine the genetic relatedness between the colonies. The results of the genetic analysis, in combination with behavioral assays, revealed that the aggression behavior of the polydomous colony was affected by both the genetic relatedness and the spatial distance between the colonies while there was no clear separation of their effects on aggression in monodomous colonies.

Key words: *Formica pratensis*, intraspecific aggression, context dependent aggression, dear enemy effect, nasty neighbor effect

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Oral Presentation 156

Hemiscorpius and *Orthochirus* Records from Iran (Scorpiones: Hemiscorpiidae, Buthidae)

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In this study *Hemiscorpius* and *Orthochirus* genera are investigated in Iran. The specimens were collected from Alborz, Ahvaz, Ilam and Sistan & Baluchestan Provinces between 2015-2017. As a total 66 specimens were collected from 15 localities and determined four species belong to *Orthochirus* and four species belong to *Hemiscorpius*: *Orthochirus scrobiculosus* (Grube, 1873) from Alborz, *O. iranus* Kovařík, 2004 from Ilam, *O. afghanus* Kovařík, 2004, and *O. fuscipes* (Pocock, 1900) from Sistan & Baluchestan, *Hemiscorpius lepturus* Peters, 1861 from Ahvaz, *H. enischnochela* Monod et Lourenço, 2005 from Ilam, *H. gaillardi* (Vachon, 1974) and *H. acanthocercus* Monod et Lourenço, 2005 from Sistan & Baluchestan were recorded. *Orthochirus afghanus* Kovařík, 2004 is first record for Iranian scorpion fauna. *Hemiscorpius enischnochela* is recorded Ilam Province and *Hemiscorpius acanthocercus* is recorded Sistan & Baluchestan Province for the first time from. *Hemiscorpius gaillardi* have been recorded second times since its description and an first exact locality record is given.

Key words: *Hemiscorpius*, *Orthochirus*, Iran, Fauna

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Oral Presentation 158

Epiphytism on the Invasive Algae

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Seasonal changes in the epiphyte flora of an invasive species, *Codium fragile* ssp. *fragile,* along the coast of the Dardanelles are reported**.** Samples were collected between December 2011 and November 2012 from depths of 0-1 m. The whole thallus was examined for epiphytes and 50 taxa were identified (27 taxa Rhodophyta, 8 taxa Heterokontophyta and 15 taxa Chlorophyta). The most common epiphytes in the Rhodophyta were found to be in the order Ceramiales, in the Heterokontophyta the Ectocarpales and in the Chlorophyta the Ulvales.

Key words: *Codium,* invasive, epiphyte, Dardanelles, Turkey

Oral Presentation 160

Report Diatom / Dinoflagellate of the Phytoplanctonic Population Harvested on the Algerian Coast

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A central goal in ecology is to understand and predict the effects of environmental change on biodiversity of phytoplankton and the consequences of biodiversity changes for ecosystem functioning. The qualitative, quantitative and structural study of the phytoplankton represented by the results of samples taken by the CNRDPA (National Center for Research and Development of Fisheries and Aquaculture), during the period 2013-2016 by the research vessel GRINE BELKACEM. Indicates relatively the presence of high rate of the class of Dinoflagellates distributed along the Algerian coast, followed by the Diatoms class in second position. However,our results indicate the presence of other groups but with a low percentage such as Chrysophyceae, Chlorophyceae, Cocolithophoridae and Euglene. The phytoplankton indicators incorporating the composition are an excellent indicator of the state of coastal waters and synthesize the adaptive boundaries of phytoplankton communities in response to anthropogenic disturbances. From a floristic point of view, the ratio Diatoms / Dinoflagellates has values lower than the average value «1»; this constant may be due to the replacement of Diatoms by Dinoflagellates (some of which are harmful or toxic), thus characterizing the state of a region in relation to another.

Key words: Phytoplancton, Biodiversity, Diatoms, Dinoflagellates, Algerian coast

Oral Presentation 161

Determination of Acorn Yield on Sessile Oak (*Quercus petraea* (Matt.) Liebl.)

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Sessile oak, which forms pure and mixed forests in the northern Anatolia and Marmara regions, is one of the most important commercial forest tree species of Turkey. However, most of these forests are in coppice character and degraded. Recently, concerns on conversion of coppice forests to high forests and natural regeneration increased the importance of researches on the seed development.

Although success of natural regeneration works depends on many factors but mainly on the adequate amount of seeds. Mast seed years occur every 3-4 years in sessile oak. However, acorn production is determined counting fallen acorns after maturation. Determination of acorn yield before acorn fell is mostly depend on the experience of the practitioner. In this study, different development processes from flowering to acorn development was observed and recorded both on open-grown individual trees and trees in the stands in İstanbul-Bahçeköy between 2013-2016.

Since acorns ripen in one year (within the same growing season) in white oaks, they develop on a short peduncles borne on young shoots. It was found that the number of peduncles and acorns on each peduncles vary from 1 to 5. In an abundant acorn year, the proportion of peduncles with 3-4 acorns were higher. When the tree produces abundant acorns, the amount of peduncles on per shoots and acorns on per peduncles increase. The highest amount of failure in acorn production occurs in the flowering and fertilization periods. The best prediction for acorn yield estimation can be done after fertilization when the acorns started to develop.

Key words: Seed, Acorn, Mast seed year, Sessile oak, Seed development.

Oral Presentation 162

A Silvicultural Management Tool Scots Pine (*Pinus sylvestris* L.) Forests

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Scots pine (*Pinus sylvestris* L.) is one of the most economically-important tree species in Turkey, and it has wide distribution areas in the country. Scots pine is considered as an intolerant tree species, thus, it is usually managed under even-aged silvicultural methods such as clearcutting and shelterwood methods. Stand density management is vital in Scots pine forests because stand density affects regeneration success, seedling growth, mortality, cone production and tree growth in these forests. It has been recommended that silvicultural management tools such as stocking charts and density management diagrams are useful when manipulating tree growing space to achieve a broad range of silvicultural objectives in even-aged stands. These tools graphically depict the relationships among stand density, average tree diameter, mean tree volume, stand basal area, tree height etc. Given the importance of stand density on the regeneration success and growth of Scots pine, a density diagram would be necessary for this tree species as well. Therefore, in this study, a stand stocking diagram (SD) was developed for Scots pine forests using the published models and approaches in the literature. The formation of the diagram followed Gingrich stocking chart. With the stocking diagram presented in this study, regeneration, tending and restoration prescriptions will be more practical and effective in Scots pine forests.

Key words: Density, even-aged, management tools, Scots pine, silviculture

Oral Presentation 163

The Effect of Mistletoe on Diameter Increment in Scots Pine Forests

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Scots pine stands suffer from mistletoe existence and infection in Turkey. The main effect of the damage of mistletoe is seen on the growth and development of trees. To determine the effect of pine mistletoe on the diameter growth of Scots pine trees in relation to the infection level, a study involving 114 circular plots (0.1 ha) were carried out in Scots pine forest in Gümüşhane, Torul and Bayburt State Forest Enterprises. Some tree and mistletoe characteristics were measured and recorded in each plot. Measurements included tree diameters (>20 cm) at breast height, age, crown base height, crown width and social status of each tree were measured and recorded. The infection status of sampled trees were evaluated according to the dwarf mistletoe rating system. A total of 1408 trees were sampled in 70 infected and 44 uninfected plots. Increment cores were taken from 648 infected and 760 uninfected trees. Increment cores were studied carefully in the laboratory and diameter increments were determined for the last 15 years. Average diameter increments for the last five 5, 10 and 15 years were also determined. The results of the study indicated that mistletoe infection status and the magnitude of its damage varies greatly. Depending on the infection level, there can be up to 60% diameter increment loss in mistletoe infected stands.

Key words: Mistletoe (*Viscum album* L.), Scots Pine (*Pinus sylvestris* L.), Infection, Increment

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Oral Presentation 164

The Difference in Wood Anatomy between 4 Different Tree Species

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The identification of wood is really important for both conifers (Gymnosperms) and hardwoods (Angiosperms). The anatomical structure mostly shows differences between Gymnosperms and Angiosperms due to their cell type and cell arrangement. The structure of conifers consists of 90-95% elongated cells that are so called tracheids which provide both water conduction and structural support. Furthermore, the structure of conifers is composed of 5-10% radially orientated parenchyma cells, arranged in thin vertical rows called rays. Contrary to conifers, the main body of hardwoods are made up of at least four different types of cells: vessels, parenchyma cells, fibers and rays. However, hardwoods also have ray cells, arranged like those of conifers, but commonly in larger, thicker rays which may be visible to the naked eye. The ray cells are different between conifers and hardwoods because of their cell shape and arrangement, and cells sizes. In this study, the anatomical structure of 4 different tree species was investigated: *Thuja plicata* Donn ex. D.Don (Western red cedar), *Larix decidua* Mill. (European larch), *Fraxinus excelsior* L. (European ash) and *Prunus avium* L. (Wild cherry). The wood anatomy was examined using ESEM and Leica MZ95stereo microscope. The width, length and number of ray cells were determined for each tree species. The width and length of rays was found to be larger in the ash and cherry than Western red cedar and European larch. Particularly, ash showed more than 1.5 times greater numbers of rays than that of other 3 species.

Key words: Rays, Wood Cells, Cell Size, Wood Anatomy

Oral Presentation 166

Some Notes on Nesting Ecology of the European Red Wood Ant *Formica pratensis* (Hymenoptera; Formicidae) in Turkish Thrace

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Here, we presented field data on some characteristics of nesting ecology of European red wood ant species *Formica pratensis* in Turkish Thrace. A total of 340 localities in the region were investigated thoroughly and 75 nests in 47 localities were determined. The habitat types were recorded for each nest and the general tendency of the species for one or more habitat preference was revealed. The analysis of the preference data showed that %60 of the nests was built in scrubby/heathland areas and %40 in woodland. Nine nests in each habitat type were also located very close to an active stream type water source. All nests were constructed as mounds of various sizes and shapes ranging from very steep to flat. The mounds were analyzed for the material used and pine needles, small twigs, moss, heather, dried grass and even pieces of lichen were determined to be used by the ants for mound construction. The southernwards exposure of majority of the nests (%85) showed that nests were located such that they were exposed to enough sunlight at least for some part of the day. All nests, irrespective of the habitat type preferred, were located close to vegetation invaded by aphids which were continuously tended by the foraging ants for honeydew. The soil in the nest area was sampled and analyzed in the laboratory in order to reveal if a particular soil type was preferred or not. The soil texture analysis revealed that sandy loam was the most preferred soil type (%70) followed by loamy sand (%23), sandy clay loam (%5) and clay loam (%2).

Key words: *Formica pratensis*, mound building ant, soil preference, red wood ant, nesting ecology

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Oral Presentation 167

A Preliminary Study to Determine Hypogean Fauna with MSS (Mesovoid Shallow Substratum) Traps

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This study is reported a preliminary results of investigation of terrestrial subterranean fauna in the Western Turkey with MSS (Mesovoid Shallow Substratum) traps which had used first time in Turkey. Plastic tubes with 78 cm length and 70 mm width, including holes between the seventh and thirtieth centimeters in the bottom were used to collect the specimens. The tubes were placed completely under the soil in vertical position, and a cup containing e*thylene glycol* was put deep inside of the tubes. Total of 12 MSS traps were set under the soil ground in Spil, Nif and Yamanlar Mountains (İzmir Province) and Bozdağlar Mountains (Manisa Province) and checked regularly from November 2014 to April 2017. As a result, the groups belong to Arachnida (Aranea, Opiliones, Pseudoscorpiones), Acari, Insecta (Coleoptera, Collembola, Diptera, Homoptera, Hymenoptera, Orthoptera), Isopoda, Gastropoda and Myriapoda (Chilopoda, Diplopoda) were identified from collected MSS trap samples.

Key words: Hypogean Fauna, MSS trap, Turkey.

Oral Presentation 169

Determination of Air Quality in Marmara Region Winter Season

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Marmara Region, one of the 7 geographical regions of Turkey, serves as a bridge connecting Europe and Asia. It has a surface area of approximately 67 thousand km2. When considered as a population, it's determined that there're approximately 24 million in total. The reason for this density's that the region's a major industrial, commercial, agricultural, tourism region of Turkey. Consequently, there're significant environmental problems like urbanization, wastewater, solidwaste and air pollution in the region. Air pollution's one of the problems of the environment that makes itself felt in the region. Especially air pollution's seen at increasing rates in areas where there are intensive industry, traffic and settlement. In this study, air quality of SO_2, PM10 of the Marmara region in the winter season of 2015-2016 (1 October-31 March) was examined. The effects and distributions of these data on air quality have been examined with distribution maps generated by Geographic Information Systems. The data of pollutants were compared statistically and cities with low air quality were identified. The average of the winter season obtained in the study was compared with the Winter Season Limit Values in the Air Quality Assessment and Management Regulation No. 26898 dated 06.06.2008. According to the statistical results, the province with the highest concentration for SO_2 pollutant was Edirne (586,84 µg/m3) in 2015, Edirne (485,06 µg/m3) in 2016 as well. When the PM10 value was examined, Bursa (124,97 µg/m3) was the highest concentration in 2015, Bursa (116,68 µg/m3) was the highest concentration in 2016 as well.

Key words: Air Quality, Marmara Region, GIS, PM10, SO_2

Oral Presentation 172

Multi-temporal Geostatistical Analysis of Tourism Climate Index – A Case Study in Biga Peninsula

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Climate is one of the most important factors affecting and directing the tourism activities in a region. In other words, long years' average/climate parameters designate the tourism comfort in general terms. In this study, climate comfort was analyzed in Biga Peninsula/Çanakkale/Turkey comprising several internationally famous historical and natural beauties. In this context, the most common climate comfort indices Tourism Climate Index (TCI) functioning with climate data of air temperature, precipitation, relative humidity, sunshine duration and wind speed was preferred to employ. The climate data were calculated from meteorological stations' in-situ measurements covering the Biga Peninsula. For each station, TCI values generated from climate data are mapped in the Geographic Information Systems (GIS) platform using the Kriging spatial interpolation method, which is one of the most useful geostatistical methods. As a result, in this study, multi-temporal geostatistical analysis of TCI in Biga Peninsula were investigated and whether or not climate change has been effective on this study area was examined. In other words, the temporal variations of generated TCI values and maps over the past 20 years were examined and the change detection analysis in climate comfort was spatially presented by considering the ever-changing climate conditions.

Key words: Biga Peninsula, Tourism Climate Index, Geostatistics, Kriging, Multi-temporal Geostatistical Analysis

Oral Presentation 174

Current Situation and Challenges of Municipal Solid Waste Management in Turkey

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The municipal solid waste (MSW) management is one of the important environmental problems in Turkey as well as many developing countries. Due to the lack of effective management programs, regulations, and policies; municipal solid wastes cause severe health and environmental problems. Also, inefficient MSW management cause suboptimal use of raw materials and energy. This study presents an overview of municipal solid waste (MSW) management in Turkey. The data are provided by the Turkish Statistical Institute (TurkStat). According to the results of TurkStat, out of 28 million ton of municipal solid waste collected by municipalities in Turkey. Over the past a decade, MSW generation in Turkey has increased from 25 million tons in 2001 to 28 million tons in 2014. The average generation rate of MSW in 2014 was 1.08 kg/capita/day. The main MSW disposal method was open dumping in Turkey before 2000s. The rate of open dumping was 58% in 2001, while it reduced to 35% in 2014. Currently, 64% of MSW generated in Turkey is landfilled, 35% is dumped in open area, 0.45% is composted and others are burned in an open area, released into water bodies, etc.). Overview of this study implicates that several possible and appropriate solutions including concentrating on key regions, intensifying source separation, promoting green lifestyle, preventing waste genetarion, encouraging recycling and reuse, and establishing specialized regulations and policies should be adopted.

Key words: Municipal solid waste, waste disposal, waste minimization, Solid waste management, Turkey

Oral Presentation 175

Investigation of Different Filling Materials on Wastewater Treatment and Bioelectric Production Constructed Wetland Coupled with Microbial Fuel Cell

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In the study, effect of different filling materials on the bioelectricity generation and wastewater treatment performances in constructed wetland integrated with microbial fuel cell were investigated. Three materials including sand, zeolite, and volcanic cinder were used as filling material for each system. The average influent of COD, NO_3- and NH_4+ were 370 mg/L, 67 mg/L, 105 mg/L, respectively and their removal efficiencies (4 day HRT) were 92.1%, 86.2%, and 88.4 %, respectively in integrated system with zeolite filling material. Besides, the maximum average output voltage, power density, and Coulombic efficiency were also obtained for this system which 1.008 V, 15.1 mWatt/m2, and 1.64 %, respectively. The results suggest that zeolite is better than CW-MFC with other filling materials because of its potential for both treatment and bioelectric production. Also, this system might be a cost-effective, low-energy, and sustainable strategy for wastewater treatment, but it needs more investigation.

Key words: Constructed wetlands, Microbial fuel cell, Wastewater treatment, Bioelectricity, Energy management

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Oral Presentation 176

Municipal Wastewater Treatment in Turkey: Current Status and Issues

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Expansion of urban population gives rise to greater quantities of municipal wastewater. Municipal wastewater is discharged directly into waterways without treatment in developing and undeveloped countries. In recent years, the emphasis on environmental health and water pollution issues has increased all of the world. This awareness indicates the need to dispose of the wastewaters safely and beneficially. In this study, wastewater treatment activities are investigated between 1994 and 2014 in Turkey. The study also assesses the present status of wastewater treatment in Turkey. The date is provided by the Turkish Statistical Institute (Turk Stat). According to the results of TurkStat, while the amount of wastewater without the treatment in 1994 was 1.36 billion m3/year, it was nearly 0.913 billion m3/year in 2016. Out of 4.3 billion m3 of wastewater discharged via sewerage, approximately 3.5 billion m3 was treated in wastewater treatment plants in 2014. The rate of advanced treatment was 41.64%, while the rate of biological treatment was 33.16%, the rate of physical treatment was 24.95% and the rate of natural treatment was 0.25%. 50.50% of treated wastewater was discharged into sea, 40.46% was discharged into river, 1.77% was discharged into dam, 1.32% was discharged into lake and artificial lake, 0.24% was discharged onto land and 5.71% was discharged into other receiving bodies. As a result, it is necessary to determine current approaches and policies in order to protect water resources effectively. The potential for recovery and reuse of wastewater is gradually increasing by using Cleaner Production.

Key words: Regional sewage treatment, Wastewater treatment plants (WWTPs), Wastewater, Geographical distribution, Nomenclature of territorial units for statistics (NUTS)

Oral Presentation 177

Evaluation of Antibacterial Activity of Honey Samples Collected From Kosovo

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Honey is a very important and special product which is made from flower nectar, combined with an enzyme secreted by honey-bees. Due to phenolic compounds and other valuable compounds in honey, it has many medicinal properties such as antioxidant, anti-inflammatory, antimutagenic, antitumor and antimicrobial. Researchers have been reported both bacteriostatic and bactericidal effects of honey and they are especially effective on pathogenic strains like *Klebsiella pneumonia, S. aureus, Salmonella typhimurium etc.*

The aim of this research is screening the antimicrobial effects of six different honey samples from Kosova against some gram-positive and gram-negative bacteria by using the agar well diffusion method in Mueller-Hinton Agar (MHA-Merck). Honey samples were obtained from the bee-keepers on January-February 2016 and kept in sterile jars at room temperature in the dark. Bacterial strains provided from first reseach's personal culture collection and kept in +4ºC during the investigation. Penicillin, streptomycine and ampicilline were used as reference antibacterial disks for positive control.

As a result, antibacterial activity was determined in different values against different microorganisms in all the honey samples. However, the activity of all honey samples against *S. aureus* ATCC 25923 and *Salmonella typhimurium* ATCC 51812 strains is higher than that of standard antibiotics discussed as reference. Therefore, it is advisable to use honey as an alternative natural product, especially in children and elderly people. Such preliminary researches should be carried out further in the country on the subject of identifying the antimicrobial properties of the substances in honey.

Key words: Antibacterial activity, honey, honey-bee, agar well diffusion method, Kosovo

Oral Presentation 178

The Effect of Some Metals (Cu, Co, and Ni) on Expression of OmpC and OmpF Porin Proteins

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Microorganisms have very different and important roles in the ecosystem. They are exposed to many stress factors during their lifetime and developing various protective mechanisms to survive. One of these protection mechanisms is to change the membrane permeability. It is known that *Escherichia coli*, an important model organism, changes the expression levels of OmpC and OmpF porin proteins in order to survive stress conditions such as temperature, pH, osmolarity. However, it is not yet known how metal stress affects the synthesis of these porin proteins. Therefore, in this study, the expression level of OmpC and OmpF porin proteins in rich medium containing Cu, Co, and Ni metal was investigated by β-Galactosidase enzyme activity using Transgenic fusion-generated MH225 (OmpC) and MH513 (OmpF) strains. Consequently, when nickel is added to the medium, OmpC porin protein synthesis was found to increase significantly. Even as the metal concentration increased, this increase was found to occur at a higher rate. However, this high increase in OmpC is not seen in the synthesis of OmpF porin protein. When Co is added to the medium, OmpF protein synthesis is reduced more than the OmpC. This shows us that the bacterium is trying to prevent the uptake of cobalt metal into the cell. In the medium containing copper metal, it has been found that OmpC protein synthesis increases significantly, whereas OmpF synthesis decreases significantly.

Key words: *E.coli,* OmpC/OmpF, Porin proteins, Metal Stress, β-Galactosidase Enzyme Activity

Oral Presentation 179

Propagation of The Euphrates Poplar Under an Aeroponic System

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Populus euphratica or Euphrates popular is a forest tree of drylands and semi-arid areas marked by severe variations of soil and climate. The Euphrates popular is known for its great ability to adapt face extreme conditions of salinity and drought, which are the main current ecological threats in the countries of the Middle East and North Africa region. Its adaptability gives it the status of protected species in Algeria as species with great ecological interest, it can promote and develop fragile ecosystems through plantation for the re-vegetation of arid zones against desertification.

However, studies on its vegetative propagation show that it remains difficult and the results do not exceed the 45% of success, while using growth regulators and compliance of periods of harvesting of the cuttings.

Thus, the present study proposes to introduce a new method of aeroponics multiplication associated with the use of growth regulator (AIB) in order to optimize the roots induction in fairly short times.
The culture environment pre-treated at 80 mg/l of AIB under an aeroponic system shows Rooted cuttings at 66%, compared to those installed under glass. However, this rate remains influenced by other parameters (provenance, sampling level and cutting diameter) that have a significant influence on these results.

Key words: *Populus euphratica*, aeroponics, Auxin, cuttings

Acknowledgements: This research was financially supported by the UPPSALA University (Sweden)

Oral Presentation 180

Integrated Ecological Agricultural Applications with Aquaculture

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According to the recent researches, the world population is estimated to be 10 billion in the next 30-40 years. It is predicted that agricultural areas will decrease because of global warming and the human population will have hunger problems. Therefore, agricultural and animal production efforts even in the smallest areas become very important issue. In order to meet the nutritional needs of the growing population, it will be necessary to receive more crops from the unit area. Different production methods such as hydroponic, aeroponic and aquaponic system techniques are still being tested in order to obtain more products from less area. The basic principle of these production techniques is soilless agriculture, known as the farming with water. Efficient utilization of decreasing agricultural land is possible via these three types of production techniques and their varied designs. The aim here is to reduce the use of soil, fertilizers and medicines to obtain more and various crops from the unit area. Water recirculates in a closed system so water saving is possible by using the same water repeatedly. These systems have recently been used as vertical designs in order to save space. They are also called vertical agricultural practices. While hydroponic and aeroponic systems are being used for plant production, aquaponic systems are emerging as methods of fish production as well as plant production. These practices, in which both aquaculture and crops are grown together, are now in the form of huge farms in some countries. The efficiency in this cyclical system, where water, space and energy are saved, is at high level. This study was carried out in order to demonstrate the environmentally friendly, ecologically sustainable production of hydroponic, aeroponic and aquaponic techniques and their applications in the world.

Key words: Hydroponics, aeroponics, aquaponics, sustainability, ecological agriculture

Oral Presentation 181

Photoperiod, As an Environmental Factor, Affects Food Intake and Body Weight in Syrian Hamsters (*Mesocricetus* auratus) and Mongolian Gerbils (*Meriones unguiculatus*)

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Photoperiod regulates food intake, body weight, energy expenditure and reproductive system of many seasonal mammals. Seasonal breeding animals use the light for physiological adaptations during the year. Body weight change varies from species to species. Reproductive system of the Mongolian gerbils are controlled by the photoperiod but body weight change is independent of photoperiod and gerbils are very sensitive to food intake. Body weight of Syrian hamsters increase in winter days. In this study three groups were established in short (8L) and long (16L) photoperiods for both male hamsters and gerbils; a) food was introduced uniformly day and night as ad libitum (control), b) food was introduced only dark period (night time), c) food was introduced only light period (day time). Daily food consumption and weekly body weights were calculated. There was no difference in daily food consumption between control and NT groups but there was a decrease in DT group in both photoperiods. Food consumption of all groups of gerbils were similar. When compared to body weights, body weight of the control group of hamster increased in short photoperiod.

It was found that weight variations of the three groups for both photoperiods to be similar in male gerbils. These results show that feeding time regulates the development of body weight in accordance with the photoperiod.

Key words: Food Intake, Photoperiod, Environment, Mongolian Gerbil, Syrian Hamster.

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Oral Presentation 182

Effects of Supplementary Diet and Diet Types on Physiology of Mother and Pups

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The environmental effects which the pregnant mother exposed can be observed physiologically in the effects on the offspring. The right proportions of carbohydrate, protein and fat macromolecules that are supposed to be available at meals and their metabolism are influencing living growth. In this study, an enriched mixture of Iron, Zinc and Selenium was fed to the mother and also to the offspring in addition to the macro molecules added to the normal diet. Female hamsters were divided into five groups. Group I; control animals receiving normal diet. Group II; carbohydrate intensive diet. Group III; protein intensive diet. Group IV; fat intensive diet. Group V; supplementary diet. Until 40 days of birth, the offspring continued to feed according to the food group the mother was fed. Body weight, food consumption and day-night blood sugar values were taken. The biggest increase in body weight of pregnant hamsters was only statistically significant when fed with carbohydrates. Food consumption was higher in groups V and III at 2nd and 3rd weeks, whereas the group consumed the most in last week was carbohydrate. Blood sugar level was highest in IV and II groups. Weight increases in the pups were constant. Food consumption of pups were similar in all groups. Values of day and night blood sugar level of control and group V were similar but lower than the other groups. As a result, important supplementary substances that are added to normal nutrients can keep the blood sugar values of the mother and the offspring at the desired physiological values.

Key words: Hamster, Nutrition, Diet, Blood Glucose, Environment

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Oral Presentation 183

Mistletoe Biomass on Scots Pine Trees

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The pine mistletoe, *Viscum album* L. subsp. *austriacum* (Wiesb.) Volmann, is one of the semi parasitic plants in Turkey. It causes important increment losses in degraded Scots pine dominated forests. In this study, mistletoe biomass in Scots pine trees were determined. To do this, a study was conducted in Torul and Gümüşhane State Forest Enterprise. Trees were selected from pure Scots pine stands for various age and structure. A total of 29 Scots pine trees at varying infection levels. Infection status of the sampled trees were assessed according to the dwarf mistletoe rating system. Tree age, diameter at breast height, crown base height, crown width, bark diameter and social status of each trees were measured and recorded. Tree crowns were divided into three equal sections. Mistletoes on each section were cut, measured and recorded, and taken to the lab for dry weight determinations. As a result of the study, regression models were developed to predict mistletoe biomass in relation to the infection status of the tree. The models developed can be used in practice and in studies dealing with the determination of the effects of mistletoe on tree growth.

Key words: Mistletoe (*Viscum album* L.), Scots Pine (*Pinus sylvestris* L.), Biomass, Model

Acknowledgements: This study was supported by The Scientific and Technological Research Council (TUBITAK) of Turkey, Project No: TOVAG-112O258.

Poster Presentations

Poster Presentation 2

Mock Community Analysis of Aquatic Plants using Environmental DNA (eDNA)

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Detection of endangered and invasive species is very important for biodiversity researches in these days. Environmental DNA (eDNA) offers a new way of study which is not harmful for species and without occupying their habitats. In nature, living organisms leave their genetic traits in different ways such as dead organisms, faeces bristle and mucus. The importance of eDNA method for aquatic plant kingdom is that not only invasive species can detect but also plant species in the depths of water also can identify with very little water sample. In this study, mock community of an aquarium which had 20 L water and three different aquatic plant species has been designed. 500 ml water samples were filtered through sterivex filters. After filtration, EURx Plant & Fungi DNA Purification Kit was optimized for extraction of eDNA from membranes. Amplification of rbcL and ycf barcode regions were used for identifying aquatic plant species. Despite three species in aquarium, only two aquatic plant species were successfully identified using rbcL primers. We concluded that ycf barcode region was not sufficient to identify by eDNA method. According to results we performed species level molecular identification of aquatic plants in a mock community aquarium using rbcl barcode primer using only water samples. These results might be a source of further work because there are few studies with aquatic plants by eDNA method. The purpose of this study was to detect aquatic plants using only water samples which we successfully did and the results were very promising.

Key words: Aquatic plants, DNA Barcoding, eDNA, *rbcl, ycf.*

Acknowledgements: This research was financially supported by the Evolutionary Genetics Laboratory (eGL), Department of Fisheries and Aquaculture, Agricultural Faculty of Ankara University, Ankara, Turkey.

Poster Presentation 3

Evaluation of the Effects of UV Radiation on DNA Integrity on Human Keratinocyte Cells

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Ultraviolet (UV) radiation is widely known as an environmental genotoxic agent that affects human population, generating DNA damage, cell death, mutagenesis and ultimately carcinogenesis via direct or indirect mechanisms. The toxic effects of UV from natural sunlight and therapeutic artificial lamps are a major concern for human health. The major acute effects of UV irradiation is on human skin. International Agency for Research on Cancer (IARC) has been classified UV radiation (UVA, UVB and UVC) as a Group 2A carcinogen, sunlight as Group I carcinogen, In the present study, the genotoxic effects of UV radiation was investigated on HaCaT cells which is the target of UV exposure. For this purpose comet assay was performed to determine the DNA strand breaks. Samples were exposed for 1, 5, 10, 15, 30, 45 and 60 min at a distance of 60 cm from the source (280-400 nm, UVA-UVB) receiving a 1 mW/cm2 dose rate. Our results indicate that, comet tail intensities were significantly (dose related) induced by UV radiation in HaCaT cells.

Key words: UV, comet assay, HaCaT, DNA integrity, tail intensity

Acknowledgement: This study was supported by Tübitak project 114S311.

Poster Presentation 4

Effects of different media types on sediment enzyme activities in mesocosm- scale constructed wetlands

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Constructed wetlands (CWs) are a cost-effective, low- energy, and sustainable technology for the treatment of a variety of wastewaters. Sediments in CWs are a living dynamic system containing many enzymes. These enzymatic activities may be nominee model of sediment stress to management practice that may ecological risk assessment warn us about degradation. This study aimed at the relationship between different media types and sediment enzyme activities in mesocosm-scale constructed wetlands (CWs) fed with synthetic wastewater. Four different constructed wetlands including peat, zeolite, sand and volcanic cinder media type were established. Evaluated the activities of three significant enzymes in the rhizosphere of CWs. The dehydrogenase, urease, and phosphatase enzyme activities in rhizosphere of the CWs were determined. Dehydrogenase activities in peat-based, zeolite-based, volcanic cinder-based, and sand- based reactors were measured 112, 15.32, 12.07, and 10.52 µg TPF g^{-1} h^{-1}, respectively. Urease activities in peat-based, zeolite-based, volcanic cinder-based, and sand- based reactors were measured 3057, 758, 523, and 261 µg NH_4^+ g^{-1} 48 h^{-1}, respectively. Phosphatase activities in peat-based, zeolite-based, volcanic cinder- based, and sand- based reactors were measured 14.81, 2.26, 1.86, and 11.09 µg p-nitrophenol g^{-1} h^{-1}, respectively. According to these results, the media types of constructed wetlands have been found to have an effect on the enzyme activities occurring in the wetland matrix. As a result, dehydrogenase, urease and phosphatase enzyme activities can be used as suitable biomarkers for determination of the removal mechanism differences that may occur due to media type in constructed wetland reactors.

Key words: Constructed wetlands, Media Types, Dehydrogenase, Urease, Phosphatase

Poster Presentation 5

Toxicological and Environmental Evaluation of Aflatoxins

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Mycotoxins are the secondary metabolites produced by fungi that have toxic effects to human and animals. The most important fungi species producing mycotoxins in foods and feeds are *Aspergillus, Fusarium, Alternaria and Penicillium*. They produce aflatoxins (AFs), ochratoxin A (OTA), fumonisins and zearalenone (ZEA), which have potent mutagenic, carcinogenic and teratogenic effects. Aflatoxins are hepatotoxic, immunosuppressive, teratogenic and carcinogenic mycotoxins produced by *Aspergillus flavus* and *A. paratisicus* species. The four major aflatoxins are called B_1, B_2, G_1, and G_2 and their toxicity potent is AFB1 > AFG1 > AFB2 > AFG2. Aflatoxins can contaminate corn, wheat, rice, peanut, fruits, milk and a variety of other feeds and foods easily because of unsuitable environmental conditions. They can occur in crops before harvest due to environmental factors such as humidity, temperature, pH, nitrogen and carbon sources and after harvest during storage and transportation. Food crops are vulnerable to climate changes so environmental factors have a significant effect on production of aflatoxins. AFs occur in agricultural products all around the world and the contamination threats health and food safety worldwide. The Food and Agriculture Organization (FAO) estimates that 25% of the world's food crops are affected by mycotoxins; therefore, mycotoxin contamination is an increasing concern in the trade of agricultural products which causes economic loses for countries. Environmental precautions, aflatoxin management technologies and the strict control of food quality are essential to avoid diseases and trading loss.

Key words: Mycotoxin, Aflatoxin, Toxicology, Food Health, Ecotoxicology, Agriculture

Poster Presentation 6

Environmental and Occupational Evaluation of Asbestos

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The term of "asbestos" describes a group of mineral fiber that occurs naturally in rock and soil. The types of asbestos are amosite, crocidolite, tremolite, anthophyllite and actinolite. Asbestos has been used in a variety of products for many years since its resistance to heat and corrosion. It is used in construction industry, shipping, paper and fabrics. People are exposed to asbestos through released particles and fibers into the air by destruction or damage of asbestos containing materials, particularly during the removal of asbestos materials due to renovation, repair or demolition in the construction industry and ship repair. People may also be exposed to asbestos through contaminated drinking water and soil via gastrointestinal tract. Workers are likely to be exposed too much higher levels of asbestos during the manufacture of asbestos-containing products. Every occupational and environmental long-time exposure to asbestos can cause chronic lung diseases and contributes to the risk of asbestos-related diseases. Also, it is one of the most important occupational carcinogens and causes about half of the deaths from occupational cancer. Asbestos has been classified by the International Agency for Research on Cancer (IARC) as being carcinogenic to humans (Group 1). According to global estimates, at least 107 000 people die each year from asbestos-related lung cancer, mesothelioma and asbestosis resulting from occupational exposures. Although, it has been banned in many countries, many of them have maintained their production and use of asbestos. Therefore global precautions are needed for elimination of asbestos-related diseases worldwide.

Key words: Asbestos, Carcinogenicity, Toxicology, Ecotoxicology, Occupational Toxicology

Poster Presentation 7

Effects of Systemic Fungicide Propamocarb in *Drosophila melanogaster*

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The population overgrowth also leads to decrease in agricultural area. Due to the increasing population and narrowing agricultural areas, it is necessary to get maximum efficiency from the available fields. As a solution to this problem, studies are being carried out to protect existing agricultural areas. Within these studies, fungicides, one of the important subgroups of pesticides, are used to protect agricultural products from fungal and fungal diseases.

Propamocarb, a fungicide of the Carbamate family, is widely used in vegetables and fruit greenhouse in Turkey and Southern Europe. However, the false use of pesticides, including fungicides such as Propamocarb, can affect the off-target organisms as a result of released into the environment by soil, air, water and nutrients. Studies have been conducted to investigate the mutagenic properties of some Carbamate compounds. However, new researches have to be done using different test system because of limited studies.

In this study, Propamocarb genotoxicity was tested with the wing spot test of *Drosophila melanogaster* (somatic mutation and recombination test, SMART). In this context, *Drosophila* larvae, transheterozygous for the multiple wing hairs (*mwh*) and flare (*flr3*) genes, were chronically treatment with four different concentrations (1, 2, 5 and 10 mM) of Propamocarb.

In the result of study, all doses of propamocarb didn't show statistically significant genotoxicity compared to the control group.

Key words: Propamocarb, SMART, *Drosophila*, Fungicide, Genotoxicity

Acknowledgements: This research was supported by TUBITAK, Turkey (116Z029).

Poster Presentation 8

Investigation of Genotoxicity of Magnesium Oxide Nanoparticles by *Drosophila* Somatic Mutation and Recombination Test

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Nanotechnology has revolutionized industry development in the 21st century, enabling us by providing advantages in different areas such as engineering, information technology and diagnostics. However, in order to meet new demands, it is necessary to develop new formulations and to produce large scale nanoparticles with surface properties. In this context, metal oxides are an important group of nanoparticles. Magnesium oxide nanoparticles (MgO NPs) are used in various fields as electronics, catalysis, ceramics, and antibacterial agents. Recently, MgO NPs have become increasingly recognized and used for applications in nano cryotherapy and hyperthermia in cancer therapy. Despite their widespread use, Potential ecological risks of these nanoparticles in interaction with the environmental are a concern. Metal oxide nanoparticles used in commercial products may cause serious damage to the environment if released into the environment and can threaten all organisms, including humans, by affecting the food chain. For this reason, the *Drosophila melanogaster* model organism, which is quite like human genetically, has been used in this study.

In this study, the potential of genetic damage (deletion, point mutation, nondisjunction, and recombination) of MgO NPs and their ionic forms on *Drosophila* has been investigated with the *in vivo* test system wing somatic mutation and recombination test (SMART).

As a result of the study, MgO ionic form showed genotoxicity at concentrations of 1, 2 and 10 mM, while MgO NPs showed genotoxicity only at the highest dose (10 mM) in terms of total clone parameter.

Key words: Magnesium oxide, SMART, *Drosophila*, Nanoparticle, Genotoxicity

Acknowledgements: This research was supported by Akdeniz University Scientific Research Projects Coordination Unit, Turkey (FYL-2016-1044).

Poster Presentation 9

The Study of Toxic Effects of Dimethyl Isophthalate (DMIP) for Possible Impacts on Health and Environmental Risks

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Phthalates are esters of phthalic acid and are mainly used as plasticizers in a wide variety of products and applications which are added to plastics to increase their flexibility, transparency, durability, and longevity. They are used in gelling agents, medical devices, cosmetics, adhesives, and emulsifying agents. Phthalates are not covalently bound to the plastic material and can easily leach into the environment. Dimethyl Isophthalate (DMIP) used as a plasticizer, to make polyester resins and as a perfume fixative. The aim of this study was to evaluate in vitro cytotoxic and genotoxic effects and in vivo toxicity of DMIP. While cytotoxicity of DMIP was determined by the MTT assay on HEK 293 Cells (Human Embryonic Kidney Cell Line), genotoxicity was determined by Ames Test (*S. typhimurium* TA 98, TA 100, TA 1535 strains). The up and down procedure was used to determine the single dose toxicity on Swiss albino mice according to the OECD Guideline 425. According to test results, DMIP was inhibited cell proliferation in a concentration-dependent manner. DMIP was produce mutagenic activity at the highest dose (5 µg/plate) on the bacterial strains tested under the condition with S9 mix. In vivo single dose toxicity assay showed that no lethality was observed with oral doses of the DMIP (LD50 > 2000 mg/kg).

Key words: Phthalates, Dimethyl Isophthalate, Cytotoxicity, Genotoxicity, Environment, Health effects

Acknowledgements: The study is financially supported by Ege University, Faculty of Science Scientific Research Projects, Turkey. (Project Number is 2017/FEN/027). The protocol was approved by the Ege University, Local Ethical Committee of Animal Experiment (31.08.2016, number 2016-073).

Poster Presentation 10

Assessment of Cytotoxic Effects of Copper Oxide Nanoparticles in Human Neuroblastoma Cell Cultures: A Preliminary Study

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The purpose of the present study was to evaluate the possible dose- and time-dependent cytotoxic effects of CuO nanoparticles (NPs) on human neuroblastoma cell (SH-SY5Y) cultures. The cultured cells were exposed to various concentrations (0,01- 800 μg/ml) of CuO NPs (<50 nm) for 24, 48, 72 and 96 hours, and cytotoxicity was evaluated by MTT assay. The results showed that the effect of CuO NPs on the viability of SH-SY5Y cell cultures was concentration-dependent, especially following 24- 72 hours of incubation. Marked decreases on the viability of cells were observed at 800 μg/ml following 24, 48, and at both 400 and 800 μg/ml following 72 and 96 hours of exposure. Between the concentrations of ≥25- 400 μg/ml of CuO NPs following 24 and 48 hours of incubation slight decreases were noted in cell viability. However, with longer incubation times cell survival percent were not decreased markedly, and fluctuations were observed at concentrations of < 400 μg/ml. Pretreatment of cells with three different substances (diethylenetriaminepentaacetic acid, N-acetyl cysteine and taurine) for 4 hours provided partial protection against CuO NPs-induced (100 μg/ml) cytotoxicity following 24 hours incubation. These results along with the limited number of studies on CuO NPs in nervous system, show that more investigation is necessary to explain the mechanism of toxicity of these NPs.

Key words: ZnO nanoparticles, CuO nanoparticles, Cytotoxicity, Human neuroblastoma cell (SH-SY5Y) cultures, Protective effect.

Acknowledgements: This study was supported by Hacettepe University Research Foundation (014 D12 301 001-830). TEM images were obtained in Central Laboratory of Middle East Technical University (METU) in Ankara, Turkey.

Poster Presentation 11

Toxic Effects of Co and Zn on Freshwater Ostracod *Cypridopsis vidua* (Muller, 1776) After Exposed Separately and In Mixtures for 24, 48 and 72 hours

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The effects of the metals on the living things separately and in mixtures are one of the current working areas. Interactions between metals can show different toxic effects on living organisms. In this study, it was aimed to investigate toxic effects of cobalt and zinc separately and in mixtures on *Cypridopsis vidua* (Muller, 1776) for 24, 48 and 72 hours.

The concentrations of metals $CoCl_2.6H_2O$ and $ZnCl_2$ were prepared between 0.01-100 µg/ml and exposed separately (Co, Zn) and in mixtures (Co + Zn) on *C. vidua*. The control group was not treated with metal. At the end of 24, 48 and 72 hours death adults were determined and LC50 values were calculated by SPSS 17.0 Probit analysis method. The experiments were repeated three times.

In this study, it was found out that the metal exposure as a mixture showed more toxic effect than separately exposure and the toxic effect was increased in all groups depending on the time. 24 hours LC50 values from low to high were Zn + Co <Zn <Co (0.082 <0.386 <0.321 µg/ml) respectively and 48 hours LC50 values were 0.013 <0.06 <0.126 µg/ml respectively and 72 hours LC50 values were 0.01 µg/ml at all groups. The results obtained indicated that when the metals are found in mixtures in environment the toxic effect might be higher because of interaction of metals with each other. So it is important to evaluate the toxic effects of metals in separate and in mixture forms to evaluate their toxicity in environment on different test organisms.

Key words: *Cypridopsis vidua*, Zn, Co, LC50

Poster Presentation 12

Determination Acute Toxicity of Arsenic to Mosquito Fish (*Gambusia affinis* (Baird & Girard, 1853)

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The experiment was intended to find the acute toxicity of *Gambusia affinis* (Baird & Girard, 1853) to Arsenic (As), which used in pesticides, herbicides, insecticides and is often found in cosmetics. 96 hours of acute static testing was performed to detect LC50 values. The results achieved a 95% success rate when performing the probit analysis. In LC50 experiments, physicochemical parameters (pH, water hardness and temperature) were measured. The experiment used 10 fish in each aquarium in two-stage experiments. *Gambusia affinis* mortality rates exposed to different arsenic concentrations (1, 10, 20, 40, 50, 100 ppm) were recorded for 24, 48, 72 and 96 hours. The LC50 value was determined as 20.000 ppm (lowest limit: 12.221 to the highest limit 32.730) after 96 hours of trial. There was a negative correlation between LC50 values and the time.

Key words: Arsenic, *Gambusia affinis*, Lethal Dose 50, Mosquito Fish

Poster Presentation 13

Direct Toxic Effects of a Lipid Synthesis Inhibitor (Spirotetramat) on Adults of *Blattella Germanica* (Dictyoptera, Blattellidae)

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Spirotetramat is a spirocyclic tetramic acid derivative, the only foliar insecticide. The product has a unique new mode of action by inhibiting acetyl CoA carboxylase which classifies it in inhibitors of lipid biosynthesis. In this study we tested the direct toxic effect of various spirotetramat concentrations (5 µg / ml, 10 µg / ml, 15 µg / ml and 20 µg / ml) on male and female adults of *Blattella germanica* (The most common species of cockroaches and which causes serious damage in terms of hygiene and health). Treatment by ingestion under controlled laboratory conditions (temperature 25 ± 2 ° C, humidity 70 to 80%, and photoperiod 12: 12 h). The results show that the mortality of adults (male and female) varies according to the concentrations used but especially according to the time of exposure. Mortality rates are 100% for the highest concentrations and the toxicological parameter calculations show that males are more susceptible to spirotetramat than females.

Key words: *Blattella germanica*, toxicity, mortality, spirotetramat, lipogenesis inhibitor.

Poster Presentation 14

Evaluation of the Potential Cytotoxic and Genotoxic Effects of Pirimicarb by Allium and Micronucleus Tests

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In this work, the potential cytotoxic and genotoxic effects of Pirimicarb insecticide was evaluated by investigating mitotic index and phases, chromosomal abnormalities, and micronucleus formation on the somatic cells of *Allium cepa*. The roots of *A. cepa* were exposed to 0.25, 0.5, 1 and 2 ppt concentrations for 12, 24 and 36 h. Mitotic index was obviously reduced with insecticide concentrations in each treatment group as compared to the controls. The percentages of the mitotic phases have been meaningfully altered. The insecticide notably enlarged the percentage of the anomaly cells at all concentrations and treatment periods as compared with their control. Mitotic aberrations were found as disturbed prophase, chromatid bridge, sticky, c-mitosis, and laggards. Moreover, the micronucleus was detected in interphase and its percentage was calculated in each application concentration.

Key words: Genotoxicity, Micronucleus, *Allium cepa*, Pirimicarb, Insecticide

Poster Presentation 15

Investigation of Cytotoxic and Genotoxic Effects of Flufenoxuron Insecticide on *Allium cepa* Somatic Cells

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In this work, the cytotoxic and the genotoxic effects of the flufenoxuron insecticide on the root tip cells of *Allium cepa* were examined. The onion bulbs were exposed to 0.5, 1, 2 and 4 ppm concentrations of the insecticide for 6, 12 and 24 h. Distilled water was utilized as a negative control, and ethyl methane sulfonate was utilized as a positive control. Test concentrations were consistently defined with the used doses in agricultural areas. The mitotic index declined mostly with increasing the insecticide concentrations. The mitotic anomalies were found as disturbed prophase, c-mitosis, stickiness, laggard chromosomes, and chromatid bridges. Also, the micronucleus was detected at the interphase and its frequency was calculated in the utilized test solutions. In this paper, the formation of chromosome aberrations, cell death, and damages in the cell membrane by Flufenoxuron insecticide has been presented for the first time. Consequently, the cytotoxic and genotoxic potency of the utilized insecticide with different tests were evaluated by using somatic cells of *A. cepa*, and the usage of a defined non-toxic dose was recommended.

Key words: Chromosome, Genotoxicity, Insecticide, Micronucleus, Flufenoxuron

Poster Presentation 16

Toxic Effect of *Peganum harmala* (Zygophyllaceae), on the Sexual Behaviour of *Drosophila melanogaster*

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The secondary plant compounds are biologically active and capable, at high or low doses by prolonged administration, of producing undesirable or even harmful toxic effects. *Peganumharmala* (Zygophyllaceae), a spontaneous plant in the Algerian northern Sahara, is known for its quantitative and qualitative richness in alkaloid bioactive molecules of b-carboline type, the most important of which are harmine, harmaline, harmol, Harmalol, especially in its seeds. In order to improve and enhance the insecticidal properties of its biological molecules, we evaluated the deferred toxic effect of a sublethal concentration (50g/l) of aqueous seed extract on a model organism, *Drosophila melanogaster*. Treatment is by ingestion of second stage larvae. Our work focuses on the possibility of causing behavioral disturbances in the process of insect reproduction. The results show that the treatment acts on the behavioral sequences of the sexual parade according to the type of crossing performed. The treated males take longer to locate the potential females (104 seconds) compared to the controls (72 seconds). All intermediate parallels at coupling (vibrations, licks, coupling attempts) are also disturbed. The abortive mating rate in treated couples is 86.33%.

Key words: Plant biodiversity, *Peganum harmala*, bioactive molecules, *Drosophila melanogaster*, Toxicity.

Poster Presentation 17

DNA Binding and DNA Cleavage Studies of Polyethylenimine Based Schiff Base

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Polyethyleneimine (PEI) is a synthetic branched polymer with weak base character. PEI has attracted great attention for many applications such as drug and gene delivery, detergents, adhesives, water treatment agents, cosmetics and in the development of catalyst supports. Due to the large number of amine groups in the structure, PEI creates a buffering effect over a wide pH range. This allows the PEI molecule to escape from the acidic endosomes in the cell very easily.

In this study, DNA cleavage and DNA binding effect of newly synthesized polyethylenimine compound was studied. DNA cleavage was performed using pBR322 plasmid DNA by the agarose gel electrophoresis method. DNA binding was investigated using calf thymus by Ultraviolet Visible Spectroscopy absorption titration method. As a result, compound can bind to calf thymus DNA electrostatically, which demonstrates their potential use as a DNA repair agent. Also, it showed oxidative and hydrolytic DNA cleavage activity effects.

Key words: Polyethylenimine, Schiff Base, DNA Binding, DNA Cleavage, UV-Vis Spectroscopy

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Poster Presentation 18

DNA Damage Protective Activity of *Polysiphonia morrowii* (Harvey)

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Marine organisms are potentially prolific sources of highly bioactive secondary metabolites that might represent useful leads in the development of new pharmaceutical agents. Red algae are considered as the most important source of many biologically active metabolites in comparison to other algal classes. The availability of high value food resources in the marine environment presents a serious potential for meeting an important amount of the food demand of the increasing world population. In this study, Red algae *Polysiphonia morrowii* (Harvey) samples collected from along the coast of Dardanelles and washed in the laboratory and then stored in suitable conditions. 10 g was weighed out from the dried algae and extracted with Soxhlet for 24 hour with in order of three different extracts(hexane, methanol and distilled water). All tested extracts and different doses seem to protect the structure of plasmid DNA in the presence of H2O2.

Key words: Red Algae, *Polysiphonia morrowii*, Dardanelles, DNA Cleavage, Protective Effect

Poster Presentation 19

Mitochondrial DNA Damage and Gene Repair Response to Agricultural Contamination in Blood of People Living Around Monoculture Rice Farming Areas

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Monoculture rice farming and agricultural practices contribute to the degradation and contamination of target area as well as the near ecosystems. Organic, inorganic and hormonal pesticides, several types of fertilizers and other agro-chemicals and toxic molecules, repeatedly applied every year, which are often the main causes of agricultural pollution. In this study, we aimed to determine the effect of agricultural contamination on DNA damage and DNA repair gene expression in humans living around monoculture agricultural areas. Two populations living in non-farmed (n=10) and monocultural farming areas (n=50) were selected for this study conducted during the summer and autum growing seasons in 2015. The mismatch repair genes, MLH1, EXO1, postreplication repair gene, RAD18, base excision repair genes, SMUG1, NEIL2, DNA double-strand break repair, MDM2 expressions were determined by qRT-PCR assay. Mitochondrial NADH dehydrogenase subunit 2 (ND2) and cytochrome c oxidase subunit 1 (COI) gene were sequenced by ABI 3500 genetic analyser. Our results showed that especially in summer, agricultural contamination not only selectively induce DNA instability of COI and ND2 genes but also DNA repair MLH 1 (11.86-fold), EXO 1 (3.74-Fold), RAD18 (4.18-fold), SMUG 1 (3.88-Fold), NEIL 2(37.10-Fold) and MDM2(4.65-Fold) genes were significantly overexpressed compared to control. In the autumn period without fertilization and spraying in the rice farming, significant increases were observed only RAD18 (47.16-fold) and NEIL (4.98-fold) in addition base change in both COI and ND2 was determined at low level. In conclusion, agricultural contamination cause DNA damage in non-worker's blood tissue depending on the intensity of agricultural activities.

Key words: Gene expression, mitochondrial DNA damage, gene repair, agricultural contamination, human

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Poster Presentation 20

Genotoxic Effects of Biga Kocabaş River's Water on *Allium cepa* L. and *Vicia faba* L. Plant Species

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In this research, Kocabaş River waters, which sources from Ida Mountain and reach to the Marmara Sea in the Karabiga village were analyzed by *Allium cepa L.* and *Vicia faba L.* root tip test. During the research Kocabaş River's water were taken with sterile conditions from five different locations (Hacılar Village, Bakacaklı Farm, Biga, Çavuşköy, Karabiga). Exposure time has been used as 48 and 72 hours. During experiment series, *A. cepa* rooted and *V. faba* were irrigated with river waters. Genotoxic effects of water samples which taken from different locations and applied to plants in different times, was determined by root tip test and calculated by mitotic index (MI) value.

As a result of root tip test, depending to exposure time and different locations chromosomal abnormalities were observed as prophase stage deformation, metaphase pole shift, unbalanced anaphase, chromosome fragments, bridge, stickiness, telophase pole shift.

After the application of river waters, mitotic activity decreasing were observed. Lowest MI in *A. cepa* and *V. faba* 72 hours after application have been found as 15% and 31% respectively when compare with control group. Genotoxic assessments which made for two plant species showed us Biga Centrum (third station) and Çavuşköy (forth station) locations of Kocabaş River were found polluted and waters which taken from this locations is not fit for any agricultural activity or other activities that might be associated with human use.

Key words: Kocabaş River, *Allium cepa, Vicia faba*, Genotoxicity.

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Poster Presentation 21

Comparision of Total Protein and Peroxidase Differences of *In Vivo and In Vitro* Growth and Naturally Spread *Urtica dioica* L. Plant Species

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In this research, 10 weeks old seedlings of *Urtica dioica* L. plants which is economicaly and medicinal important that is being growth under *in vivo* and *in vitro* conditions. Some of the plant samples were collected from their natural habitat. Then comparative analysis of total protein, peroxidase, carotenoids were analysed in fresh leaf extracts.

As a result of spectrophotometric measurements, plant extracts which obtained from natural environment, the highest amount of protein and carotenoids 0.384±0.006 mg/ mL and 0.0004 ± 0.0001 mg/g wet weight respectively. At the end of analyses amount of total protein which plants collected from nature was higher than in vivo growth plants as 19.5% and higher than 9.2% for *in vitro* plants. Seedlings that being grown *in vivo* and *in vitro* condition compare to each other according to protein and carotenoid amounts, in vitro growth seedlings were found higher results. Peroxidase activity *in vivo*, *in vitro* grown plant samples and natural plants were measured as 57.32±4.81, 43.39±2.27 and 25.69±1.67 µmol/mgprot/min respectively.

The reason for this difference among *in vivo*, *in vitro* grown and natural seedlings can be depend on limiting factors in culture conditions which is showing itself as a stress in plant physiology.

Key words: *Urtica dioica* L., chlorophyll, carotenoid, protein, peroxidase.

Poster Presentation 23

Heavy Metal Content of Plant Species along the Sitnica River

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The definition of heavy metal concentration on the plants content is of huge interest, due to its essential and toxic nature. The goal of the study was the analysis of heavy metal content (Cd, Cr, Pb, Cu, Zn, Mn and Fe) in the samples of soil and on the content of four herbaceous plant types (*Typha angustifolia*L, *Urtica dioica*L, *Ranunculus sardous* Crantz and *Rumex Crispus*L.) widely spread along all the river Sitnica, Kosovo, flow.

The values of the heavy metal content on the soil and plant samples have suggested distinction from station to station, where the lowest values for the majority of elements analyzed have been registered in Devetak (station near river flow and with no anthropogenic impacts) on the other hand, the highest values have been registered at the station of Kuzmin, a locality which is along the middle river Sitnica flow, polluted by black water discharges.

The content of heavy metal on the analyzed plants and the model of their accumulation on the soil samples belong to this order: Fe>Mn>Zn>Pb>Cr>Cu>Cd.

Key words: heavy metal, earth, content, plants, river Sitnica.

Poster Presentation 24

Determination of Heavy Metal Mobility in the Soils of Apple Gardens in Umurbey Plain (Canakkale)

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Heavy metals can be found in different concentrations and different geochemical bindings depending on the parent material of the soil and environmental factors. Environmental effects of heavy metals, whose geochemical fractions are known, can be determined by analyzing their potential source and mobility. Having a great agricultural potential, Umurbey Plain was chosen as the examination area. In the examination area, soil samples were taken from 0-20 cm of depth in 3 apple gardens which formed on the same physiographical unit. To determine the geochemical fractions of cadmium (Cd), copper (Cu), nickel (Ni), lead (Pb) and zinc (Zn) ions of the samples, a sequential extraction was utilized and the concentration of the ion was found out with the flame atomic absorption spectrometric method. After evaluating all the results, it was found out that heavy metals are sequenced as follows when their mobility, which is the total of the first three fractions (acid soluble + reducible + oxidizable), is taken into consideration; Cd (62%) > Pb = Cu (47%) > Zn (40%) > Ni (31%). Therefore, it was concluded that anthropogenic effects (in particular, agricultural activities such as applying pesticides and fertilizing) played an important role in the quantity of Pb, Cu and especially Cd. On the other hand, the fact that Ni mobility was low indicated that Ni was caused by the parent material in the acquired soil samples. Furthermore, although the mobility of Zn was under 50%, Zn (40%) was found to be caused by both anthropogenic effects and the parent material.

Key words: Umurbey Plain, Soil, Heavy metals, Sequential extraction, Mobility

Poster Presentation 25

Heavy Metals in the Soil Formed on the Altered Volcanic Rock

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The soil can be defined as a dynamic system that continuously changes along with the alterations occurring within environmental factors. Soil forms on weathered rock material as a thin layer. Weathering is a chemical process which involves dissolution, hydration, oxidation, reduction, and carbonation. As a result of chemical weathering, parent materials are decomposed and elements transfer from minerals into solutions. The study aims at determining Cd, Co, Cr, Cu, Ni, Pb and Zn content in samples taken from the soil under the olive plantations in Ezine-Gulpinar (Canakkale) region. The soil was formed on parent material rich in the malachite mineral that went under andesite-based hydrothermal alteration. As part of the study, soil samples were extracted from a depth ranging from 0-20 cm depending on how deep the area is. Soil samples were prepared for the analysis by using the method of wet digestion with *aqua regia*, after which their metal concentrations were determined with flame atomic absorption spectrometer. The acquired results were found to be as follows for the average values: Cd; 0.77±0.07 µg/g, Co; 18.83±1.06 µg/g, Cr; 78.22±11.30 µg/g, Cu; 170.85±1.75 µg/g, Ni; 30.32±2.99 µg/g, Pb; 153.61±24.74 µg/g and Zn; 124.25±3.34 µg/g. In particular, Cu, Pb, and Zn values were found to be high. The reason why these elements were found together and were in high concentration was explained by the fact that these elements showed an affinity to sulfur in the examined alteration, which makes them chalcophile elements.

Key words: Soil, Parent material, Malachite, Heavy metals, Çanakkale

Poster Presentation 26

Barium in Peach Gardens from Çanakkale, Turkey

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Soils, which are contaminated with potentially toxic elements, are gradually expanding especially in developing countries. Therefore, studies conducted on the transition of metals into the soil and plants not only provide useful information on the metal accumulation in plants but also help determine the critical metal values in the soil. It is known that the overaccumulation of barium in plants causes toxicity although its impacts on soil and plants has been rarely studied. For that reason, studying the impacts of this metal on soil and plants, and thoroughly understanding the details are thought to yield many benefits. In this study, 10 peach gardens in the Lapseki province of Çanakkale were chosen as the examination area. Surface soil and peach leaf samples were taken from the chosen gardens. A hot plate digestion technique was used with *aqua regia* in order to find out the Ba content of the soil samples. 6 mL of HNO_3 and 3 mL of H_2O_2 were mixed and used to digest the leaf samples. Barium concentrations of the samples were found out with ICP-OES. According to the results, Ba was found to be between the range of 107.70-798.88 µg/g and on an average of 315.95±276.73 µg/g in the soil. Barium concentration was found to be between the range of 13.99-31.16 µg/g and on an average of 21.52±6.55 µg/g peach leaves. Being in different ranges in the soil and leaf samples, barium quantity was considered to depend on the different parent material and human activities (especially agricultural activities and traffic).

Key words: Barium, Soils, Peach gardens, Çanakkale, ICP-OES

Poster Presentation 27

Effect of Agricultural Inputs on Copper Concentration in Cherry Gardens, Çanakkale, Turkey

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Agrochemicals are highly used in agricultural production, especially in horticulture. Agrochemicals such as pesticides or fertilizers are used in cherry production, as well. As part of this study, soil and cherry leaf samples were taken from two gardens, one of which had average agricultural input while the other had higher inputs. The leaf samples were digested with a mixture of HNO_3 and H_2O_2. To find out the geochemical fractions of copper (Cu) in soil samples, a sequential extraction method was utilized. All Cu concentrations were determined with ICP-OES. After the evaluation of the results, copper fractions of soil samples from both gardens were found in this order; residual>oxidizable> reducible>acid soluble. Cu mobility, which is estimated as the total of the first three fractions (acid soluble + reducible+ oxidizable), was 53.4% in the area with higher agricultural input while the garden with average input had 49.2% Cu mobility. Furthermore, Cu concentration values of the samples from the garden with higher input were 80.16±6.55 µg/g on average while the samples from the garden with normal input had an average of 58.58±5.34 µg/g Cu concentration. On the other hand, Cu concentration of the leaf samples taken from the garden with higher agricultural input was 14.00±3.98 µg/g while the Cu concentration of the leaf samples taken from the garden with average agricultural input was determined as 9.02±1.59 µg/g. Therefore, Cu became more mobile in the soil matrix and accumulated in the area with higher agricultural input, as a result of which it was accumulated more by the plants as well.

Key words: Cherry garden, Soil, Copper, Sequential extraction, Agricultural input

Poster Presentation 28

Monitoring and Evaluation of Nitrate Pollution in Some Surface and Groundwater of Çanakkale, Turkey

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Rapid population growth, industrial developments, and agricultural demands pose important problems for water consumption and share of water. Urban, industry, and agriculture based pollutants' pollutant effect on water sources differ greatly depending on the place and time. Eliminating the quality decrease that occurs due to the variety and concentration of the pollutants constitute vital problems in terms of time and expenses. Having been at the top of the agenda in recent years, the notion of environmental pollution has revealed that when considering the use of water sources, not only the quantity but also the quality should be taken into consideration. Being aware of the water quality besides the water quantity makes the regular water inspections necessary. In particular, nitrate (NO_3) found in water is an important parameter to monitor as it poses a serious danger to public health. Throughout this study, NO_3 pollution has been examined with the water samples taken from the surface in 20 places and from the groundwater sources in 14 places in Çanakkale. Sampling was carried out monthly for surface waters and quarterly for groundwater sources. Nitrate analysis of the water samples was carried out spectrophotometrically with kits. When the analysis results since January-2016 were examined, it was discovered that NO_3 levels vary seasonally, but the levels did not exceed domestic and international limits. It was found that NO_3 concentrations in certain groundwater sources exceeded the limit value set by the European Union (50mg/l) in settlements where there was fertilizer overuse, overwatering and no livestock fertilizer management.

Key words: Çanakkale, groundwaters, surface waters, nitrate, pollution

Poster Presentation 29

Phosphate in the waters: A case study in Çanakkale, Turkey

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Water use has become limited due to the pollutant sources' negative effect on waters. Identification of phosphate varieties, which are regarded as eutrophication parameters within the scope of water quality standards, detection of pollutant sources and enforcement of remedial measures are the most vital protective measures to implement especially in wetlands. Therefore, in this study, phosphate changes in waters of Çanakkale were monitored by conducting orthophosphate and total phosphate analysis in surface waters with a certain volume. As part of this monitoring and evaluation study, water sampling has been conducted monthly since January 2016 in 20 spots of the city including rivers, lakes, and dams. Orthophosphate and total phosphate analysis of water samples were spectrophotometrically conducted with kits. Considering the 18 months of analysis results, it was found out that phosphate levels constantly varied, however, they did not exceed the international limit values (European Union's limit value for drinking water (0.4-5 mg/l). As a result of 3 different monitoring studies conducted in different water sources, it was understood that the change intervals are seasonal in the rivers while the changes in lakes and dams, in other words, the water storage areas, are parallel to the changes in the rivers. After individually examining the 20 spots, phosphate levels in drainage and catchment areas in rural areas with insufficient infrastructure were found to be higher than the other catchment areas due to the negative impact of domestic wastes and agricultural fertilizers. In settlements with insufficient infrastructure, agricultural activity and domestic waste-based phosphate pollution were observed.

Key words: Çanakkale, surface waters, phosphate, pollution, eutrophication.

Poster Presentation 30

Determination of Some Heavy Metal Concentrations in Lime with FAAS

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Plants can contain heavy metals from their presence in the soil (including contamination of the plant material with soil), water or air and they may be easily contaminated during growing and processing. In this study, adequate quantities of lime (tilia cordata) plants offered for sale in markets, and herbalist in Karaman were taken in sufficient quantities and analyzed by appropriate drying, milling and dissolution processes. The samples were prepared to be 2 parallel for each sample and were solutioned by wet burning method. For this purpose, one gram of the powdered sample washed and dried in a suitable manner is precisely weighed 16 ml HNO_3 (65%, w/w) and 4 ml $HClO_4$ (70-72%, w/w) are added to it and the solution is slowly heated in the drawer for about 5-6 hours. The heating process close to the end of the acids is cut off and the solutions are cooled. Then 5 ml H_2O_2 (30%, w/w) was added and heating was continued until clear liquid was obtained. Heating was stopped when clear liquid was formed, and the solutions were allowed to cool. Cooling solutions were filtered through blue band filter paper and 15 ml of the obtained solutions were mixed with distilled water to prepare the analyzed. The concentrations of the determined elements were determined by FAAS. The amounts of Co, Ni, Cu, Zn, Cd, Mn, Mg, Fe and Ca were determined in all of the foods determined according to the results. Only 1 sample contained Cr element. Cr, Co and Cd exceeded the limits allowed in Europe and in Turkey. As a result, conscious consumption of these frequently consumed plants, analysis and use of certain plant species will prevent dangerous consequences.

Key words: Lime, Heavy metal, FAAS, Karaman, Turkey.

Poster Presentation 31

Investigation of the Heavy Metal Content of Soil Taken from Field Corn Silage

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Industrial activities often release heavy metals into the environment which in most cases are potentially detrimental to ecosystem and human health. Natural processes (e.g. precipitation, surface runoff) and anthropogenic processes (e.g. waste water irrigation) render soils an important reservoir for released heavy metals. Unlike organic contaminants, heavy metals are not degradable and usually can eliminated through natural attenuation, but only can be relocated from one place to another. In this study, the concentrations of heavy metals in silage corn fields produced in Karaman were determined and soil samples from 8 different cultivars were taken. The samples were prepared to be 2 parallel for each sample. Soil samples were ground and dried under suitable conditions. They have been numbered as being put into transparent bags and they have been done ready to weigh. 1 g of soil sample has been weighed and then put into beaker of 50 mL. 15 mL aqua regia has been added on it. It has been waited for 5-hours. After to weigh capacity is heated to dryness on oven, 10 mL 2 M HNO_3 has been added and after it has been waited for 2 hours, it has been filtered from blue-band filter paper and it has been done ready to be analyzed as it has been completed to 25 mL. Concentrations of Fe, Cd, Mn, Mg and Ca were determined by FAAS instrument. According to the results, Mn and Cd were found at low levels. Other elements were observed among the limit values.

Key words: Soil pollution, Heavy metals, FAAS, Karaman, Turkey.

Poster Presentation 32

Metal Levels in Large Sea Trout from Sinop Fish Market

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This study was performed for assessment of seven metals (Hg, Cd, Pb, As, Cu, Zn and Fe) in sea trout farmed from Yakakent coast of the Black Sea sold in Sinop market. Sea trout is a widespread farmed species in the rich water courses in Turkey. When the fishing season is closed sea trout is one of the most consumed fish in Sinop. A total of 5 random large trout individuals were collected monthly between January and June in 2015 from the fish market in Sinop city. Mostly Hg, Cd and As were below the detection limits except some individuals in May and June. The results of statistical analysis showed significant differences among sampling months. This variation is significantly different for the metals ($P<0.05$). Means of these metals in edible muscles of large sea trout are lower than the maximum permissible limit set by the Turkish Food Codex and EU Regulation limits for fish. The results obtained in this study show that the heavy metal levels in the edible tissues of sea trout were lower than the recommended standards. In conclusion consumption of sea trout from the Sinop markets as food may not possible health risk to people at the time of the study.

Key words: Large sea trout, metal levels, public health

Poster Presentation 33

Heavy Metal Profiles and Proximate Composition in *Pecten jacobaeus* (Linnaeus, 1758), Marmara Sea, Turkey

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Present study was carried out at Bandırma, Marmara Sea coasts during March 2011 to February 2012. *Pecten jacobaeus* collected seasonally along with temperature and salinity. Proximate composition (protein, lipid, carbohydrate and ash) and heavy metal concentration of *P. jacobaeus* were determined from the samples. Provisional tolerable daily and weekly intake metal levels, target hazard quotient (THQ) and Hazard index (HI) were also calculated in the species. The calculation results were compared with Food and Agriculture Organization (FAO), World Health Organization (WHO) and Environmental Protection Agency (EPA). Seasonal values of protein, lipid, carbohydrate and ash were mean 65.30±2.76%, 7.09±1.13%, 14.89±2.29% and 12.71±1.00% in dry weight, respectively. The mean concentrations of Cd, Cu, Pb, Co, Ni, Cr, Ba, B, Mn, Al, Zn, Fe, K, Ca and Mg in the soft tissues were 6.80±0.40, 19.20±2.78, 2.60±0.26, 1.20±0.13, 2.70±0.44, 1.90±0.30, 3.80±1.17, 20.7±1.54, 142.3±26.19, 214.20±55.85, 255.40±19.79, 528.3±72.91, 2508.00±36.40, 2654.50±388.76 and 3426.50±191.50 mg.kg-1 dry weights, respectively. The mean element levels in the mollusc muscles were clearly below the maximum allowable concentrations established by International food safety regulations. The results showed that the metal concentration in *P. jacobaeus* is not harmful for human consumption.

Key words: *Pecten jacobaeus*, Proximate Composition, Heavy metal, Health risk assessment, THQ, PTWI.

Poster Presentation 34

Bioaccumulation of Heavy Metals and Effect on Chromosomal Fractures in Subterranean Mammals (Rodentia: Spalacidae)

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The subterranean mammals (*Nannospalax xanthodon*) that spend their lives under the ground and feed on the underground parts of plants are likely to encounter heavy metals found in the soil and plant roots. Heavy metals, leads to numerical and structural differences in bone marrow chromosomes of animals. In this study, some heavy metals (Cr, Cd, Cu and Pb) were analyzed by atomic absorption spectroscopy (AAS) from four different local soil samples near the tire recycling plant located in district of Bilecik province and results were reported. The results were effective in removing the facility from the district. Considering the criteria for the Regulation on the Control of Soil Pollution (2005), the upper limit of the Cd value is 3 ppm and this value was exceeded at all locations; and the upper limit of the Cr value is 100 ppm and this value was exceeded at only one location according to the analysis results. Considering the criteria for the Regulation on the Utilization of Domestic and Urban Treatment Muds in the Soil (2010), the upper limit of the Cd value is 1,5 ppm and this value was exceeded at all locations; and the upper limit of the Pb value is 100 ppm and this value was exceeded at three locations, the upper limit of the Cr value is 100 ppm and this value was exceeded at only one location. The heavy metal analysis including in the liver tissues of *N. xanthodon* samples taken from these areas recorded as contamined zones. It was determined that the obtained values were higher than the samples taken from uncontaminated areas. When chromosomal plaques obtained from animal bone marrow were examined, it was noted that chromosomal fractures were more numerous in living animals in contaminated areas.

Key words: Heavy Metal, Soil Pollution, Chromosomal Fractures, *N. xanthodon*, Turkey

Poster Presentation 35

Industrial Symbiosis: A Long-Term Solution to Environmental Problems

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Turkey with almost 80 million inhabitants is a country of biological richness. Unfortunately, in addition to global environmental problems, in Turkey like all developing countries, industrial pollution is increasing considerably. This situation causes ecological risk especially, for aquatic environment, terrestrial areas, and all living things, including human being. It is known that, in people living in industrial areas, health problems are increasing. Industrial pollution also negatively affects both terrestrial and aquatic natural ecosystems and biological diversity is also decreasing in Turkey. Undoubtedly many solutions are proposed and applications are being tested to reduce this ecological pollution caused by the industry. For these reasons, ecological approaches have been tried in industrial enterprises in recent years

Dissemination of industrial symbiotic applications in industry can be an economical and also ecological solution in reducing environmental problems. In this system, the use of waste by another unit as input is the ecological basis of the cleaner environment. Industrial symbiosis offers adaptive industrial complexes in which materials, by-products, heat, water, etc. are shared with each other.

The industrial symbiosis is based on the use of synergistic possibilities of collaboration and geographical proximity. In addition to positive contribution to economy, the introduction of incentives for the dissemination of industrial symbiotic system throughout Turkey can reduce ecological pollution from industrial wastes. The aim of this study is to draw attention to the ecological importance of industrial symbiotic applications with some successful projects.

Key words: Industrial Symbiosis, Environmental Problems, Aquatic Environment, Industrial Pollution

Poster Presentation 37

First Population Identification of Common Cuttlefish (*Sepia officinalis*, L.1758) by Body Morphometry and Cuttlebone Chemistry along the Algerian Coast (South-Western Mediterranean Sea)

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In order to distinguish a possible population discriminations of cuttlefish along the Algerian coast, samples (72 individuals, without distinction of sex), are taken from the fishing port of Oran, Algiers and Annaba during the Spring (May) 2012. These samples were used, in the first hand, to establish biometric ratios of the cuttlefish (body and cuttlebone weight, dorsal mantle length, total length and mantle width). On the other hand, to determine concentrations of two elements: Cu and Zn by a chemical dosage from the cuttlebone. Those data are processed by the MatLab 2010 software. The results show a highly significant difference between the tree regions. The strongest parameters which show discrimination along the Algerian coast according to the Mann-Whitney test and Welch test are the morphometric ratio of the dorsal length of the mantle by the total length of the individual (LDM / LT) and the Cu concentration (at 99.9 % of trust level). This study showed that there are three discrete populations of *S. officinalis* in Algerian coastal waters which must be confirmed by genetic study.

Key words: *Sepia officinalis*, Population discrimination, Body morphometry, Cuttlebone chemistry, Algeria, discrimination

Poster Presentation 38

Some Biological Characteristics and Length-Weight Relationship of Dangerous Venomous Fishes from Black Sea Coasts

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The present study were determined some biological characteristics and length-weight relationship (LWR) of some venomous fishes from Black Sea coasts. Venomous fish generate a potent toxin detrimental to people which they transfer by prick, sting or stab. Venomous fish are found in almost all aquatic ecosystems, but usually in tropical waters around the world. The most important venomous fish in the Black Sea coats are greater weever (*Trachinus draco*), scorpion fish (*Scorpaena porcus*), stargazer (*Uranoscopus scaber*) and common stingray (*Dasyatis pastinaca). The study were carried out between 01 January 2015 and 30 September 2016 in Sinop coasts of the Black Sea. The samples were caught trammel nets (32 mm, 36 mm and 40 mm mesh size)* in 15-45 meters depth ranges. *A total 73 600 kg venomous fish were captured in the experiments.* The length-weight relationship of venomous fish was determined using the equation W = a Lb. *Mean length of* greater weever, scorpion fish, stargazer and common stingray were determined 17.46±0.27 cm, 11.49±0.07 cm, 13.25±0.47 cm and 48.8±5.04 cm respectively. LWR of the venomous fishes were calculated W=0.0287L2.5776 (n= 131, R2=0.93), W=0.0245L2.9050 (n=808, R2=0.98), W=0.0181L2.9398 (n=779, R2=0.98) and W=0.0028L3.2187 (n=10, R=0.97) respectively. Positive allometric growth for common stingray and negative allometric growth for other species were obtained (t-test, $p < 0.05$).

Key words: Venomous fish, Length-weight relationship, Biological characteristics, Fisheries, Black Sea

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Poster Presentation 39

Incidental Catch Problem of Common Porpoise (*Phocenaphocena*) in the Black Sea Coastal Fisheries

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Direct interactions between fishing gear and marine mammals occur in many fisheries activity in the Black sea and may result in incidental capture and mortality of some individuals. Fishing of the dolphins are prohibited in Turkey, but dolphins can be incidentally caught by trawls, purse seine and turbot gillnets in the Black Sea coasts. The aim of the study is determination of incidental catch of common porpoise (*Phocenaphocena*) captured by the turbot gillnets in Black Sea coasts. Sea experiments were carried out seasonally between January 2014 and August 2016 in Sinop coasts of Black Sea. A total of 30 turbot gillnets (320 mm mesh size) were used in the 16 experiments. Gillnets were set at 45-60 m depth and left in the sea during 15 days. A total of 106.557 kg turbot (*Scophthalmus maximus*),807.459 kg thornback ray (*Raja clavata*) and 12 common porpoise specimens were caught by the turbot gillnets in the study. The mean length of turbot, thornback rayand common porpoise were calculated 50.5 ±1.38 cm and79.5±0.02cmand162.5±3.00 cm respectively.All species are mostly catch in spring and summer. The lowest catch for this species occurred during the winter. There has been a conflict between the fishermen and dolphins due to the damages that the dolphins have inflicted on the fishing nets in the Black sea in recent years. With the use of the pingers (deterrent), dolphins can be temporarily removed from the fishing gears. This application, it is possible to prevent the incidental catch of the dolphins.

Key words: Incidental catch, Common porpoise *Phocenaphocena*, Turbot gillnet, Fisheries, Black Sea

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Poster Presentation 41

Use of Mollusc Species as Bioindicators in Water Pollution

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Extending water pollution affects aquatic ecosystems, wildlife health, and human health. Although they are widely used to determine the effects of pollutants on water quality, physicochemical parameters are really inadequate to give a comprehensive understanding to the effects of pollutant on living organisms. Therefore, bioindicator and biomonitor organisms can also be used to reveal the effects of environmental chemicals.

A bioindicator is an organism that reveals the presence of the pollutants by typical histophysiological and behavioral changes or measurable responses, while a biomonitor provides quantitative information such as bioaccumulated amounts of chemicals. Studies with bioindicator and biomonitor organisms can make it possible to observe the effects of pollutants by a wide screening. Aquatic (and surely, terrestrial) forms of molluscs exhibit some great advantages in these kinds of surveys. Gastropods that involve a large number of species were considered with their unique and slow moving; while bivalves are attractive organisms in this manner, due to their sensitiveness to radioactivity as well as chemical pollution; and cephalopods are also important especially due to their economic values.

In the light of previous reports, the using of different species of Mollusca as bioindicator to determine chemical pollution in water sources, was evaluated and discussed.

Key words: Water Pollution, Mollusca, Bioindicators, Biomonitors, Chemical Pollutants

Poster Presentation 42

Studies of Some Physicochemical Parameters of Water of the High Tafna (ALGERIA)

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Five physico-chemical parameters were measured in situ on a section of a watercourse in the Tafna watershed during the two sampling campaigns: water temperature, dissolved oxygen, conductivity, and the pH. These were measured using a multi parameter 340i SET instrument. The hydraulic gradient (VHG), on the other hand, is measured using a differential pressure gauge.

The values of physico-chemical analyzes of water are recorded during two hydrological periods (high water-low) at the two sites A (Seuil) and B (Mouille) and for both media, superficial and hyporheic (70-90 cm).

Average temperatures vary very little with depths. They recorded 17.85 °C on the surface, 18.4 °C at 70 cm depth and 17.92 °C at 90 cm. This reflects an exchange of water between the two media. Average recorded oxygen concentrations vary with depth. This is related to the presence of algae and bacterial activity. The highest pH values are recorded in the superficial environment; this being mainly related to the limestone nature of the lands crossed by the Wadi Tafna. Conductivity values are slightly higher in hyporheic media, reflecting a large share of surface water. The VHG analysis shows positive values explaining a feeding of the watercourse by the aquifer.

Key words: Water, Parameters, Physicochimical, Tafna, Analysis

Acknowledgements: This research was financially supported by the University of Science, Nature and Life, Earth Science and the Universe, Tlemcen, Algeria.

Poster Presentation 43

Abundance and Composition of Anthropogenic Solid Waste Materials in Some Stream of the Antalya

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There are many streams in the city center of Antalya. These carry to the sea various solid waste materials which are mostly of anthropogenic. Wastes cause pollution not only stream but seas. In this study, the variety, density and composition of the wastes were determined. The study was conducted in some water resources between September in 2016 and February in 2017 around 31 km2 in the area in Antalya. For this purpose, solid waste materials were counted in the study area and it was determined what quantity and materials were made from. In observation of study, 641 pieces of waste material were counted. The most densely observed 532 pieces were wastes made from plastic materials. Then, 38 pieces of glass, 21 pieces of metal, 15 pieces of paper, 4 pieces of styrofoam and 2 pieces of styrofoam material were determined, respectively. These values indicate that anthropogenic wastes were transported intensively to rivers and seas. Building of systems to prevent transported of waste to the sea will be effective in preventing pollution of the seas.

Key words: Solid Waste, Stream, Pollution, Antalya

Poster Presentation 45

Acute Toxicity of Chromium (VI) (hexavalent chromium) to Mosquito Fish (*Gambusia affinis* (Baird & Girard, 1853)

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Chromium (VI) (hexavalent chromium) is widely used as a pesticide, especially to protect wood. In this study, chromium(VI) was measured in LC50 values for 96 hours of acute static test system values. The results achieved a 95% success rate when performing the probit analysis. In LC50 experiments, some of physicochemical parameters (pH, water hardness and temperature) were measured. During the experiments, the water temperature was measured as 18 ± 1°, the average pH value was 8.2 (6-8.8) and the average water hardness was 846.125 µS- (617-913).The experiment used 10 fish in each aquarium in two-stage experiments. *Gambusia affinis* mortality rates exposed to different of Chromium (VI) (hexavalent chromium) concentrations (0, 10, 25,50, 100 ppm) were recorded for 24, 48, 72 and 96 hours. The LC50 value was determined as 29.932 ppm (lowest limit: 19,676 to the highest limit 45,534 ppm) after 96 hours of trial.

Key words: Chromium (VI), *Gambusia affinis*, lethal concentration LC50,Mosquito Fish

Poster Presentation 47

Monitoring of Algal Growth by Using Determination of the Chlorophyll-*a* Content in Different Media

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In order to investigate isolation and production under laboratory conditions of the *Scenedesmus* spp., the water samples were collected from freshwater of Sinop and they purified micropipette isolation method by using BG-11 medium after enrichment and cultures were obtained. The growth of isolated *Scenedesmus* spp. were followed by using BG-11 (Blue-Green Media), Bristol-Proteose medium (B-P), MWC (Modified Woods Hole Medium) and Scenedesmus medium with urea (U-S) in laboratory conditions. Cultures were incubated at 24 ± 2 °C, 65% moisture, 1800 lumen light intensity, 16 h light/8 h dark cycling illumination. Biomass was monitored by measuring chlorophyll-*a* content and it was compared four different algal media. Accordingly, Bristol-Proteose medium was the best growth medium, then the urea Scenedesmus medium. In the future studies on *Scenedesmus* spp., using of Bristol-Proteose medium that obtained maximum biomass in high cell density, best growth and high yields per unit of time is important especially for relevant other studies. In addition, Scenedesmus medium with urea could provide maximum biomass by less cost and obtain targeted products in shorter time.

Key words: Microalgae, Culture, Growth, Chlorophyll-a

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Poster Presentation 48

Temporal and Spatial Variation of Chlorophyll-*a* Content of Arılı Stream

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Turkey, which has rich resources in terms of inland waters, has 26 river basins because in this topography there are different precipitation regimes in each of these basins; so, flow capacities are different from each other. The total water potential in the river basin is 186.05 billion m3 in Turkey. Chlorophyll is the green molecule in plant cells that carries out the bulk of energy fixation in the process of photosynthesis and therefore its concentration is reported during chlorophyll analysis. The temporal and spatial variation of chlorophyll-*a* content in Arılı Stream (Rize, Turkey) was investigated between October 2013 and September 2014. Five stations were selected to investigate chlorophyll-*a* content in the stream. Chlorophyll-*a* was extracted by using acetone method. In this study, the highest chlorophyll-*a* value was found as 1.3289 mg/m3 at station 4 and then 1.180 mg/m3 at station 3 in June. The lowest chlorophyll-*a* value was found as 0.0344 mg/m3 at station 2 in August. Additionally, the average chlorophyll-*a* value was determined as 0.52453 mg/m3. According to the OECD values, the maximum and average chlorophyll-a values, the stream water had oligotrophic character.

Key words: Chlorophyll-*a*, Arılı Stream, Rize

Acknowledgements: Thank to Ethem ERTAŞ for sampling studies.

Poster Presentation 49

The Development of a Statistically Valid Fish Based Index for the Assessment of Ecological Quality in Freshwaters

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Demolishment and degradation of aquatic habitats, water pollution, and alteration of natural hydrological regime in aquatic ecosystems lead to drastic changes in the freshwater ecosystems. Therefore, the European Commission enforced the Water Framework Directive (WFD) to establish a framework for the protection, recovery and rehabilitation of water bodies. Fish has been used as a biological quality element for the evaluation of ecological quality by several researchers. Fish is considered as a good biological indicator of the environmental quality in aquatic habitats on a large spatial and long time scale, because of their longevity, high mobility and having representatives in a broad range of trophic levels. Since, fish-based indices include a combination of information concerning abiotic variables and fish species composition, biomass, number of individuals, length classes etc. they are accepted as reliable and powerful tools for evaluation of the ecological quality in water bodies. In this study, approaches for metric selection, redundancy analyses, linear mixed models, and metric scoring to develop a statistically valid fish based for the assessment of ecological quality in freshwaters was discussed.

Key words: River health, IBI, ecological quality, fish-based index, metric.

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Poster Presentation 50

Rainwater Harvest Potential in the Main Campus of Canakkale Onsekiz Mart University

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Rain water harvesting has become one of the widely chosen alternative ways of overcoming seasonal water shortage problem in many areas of the world. Collection of water in rainy seasons provides an alternative source for dry seasons. The main aim of the study is to investigate the rooftop rainwater harvesting potential of Canakkale Onsekiz Mart University Terzioglu Campus buildings. Long term meteorological data (1960-2014) in terms of average, maximum and minimum annual rainfall amount were used to determine the lowest, the highest and the mediate rainwater harvesting potential of the campus. Long term average annual rainfall is seemed to be 726 mm while minimum and maximum annual rainfall are 461 mm and 1048 mm which were occurred in 1973 and 2012, respectively. Results showed that, mediate rainwater harvesting potential according to long term average annual rainfall was found to be 39385 m^3 depending on the rooftop areas of the whole campus buildings. On the other hand, harvesting potentials of minimum and maximum rainfall situations were found as 25000 and 56845 m^3, respectively. Moreover, it has been shown that the maximum potential of rainwater harvesting can be obtained from Hospital building of Medical School while Youth Centre building has the lowest potential. It can be concluded that water collection units can be designed and placed to appropriate locations to use the harvested rain water for green area irrigation after further analysis of irrigation water requirements, water quality, and hydrologic assessments.

Key words: Annual rainfall, Campus rooftops, Canakkale Onsekiz Mart University, Rainwater harvesting potential, Terzioglu Campus.

Poster Presentation 51

Evaluation of Water Quality of River Nerodime Based On Physicochemical and Biological Parameters

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River Nerodime is the biggest tributary of the river Lepenci basin. The discharge of untreated municipal wastewaters from the city of Ferizaj in its middle and down flow makes this river one of the most polluted in Kosovo. In this paper are presented the results of a study of physicochemical and biological parameters, macro-invertebrates, in three localities along the river, that include upper, middle and down flow. The values of physicochemical parameters as well as the macro-invertebrate composition indicate that the water quality in the upper flow, where no anthropogenic pressure is registered, is very good, whereas in middle and down flow, due to the discharge of municipal wastewaters and agricultural runoff the water quality significantly decreases and is of a bad quality.

Key words: Nerodime, pollution, discharges, macro-invertebrates, water quality

Poster Presentation 52

Morphological, Anatomical and Ecological Properties of Plant Taxa *Tulipa sylvestris* L., *Scilla bifolia* L. and *Gagea bohemica* (Zauschn.) Schult. & Schult.f. Growing in Pseudo-Alpinic Area of Mount Ida

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In this study, morphological, anatomical and ecological properties of plant taxa *Tulipa sylvestris* L., *Scilla bifolia* L. and *Gagea bohemica* (Zauschn.) Schult. & Schult.f. distributed in pseudo-alpine area of Mount Ida were carried out. Biometric measurements are taken from fruit, flower, leaf, scapose, bulb and root of plants and then again this is for investigation of the anatomic features of plant organs are evaluated at sections by microtome. While characteristic features of *T. sylvestris* and *S. bifolia* were found out that a single layer of sclerenchyma cells exists under the epidermal cells in bulb anatomy and a parenchymatic structure including starch exist under this layer, characteristic features of *G. bohemica* a parenchymatic structure including plentiful starch exists under epidermis and the sclerenchymatic structure is located on the outer layer of plants. Ecological survey of plant was conducted determining the characteristics of soils with physical and chemical characteristics of the habitat of plant.

Key words: *Tulipa*, *Scilla*, *Gagea*, Turkey, Kazdağı

Acknowledgements: This research was financially supported by the Canakkale Onsekiz Mart University Scientific Research Projects Coordination Unit, Turkey (BAP/2004-23).

Poster Presentation 53

Researches on Honey Bee-Pollen Diversity in Turkey

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Honey bee-pollen is one of the vital nutrient resources for bees and humans. Bee-pollen is the name given to pollen pellets collected by bees from plants which are made up of nectar and oral secretion and occured of numerous pollen grains of the same species. Bee pollens are extremely important for the development of young bees in hives. Limited number of researches on the diversity of bee-pollens has been carried out in Turkey. This review has been derived from publications between the period 1998 and 2015 which are electronically accessible. The reviewed research studies have been conducted in Bursa, Antalya, Ordu and Ardahan provinces. According to these researches Fabaceae, Cistaceae, Brassicaceae, Asteraceae, Rosaceae, Lamiaceae, Liliaceae, Papaveraceae, Boraginaceae, Dipsacaceae, Poaceae, Euphorbiaceae, Plantaginaceae, Convolvulaceae, Campanulaceae and Scrophulariaceae are the most preferred families by the honey bees as pollen resources in Turkey (≥50%). The genera *Trifolium, Cistus, Papaver*, Raphanus, *Echium*, *Helianthus*, *Taraxacum*, *Salix*, Paliurus, *Plantago*, *Scabiosa*, *Xanthium*, *Quercus*, *Centaurea* and *Carduus* are described to be the most preferred. The taxa belonging to Actinidiaceae, Cornaceae, Corylaceae, Lauraceae, Thymelaeaceae, Verbenaceae, Iridaceae, Myrtaceae, Urticaceae, Rubiaceae, Cupressaceae and Araliacee are the least encountered ones scanned in these articles.

The increase in the number of research studies on this subject to determine the taxa preferred by honey bees as a pollen source in areas where beekeeping activities are intensively conducted is expected to make substantial contributions to the apiculture sector and economy of Turkey which has a very rich flora.

Key words: Bee-pollen, diversity, dominant family, palynology, Turkey

Poster Presentation 54

Investigation of Morphology, Anatomy and Medical Uses of Some *Ranunculus* Taxa Distributed in Çanakkale Province and its Environs

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There are about 20 taxons belonging to *Ranunculus* genus in Çanakkale province and its environs. 7 of these *Ranunculus* genus taxa have been reached. Firstly, comparative morphology, anatomy and ecological characteristics of common medical value *R. ficaria* subsp. *ficariiformis* and endemic *R. pedatus* subsp. *trojanus* taxa were discussed. For this purpose, biometric measurements were made for the morphological characters and the obtained data was evaluated as a statistic. For the first time anatomically we have taken sections of the microtome by paraffin method of vegetative organs such as root, stem, and leaf and have been compared for the first time. The root anatomy has an epidermis consisting of single row cells and an exodermis underneath. Endodermis and pericycle are distinguished. The cortex is composed of irregular parenchymatic cells and covers a large area. Vascular cylinder, tetrarch shows a structure. In the stem, there is an epidermis consisting of round and rectangular cells covered with fine cuticle. The cortex below the epidermis is parenchymatic structure. There are round or oval shaped epidermis cells with a fine cuticle on the leaf. At the upper there are 2-3 rows of palisade parenchyma cells and at the lower there is a spongy parenchyma composed of frequent and sparsely arranged cells. Stomata are mesophytic type. Ecological habitats of plants can be seen in both humid and arid places, with humid grasses, empty fields and mountain slopes at 0-800 m.

Key words: *Ranunculus*, Çanakkale, Anatomy, Morphology

Poster Presentation 56

Comparative Effects of Gold (Au) and Carbon (C70) Nanomaterials Translocation on Chick Pea (*Cicer arietinum* L.) Plant Morphology

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Aim of the study: The translocation of nanomaterials across the plants have impact for their development and considerably important on their evaluation. Chick Pea (*Cicer arietinum* L.) is belong to Fabaceae family which has an economical value in the world. According to this study; root, stem and leaf of chick pea seedlings were used to investigate the morphological features and differencies related translocation and transmission of gold nanoparticules (AuNPs) and C70 single-walled carbon nanotubes (SWNTs). Chick pea seeds were exposed to 10 nm AuNPs and 4 ml C70 single-walled carbon nanotubes (SWNTs) with 15 ml deionized water mixture for 2 days and they were grown in the pots for 3 weeks. Control group of the samples were also grown in another pot. The comparison of morphological results were made by measurements with the ruler. This method was used to investigate the comparative morphological reflection of effects related 2 nanomaterials stress or activity on plants. Some morphological changes were caused on root, stem and leaf length and appearance of chick pea seedlings with the under certain concentrations of Au and C70 nanomaterials. Consequently, it can be defined that morphological stability had changed according to different kinds of nanomaterials as regards their morphological evaluation.

Key words: Chick Pea (*Cicer arietinum* L.), AuNPs, C70 (SWNTs), morphology

Poster Presentation 57

Ichnologic Data of the Haymana Formation and Their Paleoenvironmental Significance

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The upper Cretaceous and Paleogene sediments in the Haymana region are one of Turkey's most important sites with its rich micro and macrofossil content. The late Cretaceous turbiditic Haymana Formation crops out around Haymana region and is covered unconformably by the Jura-Cretaceous Mollaresul carbonate rocks.

In this study, the trace fossil finds of the late Cretaceous Haymana Formation deep sea fan sediments were mentioned and their environmental importance was emphasized. It contains trace fossils which have been recognized and determined for the first time in this study. Trace fossils occur in a sequence identified as a deep-sea fan deposits. Twenty-three ichnotaxa have been identified in the different part of the submarine fan. They include *Bergauria isp., Cardioichnus isp., Chondrites intricatus*, *Chondrites* isp., *Desmograpton* isp., *Halopoa annulata, Helminthopsis* isp., ?*Megagraphton* isp., *Nereites* isp., *Ophiomorpha* isp., *Ophiomorpha annulata, O. nodosa, Ophiomorpha rudis, Paleodictyon majus, P. strozzii, Paleophycus* isp., *Phycosiphon* isp., *Phycosiphon incertum, Planolites* isp., *Scolicia prisca, Thalassinoides* isp., *Trichichnus linearis*, *Zoophycos* isp. The abundance and diversity of trace fossils found in the study area increase in the middle fan interchannel and channel margin deposits. In the outer fan and slope facies associations, the abundance and diversity of trace fossils are lower. Distribution and relative abundance of the trace fossils are compared with the interpretations of depositional environment and trace fossils associations were found to be related to the various parts of the deep sea fan.

Key words: Trace fossils, deep sea fan deposits, late Cretaceous, Haymana, Turkey.

Acknowledgements: This research was financially supported by the TUBİTAK_ÇAYDAĞ, Turkey (115R058).

Poster Presentation 58

Change of *Cupressus* Pollen Concentration with Meteorological Conditions in Niğde

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Cupressus pollen belonging to the Cupressaceae family has an important role in the aeroallergens that cause allergic reactions in the air and could enter the body by respiration. The most important feature of these plants is that they are wind-pollinated and produce a lot of pollen. The amount of pollen produced in *Cupressus sempervirens* may be 65 billion, 123 billion in *Cupressus arizonica* and 1 trillion in *Cupressus macrocarpa*. Pollination of pollen is of great importance in allergic diseases. There is an increase in pollen allergy cases especially in April, May and June periods. *Cupressus* pollen was collected by volumetric method with Burkard sampler in Niğde province atmospheres during 2014 and the changes in pollen levels were observed calculated by hourly, daily, weekly and monthly. The main pollen season was determined as between January 9 and May 26 for *Cupressus* pollen. The highest concentration was found on February 23 as 156 pollen / m3 and the total amount of pollen is 2244 during 2014. At that time the average temperature was 10 0C, the average wind speed was 3,3 m_sec and the average amount of moisture was 41.0 (%). When statistically compared the pollen levels with meteorological factors, it was found that there was a positive correlation with mean temperature and a negative correlation with mean humidity.

Key words: Nigde, atmosphere, Cuprassaceae, pollen, meteorological factors.

Poster Presentation 59

Agricultural Drought Management Strategies

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Drought, rainfall for many years less than average to happen, it is a natural climatic event which can occur anywhere at any time. Drought has affected every aspect of our lives including environment, urban life, economy, technology, agriculture, food, clean water and sanitation.

The importance of the drought is larger on the agricultural sector. The total rainfall in the root zone of crop during the growing period is more important than the total annual rainfall. Absence of requested water by crop during growing period is called agricultural drought.

Our country is, under the effects of global warming, among risk group countries. Measures should be taken and alternative scenarios should be produced for the period to reduce the negative effects of drought on agriculture, and drought management plan should be created.

For this purpose, agricultural drought action plan is carried out in cooperation with Ministry of Food, Agriculture and Livestock, Ministry of Forestry and Water Affairs, Ministry of Energy and Natural Resources and Ministry of Interior in our country. The works to be carried out and the measures to be taken are determined and implemented under the plan.

The most important effect of drought in agriculture is the decrease in productivity. Measures should be taken to reduce the effects of water scarcity that can be seen in case of drought. With this aim, applications that provide water saving and effective use of water are on the agenda. These applications include integrated watershed management, preparation of irrigation programs, modernization of water distribution systems, use of pressurized irrigation systems and use of marginal waters.

In this study; some knowledge related to effects of drought are given and drought management strategies are discussed in our country.

Key words: Drought, agriculture, management, climate change

Poster Presentation 60

Effects of Pesticides (Chlorpyrifos-Glyphosate) Applied to Soil on Earthworm Behaviors and Some Soil Biological Parameters

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Some pesticides are applied to soil, while some others applied to plants. The ones applied to plants somehow indirectly incorporated into the soils. Although there are several studies about the effects of pesticides on high organisms, the studies about the effects of pesticides on soil organisms are quite limited. In this study, two different doses (recommended dose and twice as much of recommended dose) of chlorpyrifos and glyphosate pesticides were incorporated into the soil and the effects of pesticides on earthworms *(Eisenia foetida)* were investigated in a 2D apparatus. The apparatus was placed in an incubator for 3 days and then gallery areas, number of aerobic mesophyll microorganisms, catalase/urease enzyme activity of earth warms were identified. The differences in gallery areas at both sides of the apparatus in non-pesticide treated soils were not found to be significant. Such a case was considered as a precondition for the other parameters. The differences in gallery areas of earthworms at treated and untreated sides of chlorpyrifos treated soils with the recommended dose were found to be significant ($p=0.0298$). A similar difference was observed in twice as much of recommended dose of chlorpyrifos ($p=0.0323$). The effects of glyphosate treatments on gallery areas were not found to be significant. As compared to control treatment, significant increases were observed in number of microorganism with the recommended dose of chlorpyrifos ($p=0.0074$). Significant differences were not observed in number of microorganisms with the twice as much of recommended chlorpyrifos dose. Glyphosate treatments significantly decreased number of microorganisms at twice as much of the recommended dose ($p=0.0273$). While double dose of chlorpyrifos significantly increased catalase activity ($p=0.0041$), both doses of chlorpyrifos and glyphosate did not have significant effects on the other parameters.

Key words: Pesticide, soil, earth worm, enzyme, microorganism

Poster Presentation 61

N, P and C Rates in Decomposing *Populus nigra* L. Leaf Litter according to Litter Placement and Time

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This study aimed to examine the variation in N, P and C concentrations in decomposing *Populus nigra* L. leaf litter according to litter placement and time. Senescent *Populus nigra* leaves were collected from Suluova, Amasya. Litter bags were used in order to examine litter decomposition and fastened to 0 cm, 5 cm and 10 cm depth from the soil surface. Decomposition was examined for three months (because of inadequacy of remaining material) and N, P, and C concentrations were measured. According to the results, C concentrations didn't significantly vary depending on litter placement and time in first and second months. In third month, significant variations were determined in C concentrations due to litter placement. N concentrations were significantly differed based on time only in January in early litter decomposition stage. P concentrations didn't vary according to litter placement. C, N and P concentrations fluctuated among litter placements according to months. While C and P concentrations significantly differed only in March based on time, N concentrations varied in three months. Trends of C, N and P concentrations were varied among litter placements. It means that element concentrations in decomposing litter may be related with stages of decomposition.

Key words: Decomposition, leaf, *Juglans regia*, litter placement, time

This study was funded by Amasya University Scientific Research Foundation (Project No: FMB.BAP. 15.0151).

Poster Presentation 62

Soils Development on a Toposequence on Sand Stones in Koru Mountain in Çanakkale, NW Turkey

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Soil properties on a certain toposequence changes since degree of detachment, transportation and deposition of soil materials from summit to piedmont. The aim of this study is to investigate and describe changes in the soil properties due to the soil cover development processes, altitudinal gradient and other environmental factors in the transect between the summit of Koru Mountain and Adilhan Village in Çanakkale, NW Turkey. For this purpose, seven soil profiles were investigated. Each of soil profiles represents approximately 50 elevation meters. First soil profile was described on the mountain summit (the altitude 350 meter) and the last one on the peidmont (the altitude 50 meter). All soils except profile 7 were formed on the same geological materials and vegetation. The soil survey was carried out according to Soil Survey Manuel (1993). Beside the in situ morphological investigation of soil profile soil sample were taken each horizon for analyses. World Reference Base for Soil Resources (version 2014) and Soil Taxonomy (version 2014) were used for the soil classification. The morphological, physical and chemical properties of soils varied from summit to piedmont on the transect from Koru Mountaion summit to Adilhan Village. This study showed that landscape position, altitude gradient and sediment transportation and deposition significantly affected all soil profiles across the toposequence. Type and number of soil horizons were differentiated from summit to piedmont. Toposequence affected variation of soil types on the classification as Mollisols, Entisols and Inceptisols according to USDA Soil Taxonomy, Cambisols, Leptosols, Phaeozems and Regosols according to World Reference Base.

Key words: Koru Mountain, Toposequence, Soil Taxonomy, World Reference Base for Soil Resources, Soil Survey

Poster Presentation 63

Soil Erosion Problems on the Kürce Hydroelectric Power Plant

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Soil erosion by water is the major cause of soil degradation in Turkey. Especially, degraded soil surface like construction sites in the Hydroelectric power plants (HEPPs) has very high erosion risks. Its topographic characteristics and soil properties cause increasing the erosion severity. In this site, large amounts of excavation and filling require during the construction of builds. A new plan and application of soil erosion conservation in these areas are necessary. For this purposes, determination of potential erosion risk and actual erosion is the important factor for conservation plans.

In this study, there is an example that Kürce HEPP reflects these characteristics as a typical way. In the field study, three soil profiles were drilled in the area. The study area was classified into five groups as no or slight erosion, medium erosion, high erosion, severe and very severe erosion. As a result, it was found that soil conservation structures must be applied in the area of 85% approximately.

Key words: Soil erosion severity, latosolic soil, restoration, soil conservation

Poster Presentation 65

Some Chemical Properties of Composting Olive Mill by Product (Olive Cake) and Other Residues from Marmara Region in Turkey

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Table olive is grown in Marmara region. Some low quality olives are used for olive oil by double phases continue systems. After the oil proses olive mill by product is obtained and generally used that material for the fuel.

The aim of this study is to reuse olive mill by product as organic fertilizer after composting proses.

Olive mill by product was composted with different organic materials to adjust the C/N ratio. Some physical and chemical analysis were done periodically during the composting. Final compost properties were found as follows; 80-88 % germination index, 26.5-29.6 humification index, 872-914 g kg-1 organic matter content.

Key words: Olive cake, composting, organic fertilizer

Poster Presentation 68

Review of Conservation Status for Amphibia and Reptile Species in Çanakkale

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Çanakkale is one of the rare areas separated by the Gallipoli strait from two region consisting of Anatolian and Thrace regions. The availability of different wetlands and thanks to the presence of terrestrial and experimental isolation centers such as the Kaz Mountains and the Gallipoli strait, amphibian and reptile diversity shows great changes. Amphibian and reptile species in Çanakkale were examined with the fieldwork performed between 2006-2016.

The Dolichophis jugularis which SW Asiatic species and *Podarcis tauricus* distributed in Thrace region were also present in the Çanakkale, and this indicates that Çanakkale is the important transitional zone.

The purpose of this study; to give the current population status of the amphibian and reptile species in Çanakkale and its vicinity and to show that the spreading limits of some species are widening.

Key words: Çanakkale, Amphibia, Reptilia, Chorotype, Population status

Poster Presentation 69

Endemism of Turkish Amphibian and Reptile Species

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Endemic species are that exist only in one geographic region and an important part of the natural heritage of a country. There are 173 native amphibians and reptiles in the Turkey, thirty two of which are endemic. It is documented that thirty two Turkish endemic species of herptiles composed of twenty one squamates and eleven amphibians. The reptilian and amphibian endemics constituted 18.5% of the total herpetofaunic species of Turkey. All of the species encountered are of known conservation status based on the 2016 IUCN Red Data List. To date, known endemic species include in sixteen genera and eight families. The Salamandridae and Lacertidae with 8 (25% of endemic species) endemics is ranked first followed by the Viperidae with six species (18.8%), the Colubridae with four species (12.5%), the Ranidae with three species (9.4%) the families Blanidae and Typhlopidae with one species (3.1% each). The Turkish endemic reptiles and amphibians are distributed in six eco-regions of the country. Among these regions, the eastern Mediterranean conifer-sclerophyllous broadleaf forest contains the highest number of endemics (10 species - 31.3%), followed by the southern Anatolian montane conifer and deciduous forest with 9 species (28.1%).

Key words: Endemic, reptile, amphibian, conservation, eco-region.

Poster Presentation 70

Examination of Size-Dependent Hematological Parameters in Populations of *Mauremys rivulata* (Testudinata: Geoemydidae) Distributed in Çanakkale

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The determination of the haematological values of wildlife species in natural life is very important in terms of monitoring the physiology of animal populations and monitoring the environmental status of the habitat inhabited. The obtained reference intervals contribute to the resolution of future health problems of species. Reproductive and environmental effects on hematological parameters in *Mauremys rivulata* species have been studied previously and there is no study on size-dependent changes.

A total of 39 samples (27 adult, 12 juvenile), around Çanakkale, will be captured alive and morphologically will be measured. Plasma biochemical parameters will be determined by the autoanalyzer. Other hematological parameters will be determined manually.

In this study, morphometric measurements of *Mauremys rivulata* samples will be taken and hematologic parameters such as erythrocyte count, leukocyte count, hemoglobin and hematocrit values, mean erythrocyte volume, mean erythrocyte hemoglobin, mean erythrocyte hemoglobin concentration, glucose, calcium, cholesterol, triglyceride, creatinine, uric acid, total protein, albumin, phosphorus, magnesium parameters will be determined. For the first time, hematological values of different sized *Mauremys rivulata* populations, including plasma biochemistry, will be determined and their size-dependent changes will be examined. As a result, it was determined that only differences in calcium value when juvenile and adult individuals were compared.

Key words: *Mauremys rivulata*, plasma biochemistry, hematology, size-dependent changes

Acknowledgements: This study is part of master thesis "Examination of Size-Dependent Hematological Parameters in Populations of *Mauremys rivulata* (Testudinata: Geoemydidae) Distributed in Çanakkale".

Poster Presentation 71

Herpetofauna of the Meke Saltpan, Karapınar, Konya

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Turkey has very high biodiversity, due to its various topographical, geological, and climatic features. Although previous studies have dealt with amphibians and reptiles from Central Anatolia no detailed study has yet been conducted on the herpetofauna of Meke Saltpan where specific ecological condition. Here, we provide a record of the herpetofauna of Meke Saltpan and contribute to the literature on the Turkish herpetofauna. Fieldworks were conducted in May and June 2014. The specimens of amphibians and reptiles were collected using different techniques according to habitat conditions. The systematics of the examined materials was studied using current literature. Also the conservation status of the species was given with national and international agreements in which Turkey is included. A total of 14 different species were recorded. Of these species, in an anuran, one tortoise, six are lizards and six are snakes. In addition, a chorotype classification of the species determined in Meke Saltpan is given. This study underlines the importance of Meke Saltpan as a herpetological area.

Key words: Meke Saltpan, reptiles, amphibians, biodiversity, herpetofauna

Poster Presentation 72

Food Preference of the *Testudo graeca* (Pallas, 1814) (Reptilia: Testudinidae)

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The spur-thighed tortoise *Testudo graeca* is one of the terrestrial tortoise in Turkey. The previously studies indicate clearly that *T. graeca* is essentially herbivorus. As a result of our direct observations, *T. graeca* specimens have been eat bird carrion. Essentially, male specimens were feeding with bird carrion. Bird carrion diet of the *T. graeca* could be due to limited to plants or to eliminate the need for protein of male individuals in reproduction period.

Key words: *Testudo graeca,* Bird carrion, feeding

Poster Presentation 73

Erythrocyte Eccentricity of Amphibians and Reptilians

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In this study, measurements of morphological and eccentricity values of erythrocytes on blood smear preparation stained with Wright's stain were given for 31 amphibia and reptile species (9 amphibian species including 3 urodeles and 6 anurans as well as 22 reptile species including 4 turtles, 9 lizards and 9 snakes). Among to amphibians, erythrocytes of *Ommatotriton ophryticus* were ellipsoidal-shape, erythrocyte of *Bufotes variabilis* were least ellipsoidal-shape. Among to reptilians, erythrocytes of *Elaphe sauromates* were ellipsoidal-shaped, erythrocyte of *Malpolon insignitus* had least ellipsoidal-shape or nearly spheroid shape. According to the results, it was determined that erythrocyte eccentricity showed great variations among to amphibians and reptilians species.

Key words: Red blood cells sizes, eccentricity, morphology, Wright's stain, blood smears.

Poster Presentation 74

Design of A Web-Based Interactive Bird Biodiversity Atlas: Case Study of Çanakkale Province, Turkey

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The main scope of the paper is to present a user friendly web-based bird biodiversity atlas for Çanakkale Province, Turkey. To achieve this aim, API interface, which allows software developers to design interactive open source maps on Google Maps application, was used to designate the distributions and intensities of each species. The PHP and JavaScript programming languages and MYSQL database were also utilized for web page, algorithm, and database development phases. Data were collected through both field surveys and literature research. Field studies were conducted between September 2013 and April 2017, and literature data covered the period between 2003 and 2012. According to the results, 295 bird species were reported around the study area during the study period. The coordinates, locality, elevation, and time of observations were recorded together with the scientific and public names, quantities, reproduction status, and other properties of bird species in excel file. Subsequently, the excel format was converted to comma-separated (csv) format and joint to MYSQL database. Application key and codes of Google Maps were integrated to bird atlas database system. Finally, query algorithms were written and two maps displayed on the website. The first map displays observation points and attributes tables, while the second one shows the intensity distributions of selected species. In conclusion, designed atlas has enabled the simultaneous query on mapping recorded properties of multiple specious selections. The study provided the first attempt for biodiversity mapping in our country using web-based application which is both instantaneously inquirable and easy to use for public.

Key words: Atlas, Biodiversity, Bird species, Çanakkale, Google Maps.

Acknowledgements: This research was financially supported by General Directore of Nature Conservation and National Parks, the Ministry of Forestry and Water Affairs, Turkey.

Poster Presentation 75

Determination of the Effect of Urbanization on Recreation Activities Using Remote Sensing: A Case Study in Çanakkale City Center

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The recreational areas play an active role especially in the psychological and socio-economic conditions of citizens in the city change and development. With unplanned urbanization, the opportunities for people to meet nature and green, and to socialize, enjoy, relax and sport in these areas are diminishing.At the beginning of this kind of area in Çanakkale City Center are Old Cordon andNew Cordon, which are at coastline, and Public Garden, which is almost the only green area inside the city.The presence of protected recreation areas far from the sea in the city is of great importance in Çanakkale City Center, where severe winter and especially wind are effective. Unfortunately, due to increasing construction, recreation areas can't respond to the needs of the citizens in terms of quantity, capacity and quality.Remote sensing is rapid and comprehensive decision-making and detection method for modern and environmentalist urbanization.In this study, the effects of urbanization on recreation areas between 1992 and 2017 were determined using remote sensing methods.Landsat multispectral satellite images were used as remote sensing data.Land use-cover maps were created using Geographic Object-Based Image Analysis (GEOBIA) method.According to remote sensing results, the decline in urban green areas over the years was clearly determined and suggestions about recreation areas such as determination of potential areas that could be converted into recreation areas were given. It is clear that new recreational areas that appeal to all segments of society should be urgently created for a living and breathing city.

Key words: Çanakkale, Urbanization, Recreation Areas, Remote Sensing, GEOBIA

Poster Presentation 76

Object-based Analysis of Recreation Areas Using High Resolution Color Infrared Aerial Images, Case Study: Çanakkale, Turkey

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Recreation areas comprise many unique attributes, which integrate man-made features and natural fields. To detect existing recreation areas accurately and decide potential ones from high-resolution color infrared orthophotos, it is crucial to use methods that are more sensitive. Therefore, in this research, object-based segmentation and classification of recreation areas were investigated for city of Çanakkale. Locations of the extracted areas were evaluated and new appropriate recreation areas were detected by the proposed method. In this study, high-resolution four-band color infrared aerial orthophotos of Çanakkale were used in order to produce classifications of landscape areas and building sites. First, bottom-top multi-resolution segmentation was implemented. The segments were acquired using spectral and shape features of the recreation areas. Final decision heuristics were calculated by best fitting of homogeneity criterion. Then, obtained segments were classified to extract landscapes and buildings in certain accuracy. This study showed that results of segmentation and classification of high-resolution orthophotos could be used to determine recreation areas in order to plan environmentally sustainable cities in/around rapidly changing cities like Çanakkale.

Key words: Aerial Images, Photogrammetry, Segmentation, Classification, Recreation Areas

Acknowledgements: This research was supported by the General Command of Mapping, Turkey (PN343907).

Poster Presentation 78

Integration of Remote Sensing and Geographic Information System (GIS) Techniques for Monitoring Shoreline Changes

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Shoreline is a natural boundary that separates the land and water and is exposed to continuous change caused by natural and anthropogenic degradation. These two factors cause shoreline changes in short-term and long-term process. Changes in shoreline are the most common natural process in coastal areas. Therefore, it is necessary to monitor the shoreline changes over time. Satellite images, remote sensing and GIS techniques are widely used in environmental monitoring because of providing important sources to investigate shoreline changes. Continuous monitoring of the shoreline changes is essential for detecting and observing the variations in coastal areas in the past and in the future. In this context, application of remote sensing and GIS techniques is very useful in detecting the shoreline changes. Also, remote sensing and GIS are effective tools for monitoring and mapping the shoreline changes. Assessment of shoreline changes is a key concern in environmental monitoring and integrated coastal zone management. Therefore, the integration of remote sensing and GIS techniques is a crucial requirement and it enables monitoring changes in the environment over time.

Key words: Geographic Information System, GIS, Remote Sensing, Shoreline Change

Poster Presentation 80

Hydrogeochemical Behaviour of Coal Mine Wastes

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Since the early 1980s Etili coal mine located in Can coal basin has been operated as an open pit mine. The coal-mining operations have been abandoned without rehabilitation. Acid mine drainage is the main environmental problem in the mine. This study is based on assessing the hydrogeochemical behaviour of mine wastes from Etili coal mine. Mine waste had very acidic paste pH (min= 2.80) and high electrical conductivity value (max= 4.18 mS/cm). The sulphur content of mine waste ranged between 0.60 to 2.11 wt.%. The mine waste was largely composed of quartz, feldspar group minerals, kaolinite group minerals, jarosite, zeolite group minerals, gypsum and pyrite. According to modified acid-base accounting test results, mine waste had high acid-generating potential and low acid-neutralizing capacity. Synthetic precipitation leaching procedure was used to examine the extraction capacity of various metals from waste into aqueous phase. The pH and electrical conductivity values of mine waste leachates ranged from 3.47 to 4.34 and 54 to 693 µS/cm, respectively. The maximum concentrations of dissolved Al, Fe, Mn, Zn and Ni of leachate were measured as 14240, 2778, 361, 290 and 33 µg/L, respectively. According to the Turkish inland water quality regulations, the mine waste leachates were classified as polluted water. Mine waste has the capacity to deteriorate water resources quality. Therefore, necessary preventive measures are strongly recommended.

Key words: Acid mine drainage, Coal mine waste, Modified acid-base accounting test, Synthetic precipitation leaching procedure, Turkish inland water quality regulations

Acknowledgements: This research was financially supported by the Canakkale Onsekiz Mart University Scientific Research Projects Coordination Unit, Turkey (FBA-2016-759).

Poster Presentation 82

Protective Effect of Taurine and Curcumin on Bisphenol - A Induced Spleen-Toxicity

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Bisphenol A (BPA) is one of the highest capacity chemicals produced worldwide and has been identified as an endocrine disrupter with estrogenic activity. Besides BPA induced oxidative stress in many tissue. Oxidative stress can produce extremely dangerous results in biological systems. Several antioxidant compounds and antioxidant enzymes [such as superoxide dismutase (SOD), catalase (CAT), glutathione peroxidase (GPx), glutathione-S-transferase (GST)] prevent cells and tissues from oxidative stress. Taurine and curcumin have antioxidant ability by scavenging reactive oxygen species. Gazi University Committee on the Ethics of Animal Experimentation confirmed experimental procedures of this research. For this study, 7 experimental groups were formed from the rats (six animals in each group). These groups were control group (1.0 ml kg-1 bw distilled water), olive oil (100 ml kg-1 bw) group, curcumin (100 mg kg-1 bw) group, taurine (100 mg kg-1 bw) group, BPA (130 mg kg-1 bw) group, BPA + curcumin group, BPA + taurine group. These chemicals were treated orally to rats daily during 28 days. At the end of 28 days, there were no significant changes between control group and olive oil-, curcumin-, taurine-treated groups for MDA level, SOD, CAT, GPx and GST activities in spleen tissues. A significant increase in the MDA level and statistically important decrease in SOD, CAT, GPx and GST activities in all BPA-treated groups compared to control group. Curcumin and taurine lead to ameliorative effect on MDA levels and antioxidant enzyme activities of spleen tissues. In this study, supplementation of curcumin and taurine alleviated BPA caused spleen toxicity.

Key words: BPA, Curcumin, Taurine, Spleen, Oxidative stress, Antioxidant enzyme.

Poster Presentation 83

Melatonin Application to *Arabidopsis thaliana* Mitigates Adverse Effects of Boron Stress

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To clarify the effect of melatonin on antioxidant system in *Arabidopsis thaliana*, which was exposed to boron stress. Col-0 ecotype and *cat2-2*, catalase deficient mutant, were used. A week-old plants in MS medium were applied with 50µM melatonin as pretreatment. Next, melatonin-treated plants were transferred to new MS medium with 10mM boric acid. Melatonin significantly reduced membrane damage, increased relative water and photosynthetic pigment contents in plants under boron stress. The addition of melatonin also controlled the rising of hydrogen peroxide (H2O2), possibly through direct scavenging or by enhancing the activities of antioxidant enzymes such as catalase (CAT), superoxide dismutase (SOD), guaiacol peroxidase (GPX), ascorbate peroxidase (APX). We also investigated expression of genes encoding these enzymes and it was found that melatonin stimulated SOD gene expression both Col-0 and *cat2-2* plants, groups under boron stress but CAT, APX, GPX gene expression were downregulated. The mutant, which was sensitive to boron stress, become more resistant to stress by the application of melatonin. In conclusion, melatonin may relieve oxidative stress by scavenging H2O2 in this study. Thus the antioxidant system was not stimulated by the application of melatonin under boron stress.

Key words: Melatonin, Boron stress, *Arabidopsis thaliana*, Antioxidant system, Gene expression

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Poster Presentation 84

The Effect on Germination and Early Stage Development in (*Agropyron cristatum* (L.) Gaert.), of Different Salt Concentrations.

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This study has been established in two stages to determine the effect of different salt concentrations on germination and early development period in crested wheatgrass. In the first step established in petri dishes, 50µM, 100µM, 150µM, 200µM, and 250µM salt concentrations and a control (pure water) were used. After the germination was completed, 5 plants were transferred to the pot to study the early developmental stage. 10 ml of saline concentration was applied to each pot according to the concentration given before germination. Variance analysis, comparison test and correlation analysis were applied to the results.

As a result of the study, it was determined that germination was delayed due to increased salt concentration. No difference was observed in the germination rate except at a concentration of 50µM. After the root lengths reached 150µM, shoot lengths slowed down after 50µM, and at 250µM salt concentrations, shoot lengths fell below 1 mm.

There was a negative correlation between germination duration and shoot and root length. The root and shoot lengths also decreased during the periods of germination. As root lengths increased, shoot lengths also increased. The plants transferred to the pots were not affected by different salt concentrations and showed that they should grow even at the highest salt concentration.

As a result, the increase of salt concentrations affected the germination rate, germination time and stem and shoot lengths at different rates. However, the plants that survived this stage did not respond to salt concentrations and continued their normal development.

Key words: *Agropyron cristatum*, salinity tolerance, germination properties, early stage development, forage crops.

Poster Presentation 85

The Protective Effect of N-acetylcysteine against Heavy Metal Stress in a Bread Wheat Cultivar (*Triticum aestivum* L. 'Ceyhan-99')

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N-acetylcysteine (NAC) can be oxidized by a wide variety of radicals and can bind metal ions such as Cd(II), Hg(II) and Pb(II) with its potential two groups, a thiol group and, at neutral pH, a deprotonated carboxyl group. In the present study, effects of NAC on the growth parameters, total phenolic compounds content (TPC) and antioxidant capacity values in the roots of the wheat exposed to heavy metal stress were investigated.

The wheat seeds that germinated at the end of the first day were exposed to 100 µM $CdCl_2$, $HgCl_2$, $PbNO_3$ and 1 mM NAC. At the end of the fifth day, standard methods of analysis were used to determine TPC content and antioxidant capacity values (DPPH radical scavenging activity, FRAP, CUPRAC) and H_2O_2 content.

NAC treatment significantly reduced the adverse effects of the heavy metals on root length ($P < 0.05$). As a result, content of TPC and antioxidant capacity values increased in the roots depending on the each heavy metal treatment and NAC application that compared to the control group. Besides, content of H_2O_2 increased in all heavy metal treatments, while the NAC treatment had noticeable decrease on it. In conclusion, NAC is preferably effective in reducing the adverse effects of heavy metals in plants and could make it desirable to grow more resistant crop plants against such an important abiotic stress.

Key words: N-acetylcysteine, *Triticum aestivum*, Heavy Metal, Antioxidant

Acknowledgment: Financial support for this study was provided by the Research Fund of Karadeniz Technical University (KTU-BAP Project ID: FBA-2016-5424).

Poster Presentation 86

The Effect of N-acetylcysteine on the Morphology and Pigment Concentration in Wheat Cultivar (*Triticum aestivum* L. 'Ceyhan-99') under Ionizing Radiation

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Ionizing radiation (IR) is one of the most important environmental factor and low doses affect plant growth at the molecular, morphological, and physiological levels. N-acetylcysteine (NAC), the acetylated precursor of the amino acid L-cysteine, is a powerful scavenger of hydroxyl radical and has relatively low toxicity. The aim of this study was to evaluate the role of NAC as a possible protector against oxidative damage associated with ionizing radiation on some growth parameters, chlorophyll (chl) and carotenoid (car) contents.

The seeds of the wheat cv exposed to 100, 200, 300 and 400 gamma rays (Gy) were grown at 1 mM NAC concentration. At the end of the seventh day, standard methods of analysis were used to determine for measuring some growth parameters, chl and car contents.

Treatment with gamma rays of higher ≤200 Gy inhibit plant biomass and inhibition effects of 400 IR was the severest. The NAC application improved plant growth of wheat seedling. The tolerance index (TI) at all IR + NAC groups appeared to be higher than that of IR groups. With the treatment of exogenous NAC, inhibition on relative water content (RWC) of IR treated seedling was alleviated. The IR treatments tended to decrease the chl a, b, total chl and car contents as the dose increased. Exogenous NAC application increased the chl a, b, total chl and car contents at 200 Gy + NAC treatments as compared to the 200 Gy treatments alone. In conclusion, exogenous NAC application plays an important role in enhancing the IR tolerance of *T. aestivum*.

Key words: N-acetylcysteine, *Triticum aestivum*, Ionizing Radiation, Chlorophyll

Poster Presentation 87

Physiological Responses to Strigolactone in Salt Stress Resistant and Susceptible Two Wheat Varieties

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Strigolactones (SLs) are signaling molecules and synthesizing from carotenoids. They are effective in the response of plants to metabolic and environmental events, in the interaction with other organisms such as parasite plants, and in the auxin-signaling pathway. On the other hand, salt stress is a major abiotic stress factor that limits wheat yield in the world.

This study was aimed to investigate the role of SL treatment (20 µM GR24) on growth parameters under salt stress (0, 100, 200 mM NaCl) in drought-resistant (Tosunbey) and drought-sensitive (Sultan-95) wheat varieties. Root and shoot samples were collected in 0 and 7th days. With this aim, the changes in relative water contents (RWC), chlorophyll contents, root and shoot lengths were determined.

Our results showed that 200 mM NaCl+20 µM GR24 increased the stem length by 7%, chlorophyll content by 13% and RWC by 40% in Sultan 95 varieties. In Tosunbey variety, the root length did not change, shoot length decreased, chlorophyll content increased 44% and RWC increased 19% at the same concentration. According to these results, GR24 application may have a protective effect against negative effects of salt stress by increasing the water holding capacity and chlorophyll content in salt-sensitive cultivars. In addition, the SL application seems to have good potential for increase the yield in resistant varieties.

Key words: Strigolactone, wheat, salinity, GR24, growth

Acknowledgement: This research was supported by COMU BAP (Pr. No.FYL-2017-1189).

Poster Presentation 88

Did the Strigolactones Help for Scavenging of H_2O_2 during Salt Stress in Wheat?

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Environmental stresses can cause changes in physiological and biochemical responses in plants. Oxidative stress is produced in all living cells by excessive accumulation of non-radical molecules such as H_2O_2 as well as oxy-radicals such as $O_2\bullet^-$ and OH● produced in the biochemical pathways. Some varieties of important agricultural plants such as wheat are resistant to oxidative stress than the others.

This study was aimed to investigate the roles of peroxidase (POX) and catalase (CAT) activities after strigolactone (SL) pretreatment (20 µM GR24) of seeds, under salt stress (0, 100, 200 mM NaCl) in drought-resistant (Tosunbey) and -sensitive (Sultan-95) wheat varieties.

Our results showed that POX activities were increased in the control group and decreased by 50% with GR24 pre-treatment with increased salt concentrations at the end of the experiment in Tosunbey. 100 mM and 200 mM NaCl treatments were reduced CAT activities by 37% and 75% , whereas those with GR24 addition were determined to be 9% and 19%, respectively. Conversely, GR-24 pre-treatment reduced the POX activity with 100 mM NaCl 39% and 200 mM NaCl by 35% in Sultan 95, while maintaining the POX activity in control plants at the end of the experiment. While CAT activities did not change this variety during salt stress compared to control plants, the pre-treatment of GR24 increased these activities by 58% and 74%, respectively, at the end of the experiment depending on the increased salt concentration.

In conclusion, the addition of strigolactone against the oxidative stress helps to reduce the negative effect of salt stress in sensitive wheat variety with increasing POX and CAT activities.

Key words: Strigolactone, wheat, GR24, peroxidase, catalase, salinity

Acknowledgement: This research was supported by COMU BAP (Pr. No.FYL-2017-1189).

Poster Presentation 89a

Effect of Magnesium Deficiency on Growth and Chlorophyll Content in Two Chickpeas Varieties under Drought Condition

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Plants need the nutrients during growth and development absolutely. Magnesium (Mg) is one of the most important nutrients involved in many enzyme activities and structural stabilization of tissues. Mg in plants also affect the secondary metabolism. However, very little is known about the role of Mg in plant secondary metabolism. In addition, the central atom of the chlorophyll molecule in plants is the Mg element. This suggests that the mechanism of photosynthesis of the plant will be affected by lack of Mg element. In this study, changes in the chlorophyll contents root and shoot lengths were determined in two kinds of chickpea (drought-sensitive Akçin and drought-resistant Uzunlu) varieties under Mg deficiency conditions. Our results showed that the chlorophyll content decreased by 3%, stem length decreased by 9% and root length decreased by 20% in Akçin while increased in Uzunlu by 14%, 6% and 6% respectively under Mg deficiency and drought conditions.

As a result, it has been determined that drought tolerance provides protection for Mg deficiency during growth of these chickpea varieties.

Key words: Magnesium deficiency, chickpea, drought, growth

Acknowledgement: This research was supported by COMU BAP (Pr. No.FYL-2017-1203).

Poster Presentation 89b

Effect on Growth of Magnesium Deficiency in Two Chickpeas Varieties

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Plants need the nutrients during growth and development absolutely. Magnesium (Mg) is one of the most important nutrients involved in many enzyme activities and structural stabilization of tissues. Mg plants also affect the secondary metabolism. However, very little is known about the role of Mg in plant secondary metabolism. In addition, the central atom of the chlorophyll molecule in plants is the Mg element. This suggests that the mechanism of photosynthesis of the plant will be affected by lack of Mg element.

In this study, changes in the chlorophyll contents, root and shoot lengths were determined in two kinds of chickpea (drought-sensitive Akçin and drought-resistant Uzunlu) varieties under Mg deficiency conditions.

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As a result, it has been determined that drought tolerance provides protection for Mg deficiency during growth of these chickpea varieties.

Key words: Magnesium deficiency, chickpea, drought, growth

Acknowledgement: This research was supported by COMU BAP (Pr. No.FYL-2017-1203).

Poster Presentation 90

Priming Studies for Increasing Plant Tolerance against Abiotic Stress Factors

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Under natural conditions, plants are in the struggle for survival under the influence of various stress factors. Sudden changes in the environmental conditions increase the stress level and limit plant performance. Abiotic stress factors including drought, salinity, temperature, light, nutrients and heavy metals have negative effects on plant growth and development and decrease plant productivity. Germination stage is a significant phase of plant life. Seed genetic structure cause simultaneous seed germination to prevent seedling emergence. Seed priming is a pre-sowing treatment in order to remove all adverse effects and to obtain sufficient seedling establishment and yield. It is aimed to minimize the negative effects that can be experienced during germination and seedling emergence with priming studies, to provide a uniform seedling exit and strong seedling development in a short time and to increase tolerance level of plants to stress conditions. Priming studies can be grouped into four groups according to the substance used: hydropriming (eg., water), osmopriming (eg., proline), hormopriming (eg., strigolactones) and biopriming (eg., *Pseudomonas aureofaciens*). In addition to these methods, effects of newly used chemicals (reactive oxygen species, nitrogen oxides, etc.) in priming studies on physiological (stomata conductance), biochemical (antioxidant enzyme activity) and molecular (transcription factors) changes were explained in this study.

Key words: reactive oxygen species, tolerance, plant stress responses, seed, pre-treatment

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Poster Presentation 91

The Role of Methyl Jasmonate Application in Salicylic Acid Dependent Reactive Oxygen Species Scavenging in Soybean (*Glycine max* L.)

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Methyl Jasmonate (MeJA) plays role as a cell regulator in plant growth process and defence responses to abiotic stress. This study was aimed to investigate the role of MeJA treatment (0.5 µM) on salicylic acid (SA) induced reactive oxygen species (ROS) scavenging under salt stress (200 mM NaCl) in soybean (*Glycine max* L.). With this aim, the changes in relative water content, relative electrolyte leakage, chlorophyll content, malondialdehyde, hydrogen peroxide, catalase enzyme and isoenzyme activity and endogenous salicylic acid level were determined in treated plants. In our results, foliar application of MeJA protected soybean leaves from negative effects of salinity by increasing relative water and chlorophyll content. Furthermore, while salt stress increased relative electrolyte leakage, exogenously applied MeJA led to impairment in membrane damage. In parallel with this result, MeJA treatment alleviated salt induced oxidative damage by reducing malondialdehyde and hydrogen peroxide content to protect membrane from reactive oxygen species. Interestingly, endogenous SA level, catalase enzyme and isoenzyme activity were decreased by MeJA treatment. Consequently, this study firstly determined that MeJa treatment improved the soybean performance under salinity by acting as an antioxidant and inhibiting SA level and catalase activity.

Key words: MeJA, soybean, salinity, salicylic acid, ROS

Poster Presentation 92

Effects of Different Salt Concentrations on the Germination Properties of Hungarian Vetch (*Vicia pannonica* Crantz.)

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This research was carried out in the Mustafa Kemal University, Faculty of Agriculture, Department of Field Crops in 2017. It was used two Hungarian vetch (Altinova-2002 and Anadolu Pembesi-2002) and five salt concentrations (unsalted, 50 mM, 100 mM, 150 mM, 200 mM) as treatment. In this experiment, it was estimated germination rate, germination index and average germination time by using germination parameters. It was also measured radicle and plumule length.

Salt concentrations effected evaluated features for both varieties in the final of this research. As the salt concentrations increased, all properties were observed to decrease. In terms of germination rate, germination index, average germination time and radicle and plumule length between varieties, Altionva-2002 variety gave higher value than Anadolu Pembesi-2002 variety. When we examined Variety*Dose interactions, all properties were most affected in the Anadolu Pembesi*200 mM interaction.

As a result, the germination parameters of both species were adversely affected as the salt concentration rose. This research clearly showed that the cultivation of Hungarian vetch will be effected in the soil that has been exposed to the problem of salinity.

Key words: Salinity, Hungarian vetch, Germination, Environment

Poster Presentation 94

Interaction between Alpha Lipoic Acid and Osmolite Compounds under Osmotic Stress

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Alpha lipoic acid (ALA) is a potential antioxidant molecule known to be functions in abiotic stress tolerance in recent years. In this study, the role of ALA pretreatment in osmotic stress tolerance in maize seedlings exposed to osmotic stressed and relationship to osmolytic metabolism such as proline, polyamine and soluble sugars were investigated. ALA was applied at a concentration of 12 µmol in the hydroponically grown seedlings under osmotic stress conditions and leaf water status, stomatal conductance, proline, soluble sugar, polyamines contents and relative expression levels of genes related to proline metabolism were determined. ALA applied at low concentration mitigated the decreases in relative water content and stomatal conductance. It was found that proline, soluble sugar and polyamine contents were increased under osmotic stress conditions and these increases were high in ALA applied plants. Similarly, increased of Δ1-proline-5-carboxylate synthase (P5CS) relative gene expression under the stress conditions was found to be further enhanced in ALA pretreated plants. On the other hand, it was noted that proline dehydrogenase (ProDH) relative gene expression decreased in the stress conditions and the reduction was greater after the ALA pretreatment. It has been concluded that exogenous ALA can reduce the adverse effects of stress by affecting certain signal intermediate compounds such as proline, soluble sugar and polyamine and by stimulating the P5CS gene expression level involved in osmolytic metabolism and by suppressing the ProDH gene expression level.

Key words: Alpha lipoic acid, Osmotic stress, Proline, Polyamines, Soluble sugar

Acknowledgements: This research was financially supported by the Karadeniz Technical University Scientific Research Projects Coordination Unit, Turkey (THD-2016-5501)

Poster Presentation 95

The Effects of Hydrogen Peroxide Pre-Treatment on Photosynthetic Machinery and Antioxidant System in Maize Cultivars Exposed to Excess Copper

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The effect of H_2O_2 pre-treatment was investigated on copper tolerance in two maizes (*Zea mays* L.) cultivars, Akpınar (sensitive) and Pegaso (tolerant). For this purpose, antioxidant enzyme activities (ascorbate peroxidase, catalase, guaiacol peroxidase, glutathione reductase, superoxide dismutase), malondialdehyde (MDA) content, endogenous H_2O_2 level were determined spectrophotometrically. Also the changes happened in the photosynthetic apparatus were analyzed fluorometrically in the leaves of two maize cultivars. It has been found that the copper stress has reduced the growth of the plants, increased levels of MDA, endogenous H_2O_2 content and antioxidant enzymes activities and affected the chlorophyll fluorescence parameters. Pre-treatment of H_2O_2has reduced the endogenous H_2O_2 content, and levels of MDA, increased antioxidant enzymes activities and ameliorated the negative effects of excess copper on chlorophyll fluorescence parameters. As a consequence of these results, we can say that pre-treatment of H_2O_2 may decrease the negative effects of the copper stress by activation of antioxidant system enzymes, and defense the photosynthetic apparatuses in maize plants.

Key words: Antioxidant enzymes, Chlorophyll fluorescence, Copper stress, H2O2, Lipid peroxidation, Maize (*Zea mays* L.)

Poster Presentation 96

Soaring Bird Migration in Mut Province, Mersin

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Since Turkiye is on the Eurasian-African flyway, 3 (Bosporus, Artvin-Borçka and Hatay-Belen Pass) out of 8 bottlenecks for bird migrations in the West Palearctic are located in Turkiye. Consequently, the migrant soaring bird species, such as storks, cranes or migrant raptors migrate over Turkiye to reach their destinations in both spring and autumn on the Eurasian-African flyway. However, soaring birds and migration patterns on these 3 bottlenecks (primary migration routes) are well known; secondary migration routes are less known. In this study, therefore, we intend to determine soaring migrant birds migrating over Mut Province on the Eurasian-African flyway, Mut Province Southern Turkiye. Standard raptor migration survey guideline used to record passing and counting was started at sunrise and continued until sunset. Systematic counts were made during both spring and autumn between September 2013 and September 2017 in both spring and autumn migration periods for 15 days. The region was visited once a month and during the breeding seasons twice a month. Telescopes (40X60) and binoculars (16X24), digital cameras (Canon 400mm) were used during the survey period. White stork, black stork, crane, demoiselle crane, egyptian vulture, short-toed eagle, lesser spotted eagle, honey-buzzard, black kite, red kite, common buzzard, booted eagle and peregrine falcon passings were observed in the region.

Key words: bird migration, soaring birds, secondary migration route, Eurasian-African flyway, Mut

Poster Presentation 97

The Status of Chukar Partridge (*Alectoris chukar*) in Türkiye

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The Chukar Partridge *Alectoris chukar* is among the economically and culturally important birds of Turkiye. Besides being a food source, it is also important as a game animal. Moreover, local people especially in south-eastern Anatolia breed chukar partridges as a tradition. Over the last 50 years partridge populations of Turkiye has lived a considerable decline because of excessive hunting, habitat destruction and environmental pollution. On the other side, data on chukar partridge of Turkiye are limited and populations abundance are not well known. Furthermore, thousands of partridges breed in captivity were released to nature by The Ministry of Forestry and Water Affairs for hunting purposes. By this study, we want to present our early data on the distribution and possible breeding density of chukar partridges live in wild in Turkey. Our early observations indicate that the population density of chukar partridge is considerably low in the Western Anatolia and Trace Region while relatively high in East and South East Anatolia. There seems a negative correlation between human and partridges' population densities and so an anthropogenic effect on decline in partridges' population.

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Key words: Chukar partridge, *Alectoris chukar*, species status, distribution, breeding density

Poster Presentation 99

Avian Mortality Rate Due to Collisions with Automobiles and Wind Turbines in Çanakkale

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Today, instead of classical fossil fuel-based energy production systems that cause environmental pollution on a global scale, the tendency towards energy resources with less environmental impact and renewable energy is increasing rapidly. In alternative electricity generation methods, wind power plants without air pollution and greenhouse gas emissions are becoming increasingly widespread. However, there are potential to harm bird species, especially in wind energy plants (RES), as in all the interventions and structures in nature. Potential effects of wind energy plants on bird species can be classified as loss of habitat, impact, disturbance and barrier effect. The effect that is most brought to the agenda is the collision effect. Another human activity that leads to deaths resulting in crashes to bird species is vehicle movement on the highway. Although there are many studies on the negative effects of wind power plants in Turkey on bird species, there is not enough data about bird deaths in highway networks. With this study, attempts have been made to make the data of turbine and vehicle crash mortality rates in the region as perspective. For this purpose, collision deaths experienced in two wind power plants with a total of 34 turbines located in Çanakkale province were compared with deaths resulting from vehicle crashes occurring 90 km away from the main roads closest to the wind turbines. The mortality rate per turbine for the two-year period was found to be 0.21 and for the highway networks 0.34 bird death rate per km.

Key words: Avian mortality, Vehicles, Wind turbines, Collisions, Çanakkale.

Poster Presentation 100

Gallipoli Peninsula Breeding Bird Species Survey and Relatives Threat Factors

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Birds are one of the groups with a wide variety of ecological functions in vertebrate classes. It is inevitable that the declines in bird species diversity and populations will cause a wide range of ecological problems in the ecosystem they are in. Important areas of breeding, diversity and high abundance of bird species are sensitive areas in terms of protecting the health and continuity of the ecosystem. The Gallipoli peninsula, one of the major bird migration routes, is located in the western palearctic region. It has a rich diversity of species with different types of habitats and wetlands. As a matter of fact, 245 birds from 57 families were observed in the field studies in 2015-2016. Research on breeding birds was conducted between 15 March and 15 June. The behaviors of the observed birds were evaluated by 16 different breeding codes (European Bird Census Council - EBCC Breeding Codes). As a result of field studies, breeding code was given to 137 spices from 45 families (58 possible breeding, 39 probable breeding and 40 confirmed breeding). The Gallipoli peninsula has an area of 1296 km2 and has been divided into 18 10x10 km UTM squares, resulting in the distribution of breeding areas of bird species. Considering the species diversity and density of breeding birds detected in the study squares, significant breeding areas were determined. Critical and endangered habitats have been identified by classifying anthropogenic sources in important breeding sites. It is aimed to contribute to the preparation of management plans for conservation purposes.

Key words: Gellipoli Peninsula, Bressding Birds, Treat Factors, Loss of Habitat, Disturbance

Acknowledgements: This research was financially supported by the Çanakkale Onsekiz Mart University Scientific Research Projects Coordination Unit (BAP), Turkey (FBA-2015-511).

Poster Presentation 101

Storks (*Ciconia ciconia* and *C. nigra*) Migration at Biga District

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Migration is an important life trait for migrating birds to arrive places which has good conditions to breed and continue lineage. There are 8 important bird migration flyways on the world and one of them is the Mediterranean/Black Sea Flyway and passed on Turkey. Storks (*Ciconia ciconia* and *C. niger*) are used this flyway during spring and autumn migration periods with millions of individuals. This study is carried out at Biga district, which is a part of Bosporus bottleneck, from 2015 to 2017 to investigate stork migration and also stopover status of the area. Daily observation has been done to count storks' population and passing frequency from the district. It was found out that the Biga district is a stopover and resting site for the storks' populations both in spring and autumn migration periods before passing Bosporus bottleneck. A total of 11826 White and 394 Black stork individuals were counted and are used Biga district during consecutive study years. Three important migration pathways were found that storks are used to passing peninsula and/or Bosporus. The study revealed that Biga district is an important stopover and migration routes for the storks and have to be into account to protect storks' populations from the anthropogenic activities.

Key words: Biga district, Black Stork, Çanakkale, Migration, White Stork.

Poster Presentation 102

Birds of Biga Wind Farm and its Environs

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It's well known that Turkiye has rich bird fauna due to the geographical location and other bio-ecological characteristics. However, there is no research on birds of some parts of the country like city or districts. The study, therefore, was carried out at Biga wind farm and its environs during the years of 2015-2017 to find out birds of Biga lowland, Ayıtdere pond and Karabiga villages. Point count and transect line was used to determine bird species by 5 days monthly observation. A total of 161 bird species belonging to 43 families were observed in the study area and 63 of them are resident, 45 are summer visitor, 30 are passage migrant and the last 28 species are winter visitor. A half of the observed species is belonging to Passeriformes (48%) order and many of them breed in the area. The study maintaining different habitats like pond, agricultural areas, shores, forest, scrub, reeds etc. and are provide opportunity to feeding, resting and breeding activities. It was seen that the area used during migration by the soaring birds like stork and raptors and also by the waterfowls and other migrant birds. The threatened status of the birds evaluated according to IUCN criteria and found that 5% of the species under protection at international level. The study showed that Biga wind farm and its environs have a rich bird fauna and the Biga peninsula need to long term monitoring studies to get conclusive results.

Key words: Biga, Çanakkale, Migration, West Palaearctic, Birds of Biga, Wind farm

Poster Presentation 103

Necropsy Findings in 19 Free-Living Buzzards in Burdur, Turkey

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Post-mortem findings of 19 free-living buzzards (*Buteo rufinus* and *Buteo buteo*) that died due to illegal hunting. The living birds sent to rehabilitation center or faculty for treatment. They presented to department of pathology after death. Blood samples were collected in some cases before death. Necropsy were not performed three of them because of the severe autolysis. The most common necropsy findings were visceral hemorrhage and bone fractures. An adult, female common buzzard (*Buteo buteo*) with paraplegia due to shooting wound on the sacral region was diagnosed with *Leucocytozoon toddi, Haemoproteus elani,* and *Histomonas meleagridis*. Avipox was diagnosed in an adult, male common buzzard *(Buteo buteo)* with a leg fracture and multiple proliferative cutaneous nodules on its feet, eyelids and beak. Candidiosis was observed in a young adult falcon. Parasites in gastrointestinal tract were common findings and the *Parracaecum sp.* the most frequently observed gut parasites and observed 5 out of 19 buzzards. In addition, septicemia was frequently observed in injured falcons. Inflammatory reaction and abscess formations were also diagnosed. This study showed that different parasites and diseases occur in free-living buzzards.

Key words: Buzzard, postmortem findings, histopathology

Poster Presentation 105

Sexual and Social selection in the white-eyed bulbul *Pycnonotus xanthopygos*

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Mate choice is suggested to be one driving force of sexual selection responsible for the evolution of exaggerated ornaments. However, many animals also use ornaments, particularly colour traits, to communicate outside a sexual context. Therefore, if particular ornaments confer social advantages, such as competition for non-reproductive resources, social status or prestige, then they may evolve outside the framework of sexual selection. This alternative possibility, a form of social selection, We, therefore, measured both male and female preferences in opposite-sex (sexual context) or also in same-sex associations (social context) for familiarity (individuals recognize group mates with which they have had previous interactions) and/or experimentally manipulated ornaments (yellow ventral plumage feathers) in an aviary four-choice test in territorial and socially monogamous white-eyed bulbul. We found that in the mate choice test, females preferred unfamiliar males with increased yellow. There were no biologically important differences in male preferences based on familiarity or intensity of patch colour. In the social choice test, females preferred to associate with familiar females. Males preferred to associate with familiar males but also preferred to associate with less ornamented males. Our results suggest that ornamentation and familiarity are important features, playing different roles in males and females, in both social and sexual selection processes.

Key words: White-eyed bulbul, *Pycnonotus xanthopygos,* breeding biology, breeding ecology

This study was supported by The Scientific and Technological Research Council of Turkiye (TUBITAK) under project no: 212T111 and was conducted with the permission of The Ministry of Forestry and Water Affairs (17825 /2011) and Akdeniz University Ethical Committee on Animal Experiments regulations (134 /2012).

Poster Presentation 106

Assortative Mating, Sex Allocation and Offspring Sex Ratios in the White-eyed Bulbul *Pycnonotus xanthopygos*

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Assortative mating is the mating pattern where individuals of similar phenotype or quality mate together more often than expected by chance. On the other hand, females might use sex allocation strategies to increase their fitness depending on the relative quality of their partner. We examined these mating patterns in the white-eyed bulbul *Pycnonotus xanthopygos*.In this species, sexes are similarly ornamented, but males are heavier and larger than females. To assess assortative mating, we performed non-parametric spearman's rank correlation between the same trait of male and female. To investigate sex allocation we built linear regression. We found that bulbuls in the studied population do not pair randomly, but both sexes prefer partners with the longer wing (S: 837.39, p: 0.038, n: 22) and tarsus (S: 757.44, p: 0.019, n: 22). Furthermore, we found a relationship between the difference in body condition within a pair and offspring sex ratio. When females were in better body condition comparing to their partner, they produced more males in a clutch (B ± SE: -0.003 ± 0.001, t: -2.25, p: 0.037, n: 18). Our results showed that both sexes of the white-eyed bulbul attempt to gain the best quality partner possible and females allocate offsprings sex to increase their fitness.

Key words: White-eyed bulbul, *Pycnonotus xanthopygos,* assortative mating, sex allocation, offspring sex ratio

This study was supported by The Scientific and Technological Research Council of Turkiye (TUBITAK) under project no: 212T111 and was conducted with the permission of The Ministry of Forestry and Water Affairs (17825 /2011) and Akdeniz University Ethical Committee on Animal Experiments regulations (134 /2012).

Poster Presentation 107

The Breeding Biology of White-eyed Bulbul *Pycnonotus xanthopygos*

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The White-eyed bulbul *Pycnonotus xanthopygos* is a common sedentary passerine bird in Turkey, where it has gradually expanded its distribution and breeding range in both western (From Antalya to Fethiye) and south eastern (from Adana-Hatay to Gaziantep-Adıyaman) directions. In this study, we report the breeding biology of the white-eyed bulbul in Antalya where the northernmost distribution of species occurs, over a 6-year period (2002-2003 and 2013-2016). During breeding seasons, the nests were checked weekly to determine breeding data. We found that nest building activity started in February and laid the first egg in March. The latest nests are built in August while reproduction is concluded by September. The preferred nesting areas were mainly gardens and maquis groves while 24 different tree species were preferred and the most common were palm trees (24.2%) in 103 nests. The clutch size is 3.3 ± 0.8 eggs per pair, and nesting, hatching, fledgling and overall breeding success rates are 68%, 94%, 95% and 89%, respectively. While a difference was noted regarding nesting success through the years, we found no significant differences in hatching, fledgling, and overall breeding success in the years studied.

Key words: White-eyed bulbul, *Pycnonotus xanthopygos,* breeding biology, breeding ecology

This study was supported by The Scientific and Technological Research Council of Turkiye (TUBITAK) under project no: 212T111 and was conducted with the permission of The Ministry of Forestry and Water Affairs (17825 /2011) and according to Akdeniz University Ethical Committee on Animal Experiments regulations (134 /2012).

Poster Presentation 108

Long-term mate and territory fidelity in the white-eyed bulbul *Pycnonotus xanthopygos*

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White-eyed bulbul *Pycnonotus xanthopygos* is territorial and socially monogamous species, pair bonds persists through breeding season or all year and often lasts for several years and species flocking in the winter. However, little is known on mate and territory fidelity in white-eyed bulbul. In this paper, we examined mate and territory fidelity in white-eyed bulbul, a sedentary passerine, over a 4-year period. Bulbuls were captured with the mist nests in their breeding territory in breeding season and marked with plastic color rings. Territories were monitored and the ringed pairs were followed per year. We found that 12 (27%) of 45 pairs breed in same territory 2 or more successive years. It was observed that males were the territory holders when the pairs divorce. Long-term monogam pairs (LMP) with the territory fidely had higher breeding succes than the others and only 1 LMP had the second cluth. In this context, LMP pairs with territory fidelity gained direct benefits through higher breeding success and second clutch. These results support that white-eyed bulbuls are socially monogamous species with long-term pair bonds.

Key words: White-eyed bulbul, *Pycnonotus xanthopygos,* long-term monogamy, mate fidelity, territory fidelity

This study was supported by The Scientific and Technological Research Council of Turkiye (TUBITAK) under project no: 212T111 and was conducted with the permission of The Ministry of Forestry and Water Affairs (17825 /2011) and according to Akdeniz University Ethical Committee on Animal Experiments regulations (134 /2012).

Poster Presentation 109

The Migration Ecology of Soaring Birds in Autumn 2017 in Nurdağı Province, Gaziantep, Turkiye

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Nurdağı Province is located on the southeastern Turkiye where is approximately 30 km away from the Belen pass which is a migration bottleneck for soaring birds migrate over Turkiye. Furthermore, it is located between the Artvin-Borchka and Belen flyway. In this study, therefore, we intend to determine the autumn migration ecology of soaring migrant birds migrating over Nurdağı Province on the Eurasian-African flyway, south-eastern Turkiye. Surveys were performed between August 2017 and December 2017 in autumn migration period. Systematic counts were made for 18 days. Standard raptor migration survey guideline used to record passing and counting was started at sunrise and continued until sunset. Telescopes (40X60) and binoculars (16X24), digital cameras (Canon 400mm) were used during the survey period. Birds arrived from the north-east and departed to the south-west, and a total of 1,171 were counted in 10 species. These species were egyptian vulture, Short-toed eagle, greater spotted eagle, lesser spotted eagle, honey-buzzard, black kite, Montagu's harrier, common buzzard, booted eagle and peregrine falcon. Honey-buzzard was the most numerous species with 540 individuals (Max. 237 on 3rd October 2017). Common buzzard was the most frequently observed raptor with 20 passing and followed by short-toed snake eagle with 18 passing. Our results confirm that a small but significant passage of soaring birds occurs in Nurdağı Province.

Key words: Bird migration, soaring birds, secondary migration route, Eurasian-African flyway

Poster Presentation 110

Effects of Turbine Lighting on Bird and Bat Mortality

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We studied impact of a wind farm on birds and bat in south-east Turkiye. The wind farm consist line of 10 medium sized turbines and each turbine has a fence with night-long active lighting source. The vegetation is characterized by red pine forest (*Pinus brutia*) on the mountain ridge and pasture land used for cattle grazing predominating in the lower areas. We performed carcass search for a year between July 2016 to July 2017 and each month for 5 days. Each turbine was searched at a radius of 50 m with 2 researchers. We detected that 10 bird (3 red-backed shrike *Lanius collurio*, 1 red-breasted flycatcher *Ficedula semitorquata*, 1 chiffchaff *Phylloscopus collybita*, 1 blackcap *Sylvia atricapilla* and 1 black redstart *Phoenicurus ochruros*) and 18 bat (12 common pipistrelle *Pipistrellus pipistrellus* and 5 puhl's pipistrelle *Pipistrellus kuhlii*) died due to collision to turbine blade (5 birds and 6 bats), collision to turbine tower (2 birds and 1 bat), collision to fence (3 birds and 1 bat) and barotrauma (7 bats). Three birds and 1 bat carcasses could not identified due to damages of collision. All bird species were migrant for the area and bats were resident species. All the bird carcasses found <5 m from the turbine. This indicates that the lighting around the turbine is the cause bird mortality. To mitigate this effect, light sources around the turbines should be removed or sensory lighting systems should be used.

Key words: carcass search, collision, wind turbines, turbine lighting, wind farm

Poster Presentation 111

Birds of Andırın, Kahramanmaraş, Turkiye

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Andırın is located on the south-eastern Turkiye. The region consists of orchards, agricultural areas; both cultivated and grazed pastures, with patches of open woodland areas and red pine forests. In this study, we determine birds of Andırın. Surveys were performed between Jun 2016 and Jun 2017 for 30 days. The region was visited once a month and during the breeding seasons twice a month. We used point counts, and line transects to detect passerine birds and water birds. Standard migration survey guideline used to record for migrant birds, and counting was started at sunrise and continued until sunset. Telescopes (40X60) and binoculars (16X24), digital cameras (Canon 400mm) were used during the survey period. We observed 81 bird species in the region. Passeriformes has the richest bird diversity with 50 species. While the region is not a breeding ground for any endangered avian species, the endangered egyptian vulture was transit migrant in the region. White stork, black stork, egyptian vulture, short-toed eagle, lesser spotted eagle, black kite, honey-buzzard, common buzzard, booted eagle, marsh harrier, levant sparrowhawk, and peregrine falcon were the soaring migrant species spotted in the area.

Key words: bird diversity, avifauna, bird migration, Species diversity, Andırın

Poster Presentation 112

Colony Morphology of Semi-Synthetic Modified Media of Some Isolates of *Penicillium* Species

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In this research it is intended to investigate the effect of the usage of medium and their modified conditions that have been used on mold culturation and identification on colony morphology. It is also intended to find the culturation yields in accordance to the used isolators. 4 microfungus strains have been used, which are as follows: *Penicillium expansum*, *Penicillium italicum* and *Penicillium purpurogenum* and 1 *Talaromyces* (*T. radius* of which is the new generic name of Subgenus Biverticillium of the genus *Penicillium*). These strains were inoculated to Blakeslee's Malt extract Agar (BL), Czapek Yeast Agar (CZYA), Glucose Pepton Yeast Extract Agar (GPYA), Glucose Yeast Pepton Agar (GYPA), Malt extract %2 (ME%2), Malt extract %5 (ME%5), Malt Extract Agar (Samson, MR) and Patato Dextrose Agar (PDA) for incubation for 7 days in 25°C. Each of them has been photographed and measured for their colony diameter, and have been left for a 7 day incubation in 25°C and photographed. As a result, *P. expansum* has shown growth in every media. For sporulation, 2-BL, 4-BL, 1-CZYA, 2-CZYA, GPYA, GYPA and 1-MR have been effective. *P. italicum* has shown growth in every medium except for salty agar. Especially BL, ME%2 and 3-MR broths are important for sporulation. *P. purpurogenum* has shown slight growth in salty broths, and has shown no growth in 1-PDA TM at all. For sporulation, BL, CZYA, GPYA, GYPA, ME%2 and ME%5 are detected to be ideal. *T. radius* has shown growth in every medium but for sporulation, 3-BL, ME%2 and ME%7 have shown sporulation in 7 days, and a period of 14 days of sporulation in all other broths. But 2-GYPA has been covered with exudates on sporulation area in 14 days, and has shown thread like hyphae in 3-MR.

Key words: fungal media, fungal sporulation, microfungi, modified media, *Penicillium*, *Talaromyces*.

Poster Presentation 113

Seasonal Distribution of Outdoor Airborne Mold Genera in Çanakkale, Turkey

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Epidemiological investigations have shown that some mold genera have influences on human health than other mold genera. Therefore; identification of fungal aerosols is important to identify mold source and its role of allergenic disease or their toxic effect on human. The aim of this study was to characterize the outdoor mold in Canakkale, Turkey on a seasonal basis. Dichloran Rose Bengal Chloramphenicol (DRBC) was used to determine fungi sampling (August 2013 - September 2014). Observation frequencies of each fungi genera on all samples collected throughout the study were sterile hyphae (95%) *Cladosporium* spp. (94%), *Penicillium* spp. (94%), yeast (83%), *Aspergillus* spp. (66%), *Alternaria* spp. (47%), *Acremonium* spp. (17%), *Trichothecium* spp. (16%), *Fusarium* spp. (14%) and *Geotrichum* spp. (3%), in descending order during the winter period and *Cladosporium* spp. (100%), *Penicillium* spp. (100%), *Alternaria* spp. (98%), sterile hyphae (98%), *Aspergillus* spp. (95%), yeast (88%), *Acremonium* spp. (50%), *Trichothecium* spp. (35%), *Fusarium* spp. (32%) and *Geotrichum* spp. (16%), in descending order during the summer period. Some of the fungi genera were observed at some measurement points only in the summer, not in the winter. This study has shown that distribution of the airborne fungi genus, collected from different parts of Canakkale city, varied seasonally.

Key words: Airborne fungi, Outdoor air, Mold species, Fungal Aerosols, Microfungi

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Poster Presentation 114

Daily Airborne Bacteria Samplings in Two Different Localities on Edirne City; The Relationships with Meteorological Factors and Pollution Parameters

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In this study, in two different localities in Edirne City were determined the airborne bacteria. In one of the localities as heating system were used mostly coal, in the other were used natural gas. Air samplings were undertaken daily over one month in February and March, in the evening hours when heating is active. The average colony counts (CFU/m^3) in each localities of isolated bacteria were determined. In addition, the relationships between bacterial concentration with various meteorological factors (temperature, relative humidity, rainfall), and air pollution parameters (SO_2, PM_{10}) were statistically evaluated. For isolation of bacteria were used 124 petri plates and aspirated 12.400 L of air. A total of 26.260 CFU/m^3 (average 13.130 CFU/m^3) bacteria colonies were isolated. In the first station, which is warmed by coal, an average of 11.425 CFU/m^3 bacteria and in the second station heated by natural gas, 1.705 CFU/m^3 bacteria were found. In terms of statistical, the highly significant relationships ($p<0,001$) were determined between daily total bacterial concentrations in 1st station and some meteorological parameters (relative humidity, SO_2 and PM_{10}), while bacterial concentrations in the second station were significantly ($p <0,05$) correlated only with rainfall.

Key words: Air, Bacteria, Meteorological factors, Air pollution.

Poster Presentation 115

A Survey of the Mycobiota in Soils Grown of Different Plants in Thrace Region, Turkey

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In this study, microfungi concentration and diversity were investigated in field and garden soil (sunflower, corn, chickpea, onion, bean, pea, strawberry, bean, lettuce, mint, potatoes) where different plants were grown in the vicinity of Yesilkoy (Keşan, Edirne) in Thrace region. For this purpose, samples were taken from the top soil and microfungi were isolated by using "Soil Dilution Method". Then, microfungi were counted and identified in genus level. According to the results of the quantitative analysis, the average number of microfungi in fresh soil corresponding to 1 g dry soil was highest in garden soil grown potato and lowest in garden soil grown pea. Microfungi belonging to Mycelia Sterilia were the most commonly isolated from the soil samples, and followed by *Penicillium*, *Acremonium*, *Aspergillus* and *Fusarium*, respectively. The soil of the onion field was showed the most variety in terms of microfungus genus while the least diversity was observed at the pea garden soil.

Key words: Microfungi, Soil, Thrace, Edirne.

Poster Presentation 116

Evaluation of Anthropogenic Impact on Coastal Areas Using Bacteriological Indicators (The Western Coasts of Turkey)

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Microbial contamination in surface waters influences commercial uses of coastal areas. Fecal coliforms (FC) and fecal streptococci (FS) are used as indicators of enteric organisms in aquatic environments. They are regularly monitored to ensure sanitary standards used in recreational activities. The aim of the present study was monitoring the fecal indicators (FC and FS) of seawater samples taken from two coastal regions at spring and autumn periods. Seven samples were collected from two coastal areas (Ildır and Akköy located on the western coast of Turkey). In order to determine the number of fecal indicator bacteria, membrane filtration method was used. Samples were filtered immediately and membrane filters were transferred to petri plates containing m-FC medium incubated at 44.5 °C- 24h for fecal coliforms and Azide Dextrose medium at 37.5 °C- 48h for fecal streptococci. Membrane filtration analysis indicated that fecal contamination risk was detected two sampling stations in Akköy and one sampling station in Ildır. In addition, the highest FC (9x102 cfu/100ml) and FS (9.5x102 cfu/100ml) results were observed in the autumn periods. Considering the findings of the present study, it can be said that coast of the Aegean Sea should be monitored regularly in terms of sanitary standards.

Key words: Coastal areas; seawater; bacterial indicators; fecal coliforms; fecal streptococci

Acknowledgments: This work was supported by the Republic of Turkey Ministry of Environment and Urbanization.

Poster Presentation 117

Assessment of Chemical Properties in Çakalburnu Lagoon (İzmir Bay)

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Çakalburnu Lagoon is affected by both land and sea because it is located between the terrestrial systems and the marine environment. In the scope of the study, dissolved oxygen, chlorophyll-a, total inorganic nitrogen (TIN), total phosphate (TP), particulate organic matter (POC) and particulate organic nitrogen (PON) were measured in wet (winter) and dry (summer) periods of year 2016. Dissolved oxygen concentrations were measured between 6-20 mg/l and 3-7 mg/l in winter and summer, respectively. The chlorophyll-a concentrations representing the phytoplankton biomass were measured at a maximum of 45.3 µg/l in the summer, when the production of particulate organic matter was high. Minimum chlorophyll-a level (1.22 µg/l) was detected in winter period. The photosynthetic production over a certain level in the lagoon is available throughout the year and reaches high levels in the summer. TIN with a maximum level of 281 µM, found in the winter because of precipitation and terrestrial inputs. TIN levels sharply decreased and ranged between 0.2-2.8 µM in summer. TP concentrations were observed between 1.2-2.6 µM and 2.8-4.2 µM in wet and dry season, respectively. It has been determined that the productive lagoon, which has two connection points with the sea and is heavily influenced by climatic changes, has a dynamic structure similar to that inner part of İzmir and is affected by both land and sea.

Key words: Çakalburnu Lagoon, total phosphate, total inorganic nitrogen, chlorophyll-a, particulate organic matter, particulate organic nitrogen

Acknowledgment: This study was supported by The Scientific and Technological Research Council of Turkey (Project number: TUBITAK 115Y406).

Poster Presentation 120

Antimicrobial Activity on the Skin Secretions of Nine Anuran Species from Turkey

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With regard to amphibians, a dramatic worldwide decline of populations of multiple species was first noted about 40 years ago since then, this decline has continued at an alarming rate. According to the most recent 2008 global assessment nearly one-third (32%), or 6593 amphibian species are threatened. Some 122 amphibian species have become extinct since 1980, and the population size of at least 43% of species is declining. The causes of this declines are likely to be multiple and complex. Amphibians have the full complement of immune systems as higher vertebrates including both adaptive and innate immunity. Innate immunity involves different mechanisms that can provide an instant response nonspecifically to many different pathogens. Antimicrobial peptides are the first place in these mechanisms. As each frog species secretes its own unique set of peptides, significant variation occurs among species in the number, structure and antimicrobial activity of these peptides. In our knowledge, there is no study previously performed in our country on the amphibian immune system. The aim of this study was to evaluate the skin secretions of the nine anuran species has led to the identification of multiple peptides with antimicrobial activity.

Key words: Amphibian Populations, Decline Causes, Amphibian Immune System, Antimicrobial Peptids

Acknowledgments: This research was supported by Project no. Tubitak 113Z139. Ethical endorsement was ratified by the Ethical Committee of Afyon Kocatepe University and the Turkish Department of Nature Conservation (Permit number, DKMP-51039719

Poster Presentation 121

Investigation of DNA Damage Caused by Carbon Nanotubes in the NIH/3T3 Cell Line with Single Cell Gel Electrophoresis Assay

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Carbon nanotubes (CNTs) from carbon-based nanomaterials are used in a variety of applications in the areas of nanotechnology such as automotive, aviation, computer industry, mechanical engineering, drug delivery systems, textile, sporting goods, electronics, optics and plastics due to their unique physical and chemical characteristics. MWCNTs are produced in advanced technology laboratories as well as naturally as a result of the burning of particulate fuel. For this reason, it is estimated that tons of CNTs are produced worldwide every year. Although extensive research has been conducted on carbon nanotubes in recent years, the effects on potential environmental and community health have not been clarified and the risks to be created are generally unknown. Because it can accumulate in the environment, it poses a potential risk to human health and the ecosystem. The publications in the literature show controversial results about the genotoxicity of carbon nanotubes. In this study, we tested four different concentrations (0.1, 1, 10 and 100 ppm) of multiwalled carbon nanotubes (MWCNT), NH2 functionalized carbon nanotubes (MWCNT-NH2) and COOH functionalized carbon nanotubes (MWCNT-COOH) by using the single cell gel electrophoresis (COMET) assay. The murine embryonic cell line (NIH/3T3) was used for the investigation of genotoxicity in the COMET test. As a result of the study, genetic damage was not observed when compared to negative control group in terms of all parameters (tail length, tail moment and tail density) in the applications of all concentrations of MWCNT, MWCNT-COOH and MWCNT-NH2.

Key words: MWCNT, COMET, NIH-3T3, Genotoxicity

Acknowledgements: This research was supported by Akdeniz University Scientific Research Projects Coordination Unit, Turkey (2014.01.01115.001).

Poster Presentation 122

Investigation of Antigenotoxic Effects of Melatonin Against Cobalt Nanoparticles-Induced Genotoxicity in *Drosophila melanogaster*

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Nanotechnology finds more applications year after year in medicine, cosmetics, food, textile, chemical, automobile and metal industry and it is becoming indispensable for human life. There is an increasing interest in the genotoxic and carcinogenic effects of these substances on human and environmental health. Numerous studies have been carried out in in vivo and in vitro test systems to reveal these effects. In this study, the protective effect of melatonin against CoNP genotoxicity, was evaluated by *Drosophila* SMART and KOMET methods. In the preliminary practice of SMART method showed that melatonin showed an antigenotoxic effect against cobalt toxicity at all doses (0.1, 0.5 ve 2.5 mM). In concurrent application, Melatonin did not show any antigenotoxic effect. In concurrent application, Melatonin did not show any antigenotoxic effect. In the KOMET method, it was determined that all concentrations of Melatonin showed protective effect in terms of three parameters (tail density, tail moment, tail length) against DNA damage induced by CoNP in hemocytes. It is considered that the protective mechanism of action of melatonin against genetic damage induced by CoNP is mainly due to antioxidant effects. It is also known that some preservatives have an important effect in reducing the genotoxicity and protecting the organism by acting anti-oxidant as well as defense system.

Key words: Melatonin, SMART, KOMET, *Drosophila*, cobalt nanoparticles, Genotoxicity

Acknowledgements: This research was supported by TUBITAK, Turkey (113Z564).

Poster Presentation 123

Cytotoxic and Apoptotic Effects of Boric Acid and Zinc Borate on Human Sertoli Cells

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Boron is a group 3A element with atomic number of 5, atomic weight of 10.81 g/mol, and a chemical symbol of B. Boron compounds when solve in water transforms to boric acid. Boric acid and zinc borate are among the most important exportation products of Turkey. Boron compounds have been considered as being toxic to reproduction system in animal experiments. Reproductive data of boron exposure is very limited. Results of epidemiological studies in Turkey and China showed that normal daily boron intake have no adverse effect on human reproductive system.

The aim of our study is to investigate the cytotoxic and apoptotic effects of boric acid and zinc borate on Sertoli cell culture in vitro. This study is substantial as we used the reproductive system cell which is the target of boron exposure. The cytotoxicity of boric acid and zinc borate was determined by using Neutral Red Uptake (NRU) assay. Apoptosis was performed by Muse Annexin V& Dead Cell Kit using Muse Cell Analyser. Acording to our results, boric acid has no cytotoxic effect and does not induce apoptosis on human Sertoli cells up to 1000 µM. Besides, zinc borate is cytotoxic on human Sertoli cells (IC50=90µM) and significantly induces apoptosis at 100 µM. From the results of our study, it was concluded that zinc borate induces cell death and apoptosis upon 90 µM concentration.

Key words: Boric acid, zinc borate, NRU assay, apoptozis, human sertoli cells

Acknowledgement: This study was supported by Tübitak project 115S983.

Poster Presentation 124

Evaluation of the Effects of UV Radiation on DNA Integrity on Human Keratinocyte Cells

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Ultraviolet (UV) radiation is widely known as an environmental genotoxic agent that affects human population, generating DNA damage, cell death, mutagenesis and ultimately carcinogenesis via direct or indirect mechanisms. The toxic effects of UV from natural sunlight and therapeutic artificial lamps are a major concern for human health. The major acute effects of UV irradiation is on human skin. International Agency for Research on Cancer (IARC) has been classified UV radiation (UVA, UVB and UVC) as a Group 2A carcinogen, sunlight as Group I carcinogen, In the present study, the genotoxic effects of UV radiation was investigated on HaCaT cells which is the target of UV exposure. For this purpose comet assay was performed to determine the DNA strand breaks. Samples were exposed for 1, 5, 10, 15, 30, 45 and 60 min at a distance of 60 cm from the source (280-400 nm, UVA-UVB) receiving a 1 mW/cm2 dose rate. Our results indicate that, comet tail intensities were significantly (dose related) induced by UV radiation in HaCaT cells.

Key words: UV, comet assay, HaCaT, DNA integrity, tail intensity

Acknowledgement: This study was supported by Tübitak project 114S311.

Poster Presentation 125

Heavy Metal Accumulation in Liver Tissue of Wild *Microtus guentheri* (Danford and Alston 1880) from The Korkuteli-Antalya, Turkey

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The objective of this study was to determine the concentrations of seventeen heavy metals (Fe, Al, Zn, Cu, Cr, Mn, Sr, Ni, Ba, Se, V, Sn, Pb, As, Co, Mo and Cd) in liver from wild rodent *Microtus guentheri* from natural region which is near mine and stone quarry activities in Korkuteli-Antalya. Liver samples of six voles specimens from one season (2016, spring) collected by means of Sherman traps, in Korkuteli-Antalya. Captured specimens were killed by cervical dislocation and livers were immediately removed, weighed and frozen at -40 °C prior to chemical analyses in polystyrene tubes. Samples were analysed by Inductively Coupled Plasma-Optical Emission Spectometer (ICP-EOS). For control purposes, the same procedures were carried out for a blind sample on the same conditions. The concentrations of heavy metals were expressed for the liver samples as milligrams per kilogram (ppm) for dry weight. Descriptive statistical characteristics were calculated (mean, standard error) for liver tissues of *M. guentheri*. The mean concentrations of the metals accumulated in liver samples of *M. guentheri* as follows (X±Se, n=6): Fe: 937.23±123.43, Al: 160.38±39.23, Zn: 141.02±7.04, Cu: 21.39±0.54, Mn: 18.70±1.63, Mo: 7.50±0.62, Cr: 6.20±0.44, Sr: 1.91±0.38, Se: 1.87±0.45, Co: 0.66±0.05, Ba: 0.54±0.22, Ni: 0.48±0.08, Pb: 0.46±0.06, Sn: 0.45±0.04, V: 0.42±0.07, As: 0.24±0.05, Cd: 0.08±0.02 ppm. The order of mean concentration of the heavy metals in samples was Fe>Al>Zn>Cu>Mn>Mo>Cr>Sr>Se>Co>Ba>Ni>Pb>Sn>V >As>Cd. The toxic heavy metal pollution began at the vicinity of Korkuteli.

Key words: Heavy metal accumulation, ecotoxicology, liver, *Microtus guentheri*, biomonitoring

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Presented by

Poster Presentation 126

The Effects of Aroclor 1254 and/or Selenium Status on Hepatic Caspase 3 And Caspase 8 Activities and Hepatic Apoptosis

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Polychlorinated biphenyls (PCBs) are synthetic mixtures of chlorinated congeners. They have been used as coolants and lubricants as they are good insulators and do not burn easily. Aroclor was a trade name of the commercial PCB mixtures. Aroclor 1254 (A1254) was the most widely used Aroclor congener and is suggested to cause hepatocellular damage in rodents. Selenium is an essential micronutrient for many living organisms. Concerning all the available data, this study was designed to determine hepatic caspase 3 and caspase 8 activities and hepatocellular apoptotic death in male Sprague-Dawley rats. Three-week-old male rats were randomly divided into 6 groups. Selenium deficiency was introduced by feeding 3-week old Sprague-Dawley rats with ≤0.05 Se mg/kg diet for 5 weeks. Selenium supplementation group received 1 mg Se/kg diet. A1254-treated groups were dosed with 10 mg/kg dose by gavage during the last 15 days of feeding period. Caspase 3 and 8 activities were not significantly affected from selenium status. A1254, on the other hand, caused a marked increase in caspase 3 activity (6.5-fold). In addition, hepatic caspase 8 activity increased 54% in A1254 group vs. control. Moreover, number of hepatic apoptotic cells were almost 3.5-fold higher in A1254 vs. control. Selenium supplementation along with Aroclor 1254 provided marked decreases in the activities of both caspase 3 and caspase 8 activities as well as in number of apoptotic cells. These results indicate that A1254 can induce caspase cascade *via* extrinsic pathway and inorganic selenium can ameliorate the apoptotic effects of A1254 *in vivo*.

Key words: aroclor 1254, caspase 3, caspase 8, polychlorinated biphenyl, selenium

Poster Presentation 127

The Influence of Radioactive Polluting the Environment on the State of Reproductive System in Wild and Laboratory Animals

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The paper assesses the degree of sperm DNA damage (DNA fragmentation index – DFI) and the distribution of populations of spermatogenic cells in mice after their exposing in PSRER for a month and in their progeny born in the vivarium. Dose rates on places of animal accommodation were 3,3-3,8 ± 0,10 μGy/h. Like mice, DFI in raccoon dogs from areas with levels of contamination (2000-7500 kBq/m2) was measured by SCSA method. In male mice, exposed in PSRER for 1 month, the mass indices significantly reduced, compared to the control: testes - to 68% and epididymis - up to 83%. Violations in distribution of spermatogenic cells and increased DFI (> 80%) were found. In the 6-month old progeny F1, from parents irradiated in PSRER for 1 month, there is a significant increase in body weight (by 18%) and the reduction of a relative weight of testis and epididymis (by 8-19%) compared to age-control. There occurs a slight decrease in the number of mature sperm cells, along with an increase of their viability and decreased DFI. The distribution of populations of spermatogenic cells in F1-progeny's testes showed statistically significant changes only for elongated spermatids and spermatocytes I. At density of contamination 2000-4000 kBq/m2 DFI in mice (4,17 ±0,67) was significantly higher than in raccoon dogs (1,81 ±0,57). Increasing the density of contamination, there was a significant growth of DFI (> 5 times) in raccoon dogs. Integrating the data can indicate not only a species-specificity in the reaction of reproductive system of animals from different taxonomic groups to the chronic exposure, but also the presence of adaptive processes.

Key words: Reproductive system, spermatogenic cells, DNA fragmentation index – DFI, radioactive polluting, wild and laboratory animals

Poster Presentation 128

Preventive Effects of Curcumin and Taurine on Bisphenol A Induced Oxidative Stress in Brain of Rat

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Bisphenol A (BPA), is an important environmental contaminant, used as a monomer material for the production of epoxy resins and polycarbonate plastics. Humans are exposed to BPA due to its increased use in food containers and polycarbonate plastics. BPA is an endocrine disrupting chemical. In addition, BPA causes toxic effect by induction of oxidative stress in various organs. Several antioxidant compounds and antioxidant enzymes play an important role in the elimination of free radicals and the simultaneous decrease in oxidative stress. Taurine and curcumin are known that reduce the potential toxic effects of environmental contaminants.

Rats were exposed to all tested compounds orally via gavage during 28 days. Rats were divided into seven groups, each consisting of six rats. These groups were control (1.0 ml/kg distilled water), olive oil (1.0 ml/kg), curcumin (100 mg/kg), taurine (100 mg/kg), BPA (130 mg/kg), curcumin + BPA and taurine + BPA. The Gazi University Committee on the Ethics of Animal Experimentation approved all animal experiments. At the end of 4th week, malondialdehyde (MDA) levels and antioxidant enzyme activities [superoxide dismutase (SOD), catalase (CAT), glutathione peroxidase (GPx), glutathione-S-transferase (GST)] changes of brain tissue were investigated compared to control group. No significant differences were observed between control, taurine and curcumin treated groups. BPA treatment decreased the antioxidant enzyme activities, and increased malondialdehyde levels compared to control. Curcumin and taurine showed protective effects against examining parameters. In the present study, we found that BPA caused oxidative stress in rat brain, curcumin and taurine treatment reduced BPA-induced toxicity.

Key words: Bisphenol A, Curcumin, Taurine, Brain, Oxidative stress, Antioxidant Enzymes, Lipid peroxidation

Poster Presentation 129

Element Analysis in Human Blood with Photoactivation Analysis (PAA)

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It is possible to electromagnetically stimulate the atomic nuclei of elements contained in a sample exposed to gamma rays produced by a clinical linear accelerator. Although there are many techniques for performing photonuclear reactions, gamma ray production is the most commonly used method with a linear accelerator. For this reason, it is possible to determine the element concentration by photo-activation analysis (PAA) method. At the basis of the method, the material used is derived from the abundance of characteristic gamma rays that are released as a result of photo-nuclear reactions. In this study, a sample of 5 ml of human blood was first dried at 85 ° C for 70 hours in a half vacuumed drying oven. The pulverized sample was then irradiated with bremsstrahlung photons of 18 MeV endpoint energy. The characteristic gamma rays emitted by the activated elements in the irradiated sample were analyzed by measuring with a high purity germanium detector. As a result, in the observed spectrum, elements of Cl, Na / Mg, Fe, Mn, Sr, Ca, K, Cu and Zn are defined. It is thought that the source is Na due to the predominance of Na in Na / Mg definition. Organic components such as H, O, C and N, which cannot be detected by PAA, are not observed. The widespread use of PAA as a reliable and non-invasive method for analyzing elements and concentrations in organic and inorganic materials, which are not intended to be especially harmful in the field of biology, will be very beneficial in this area.

Key words: Bioanalysis, photo activation analysis, blood analysis, element concentration, photo nuclear reactions.

Poster Presentation 130

Advantage of the Molecular Approach: Detecting Eurasian Otter (*Lutra lutra*) and Identification of Fish Species in Diet from Faecal Samples

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The aim of this study is molecular detection of Eurasian otter in Abant Lake which is listed on the IUCN Red List as Near Threatened. For this purpose, nine fresh faeces were collected throughout the perimeter of the lake area. Among nine samples four were divided into two parts, one of which was stored in silica gel and another in %96 ethanol. DNA was extracted from all faecal samples using the Gene MATRIX Stool DNA Purification Kit. First, cytochrome b gene region of all samples were amplified using otter specific primers and a mammalian specific primer pair. For the diet analysis, 12S rRNA gene region of extracted DNA were amplified using universal fish specific primers. Nucleotide sequences were compared with NCBI database using MEGA7 software.

The first result is that silica gel is a better storage method than ethanol according to quality and quantity of the extracted DNA from the faecal samples. Secondly, pre-PCR assay show that one of the collected faeces belongs to a weasel (*Mustela nivalis*) and this indicates the significance of pre-control of faecal samples before the diet analysis based on morphologic identification on the field. Lastly, according to the sequencing results of all the positive PCR samples, families *Gobiidae* and *Cyprinidae* are the most dominant taxa in the otter diet.

Our results show that integration of the molecular approach for identification of diet contents using faeces plays an important role by providing more reliable information for the monitoring of non-invasive and elusive species like Eurasian otter.

Key words: Diet analysis, Faecal sample, *Lutra lutra*, Molecular identification, Non-invasive

Poster Presentation 134

Controlled Release of Vancomycin at In-vitro

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A burn is a type of injury to skin, or other tissues, caused by heat, cold, electricity, chemicals, friction, or radiation. Most burns are due to heat from hot liquids. Burn patients are also at risk for developing serious types of infections and requires using antibiotics. However the oral use of antibiotics sometimes become insufficient to reach the therapotic range of the injured-skin depending on the extend and depth of the burn-injury. Therefore the local and especially the transdermal route becomes more advantageous for drug applications. Additionally, prevention of fluid loss, the maintenance of body temperature within a constant normal range, the easing of severe pain, and the prevention of infection is very important factors for skin-burning. At this point skin-wounds including antibiotics appears as an attractive materials. Vancomycin, a glycopeptide antibiotic, is effective against gram-positive bacteria, including methicillin-resistant staphylococcus aureus and is commonly used antibiotic in skin-burns. In this study a biocompatible skin-wound was prepared by using poly(vinyl alcohol) (PVA) and the release of vancomycin through PVA membranes were studied at in-vitro conditions. The effect of temperature, pH and the thickness of the membrane on the release of vancomycin were all studied. At the end of the study it was concluded that PVA membranes can control the release of vancomycin for 24 h period and increase in the temperature increases the released amount of vancomycin.

Key words: Poly(vinyl alcohol), Vancomycin, Skin-wounds, Transdermal, Biocompatible

Poster Presentation 137

Neurobehavioral Effects of Intraperitoneal Cadmium Administration in Rats

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Cadmium (Cd) is an environmental pollutant that adversely affects the brain which may be manifested as histological, biochemical and behavioral changes. This study assesses neurobehavioral and functional changes in male Wistar rats following acute administration of Cd, intraperitoneally (i.p.). Doses of Cd were calculated on the basis of Cd content in physiological saline solution after dissolving Cd chloride. The bench mark dose of Cd at 2 mg/kg body weight, i.p. significantly decreased open field activity in rats at post treatment times of 0.5 and 24 h. Administration of Cd at 0.5, 1, 2 and 4 mg/kg, i.p., dose-dependently changed the functional domains of the rats. These included central nervous system activity, excitability, autonomic, neuromuscular and sensorimotor domains. The influences of Cd treatments appeared 0.5 h after dosing, with residual effects (most notably in the 2 mg/kg, i.p. dose group) 24 and 48 h after the dosing. Open field activity of the Cd-treated rats was depressed and the rats showed reduced responses to tail pinching, clicking, touching and approaching, with reduced 24-h water and food intakes. The overall effects of Cd was depressant in nature, and the results suggested the neurotoxic potential of acute Cd administration in rats. Further examination of neurochemical changes induced by Cd in rats is warranted.

Key words: Cadmium, Neurobehavior, Battery of functional tests, Motor activity, Open-field activity

Acknowledgement: This research was financially supported by the College of Veterinary Medicine, University of Mosul, Moaul, Iraq.

Presented by

Poster Presentation 139

Use of Tissue Culture Techniques in Conservation of Sweetgum

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In situ and *ex situ* conservation strategies have been applied to avoid the loss of biodiversity which is a global problem. Native species' propagation is quite important in biodiversity conservation and management by *ex situ* conservation strategies. Recently, not only traditional methods but also tissue culture techniques have been used for propagation. Developing and practice a successful micropropagation process according to the species provides some advantages. The genus *Liquidambar* is spread out in a wide geographical range extending from the North America to the East Asia with its four different species as *Liquidambar acalycina*, *L. formosana*, *L. orientalis* and *L. styraciflua*. In this study, in vitro culture studies on endemic *Liquidambar orientalis* in our country and on the island of Rhodes and on the other Liquidambar species have been complied as it is important to use in vitro strategies in conservation programs.

Key words: Biotechnology, Conservation, *Liquidambar* sp., Micropropagation, Sweetgum

Poster Presentation 140

Determination of Antimicrobial Activity Against Twelve Different Clinical Isolates of *Laurus nobilis* L. Essential Oils

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In this study antimicrobial activity against twelve different clinical isolates of four different commercial essential oils (T1, T2, T3 and T4) belonging to *Laurus nobilis* L. was investigated. For this purpose disc diffusion and microdilution methods were used in antimicrobial activity experiments. The Minimum Inhibitor Concentration (MIC) of essential oils with antimicrobial activity has been determined. The highest inhibition zone diameters in the study were determined as 26.50 mm from T1 essential oil against *Staphylococcus lugdunensis* ATCC 43809 strain, 26.25 mm from T2 essential oil against *Shigella boydii* P 288 strain and 25.00 mm from T3 essential oil against *Acinetobacter baumannii* strain. The lowest inhibition zone diameters in the study were determined as 11.50 mm from T3 essential oil against *Staphylococcus caprae* ATCC 13313 strain and from 10.50 mm from T4 essential oil against *Staphylococcus aureus* ATCC 12600 strain. The concentrations investigated for 4 different essential oils in microdilution experiments ranged from 0.0625% to 8.00%. MIC results obtained from T2 and T3 essential oils were between 2% and 8%. When the research findings are evaluated taking into account the lowest MIC values, the efficacy ratings of commercial essential oils were determined as T2 and T3, and these findings supported the disk diffusion results. In future researches, it is planned to determine the chemical content of commercial essential oils by GS-MS analysis and to show the effectiveness of the commercial essential oils against clinical isolates by electron microscopy.

Key words: *Laurus nobilis* L., Commercial Essential Oil, Antimicrobial Activity, Clinical Isolate, Strain.

Poster Presentation 141

Antimicrobial Activity of *Mentha piperita* L. Essential Oils Against Some Clinical Isolates

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In this study, antimicrobial activities against seven different clinical isolates of five different commercial essential oils (T1, T2, T3 T4 and T5) belonging to *Menta piperita* L. were investigated. For this purpose, disc diffusion and microdilution methods were used in antimicrobial activity experiments. The Minimum Inhibitor Concentration (MIC) of essential oils with significant antimicrobial activity has been determined. According to the findings of disk diffusion of the study, it was found that T1 essential oil is more effective against clinical isolates of *Bacillus cereus* ATCC, *Shigella boydii* and *Staphylococcus hoemoliytcus*. The maximum and minimum inhibition zone values obtained from T4 essential oils against clinical isolates were determined as 63,50 mm and 06,00 mm respectively. T5 essential oil was less effective than other oils against clinical isolates. Concentrations tested for commercial essential oils that were effective in this study were between 0.0625% and 32%. MIC results obtained from essential oils were determined between 0,5% and 16%. In future researches, it is planned to Identification the chemical content of *Menta piperita* L. essential oils and to display the effectiveness of the commercial essential oils against some clinical isolates.

Key words: Antibacterial Activity, *Mentha piperita*, Commercial Essential Oil, Hospital Isolates, Effectiveness.

Poster Presentation 143

The Use of Bacteriophage in Seafood Product

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Bacteriophage is a virus that infects and replicates within a bacteria. The use of bacteriophages for the biocontrol of food-borne pathogens is progressively gaining acceptance. Therefore unlike traditional, non-specific chemical antimicrobials and other interventions currently employed by the food industry, bacteriophage-based bio-control may enable targeted elimination of specific foodborne bacteria in foods without destroying normal and often beneficial microflora of the foods. Recently studies concentrated on some food-borne pathogen bacteria such as *E. Coli* O157:H7, *Salmonella* spp. and *Listeria monocytogenes*. Results of these studies show bacteriophages can use to as a biocontrol agent against these food-borne pathogen bacteria. Besides the food sector, use of bacteriophage in seafood sector has gained popularity. Because microbial seafood-borne disease represents 10 to 20% of the total food-borne outbreaks. Most of them are from bacterial origin and involve seafood products that have been contaminated by pathogenic bacteria. Studies for bacteriophage against *Salmonella enteritidis* and *Listeria monocytogenes* in smoked fish, against *Vibrio parahaemolyticus* in oysters, against *Shewanella putrefaciens* in chilled fish is done in seafood. Consequently bacteriophages known are as new antimicrobial agents in food and seafood industry. In this study, the use of bacteriophages as antimicrobial substances in seafood will be compiled.

Key words: Bacteriophage, biocontrol, antimicrobial, pathogenic bacteria, seafood.

Poster Presentation 144

Identification of Antimicrobial Activity against *Staphylococcus* spp. Clinical Isolates of *Syzygium aromaticum* Essential Oils

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In this study, antimicrobial activities of four different commercial essential oils (T1, T2, T3 and T4) and aqueous extracts belong to *Syzygium aromaticum* against six different clinical isolates identified by 16S rRNA analysis were investigated. For this purpose, disc diffusion and microdilution methods were used. The Minimum Inhibitor Concentration (MIC) of essential oils with significant antimicrobial activity has been determined. According to the disc diffusion findings of the study, commercial essential oils were found to be more effective than aqueous extracts against clinical isolates. In the study, the highest inhibition zone diameters were obtained as 61.00 mm and 60.50 mm from T2 essential oil against *Staphylococcus homyliticus* and *Staphylococcus hominis* clinical isolates, respectively. The maximum and minimum inhibition zone values obtained from T1 essential oil against clinical isolates were determined as 57.75 mm and 16.25 mm. In addition, the maximum and minimum inhibition zone values for T3 and T4 essential oils were found between 31.75 mm and 12.00 mm and 14.80 mm and 09.50, respectively. The MIC concentrations for three different commercial essential oils found to be effective according to the disk diffusion results were tested as 0.0625% and 32%. MIC results obtained from T2 essential oil were determined between 0.0125% and 0.5%. When the research findings were evaluated taking into account the inhibition zone diameters and the lowest MIC values of essential oils, the order of activity of commercial essential oils was identified as T2, T3 and T4.

Key words: Antibacterial Activity, *Syzygium aromaticum* Essential Oil, *Staphylococcus* spp. Clinical Isolate, Aqueous Extract.

Poster Presentation 145

Antibacterial Activity of Honey-Bee Pollens Collected From Çanakkale Province

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Although pollen has been mentioned quite often in recent years, it is still exactly unknown to most people what pollen is. İt is also known as pollen grains, can be described as male reproductive cells produced by male organs of flowers in pollen-flowering plants. Above all, pollen is the only protein source for puppies and adult honey bees. It has unique structures depending on the plant species. Honey-bee pollens provide firstly pollination and then fertilization in flowers. Scientists and researchers have identified a number of medical uses for pollen in their investigations. In this sense, pollen has found an important application area in apitherapy.

The aim of this research is screening the antibacterial activity of 10 different honey-bee pollen samples from different sources in Çanakkale. They were tested against 8 bacterial strains by using disk diffusion method and Mueller Hinton Agar (MHA-Merck) was used as a medium in the survey. Penisillin, streptomycine and ampisillin standard disks were selected as positive control and DMSO (di methyl-sulfoxide) was used as negative control. Bacterial strains provided from first reseach's personal culture collection and kept in +4ºC during the investigation.

In this study, antibacterial activity of pollen samples belonging to *Cistus* spp. and *Trifolium* spp. were investigated. Finally, we examined that honey-bee pollen samples had antibacterial effect against to all bacterial strains in the similar values between 8-12 mm.

Key words: Antibacterial activity, honey-bee pollen, disk diffusion method, apiterapy, Çanakkale

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Poster Presentation 146

Field Observation Notes on *Sciurus anomalus* (Gueldenstaedt, 1785) Recorded from Various Locations of Muğla (Southwestern Turkey)

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Mammal species are well known for their sensitivity and vulnerability to anthropogenic effects; so it is increasingly being difficult to observe them in their natural habitats. Deforestation, habitat patchiness, hunting, forest fires, urbanization and many other negative factors are driving them to the deeper parts of their home ranges. Even an alien sounding or scent change in their habitats are having them avoided from being encountered as expected by researchers. Collecting data about mammal species, therefore, is of high importance in order to understand their ecology and environmental trends governing their occurrence.
In the current study, field observation notes concerning several aspects of Caucasian squirrel (*Sciurus anomalus* Gueldenstaedt, 1785) were presented. The mentioned aspects are its distribution in Mugla, their food materials and marks left by them. Notes provided here were collected between 2012 and 2016 from various parts of Mugla and sample size is 20 individuals. According to the findings of this study, Akyaka province, where 8 of 20 individuals were observed, is the best place to monitor *S. anomalus* population. It can be proposed that a team of researchers can hold detailed studies about *S. anomalus* to clarify its population status and determine conservation measures of need.

Key words: Caucasian squirrel, *Sciurus anomalus*, Mugla, animal ecology, conservation.

Poster Presentation 147

Investigation of Gastropoda (Mollusca) Fauna in the Lagoon Lakes of Turkish Thrace

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In this study, gastropod fauna of lagoon lakes in Turkish Thrace was investigated. A total of 15 species belonging to 11 families was identified at 10 different sampling localities. While the species *Theodoxus* (*Thedoxoxus*) *fluviatilis* (Linnaeus, 1758), *Viviparus viviparus* (Linnaeus, 1758), *Bithynia tentaculata* (Linnaeus, 1758), *Ventrosia ventrosa* (Montagu, 1803), *Borysthenia naticina* (Menke, 1845), *Lymnaea stagnalis* (Linnaeus, 1758), *Radix auricularia* (Linnaeus, 1758), *Radix labiata* (Rossmässler, 1835), *Physella acuta,* (Draparnaud, 1805), *Planorbarius corneus* (Linnaeus, 1758) which have been reported from the previous studies in Turkish Thrace were determined, on the otherhand, *Bittium reticulatum* (da Costa, 1778), *Rissoa membranacea* (J. Adams, 1800), *Rapana venosa* (Valenciennes, 1846), *Stagnicola palustris* (Müller, 1774), *Planorbis* (*Planorbis*) *intermixtus* Mousson, 1874 were also determined as the first records for inland waters in the area.

Key words: Lagoon Lake, Turkish Thrace, Gastropoda, Fauna, Taxonomy.

Poster Presentation 148

Alien Benthic Amphipods in the Mediterranean Area

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The Mediterranean Sea is one of the areas in the world that has been most affected by biological invasions. Alien species may affect ecosystems by altering ecosystem processes, disrupting trophic dynamics, disturbing and degrading habitats, or directly competing, parasitizing or preying upon native species. Nearly 613 alien species have been established in the area, 101 of these belong to the group Crustacea. The compilation of data on alien amphipods reported from the Mediterranean Sea to date yields a total of 12 alien amphipod species of which six species can be classified as cryptogenic, five species as established and one species as casual. The highest number of alien amphipods were encountered in the eastern Mediterranean (10 species), followed by the western Mediterranean (7 species), the central Mediterranean (5 species) and Adriatic (4 species). The main pathways for the introduction of alien amphipods to the Mediterranean are the Suez Canal and shipping (via ballast waters or fouling). Eight species were reported only on hard substratum while four species were reported both on the hard and soft substratum. This study reviews the status of alien benthic amphipods reported from Mediterranean coasts with their distributional and ecological properties.

Key words: Amphipods, alien, Mediterranean Sea, pathways, substratum.

Poster Presentation 149

Population Dynamic and Distribution of *Pleurobrachia pileus* (Müller, 1776) in the Southern Black Sea

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The increasing presence of gelatinous macrozooplankton and ecosystem interactions in the world's seas are remarkable and important. They have a high feeding rate on zooplankton and ichthyoplankton with negative effects on pelagic fisheries. The study is aimed to determine length-weight relationship, size frequency and distribution of *P. pileus* one of the gelatinous macrozooplankton in the southern Black Sea.

The study was carried out at the Sinop coast of the Black Sea between January and December 2008. Samples was collected monthly with vertical and horizontal by net hauls from at three station. Hydrographic data were obtained by YSI 6600 sounder.

Wet weight - length relationship of *P. pileus* was estimated as W= 0.0757L0.7642 (R=0.7144, n=99). Length frequency with 0.6 (32.32%) and 0.8 cm (25.23%) was found dominate. Maximum length and weight were 2.1 cm and 1.5 g. Mean length and weight were calculated as 0.8±0.0173 and 0.7±0.0178, respectively. As a result, *P. pileus* size distribution showed differences ($p<0.05$) among stations. The biomass and abundance of *P. pileus* were not significantly different between stations ($p>0.05$). Highest abundance and biomass were determined as 11.67 ind.m-2 and 7.14 g.m-2, respectively. The abundance of *P. pileus* showed no significant correlation with hydrologic data ($p>0.05$).

Key words: Southern Black Sea, *Pleurobrachia pileus*, abundance, biomass, population dynamic.

Poster Presentation 150

Seasonal Size Composition of Gelatinous Macrozooplankton in the Southern Black Sea

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Increasing abundance of gelatinous macrozooplankton due to global climate change may cause negative changes in the Black Sea ecosystem. Therefore it is essential that the changes in the size composition, population dynamics and distribution of these organisms should be determined. In study, seasonal size compositions of *Aurelia aurita*, *Pleurobrachia pileus* and *Mnemiopsis leidyi* at the central southern Black Sea (Sinop Peninsula) were presented between March 2015 and February 2016. Sampling was carried out monthly at the 6 stations by plankton net (50 cm diameter mouth opening and 112 µm mesh size) in vertical and horizontal. As a result, small-sized individuals of *A. aurita*, *M. leidyi* and *P. pileus* were dominant in summer. In this season, *A. aurita* <4 cm were determined as 31%, *M. leidyi* <2 cm were 58% and *P. pileus* < 0.6 were as 67%. Maximum lengths were measured 28 cm for *A. aurita*, 2 cm for *P. pileus* and 9 cm for *M. leidyi*. Size distribution of *A. aurita, M. leidyi* and *P.pileus* showed significantly differences ($p<0.05$) seasonally.

Key words: Black Sea, Aurelia aurita, Pleurobrachia pileus and Mnemiopsis leidyi, size composition.

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Poster Presentation 151

Molecular identification of haemosporadian parasites of Buzzard (*Buteo buteo*) in Burdur, Turkey

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Studies of avian malaria parasites have increased after polymerase chain reaction-based methods for parasite identification in the last decade. Blood parasites which were identified using PCR methods of Anatolian birds is not well studied. We investigated total fifteen adult Buzzard, *Buteo buteo* which had been killed by illegal hunters and collected by General Directorate of Nature Conservation and National Parks in Burdur region in 2016. Avian malaria parasite genera, *Plasmodium*, *Haemoproteus* (including *Parahaemoproteus*) and *Leucocytozoon* were screened by analyzing partial sequences of the mitochondrial cytochrome b gene using specific primers. The overall prevalence of infection was found 20% for *Parahaemoproteus* and we did not find any *Leucocytozoon* infection in the samples. While prevalence of avian malaria parasites of songbirds has been given as usually more than 50% in literature, interestingly malaria infection of Buzzard was found less than expected. These results will compare with our continuous study on captive Buzzards in Rehabilitation Center and wild songbirds in Burdur.

Key words: Aves, Buzzard, *Buteo buteo*, haemosporidian parasites, mitochondrial DNA

Poster Presentation 152

Biodiversity of Parasites on Batoid Fishes (Elasmobranchii) from the Algerian Coasts: a First Annotated Inventory

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Parasites were actually recognized as important components of the global biodiversity because of their essential roles in providing valuable information on host populations and in the functioning of natural ecosystems. Although knowledge about the diversity of these organisms has increased in recent decades, there are still many species to be identified and more investigations to be performed. Elasmobranch fishes represent an important biological resource for the human population particularly along the Mediterranean. However, the data on their parasitic fauna in Algeria are little known and still to date incomplete. Therefore, the aim of this study is to survey and to provide data on the biodiversity of parasites of fishes Elasmobranchii sub class from Algerian coasts.

Between 2000 and 2017, a total of 2935 Batoid fishes belonging to 4 families: Topedinidae, Rajdae, Dasyatidae and Myliobatidae, were carried out in four sites situated near Algiers and examined for their parasites. 50 taxa belonging to Monogenea, Cestoda and Copepoda were identified. Class Monogenea presented the highest richness (24 taxa), and 5 new species: 4 species of *Amphibdelloides* sp. and one species of *Calicotyle* sp.. Class Cestoda is representing by 23 taxa and 3 new species: 2 species of *Acanthobothrrum* sp. and 1 species of *Echinobothrium* sp. and Copepoda with 3 taxa. This study allowed us to establish for the first in Algeria an inventory of parasites of this group of fish Selachii, as well was an important contribution to the knowledge about the parasitic fauna of Algerian and Mediterranean Elasmobranch fishes.

Key words: Parasites, Biodiversity, Fish, Elasmobranchii, Algerian Coasts, Monogenea, Cestoda, Copepoda, Inventory.

Poster Presentation 153

Isopod Parasites of Some Black Sea Fishes Collected from Coasts of Sinop

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Marine isopods have an important role in the food web by removing decaying material from natural or altered environments and they are also known to be one of the factors causing economic losses on cultured fishes. Among marine fish parasites, crustaceans including copepods, branchiurans and isopods possess nearly 25% of all parasites. Members of genus *Nerocila* belongs to the isopod family Cymothoidae and they are ectoparasitic parasites of marine, freshwater or brackish water fishes. In the present study, individuals of grey wrasse *Symphodus cinereus,* common sole *Solea solea*, rusty blenny *Parablennius sanguinolentus* and knout goby *Mesogobius batrachocephalus* were collected by angling in Sinop coasts of the Black Sea during the period from September 2015 to August 2016 and they were investigated for isopod parasites using conventional methods. Of the investigated fish species, *S. solea, M. batrachocephalus* and *S. cinereus* were found to be infested by *Nerocila bivittata* while *P. sanguinolentus* was infested by *Nerocila orbignyi*. The site of infestation was skin of all investigated fish species. The prevalence (%) of infestation and mean intensity values of *N. bivittata* were 24.6% and 1.0±0.0, on *S. cinereus*; 9.1% and 1.4±0.2 on *S. solea*; 7.7% and 3.0±1.0 on *M. batrachocephalus,* respectively. On the other hand, these infestation values of *N. orbignyi* were 2.1% and 1.0±0.0 on *P. sanguinolentus,* respectively. This study makes new contributions to our knowledge on these isopods by providing new host records for both parasite species in the Black Sea.

Key words: Isopod, marine fish, *Nerocila bivittata, Nerocila orbignyi*, Black Sea

Poster Presentation 154

Monogenean Gills Parasites in Scombrid Fishes (Teleostei; Scombridae) Off the Coast of Algiers

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A study of biodiversity of Monogenea, Platyhelminthes, gills parasites of five species of Teleosts fishes (*Auxis rochei* (Risso, 1810), *Euthynnus alletteratus* (Rafinesque, 1810), *Sarda sarda* (Bloch, 1793), *Scomber japonicus* Houttuyn, 1780 and *Scomber scombrus* Linnaeus, 1758) belonging to the host family Scombridae caught off the Coast of Algiers revealed the presence of 9 parasites species, reported for the first time from the coast of Algiers. These species belongs to 2 subclasses: Monopisthocotylea Odhner, 1912 represented by 1 family which is Capsalidae Baird, 1853 and Polyopopisthocotylea Odhner, 1912 divided on 2 families Hexostomatidae Price, 1936 and Mazocraeidae Price, 1936.

The study of parasitic indexes of host species revealed that the parasitic charges vary from one species to another. Among Monopisthocotylea, *Capsala manteri* Price, 1951 from *Euthynnus alletteratus* (Rafinesque, 1810) present the highest value of prevalence (45, 16%) and *Capsala pelamydis* Taschenberg (1878) from *Sarda sarda* (Bloch, 1793) unveil the lowest value of prevalence (8,57%). Among Polypopisthocotylea, *Pseudokuhnia minor* from *Scomber japonicus* Houttuyn, 1780 exhibits the highest prevalence and abundance value (94, 34%; 11 respectively) while *Hexostoma lintoni* Price, 1936 shows the lowest prevalence value in *Sarda sarda* (17, 14%).

In addition to the knowledge of the diversity of Monogenean found in Scombridae, this study allowed to establish for the first time in Algeria an inventory of Monogenean parasites of different species of Scombridae.

Key words: Parasites, Monogenea, Teleostei, Scombridae, Coast of Algiers

Poster Presentation 155

In Çavuşçu Lake Crayfish Plague (*Aphanomyces astaci*) Pathogen Environmental DNA (eDNA) Method For The First Time Investigation

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Today, direct and indirect anthropogenic factors affect the ecological balance negatively due to global climate changes and pollution of natural resources. Eastern Europe crayfish (*A. leptodactylus*) also known as freshwater lobster in Çavuşçu Lake, has been caught close to 80 tons in 1987, but since 2009 it has been determined that the numbers have decreased seriously. It is alleged that this reduction is due to a "fungal" pathogen named dermatoneurotropic *Aphanomyces astaci* belonging to the "oomycetes" class of crayfish. In this study, the presence and absence of the *Aphanomyces astaci* specific primer were investigated for the first time in the samples obtained by environmental DNA (eDNA) method in Çavuşçu Lake using real-time PCR (rt-PCR) technique and crayfish effect. 9 water samples and 3 soil samples from Çavuşçu Lake were collected from 12 localities in total. DNA samples isolated from 12 samples were subjected to rt-PCR using fungal pathogen specific primers. As a result of Rt-PCR, a total of 12 localities and 3 *Aphanomyces astaci* were encountered.

Key words: eDNA, Real Time PCR, *Aphanomyces astaci*

This project is supported by TÜBİTAK 2209-A University Student Research Project Support Program.

Poster Presentation 156

Drought Related Tree Mortality in Antalya-Kemer Forests

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This study covers field observations and determinations to define the causes of tree mortalities in Antalya Beydağları Coastal National Park at the beginning of 2017. The study area is located on the coastal belt in Antalya-Kemer. As a result of the examinations made on the national park grounds, it has been found that different tree and shrub species including Turkish red pine (*Pinus brutia*) and macquis vegetation such as rock rose (*Cistus creticus*), strawberry tree (*Arbutus andrachne*), kermes oak (*Quercus coccifera*) and tree heath (*Erica arborea*). Annual precipitation average of this period was 741.8 mm, according to the meteorological data of Antalya-Kemer Meteorological Station for the period covering 2007-2016 years. The total rainfall of 2016 was 432.2 mm, with a precipitation of approximately 58% of the long term average. Rainfall amount was between 1000-1113 mm In the period 2013-2015, and it decreased to 432.2 mm in 2016, indication of a dry year. During the field investigations, it was observed that the bedrock-parent material structure was in a complex sedimentary structure. Conglomerates, sandstones and coarse loose sediments constitute the main bedrock-parent material types. There was no evidence of an insect damage which could directly lead to the mortality of the trees as a result of the entomological examination made on the roots, bark, trunk, leaves, shoots of dead or dying trees. However, the Mediterranean pine engraver beetle (*Orthotomicus erosus*), a species of secondary bark beetle, was detected on the dead or dying trees. The decrease in rainfall and relative humidity and increase in temperature in 2016 indicated that the given year had an exceptional drought. The intensity of the drought has increased based on the soil depth and bedrock, which in turn led to the mortality of pine trees and some macquis vegetation.

Key words: Mediterranean forests, drought severity, bedrock, parent material

Poster Presentation 159

Plant Biodiversity of Nilüfer Lake in Çanakkale

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Nilüfer Lake (waterlily lake) is located in the forest near the Kalafat village, 5 km outside of Biga district. The lake is filled with seasonal rainfall, but it is dry at end of the summer. There was a great drought in 2007, and then a water supply project was undertaken by the Municipality of Biga. Then, the lake has returned to its former landscape. Nevertheless, the risk of drought continues todays.

Within Çanakkale Biological Diversity Project, fieldworks were carried out in the Nilüfer Lake and its surrounding between 2014-2017. Flora and environmental effects of the area were revealed. There are 132 taxa under 102 genera and 44 families in the area. Of this species, 105 taxa are in forest, 16 taxa are in swamp and 11 taxa are existing in aquatic habitats. The most important plant is waterlily (*Nymphaea alba*) in the region.

The biggest problem in the area is drought caused by water withdrawal in July and August. The second problem is uncontrolled bovine grazing and farm animals entering the lake, also the stools change the chemical structure of water. The third problem is visitors. They do not use the area properly and do not show enough attention about waste.

There is no legal protection in the area. It is suggested that the Ministry of Forestry and Water Affairs should declare the area a Natural Monument. In addition, adequate water should be provided for the summer, information board and labels about plant species and ecosystems should be provided.

Key words: Biga, Biodiversity, Çanakkale, environmental problems

Acknowledgements: This research was supported by The Ministry of Forestry and Water Affairs, 2nd Regional Directorates.

Poster Presentation 160

Gypsum Soil and Endemism in Sivas

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Floristic studies considering soil structure, particularly pure floristic studies in gypsum, are very rare. The restriction of vascular plant species in soil which is high in gypsum was first reported by Johnston (1941) from the Chihuahuan Desert of northern Mexico, and has since been observed in many arid and semi-arid regions of the world. However, the features of the gypsum habitat which provide the selective force for the evolution of gypsophile endemics have not been clearly identified.

Gypsum areas occupy 0.5% of Turkey and the largest fraction of gypsum occurs within Sivas province. A total of 122 taxa are found to be endemic for Turkey and the ratio of endemism is 35.8% in Sivas. The proportion of endemism in the area is higher than the average estimated for Turkey (34.4%). The reason for this is assumed to be gypsum habitats. The chief advantage on gypsum for the gypsophile species may be reduced moisture stress during the early summer drought, due either to reduced competition for water because of low densities or to intrinsic properties of the gypsum soil.

Key Words: Gypsum, endemic, Sivas

Poster Presentation 161

The Seasonal Elemental Composition of Green Seaweed (*Ulva rigida*) Collected from Çanakkale, Turkey

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Seaweeds or marine algae are rich in terms of minerals. They are used as food source due to quality biological content in many countries. In this study, the elemental composition Green seaweed *(Ulva rigida*) was determined seasonally. Sampling was carried out seasonally from Çanakkale strait of Turkey and collected algae were analyzed wet and dried according to Nordic Committee on Food Analysis (method 186). According to results; calcium, potassium, magnesium, sodium as macro elements and boron, barium, chromium, copper, iron, manganese, zinc as micro ones were determined within the legal limits stated by food codex. However, cobalt and nickel as trace metals were not detected in all groups. Moreover, lead and cadmium which are among hazardous ones were also not detected. Only aluminium was found as toxic element in autumn. While Mg was found highest macro element in all seasons in wet algae, highest macro mineral varied in dried algae Ca in spring, K in summer and Mg in both autumn and winter. Fe was found highest micro mineral and followed by B, Zn, Mn and Cu both by seasons and by dried or wet ones ($P<0.05$).

Key words: Green seaweed, *Ulva rigida*, trace elements, Çanakkale strait, nutrient

Acknowledgements: This research is part of "Determination of Seasonal Chemical Composition of Sea Lettuce (*Ulva rigida*) and Utilization as a Human Food" named project and supported by the Canakkale Onsekiz Mart University Scientific Research Projects Coordination Unit, Turkey (2012/023).

Poster Presentation 162

Determining Food Safety Regulations for Seaweeds Potential for Turkish Food Industry

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Algae (microalgae and seaweed), which have been traditionally used by both Far East and Western countries for food, feed and industrial additives. About 42 genera of algae are cultured for these purposes in different parts of the world. These sources are expected to enter the Turkish feed and food market as alternative for agricultural products, thus opening new opportunities for food industry. Because of this, food safety aspects of these sources have to be determined. Only, three microalgae and two seaweed species, which are imported, are described as safety sources in Turkish Food Codex regulation. Potential hazards such as heavy metals, mycotoxins, pesticide residues and pathogens for five species are described and Turkish legislative requirements as regard to food and feed safety are explained. There is no regulation on the gathering or culturing of *Gracilaria, Cystoseira* and *Ulva* species, have potential to be consumed as food and distributed in our coastal waters. For market introduction these seaweeds, Turkish legislation should be adjusted and clarified. The aim of this study is to the state of the art on the safety of *Gracilaria*, *Cystoseira* and *Ulva* for food production.

Key words: Food Safety, Seaweed, Macro algae, Turkish Legislation, Food Codex

Poster Presentation 163

Effects of Urea Enrichment on Biochemical Composition of *Cystoseira barbata*

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In this study, biochemical composition of *Cystoseira barbata* (Stackhouse) C. Agardh cultured at different urea concentrations (0.0125, 0.025, 0.0375, 0.05 and 0.625 g l-1d-1 CH_4N_2O) were tested. During the experiments, average growth rate and biomass yield was determined as 1.19 % d-1 and 22.52 g m-2 (0.0125 g l-1d-1 CH_4N_2O). The significant differences were determined in growth rates and biomass yield among the experimental groups ($p<0.05$). The maximum chlorophyll *a, b, c* and total carotenoid 1.72±0.05 mg g-1 (0.0375 g l-1d-1 CH_4N_2O), 0.07±0.01 mg g-1 (0.0375 g l-1d-1 CH_4N_2O), 0.26 ±0.02 mg g-1 control), 0.56±0.08 mg g-1 (0.0375 g l-1d-1 CH_4N_2O) respectively. At the end of the study, the proximate compositions of the experimental groups were analyzed. The maximum crude lipid, protein, ash and carbohydrate contents were measured as 4.35±0.11 % (Control), 22.70±0.23 % (0.025 g l-1d-1 CH_4N_2O), 36.33±0.33 % (0.0625 g l-1d-1 CH_4N_2O), 50.87±0.30 % (0.0125 g l-1 d-1 CH_4N_2O), respectively. The statistical significant differences were determined between the groups ($p<0.05$). Also, the sodium alginate contents of the groups were studied and the highest sodium alginate content was determined as 16.43±0.23 % (0.025 g l-1 d-1 CH_4N_2O). The results of the present study indicate that urea uptake by *C. barbata* is directed towards increased growth rate and sodium alginate content when urea concentration is <0.0375 g l-1 d-1.

Key words: *Cystoseira barbata*, urea, growth, proximate content, Sodium alginate

Poster Presentation 164

Epizoic Algae Composition on Surface Area on *Melanopsis buccinoidea* (Olivier, 1801) (Gastropoda: Melanopsidae)

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The adhesion of microalgae to living substrata is well known in marine and freshwater environments. These epizoic habitats can serve as "gardens" for algal growth, which is supported by the relatively high-nutrient environments surrounding the metabolizing animals. In this study, a total of 59 species of epizoic algae were recorded on the *Melanopsis buccinoidea*. Division wise distribution of the recorded algae were Cyanophyta 26, Chlorophyta 13, Euglenophyta 5 and Chrysophyta 15. The following species were the dominant epiphytic taxa of epizoic flora: *Calothrix fusca, Cocconeis placentula, Gomphonema truncatum, Rhoicosphenia abbreviata, Gomphonema acuminatum, Cymbella cistula* and *Tapinothrix janthina*. The average abundance of epizoic community was 10226 ind.cm2, and the average chlorophyll-a value was calculated surface area on *M. buccinoidea* as 18.95 µg.cm2.

Key words: Epizoic algae, *Melanopsis buccinoidea*, freshwater snail, surface area

Poster Presentation 165

Spatio-temporal Variation of chl b and chl c Concentrations in a Mesotrophic Temperate Lagoon: Implications for Phytoplankton Community Composition

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The spatio-temporal variation of chl b and c concentrations were examined using corollary data collected between August 2009 and August 2010 in a study aimed to examine phytoplankton C:N:P stoichiometry – nutrient relations in a coastal ecosystem (the Cardak Lagoon) located at the conjunction of Strait of Canakkale and Sea of Marmara. The chl b was not detected in all samples and had a concentration range of 0.06 to 0.29 μg/L with a mean value of 0.14 ± 0.01 (n=54). Chl c values were much higher than those of chl b and were within the range of 0.23 - 1.84 μg/L with an average value of 0.71 μg/L ± 0.05 (n=81). The spatio-temporal variation in chl c and temporal variation in chl b concentrations were significant. The patterns of temporal change in chl b and chl c levels broadly reflected the changes in phytoplankton community compositon and corroborated with the microscopic examination of samples. The highly significant ($r = 0.96$, $p<0.01$, $n=27$) correlation of chl c with chl a and co-occurrence of diatom abundance and higher chl c levels suggested diatoms were the major chl c bearing phytoplankton taxa in the lagoon during the study period.

Key words: chl b, chl c, Cardak, lagoon, phytoplankton.

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Poster Presentation 166

Significance of Terrestrial Inputs on the Nutrient Concentrations and Stoichiometry Measured along the Dardanelles

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Terrestrial nutrient inputs represent a significant fraction in the nutrient budgets of coastal marine ecosystems. The importance of such inputs on the ecology of receiving water bodies depends largely on their hydrodynamic characteristics. Data on dissolved nutrient concentrations and stoichiometry measured in different parts of Dardanelles were compiled to assess influence of terrestrial inputs on the nutrient environment of the strait ecosystem that is primarily characterised by the inflow of modified Black Sea water and vertical mixing, to a lesser degree. There were differences in the concentrations of nitrate, orthophosphate and ortho-silicic acid and in N:P ratios with distance from the shoreline predominantly characterised by a pronounced decrease. This compilation study has shown that terrestrial inputs may have spatially restricted influence on the surface water nutrient properties of Dardanelles. Such influence can create locally distinct nutrient conditions and affect phytoplankton community development both quantitatively and qualitatively, predisposing the impacted areas to nutrient enrichment associated changes.

Key words: Coastal, Dardanelles, input, nutrients, terrestrial.

Poster Presentation 167

Metazoan parasites of the red-mouthed, *Gobius cruentatus* Gmelin, 1789 collected from the Sinop coasts of the Black Sea

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Benthic and predominantly marine *Gobius cruentatus* is a member of Gobidae family. These species occur in the Eastern Central Atlantic and also in the Mediterranean and Black Sea. The present study is aimed to determine the metazoan parasites of the rock goby collected from Sinop coasts of the Black Sea in Turkey. *Gobius cruentatus* was collected by long-line and only during summer. A total of 5 fish specimens were examined for parasites. They were immediately transferred to the parasitology laboratory at the Faculty of Fisheries and Aquatic Sciences in Sinop and examined freshly for metazoan parasites. A total of 6 different metazoan parasite species were detected. These are 4 digenea (metacercariae *Metadena* sp., *Galactosomum lacteum* and adult *Magnibursatus skrjabini, Phyllodistomum* sp.), 1 nematoda (*Hysterothylacium aduncum*) and 1 cestode (*Scolex pleuronectis*). The overall infection prevalence (%) and mean intensity values were 100% and 16.80±6.55 respectively. There are a lot of studies about other gobiid species in the Black Sea Region, but the number of studies about the rock goby is very limited. This study is very important for parasites fauna of Turkish Black Sea coast, because it is revealed the new data.

Key words: *Gobius cruentatus*, biodiversity, metazoan parasites, Sinop, Black sea

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Poster Presentation 168

Feeding Ecology of the Endemic Killifish *Aphanius marassantensis*: Ontogenetic Shift and Seasonal Diet Variation

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Turkey has been considered as the diversification center of the Genus *Aphanius* with 13 endemic and two non-endemic species. Some species have restricted to a single locality and some are distributed in one or two river basins. *Aphanius marassantensis* is endemic to the Kızılırmak River Basin with a few records from the central and lower parts of Yeşilırmak River. Beside the knowledge on its distribution, little information is however available on its feeding ecology; therefore, in this study, ontogenetic shift and seasonal variation in feeding of *A. marassantensis* was investigated from Hirfanlı Reservoir, one of the largest dams in Turkey. Fish specimens were captured by a beach seine from April 2008 to March 2009 on monthly basis and stomach content of 130 individuals were examined. According to the diet analysis, *A. marassantensis* was mainly fed on zooplankton in spring and on Amphipoda in summer. The diet was dramatically shifted towards filamentous algae and diatom in autumn and winter. The food of larger individuals (50-65 mm TL) predominantly consisted of *Gammarus* sp., whereas smaller individuals (20-50 mm TL) had wider diet spectrum including zooplankton, other invertebrates and plant material. No significant difference was found between the food compositions of sexes. Hirfanlı Reservoir is known to be invaded by *Pseudorasbora parva* and *Atherina boyeri*, however flexible feeding pattern of *A. marassantensis* seems to allow the species to establish successful population in the reservoir.

Key words: *Aphanius marassantensis*, Toothcarp, Diet Composition, Hirfanlı Dam Lake, Turkey

Acknowledgements: This research was financially supported by the Turkish Scientific and Technical Researches Institution, project number 107O718.

Poster Presentation 169

Lipid and Fatty Acid Composition in the Liver Oil of Smooth-Hound Shark, *Mustelus mustelus* (Linnaeus, 1758) and Thornback Ray, *Raja clavata* (Linnaeus, 1758)

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Lipid and fatty acid compositions of liver oils from economically important elasmobranch fish species, smooth-hound shark (*Mustelus mustelus*) and thornback ray (*Raja clavata*), commercially captured in the North Aegean Sea were investigated. Quality lipid index such as atherogenicity and thrombogenicity were also studied. Total lipid contents of liver samples were relatively high, ranging between 32.48-36.34% in smooth-hound shark, 30.48-37.08% in thornback ray, the highest observed in spring season ray sample. However, except for ray sample in spring season, the liver lipids of both fishes consisted mainly of polyunsaturated fatty acids (PUFA) during spring and summer and monounsatured fatty acids (MUFA) throughout autumn and winter seasons. The dominant fatty acids were palmitic acid (C16:0), oleic acid (C18:1 (n-9)), eicosapentaenoic acid (EPA; C20:5 (n-3)), and docosahexaenoic acid (DHA; C22:6 (n-3)) in both elasmobranchs all seasons. The composite percentage composition of DHA plus EPA with respect to the total of fatty acids in livers oils was ranged from 19% to 33% for *Mustelus mustelus* and 21% to 33% for *Raja clavata*. The n:3/n:6 ratio of thornback ray was higher compared to smooth-hound shark in all seasons. The atherogenicity (0.41–0.53) and thrombogenicity (0.21 - 0.32) indexes were similar in both elasmobranchs all seasons and these values were accepted as noticeably low, supporting the evidence of their high quality for cardiovascular disease prevention. In conclusion, the lipid levels and the amount of EPA and DHA in the liver oil of mentioned elasmobranch fish are sufficient to be used as commercial raw materials for the manufacturing of pharmaceutical and cosmetic products.

Key words: Fatty acid composition, *Mustelus mustelus*, *Raja clavata*, Lipid composition

Acknowledgements: This research was financially supported by the Canakkale Onsekiz Mart University Scientific Research Projects Coordination Unit, Turkey (FBA-2015-533).

Poster Presentation 170

Current Status of *Alburnoides* from Southern Black Sea Basin, Turkey

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The Black Sea extends in the east-west direction between the Balkan and Anatolian peninsulas in the south east of Europe and the Caucasus in the Eastern Europe. Turkish territories surround almost all the southern part of the Black Sea. From Northern Anatolia there are numerous of large to small rivers and streams in the Black Sea region. Çoruh, Yeşilırmak, Kızılırmak, Sakarya rivers and Filyos, Bartın and Harşit streams flowing to Black Sea and their branches have a rich ichthyofauna including *Alburnoides*. The members of this cyprinid genus are widespread in the temperate Eurasian rivers and lakes with 32 species and from these 11 species are inhabiting in Thrace and Anatolian parts of Turkey. The spirlins are widely distributed in the southern Black Sea basin, 5 species including *A. fasciatus* (rivers of the western Transcaucasia), *A. freyhofi* (Kızılırmak River drainage), *A. kosswigi* (Sakarya River drainage), *A. kurui* (Yeşilırmak River drainage), and *A. tzanevi* (Rezovska River) are presently recorded. The authors of this presentation were identified 3 new species using both morphological and genetical methods. In this presentation the distribution area and diagnostic features of these species are discussed.

Key words: Spirlin, Black Sea, ichthyology, freshwater fish, taxonomy

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Poster Presentation 171

Element Composition of Farmed Rainbow Trout (*Oncorhynchus mykiss*) Obtained from Fish farm in the Mount Ida

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In this research, element composition of rainbow trout was evaluated. Trouts were provided from a fish farm operated Mount Ida in northwestern Anatolia. First of all, trouts were filleted and element analyses were carried out those fillets according to Nordic Committee on Food Analysis and calcium (Ca), manganese (Mg), potassium (K), sodium (Na), boron (B), barium (Ba), chromium (Cr), cobalt (Co), copper (Cu), iron (Fe), manganese (Mn), nickel (Ni), zinc (Zn), aluminium (Al), cadmium (Cd) and lead (Pb) were analysed. According to results, while the highest macro element was detected as K (2657.08±8.96g/100g), lowest macro element was detected as Mg (292.99±5.40g/100g). Besides, remarkable amount of Na (1898.98±1.98g/100g) and Ca (1230.97±6.92g/100g) were detected. The highest trace element was found Fe (21.81±0.53g/100g) and followed by B (10.84±0.22g/100g), Zn (10.61±0.19g/100g), Al (8.14±0.01g/100g), Ba (3.42±0.06g/100g), Cu (2.64±0.37g/100g) and Mn (1.52±0.01g/100g) respectively. Moreover, Cr, Co, Cd, Ni and Pb were not determined in rainbow trout meat. In the view of the results, farmed rainbow trout obtained from Mount Ida meat have beneficial macro and micro elements within acceptable limits regulated by food codex.

Key words: Rainbow trout, *Oncorhynchus mykiss*, trace elements, Mount Ida

Acknowledgements: This research is part of "Determination of Quality Parameters of Coated Products (Croquette) Obtained from Different Seafood" named master thesis project; mentored by Assoc. Dr. Nermin Berik and supported by the Canakkale Onsekiz Mart University Scientific Research Projects Coordination Unit, Turkey (2010/142).

Poster Presentation 172

Effect of Replacing Dietary Soybean Meal with Distiller's Dried Grains with Solubles on Proximate Composition of Rainbow Trout, *Oncorhynchus mykiss*

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The effects of replacement of dietary soybean meal by corn distiller's dried grains with solubles (DDGS) on proximate composition of rainbow trout (*Oncorhynchus mykiss*) carcass were investigated. Five isoproteic (45.47% crude protein) and isocaloric (3570 kcal/kg digestible energy) diets were formulated: Conrol-1 (Fish meal control), Control-2, DDGS33, DDGS66 and DDGS100 which included 0%, 0%, 10%, 20% and 30% DDGS, respectively. 15 tanks were stocked each with 25 trouts with an average weight of 20.46 g. At the end of the 84-day feeding trial, the content of moisture, proteins, fats and ash was determined. Proximate composition of the fish carcass were analyzed according to standard procedures following AOAC (1995). Moisture (70.16% - 70.72%), crude protein (17.99% - 18.47%), crude lipid (10.54% - 10.96%) and crude ash (2.03% - 2.23%) among all groups at the end of the trial were not significantly affected by the dietary treatments (P>0.05).

At the end of this study, DDGS could be used to partially or totaly replace soybean meal in rainbow trout diets without affecting proximate composition.

Key words: Feeding, DDGS, Soybean meal, Rainbow trout, Meat quality

Poster Presentation 173

The Effect of Overfishing on Genetic Erosion

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As in East Mediterranean, fish is still an important part of daily nutrition in many parts of the world due to its rich contents which is essential to maintain a healthy life. Fishing is the first step to provide it. Therefore fishing is of great economic importance all coastal regions in the world and İskenderun Bay is just one of them. In all aquatic ecosystems, fish stocks and genetic diversity are declining around the world due to the increase in number of boats and equipment and some species are on the Red List of threatened species. Overfishing give significant damages in terms of both marine ecosystem and sustainability of fish stocks. To impair the sustainability of species can cause loss of intraspecific genetic diversity. Accordingly conservation of fish stocks and reduction of genetic erosion are very important for sustainable fisheries. Especially illegal and uncontrolled practices are problematic in fisheries management and fisheries.

Genetic erosion refers to the process in which any living species faces a gradual or drastic diminishing or complete loss of its unique gene pool. A gene pool, is a complete set of unique alleles of a population and source of genetic variation. In genetic erosion, there is a loss in genetic variation of a species and also in biodiversity of an ecosystem. This means there is a loss of particular individual genes or a loss of a certain gene combination. As a result, in recent years increasing equipment and numbers of trawl, purse seine, small scale fisheries, and overfishing which are some reasons to decline biodiversity which caused genetic erosion.

Key words: Overfishing, Sustainable Fisheries, Genetic Erosion, Genetic variation, East Mediterranean

Poster Presentation 174

Some Aspects of the Reproduction in Scorpion Fishes: The Genus *Scorpaena* from the Algerian Coast.

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The genus *Scorpaena* contains four species in the Algerian coast (*Scorpaena notata, Scorpaena scrofa, Scorpaena porcus* and *Scorpaena elongata*). The present work compares some aspects of reproduction of the Slender rockfish, *Scorpaena elongata* (Cadenat, 1943) with different species of the same family around the Algerian coast, based on the gonado-somatic index (GSI) and microscopic observations of the gonads. The target species *S. elongata* is a carnivorous scorpion fish with a high trophic level, widely distributed in the e**astern Atlantic, Mediterranean Sea and Morocco to off northern Namibia.** A total of 73 individuals of *S. elongata* (52 females, 21males) was sampled during december 2015 to may 2016 from the Algerian ports (Annaba and Algiers).The morphological and histological preliminary study, allows to determine different maturity stages for both sexes with the size at first sexual maturity which is 28.51 for male and 28.31cm for female. These sizes are significantly higher than the other three species as well as in males (19.58, 20.73, 13.38cm) than females (18.4, 18.3, 11.1cm) for S. *porcus, S. scrofa, S. notata* respectively. According to the GSI, active reproductive periods were observed in spring for females and in winter for males for *S. elongata*. Whereas, *S. notata* and *S. scrofa* have the same reproductive periods, from april to september but *S. porcus* from april to august. The spawning period begins from july to august for *S. notata, S. scrofa and S. porcus.*

Key words: *Scorpaena,* reproduction, maturity, spawning, Algeria.

Poster Presentation 175

Some Biological Characteristics of the Thornback Ray (*Raja clavata* Linnaeus, 1758) in the Aegean Sea

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Thornback ray is a very important component of demersal fisheries in most European waters and is taken by trawl and gillnet, particularly as bycatch. *Raja clavata* is currently assessed as "Near Threatened" globally and listed in the IUCN Red List. The present study describes the sex ratio, length-frequency distribution, length-weight relationship, length-disc width relationship, reproduction and feeding habits of thornback ray population from the Aegean Sea. Specimens were obtained from commercial fishing vessels in the Aegean Sea. Total of the 57 specimens measured, 43 were females (75.4%) and 14 males (24.6%). The overall F:M ratio was 3.07:1. The total length (TL) of females ranged from 50.2 to 81.6 cm (33.4-57.2 cm disc width (DW)) and males from 55.1 to 81.9 cm (36.7-51.3 cm disc width (DW)). The total length-weight and the disc width-weight relationships were determined as TW=0.0031*TL3.165 (r2=0.90) and TW=0.0233*DW2.950 (r2=0.93), respectively. We were found egg case of the specimens in January, May and June. The stomach contained mainly Decapod crustaceans.

Key words: *Raja clavata*, reproduction, feeding, length-weight relationship, Aegean Sea

Poster Presentation 176

Lessepsian Migrant Fishes along the Tunisian Coasts: an Update

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This review of the Tunisian Lessepsian migrant fishes is based on information compiled from published literature until 2017 and unpublished own observations of the authors. A total of 28 Lessepsian fish species, representing 23 different families including 8 that are new for the Tunisian ichthyofauna (Dussumieriidae, Fistulariidae, Holocentridae, Monacanthidae, Pempheridae, Plotosidae, Priacanthidae and Siganidae), were counted along Tunisian coasts. Concerning their status, the majority were classified as alien (85.71%) while only 14.29% may be considered as established; indeed, the majority of these species were casual (78.57%) while a less percentage were common (21.43%). Concerning their distribution, 46.43% of Lessepsian species were present in the North, same percentage in the South, 3.57% in the Central region while 14.29% of them were observed along the entire Tunisian coasts. According to size ranges, 78.57% of the Lessepsian fish species were classified as medium and 21.43% as large. Tunisian Lessepsian species were found on sandy/muddy bottoms (28.57%), on rocky substrates (17.86%), on substrates covered with vegetation (10.71%), 21.43% were reef-associated, 7.14% were bentho-pelagic and 25% were pelagic. A great percentage of these species were carnivorous (85.71%) and a less number were herbivorous (10.71%) while only 3.57% were omnivorous. Actually, only 7.14% of the species are recognized as commercial species. This updating of the Lessepsian fish spreading along the Tunisian coasts shows their accelerated increasing over time which may have repercussion on the local ichthyofauna on a short or a long term.

Key words: Lessepsian, migrant, fishes, ichthyofauna, Tunisia

Poster Presentation 177

Heavy Metal Contents of Some Fish Species in the Dardanelles

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Considering the food chain in the aquatic environment, It can be seen that the polluting elements reach from one organism to another organism and human beings. Based on this idea, it is very important to determine heavy metal concentrations in fish that are located at the top of the aquatic food chain in order to be able to assess the potential risks in fish consumption.

In this study, Hg, Cd, Co, Cr, Cu, Fe, Ni and Pb was investigated in edible parts of Anchovy (*Engraulis encrasicolus*, Linnaeus 1758), Sardine (*Sardina pilchardus*, Walbaum 1792), Needlefish (*Belone belone*, Linnaeus 1758) and Horse mackere (*Trachurus trachurus*, Rafinesque 1810) which reserve a big place in food consumation by local community of Çanakkale. The data obtained are compared with national and international standards. As a result, Hg, Cd, Co, Cr, Cu, Fe, Ni and Pb data were determined within permissible limits of Turkish Food Codex, European Union Directives and World Health Organization standards.

Key words: Heavy metal, Anchovy, Sardine, Neeslefish, Horse mackerel, Dardanelles

Poster Presentation 178

The Impacts of Net Cage Fish Farming on Water Quality of Ildır Bay

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This study was carried in offshore aquaculture areas out seasonally at 4 different stations in Ildır Bay (Aegean Sea) between December 2013 - October 2014. The physicochemical parameters of sea water, the amounts of suspended solid matter (SSM), particulate organic matter (POM), particulate inorganic matter (PIM), nutrients, burnable organic matter (BOM) and organic carbon (OC) in the sediment values were determined from samples collected seasonally. The mean annual values of temperature, salinity, dissolved oxygen (DO), pH, total dissolved solids (TDS), electrical conductivity (EC), Secchi disc (SD) depth, SSM, POM and PIM were found as 19.9±0.54 °C, 38.97±0.06‰, 8.88±0.10 mg/L, 8.31±0.01, 58.84±0.07 mg/L, 58.79±0.09 mg/L, 14.97 m, 20.42±0.40 mg/L, 5.57±0.23 mg/L and 14.88±0.20 mg/L respectively. The amount of BOM and OC in the sediment were calculated as 10.32% and 0.76%, respectively. Physicochemical parameters of the water indicated seasonal variations. The mean annual concentrations of nutrients were 1.55±0.29 µg.at.NH_4+-N/L, 0.15±0.03 µg.at.NO_2-N/L, 0.91±0.24 µg.at.NO_3--N/L, 0.67±0.05 µg.at.PO43--P/L, 2.47±0.35 µg. at. SiO_2-Si/L and 1.049±0.09 µg/L chlorophyll-*a* respectively. Minimum concentrations for all nutrients were observed in autumn. Maximum concentrations of ammonium nitrogen, phosphate phosphorus and nitrite nitrogen were observed in summer whereas those of nitrate nitrogen, silica and chlorophyll-*a* increased in spring. In comparison to the other studies conducted in the region, nutrient amounts, except for silica, were found to be considerably lower. Nonetheless, silica and phosphate phosphor values exceed the limits by comparing to those of clean marine water.

Key words: Ildır Bay, Water Quality, Offshore Aquaculture, Nutrients, Aegean Sea.

Acknowledgements: This research was financially supported by the İzmir Katip Çelebi University Scientific Research Projects Coordination Unit, Turkey (2014-1-TEZ-44).

Poster Presentation 179

On Trace Element Analyses of Some Ancient Bones of Asiatic Elephant (*Elephas maximus*)

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Remains of *Elephas maximus* are known from Aççana-Alalakh (Middle Bronze Age) in Antakya and also from Sirkeli Höyük in the north to Emar in the south. Apart from these localities remains of elephants are found from Gavurgölü Swamp in Kahramanmaraş which was once a big lake before drainaging. After that Gavurgölü Swamp is used for agricultural purposes and local people found some elephant remains in this area. Most of the remains were given to the museums. Because these remains were found from field crop, there is no information about the exact locality. Physical features and measurements of the molar tooth Gavurgölü elephants and recent Asian elephants are very similar. According to the radiocarbon analysis made from the roots of two molars of Elephas maximus from Gavurgölü, the age of elephant of Gavurgölü is around 3500 BP.

We used several techniques to investigate diagenesis of fossil bones: scanning electron microscopy, XRD-analysis, and ICP-MS. Internally fossil bone is generally well-preserved, We found that the direct determination of major elements (Ca, K, Mg, Na and P) and Zn and trace elements (Al, Ba, Cu, I, Mn, Mo, Pb, Rb, Se, Sr and Zn) by inductively coupled plasma mass spectrometry (ICP-MS) in powdered.

Key words: Fossil bone, *Elepha maximus,* ICP-MS, SEM

Poster Presentation 180

Determination of Catch Compositions of Alternative Codends in the Eastern Mediterranean Bottom Trawl Fisheries (Kuşadası Bay)

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This study was conducted between 19-24 January and 25-29 March 2015 in order to determine catch composition in the Eastern Mediterranean bottom trawl fisheries with experimental codends. A modified 900 meshes fishing circle demersal trawl net was used for all experiments. In this study, 3 different 90° turned mesh codends were used. Characteristics of the mare as follows: (1) 40C165: nominal 40 mm 165 meshes on its circumference. (2) 44C300: nominal 44 mm 300 meshes on its circumference. (3) 44C150: nominal 44 mm 150 meshes on its circumference. Hauls were performed between 65-215 meters depth, lasted 110-250 minutes. A total weight of 4.3 tonnes was caught during 100.9 hours, in 34 hauls. The total catch was composed of 1.4 t with 40C165, 0.8 t with 44C300 and 2,1 t with 44C150. The fisherman retained 1.8 tonnes of total catches and 2.5 tonnes were discarded. Horse mackerel (*Trachurus trachurus*), red mullet (*Mullus barbatus*), Moroccodentex (*Dentex maroccanus*), bogue (*Boops boops*), European hake (*Merluccius merluccius*), deep water rose shrimp (*Parapenaeus longirostris*) and common cuttlefish (*Sephia officinalis*) accounted for the majority of the total catch by weight.

Key words: Bottom trawl, turned mesh codend, catch composition, Kuşadası Bay, Mediterranean

Poster Presentation 183

Oxidative Stress Responses and Blood Metal Accumulation in Human Living in Intensive Agricultural Area

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Heavy metal contamination is one of the important problem in environment. Agrochemicals such as fertilizers and pesticides can lead heavy metal release in agricultural areas. In the monoculture agriculture, pesticide and fertilizer use increasing exponentially due to mineral depletion of soil and development of pesticide resistance. Excessive use can lead dramatic increases of these toxic substances in the soil, water and atmosphere and cause important health problems for human living in agricultural area. In this study, we aimed to determine serum metal concentrations and antioxidant enzyme gene expression in human living around intensive rice agricultural area. Population for this study were selected as male living in intensive agricultural area (n=50), and control area (n=10) of Edirne/Turkiye. Blood samples were collected on all participants and analyzed for gene expressions and activities of antioxidant enzymes and serum residues of metals on August and November in 2015. In the agricultural people Zn, Li, Ni, Mn and Cr amounts significantly higher than control in both sampling time. Compared to their respective controls, while the expressions of Cu-Zn superoxide dismutase, Mn-superoxide dismutase, catalase, glutathione-S-transferase, glutathione synthase and glutathione peroxidase significantly higher in the blood of agricultural people at the August 2015, significant increases were determined only SOD, CAT and GST expressions in the November 2015. According to our results we can said that agricultural activities can cause heavy metal accumulation and oxidative stress in human living around agricultural area depending on agrochemical use intensity.

Key words: Agricultural pollution, oxidative stress, heavy metals, bioaccumulation, blood

Acknowledgements: This research was financially supported by the TUBİTAK (The Scientific and Technological Research Council of Turkey; Project Number: 214Z056).

Poster Presentation 184

Ex-situ Conservation of Dunes in Istanbul at the Nezahat Gökyiğit Botanic Garden

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Most of the dunes of Istanbul are threatened by industrialization, urbanization, tourism and agriculture that cause destruction and fragmentation of dune habitats. Akpınar and Ağaçlı dunes, which carry peculiar and important flora, will be threatened by the possible urban development following the completion of the new airport. Both, Akpınar and Ağaçlı dunes are fragile ecosystems and hosting many endemic and rare plant species. Ağaçlı dune is one of the important plant areas of Turkey. NGBB and IGA Consortium decided to collaborate to create an ex situ conservation area in NGBB because of possible future and current threats. To create reasonable sand dunes habitat in NGBB, plants and sandy substrate were carried to NGBB in 2016. Later, the ex situ conservation area were fenced for protection. 15 plant taxa were planted to the prepared area in NGBB. Currently there are 20 taxa and their development are compared with their natural represantatives.

Key words: sand dunes, Ağaçlı, Akpınar, İstanbul, ex-situ conservation.

Poster Presentation 185

Anthropogenic Effects on Monumental Trees in Çanakkale

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According to Ministry of Environment and Urbanisation, 60 monumental trees have been registered in the Çanakkale province until now. In our work we have done in Çanakkale for determination of existing and potential monumental trees, it has been showed that humans damage to some trees. There are various harmful factors that them shorten life span and disrupt appearance of monumental trees in Çanakkale. These are font scraping on stem surface, to drive nail on trunk, to cover base of tree with concrete or paving-stone, to fill garbage their cavity, intensive picnic activities, environmental pollution as road dust, treasure hunting and illegal cutting.

One of the 60 trees was burnt with hope of finding a treasure; base of six of them were covered by concrete or paving-stone; two of them were damaged by picnic activities, one of them was illegal cut, most of them were nailed on trunk and engraved letters on their trunk.

Although the monumental trees are protected by the laws, they suffer from these cases because of lack of adequate information and conservation work.

Key words: Monumental tree, anthropogenic effects, Çanakkale, conservation

This work is a part of master thesis named Çanakkale Monument Trees.

Poster Presentation 187

Current Population Size, Distribution Area and Re-Evaluated IUCN Category of *Sideritis gulendamiae* H.Duman & F.A.Karaveliogullari

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Sideritis gulendamiae is an edaphic endemic species known only from gypsaceous steps of 7 localities at Ankara and Eskişehir. It needs special habitat type with gypsaceous soils which can be considered as one of the reasons that explain the discontinuous distribution of the species. The goal of this study was to determine the current population size, distribution area, threat factors and re-evaluate IUCN category of *Sideritis gulendamiae*. To assess the current population size of small populations, mature individuals were counted one by one. For relatively larger populations the number of mature individuals were estimated via randomly chosen sampling areas with the size of 25 m2. *S. gulendamiae* is known from 7 localities the area of occupancy 28 km2 and the extent of occurrence are 6539 km2 respectively. The estimated total number of mature individuals is 20563. Threat category of *S. gulendamiae* is listed as EN (Endangered) in Red Data Book of Turkish Plants. Considering the area of occupancy and threat factors, *S. gulendamiae* is re-evaluated in category EN according to 2012 IUCN Red List Categories and Criteria. Although the number of individuals seems relatively high, habitat fragmentation and habitat loss because of uncontrolled land use such as urbanization, expansion of agricultural areas are being serious threatening factors to this endemic species.

Key words: *Sideritis gulendamiae,* Endemic, IUCN, EN, Conservation

Poster Presentation 188

Endangered *Allium* Species of Turkey and Conservation Studies

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Many plant genetic resources, including *Alliums* are under genetic erosion because of the environmental and other problems and therefore face with the danger of extinction. Turkey has 14 *Allium* species in different categories of IUCN Red List. *Allium baytopiorum* and *Allium czelghauricum* are in CR (Critically Endangered), *Allium pseudoalbidum* is in EN (Endangered), *Allium exaltatum* is in VU (Vulnerable), *Allium colchicifolium, Allium rubrovittatum, Allium ampeloprasum, Allium autumnale*, *Allium schoenoprasum* and *Allium willeanum* are in LC (Least Concern), *Allium atroviolaceum, Allium bourgeaui, Allium koenigianum and Allium scabriscapum* are in DD (Data Deficient) of IUCN Red List categories. Their major threats are housing developments and improvements to road infrastructure, fire, overgrazing, hay making, over-collection, urbanization and development for tourism, recreational activities and afforestation.

In the framework of a national TÜBİTAK project *Allium* species were taken under conservation in the collection gardens or Research Institutes in Turkey. All *Allium* spp. in Turkey are included under forbidden list of the CITES. In addition to their potential usage as ornamental plants, their usage pharmacology increases their importance. *Alliums* also have potential as a gene donor for crop improvement of other *Allium* crops. Therefore, it is very important to protect these genetic resources of *Allium*. Most of these species are endemic to Turkey. Lost of these endemic species in the flora of Turkey, means their lost from the world. In this review, some information about the conservation studies on *Allium* species in the flora of Turkey that are IUCN Red List categories were given and discussed.

Key words: Endangered *Allium* spp, IUCN Red List, Endemic, Threats, Conservation

Poster Presentation 189

Endangered *Galanthus* Species of Turkey and Conservation Studies

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Turkey is among the major gene centers of the world and has a special place in plant genetic diversity. However, many geophytes are under threats.

Six *Galanthus* species in Turkey are in various categories of IUCN Red List. *Galanthus elwesii* and *Galanthus gracilis* are in Data Deficient, *Galanthus koenenianus* and *Galanthus peshmenii* are in Vulnerable, *Galanthus plicatus* is in Least Concern, and *Galanthus trojanus is* in Critically Endangered of IUCN Red List categories. Their major threats are over collection, climate change, forest management, tourist infrastructure development, recreational activities, mining and grazing. *Galanthus* species have been collected and exported from nature of Turkey for centuries. As a result of over collection they have been threatened with extinction. Thereafter, the first cultivation and propagation studies started in 1990's.

G. koenenianus, G. peshmenii and G. trojanus are endemic to Turkey. *G. peshmenii* is also endemic to Greek Island of Kastellorhizo. Lost of these endemic species in the flora of Turkey, means their lost from the world. In addition to their potential usage as ornamental plants, their usage in pharmacology due to the medical properties of the modified stems and in other related industries increases their importance. Therefore, it is very important to protect these genetic resources in the World and to prevent their destruction. In this review, some information about the conservation studies on *Galanthus* species in the flora of Turkey that are IUCN Red List categories due to the danger of extinction by various reasons were given and discussed.

Key words: Endangered *Galanthus* spp., IUCN, Red List, Threats, Conservation

Poster Presentation 190

Alternatives of Methyl Bromide in Plant Health

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Turkey is located in an important place in world export order to fruits, vegetables and cereal products. In these products that can be stored, Turkey has a serious market share in domestic and foreign markets. Post-harvest pests in stored products have proved effective in this large market product submission. The most commonly used method against harmful effects in stored products is the fumigation method. The most commonly used toxic gases in this method are methyl bromide and phosphine. Methyl bromide is an important threat to the environment and human health. At the same time, due to the inclusion of the ozone layer in the thinning group, the Montreal Protocol was banned in 2015 - excluding the guarantee and exports. Scientists have sought out different methods for removing methyl bromide from all over the world. In this study, the environment and hazardous to human health as methyl bromide were examined as an alternative to the methods used.

Key words: fumigation, plant health, environment, metil bromide, storage

Poster Presentation 191

A Different Area for Ozone Usage: Plant Health

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Plant health is a science that makes research on residue problems and the tools and equipment used in controlling harmful diseases, pests and weeds in cultural plants that have economic importance. Damage caused by chemicals used in the controlling harmful organisms in the soil and plants has become very important nowadays. For this reason, as an alternative to controlling harmful plants the use of ozone has begun to emerge in phytosanitary practices. Ozone is an effective oxidant with a variety of beneficial applications. The reason for choosing ozone in the agricultural sector is that protection of both the chemical and biological balance of the soil and the plants, the absence of residue on the product, the environmental friendly and has no harmful effect on people, animals and plants. It is used in the protection and storage of vegetables and fruits, in poultry production, in soil sterilization, in controlling stored grain pests and soil pests. Ozone use has emerged as an alternative because of the rapid killing of insects, broad spectrum activity and low cost and the Montreal Protocol, the use of MeBr in Turkey has been forbidden since 2007. In this study, subjects where ozone gas is applied in plant health and the studies done were discussed.

Key words: ozone, environmental friendly, plant health, stored pests, metil bromide

Poster Presentation 192

Infestation of the Cork Oak Leaves from the Decline in Cork Forests: Case Forest of Ouled Bechih (Souk Ahras, Algeria)

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Decline problem of the cork oak forests of Algerian led us to study the health status of each of the species and especially the leaves which include the existence of a particular fauna.

In this context we studied the leaves of *Quercus suber* in the Algerian North-eastern at the cork forests of Souk Ahras. However observations and various measures during the last two years of study were able to show the diversity of infestation by leaf-cutting. The attack by punching the leaves between 4% and 8%, by scraping the highest attack rate was 71%, while the two attacks together on the same leaf with a rate between 24% and 27%.

On the affected leaves, we found bacterial origin necrosis at considerable rates. However, the presence of a double infestation attacked and necrotic leaves are reported on a significant portion of investigated leaves.

Finally, we recorded the appearance of the gall organisms represented by *Dryomyia lichtensteini* (Diptera: Cecidomyiidae), *Neuroterus saltans, Neuroterus minutulus* (Hymenoptera: Cynipidae) and *Eriophyes sp*. The coexistence of certain gall species is observed especially for *N. saltans* and *N. minutulus* with a high rate of 87% followed by *D. lichtensteini* and *Eriophyes sp* (Acari: Eriophyiidae). The biometric study of leaves showed that the leaves with galls have greater leaf area (18.15 ± 8,23cm^2) than the healthy leaves (16.83 ± 6.36 cm^2).

Key words: Algeria, Souk Ahras, Quercus suber, leaves, phyllophagous, necrosis, galls.

Poster Presentation 193

Sideritis L. Species Used As Herbal Tea in Kemer District of Antalya

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Genus *Sideritis* which widely known as 'mountain tea' is ranged in Western Palaearctic by 193 species. Its species diversity mainly concentrated in Mediterranean basin. In Turkey 53 taxa are distributed and 40 of them are endemic. Some species of the genus are widely used as herbal tea and folk medication traditionally. Aim of the present study is to document and compile all the information relevant to the *Sideritis* species which are used as herbal tea in Kemer district ,where located about 48 km west of Antalya, and finally transfer it to the future generations. Kemer district located about 48 km west of Antalya. For this purpose, inhabitants of the Kemer district were interviewed face to face and knowledge on the methods of use and implementation were recorded. It is found that endemic *S. stricta* Boiss. & Heldr. and *S. congesta* P.H.Davis & Hub. Mor. are used as herbal tea that prepared by infusion method and are sold in the herbalist shops. Unfortunately both of the species face to anthropogenic threats such as; overgrazing, urbanization and excess collecting by the local people.

Key words: Mountain tea, Endemic, Ethnobotany, *Sideritis stricta, Sideritis congesta*

Poster Presentation 194

The Effect of Micronutrients on the Development of *Agelastica alni* (Coleoptera: Chrysomelidae) Larvae

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Insects for their growth and development need macronutrients as well as micronutrients, such as vitamins and salts. There is a significant deficiency in the literature regarding the effects of the micronutrients on larval development. In our study, the effects of vitamins and salts on the food consumption and development of *Agelastica alni* larvae were investigated. For this purpose, 8 different artificial diets were prepared by changing the vitamin (V) and salt (T) ratios and the foods were named as follows: A (V/T), B (0.5 V/T), C (2V/T), D (V/0.5 T), E (V/2T), F (0.5 V/0.5 T), G (V), H (T). The diet A was used as the control diet.

According to the study results, the highest food consumption by the larvae was on D (43.85 mg) diet and the lowest food consumption by the larvae was on B (32.12 mg) diet. The highest pupa dry weight was determined with the larvae fed on C (3.64 mg) and lowest pupa dry weight was found with the larvae fed on E (2.3 mg). It was determined that the highest amount of pupa protein was with the larvae fed on C (1.9 mg) and the lowest amount of pupa protein was with the larvae fed on B (1.3 mg). According to the results of the pupa lipid amount, the highest value was determined for C (1.06 mg) diet and the lowest value was determined for E (0.3 mg) diet.

According to our results, as the vitamin concentration increases in the diets, the pupa dry weight, the pupa protein content and the lipid content rich the highest values for *A. alni* larvae. The amount of the salt in the larval diet is two times higher than the amount of the vitamins in the diets, the pupa dry weight and the lipid content are determined to be the lowest levels. As a result, the amount of the salt in the diets increases food the food consumption, while the amount of vitamins promotes the larval development.

Key words: *Agelastica alni*, salt mixture, vitamin, micronutrients, development

Poster Presentation 196

Thermal Study of Heavy Metal-Tolerant *Gordonia*, *Acinetobacter* and *Microbacterium* Species for Investigation of Bioremediation

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The first step in bioremediation of heavy metal polluted soil/water is to select the heavy metal-tolerant microbes from others. In this, major drawback is the insufficiency of the time-consuming and expensive selection/characterization techniques, which necessitates the development of accurate and sensitive technology. In this study, we applied Differential Scanning Calorimetry (DSC) technique, to characterize heavy metal-tolerant bacteria at molecular level. For DSC experiments, we used bacteria derived from the surface mucus of freshwater fish and exposed them to toxic concentrations of cadmium (Cd), lead (Pb) and silver (Ag) and selected most tolerant ones. We found structural changes in biomolecules of tolerant bacteria compared to non-tolerant ones. Each bacteria showed unique peak profile at three different thermal regions which are assigned for ribosomal proteins, nucleic acids and cell wall components. Our findings evidenced shifts, diminishes or losses of the thermal peaks. We also measured unique thermal stability changes in ribosomes, nucleic acids and cell wall constituents corresponding to conformational alterations in molecular structure. Unique alterations proved that, DSC can easily differentiate and select the heavy metal tolerant-bacteria at high sensitivity and accuracy. Fascinatingly, the bacteria are not dying as a result of huge changes, instead continuing their lives in linearity with the degree of adaptation process and become tolerant to heavy metal environments. This ability of bacteria can be used to develop novel heavy metal bioremediation strategies for ecosystem restoration.

Key words: Bioremediation, Differential Scanning Calorimetry (DSC), Bacteria, Heavy metal

Acknowledgements: This study was funded by TUBITAK (Grant No: 113Y515)

Poster Presentation 200

Some Virulence Factors of Gram Negative Bacteria Isolated from Some Amphibian and Reptile Species of the Biga Stream in Turkey

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Aquatic ecosystems contain a variety of microorganisms, of which, a limited number are able to develop in association with higher organisms and of these, a small number are pathogenic bacteria. The ability of pathogenic bacteria to cause disease in a susceptible host is determined by multiple virulence factors acting individually or together at different stages of infection. The main goal of the present paper was to perform microbiological investigations to phenotypically emphasize the some virulence factors (enzymatic activity) of Gram negative bacteria isolated from Biga stream and some reptilians captured around this freshwater. Studied amphibian (*Pelophylax ridibundus*) and reptiles (*Mauremys rivulata*, *Natrix natrix*) were captured around the Biga Stream on April-May 2014. The Gram negative strains were isolated and tested for virulence factors. A total of 431 Gram negative bacteria were successfully isolated from cloaca and oral samples of the aquatic amphibians and reptiles as well as from the water sample. The most frequent isolate was *Aeromonas hydrophila* (31.09%). The total numbers of bacteria obtained were as follows: 57 in *N. natrix*, 51 in *M. rivulata,* and 50 in *P. ridibundus*, and 273 in the water sample. The presence of enzymes that determined virulence factors for bacterial strains was identified: DNase, amylase, lipase, haemolysin and protease. With reference to, *A. hydrophila* is thought to carry a high virulence factor due to its high DNase, amylase, lipase and protease activity.

Key words: Virulence factor, Biga Stream, Pelophylax ridibundus, Mauremys rivulata, Natrix natrix

Acknowledgements: This study was funded by the Scientific and Technological Research Council of Turkey (TUBITAK Project No. 113Z098).

Poster Presentation 201

Investigation of the Effect on Growth of *cpxA*, *cpxR*, *cya* and *crp* Mutant Strains in the Presence of Some Metals

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Bacteria have a signal transduction called a two-component system in order to adapt to external environmental stimuli. Some functions of CpxA-CpxR and Cya-Crp from these systems have been identified. The Cpx system responds to stimuli such as pH, salinity, metals, lipids, and misfolded proteins, which cause membrane integrity to deteriorate. CRP is associated with many mechanisms such as multidrug resistance, biofilm formation and nitrogen assimilation. However, these systems are thought to have roles in different stress conditions besides their known tasks. Therefore, effects on the growth of the mutant gene in a rich medium containing metal were investigated. In this study, firstly MIC and MLC values of metals were determined on wild type and mutant strains. According to these determined values, growth of wild type and mutant strains were followed during 8 hours at 37 ° C in a metal containing medium. As a result, susceptibility to Ni and Co metals was observed while resistance against Cd and Cu metals occurred in mutant bacteria of *cpxA* and *cpxR* genes. Furthermore, it was determined that there is no role of *cpxA* and *cpxR* genes in Zn metal. In bacteria where the *cya* and *crp* genes were mutants, sensitivity was observed in both mutants in the Cd metal, but no role of Cu the metal was determined. While the *crp* mutant was resistant to Co and Zn metals, *cya* mutant showed susceptibility. It was also determined that there is no role of *crp* when *cya* is sensitive in Ni metal.

Key words: *E. coli*, CpxA/CpxR, Cya/ Crp, two component system, metals stress

Poster Presentation 202

Prokaryotic Diversity of a Hypersaline Pond in Delice (Kırıkkale, Turkey)

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In this research, we focused on archaeal and bacterial groups inhabiting in a small hypersaline pond in Kırıkkale. Culture-dependent techniques, DAPI staining and high-throughput sequencing were used to detect microbial groups. Total salt concentration of the sample was measured as 20 %. Isolation studies were carried by using 18-23 % MGM (Modified Growth Medium). Some of the representatives of the isolates were chosen for 16S rDNA gene sequencing. Isolates were phylogenetically related with the genera *Halomonas* (2 strains), *Salinivibrio* (2), *Aliifodinibius* (1) and *Haloferax* (1). The cells were stained with DAPI and counted by using fluorescence microscopy. The total number of cells in the sample was found to be 7.5x10$_6$ (±1.0x10$_6$) cells/mL. Reads obtained from Illumina MiSeq sequencing were clustered in the phyla *Proteobacteria* (52 %), *Bacteroidetes* (30 %), *Cyanobacteria* (12 %) and *Euryarchaeota* (6 %). The most represented OTUs were within *Rhodobacteraceae* family (36 % of all reads) and did not match any known cultured organism. Other abundant OTUs were assigned to the *Saprospiraceae* family (14 %), *Cyanothece* (13 %) and *Halorhodospira* (10 %). Phylotypes representing the halophilic archaea were clustered in *Halonotius* (2 %) and *Halorubrum* (1 %).

Key words: Halophiles, High-Throughput Sequencing

Acknowledgements: This work was supported by Anadolu University Research Foundation, Turkey (1109F153).

Poster Presentation 203

Prevalence of *Aeromonas hydrophila* in Endemic Beyşehir Frogs (*Pelophylax caralitanus*)

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Amphibians are in decline globally and the causes of the declines are poorly understood In the Great Lakes region, the disease 'red-leg' has been implicated in mass-mortality of captive and natural populations of frogs. This disease is typically associated with the presence of the bacterium *Aeromonas hydrophila (Ah)*, which is ubiquitous in aquatic environments, but only leads to mass mortality in some instances. One possibility is that Aeromonas is an opportunistic generalist parasite which takes advantage of amphibians with weakened immune systems possibly the result of stresses associated with environmental change. While occurrence of dead Beyşehir frogs in the field was rare, live specimens were collected, and their skins were swabbed and in some cases, cultures of *Ah* were established. Genomic DNA (gDNA) was isolated from bacterial cultures using a commercial kit, following the manufacturer suggested protocol for Gram-negative bacteria. Primers and probes that target specific sequences of the 16S rRNA gene were combined in Rt-PCR assay. In adult frogs the higher prevalence rate of *Ah* isolates ranged from 15.5% to 34.2%.

Key words: Disease amphibians, Beysehir frogs, *Pelophylax caralitanus*, *Aeromonas hydrophila*

Poster Presentation 204

Investigation of Anti-Archaeal Activity of Commercial Boric Acid (H_3BO_3) on Extremely Halophilic Archaea in Salted Raw Hide

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Prevention of microorganism attacks in conservation, which is the first step in leather production, is very important in terms of quality of finished leather. For this reason, in the conservation of the raw hide, salt is commonly used as high as 50%, but this leads to the development of extreme halophilic Archaea that cause damage to the hide. Boric acid is occasionally added to salt in the conservation for prevention of microbial growth. In this study, it was investigated whether anti-archaeal activity of boric acid or not on extremely halophilic Archaea. For this purpose in the study, the anti-archaeal activity of commercial Boric Acid (H_3BO_3) was examined against *Halococcus morrhuae* strain 123, Haloarchaeon 129, *Halorubrum* sp. 140 CH3, *Natrinema pallidum strain 153*, *Natrialba aegyptia strain 213*, *Haloterrigena thermotolerans strain 415*, *Halococcus thailandensis strain 514*, *Halobacterium noricense strain 714*. SW25 liquid, solid media and 1%, 3% and 5% boric acid solutions were used for the growth of cultures *in vitro* studies. Agar disc diffusion method was applied for antimicrobial activity experiments. Novobiocin (NV5), Penicillin G (P10), Fusidic acid (FA10) antibiotic discs and *Haloferax sp.* HSC4 extremely halophilic Archaea were used for control. In our study, it was determined that all concentrations of commercial boric acid used against 8 halophilic Archaea did not show anti-archaeal activity. It is planned to investigate whether or not boric acid is effective on halophilic bacteria except for extremely halophilic Archaea. In addition the necessity of to investigate new and eco-friendly anti-archaeal substances instead of boric acid against to extremely halophilic Archaea has been demonstrated in this study.

Key words: Prevention, Eco-Friendly Substances, Anti-Microbial Activity, Leather Manufacturing, Salt Curing

Poster Presentation 205

Determination of Anti-Archaeal Activity of Thyme Essential Oil on Extremely Halophilic Archaea in Salted Raw Hide

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Conservation, which is the first step in the production of finished leather from raw hide, is usually carried out by salt curing in our country. Although this process is greatly inhibiting microbial growth, it encourages the growth of extremely halophilic Archaea. Therefore, in addition to salt, discovery of new and eco-friendly chemicals are needed to prevent the growth of extremely halophilic Archaea. In this study, it was investigated whether anti-archaeal activity of thyme essential oil, which could be used in addition to salt, on the extremely halophilic Archaea. For this purpose in the study, the anti-archaeal activity of thyme essential oil was investigated against *Halococcus morrhuae* strain 123, Haloarchaeon 129, *Halorubrum* sp. 140 CH3, *Natrinema pallidum strain 153*, *Natrialba aegyptia strain 213*, *Haloterrigena thermotolerans strain 415*, *Halococcus thailandensis strain 514*, *Halobacterium noricense strain 714*. In the experiments, SW25 liquid and solid media and 1/10, 1/50 and 1/100 thyme essential oil solutions were used for the growth of cultures. Agar disc diffusion method was applied for anti-archaeal activity *in vitro* studies. Novobiocin (NV5), Penicillin G (P10), Fusidic acid (FA10) antibiotic discs and *Haloferax* sp. HSC4 extremelyly halophilic archaea were used as control. In our study, it was determined that all concentrations of thyme essential oil used against 8 halophilic Archaea showed anti-archaeal activity. In future studies, it is planned to investigate the anti-archaeal activity of thyme essential oil on the extremely halophilic Archaea with more advanced methods. In addition, the necessity of to investigate the anti-archaeal activity of different essential oils instead of environmentally harmful chemicals that could be used in addition to salt against extremely halophilic Archaea that cause damage to the raw hide has emerged with this study.

Key words: Microbial Control, Eco-Friendly Chemicals, Anti-Microbial Activity, Leather Production, Halophilic Bacteria

Poster Presentation 206

Biosorption of Copper (II) Ions from Aqueous Solution onto *Pantoea agglomerans* Isolated from Water Containing High Amount of Boron Element

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Heavy metal pollution is a serious environmental problem because of the toxic effects of heavy metal ions on living organisms. Conventional methods used for the removal of heavy metals include chemical precipitation and ion exchange. However sometimes the application of such processes are restricted because of technical or economic constraints. Recent studies have focused on the use of microbial-based potential biosorbents such as yeasts, bacteria and fungi for removal of heavy metals. Many biological materials for the removal of copper ions have already been employed.

In this study, the biosorption ability and capacity of lyophilized *Pantoea agglomerans* for Cu^{2+} ions were investigated under various conditions. Its copper ions uptake capacity were determined as a function of initial pH, contact time, initial heavy metals ion concentration. The monocomponent biosorption data have been analyzed using the Freundlich and Langmuir isotherm models. The kinetic models for heavy metals ions biosorption onto the lyophilized *P. agglomenans* were studied. *P.agglomerans* was isolated from Boron pool of Etibor Establishment Eskişehir/Turkey. BIOLOG system were used for identification.

The copper sorption was found to increase with the increase in the solution pH, reaching a value beyond pH 5, and the most favourable pH for removal was determined as 5.0-5.5.

The highest copper uptake capacity of the biomass was obtained at the initial copper concentration of 250 mg L^{-1}. The Langmuir and Freundlich adsorption models were applied to determine the biosorption isotherm, and the equilibrium data correlated well with the Langmuir model.

Key words: Biosorption, *Pantoea agglomerans*, isotherm, kinetics, copper

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Poster Presentation 207

Screening of Yeasts for Growth on Crude Glycerol

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Biodiesel is a useful alternative energy resource. Crude glycerol is the waste of biodiesel production process from fats and vegetable oil. This crude glycerol can be converted into the industrially useful byproducts or bioenergy such as microbial lipids by green technology using environment friendly microorganisms. There is a small number of Lipid-producing (oleaginous) microorganisms in nature that can convert carbohydrates into oils such as oleaginous yeasts. 107 yeast strains previously isolated from boza were tested, 92 grew on pure and crude glycerol. By applying Sudan Black B staining tests, 60 strains were identified as potential lipit producer yeast. Secondary screening was carried out with crude glycerol and 25 strains showed specific growth rates (OD 600). These strains were identified as *Pichia cactophila, P. fermentans, P. anomala, Rhodotorula mucilaginosa*, *R. dairenensis, Clavispora lusitaniae*, *Saccharomyces cerevisiae*, *Wickerhamomyces anomalus, Candida glabrata*, *C. inconspicua, C. albicans, Yarrowia lipolytica* with molecular identifications based on ITS and D1/D2 26S rDNA sequences. These 25 strains showed high biomass production and lipid content. The results suggest that crude glycerol can be utilized as carbon source in yeast cultivation and these strains have the potential for producing fatty acids which can in turn be utilized as substrate for biodiesel production.

Key words: Oleaginous yeasts, Biodiesel, Microbial lipid, Crude glycerol, Screening

Acknowledgements: This research was financially supported by the Anadolu University Scientific Research Projects Coordination Unit, Turkey (project number 1410F411).

Poster Presentation 208

Cold Alkaline Protease from Bacteria Isolated from Bat Guano: Molecular Identification and Characterization

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This study is based on the molecular and microbiological analysis of bat guano samples that live in an artificial gallery in Kırıkkale between the dates May, 2016 and September, 2016. Guano samples were collected from the galley floor to the falcon tube then diluted in sterile distilled water. The diluted samples were then plated onto skim milk agar plates. Plates were incubated at 37 °C for 24 h. A clear zone of skim milk hydrolysis gave an indication of protease producing organisms.These microorganisms have been purified.The temperature range and pH for growth was determined by incubating the strain in nutrient broth medium at temperatures from 15 to 50 °C and pH 7.0-12.0, respectively. The absorbance was measured at 600 nm using the microplate reader. Biochemical characterization tests included Gram staining, spore staining, IMVeC, catalase activity, gelatin and starch utilization. The isolates were identified by using 16S rRNA gene analyses.3 isolates were identified as *Bacillus*species and 1 isolate was identified as *Kurthiagibsonii*by using 16S rRNA gene analyses.

Key words: Bat Guano, Protease, *Bacillus* sp,16S rRNA,Kırıkkale

Acknowledgements: This research was financially supported by the Kırıkkale University Scientific Research Projects Coordination Unit, Turkey (BAP 2015/136).

Poster Presentation 211

Life Cycle Assessment of Activated Carbon Prepared from *Citrus aurantium* Peels

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The life cycle assessment (LCA), an objective tool to evaluate environmental burdens of a process, was implemented to determine the environmental impacts of activated carbon (AC) production steps from *Citrus aurantium* peels. AC has a number of industrial applications with great performance. Especially, it is preferable for adsorption applications due to its high porosity and large surface area. Even so, environmental impacts of AC production, both laboratory and industrial scale, needs to be investigated.

This study evaluates the environmental impacts of laboratory scale activated carbon production using *C. aurantium*. Functional unit was determined as 1 kg of AC production. GaBi 6 software and CML 2001 methodology were used to create and compare AC production steps. All database was gathered from equipment guide books and literature. Transport, crushing, drying, impregnation, pyrolysis and washing processes were main operational units in AC production. The results showed that pyrolysis and impregnation had highest environmental impacts in most categories, respectively. High energy demand in pyrolysis and H_3PO_4 usage in impregnation were thought be main reasons for high impacts. Some of the environmental impacts for pyrolysis and impregnation respectively: Global warming (53%-23%), Ozone layer depletion (45%-27%), Human toxicity (53%-5%), Photochemical ozone creation (80%-2%) and Terrestric eco-toxicity (44%-26%). Transportation of the peels had least impact in most categories.

Key words: Activated Carbon, *Citrus aurantium*, GaBi, LCA, Life Cycle Assessment

Poster Presentation 213

Investigation of Blood Cells of *Miniopterus schreibersii* (Mammalia: Chiroptera) in Turkey

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Hematological studies provide important clues for animals in terms of environmental health as in humanbeing. However, researches on mammalian hematology are very limited. As in other vertebrates, haematological data of the bats, true flying mammals are also necessary and wondered. The determination of some blood values of *Miniopterus schreibersii*, Long Winged Bat, widespread and forming large populations in Turkey, is the main purpose of this study. This research is based on some features of blood cells of 9 female *Miniopterus schreibersii* specimens obtained from Balıkesir Province between July 2015 and September 2016. Bats were caught by using special misnet and aerial net from the cave. After taking the standard external measurements and weights, blood samples were taken from bats via heparinized hematocrit capillary tubes and then bats were released into their habitat. Smear preparates were made from the blood samples in the laboratory. Some features belonging to erythrocyte and leukocyte of the blood cells were recorded. In *Miniopterus schreibersii*, number of erythrocytes ranges from 7.500.000 to 10.000.000 in 1 mm^3 of blood. Mean diameter values of erythrocyte, monocyte, lymphocyte, eosinophil, neutrophil and basophil cells were measured as 5.65 µm, 9.66 µm, 8.4 µm, 8.66 µm, 10 µm and 8.5 µm, respectively. The data of our specimens are compared to the literature. With this study, the blood values of *Miniopterus schreibersii* in Turkey were recorded for the first time.

Key words: Hematology, Erythrocyte, Leukocyte, *Miniopterus schreibersii*, Turkey

Poster Presentation 214

Karyomorphological Analysis of *Cyanus cheiranthifolius* (Willd.) Soják var. *cheiranthifolius* and *Cyanus thirkei* (Sch. Bip.) Holub taxa (Asteraceae) from Turkey

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Plant materials consisted of root tip belonging to the genus *Cyanus* were collected from natural populations of Turkey. Root tips were pre-treated in 0.002 M 8-hydroxyquinoline at 4₀ C for 8 h. The material was fixed with Carnoy for 24 h at low temperatures (+4₀ C). Before staining, the material was hydrolyzed with 5 N HCl for 1h at room temperature, stained with 1 % aceto-orcein and mounted in 45 % acetic acid. At least 10 metaphases were examined per taxa; the best metaphase plates were photographed (100X) with a digital camera (Olympus DP-72), mounted on Olympus BX53 microscope. Idiograms and karyotyping analyses were carried out using KAMERAM 2.9.4.0. We took into account five different asymmetry indices to analyze the karyomorphologies of the *Cyanus* taxa using KAMERAM.

The basic chromosome number for all of the studied metaphase plate was determined as 9 (x=9) for *C. cheiranthifolius* var. *cheiranthifolius* and as 11 (x=11) for *C. thirkei*. The studied *Cynaus* taxa are diploid (2n=2x=18 for *C. cheiranthifolius* var. *cheiranthifolius* and 2n=2x=22 for *C. thirkei)*. The karyotypes had a predominance of metacentric (m) chromosomes. *C. cheiranthifolius* var. *cheiranthifolius* karyotype formula is 12m + 6sm and *C. thirkei* karyotype formula is 16m + 6sm. When considering total haploid chromosome lengths (TCL) the studied taxa are seen very different that the values are interval in minimal and maximal values. *C. cheiranthifolius* var. *cheiranthifolius* has the highest TCL value (with 17.689 µm). Unlike, *C. thirkei* has the lowest TCL value (with 15.968 µm).

Key words: Chromosome number, chromosome morphology, karyotype analysis, karyotype asymmetry, Turkey.

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Poster Presentation 215

Some Ecological and Karyological Features of *Myotis blythii* (Tomes, 1857) (Chiroptera: Vespertilionidae) From Eastern Anatolia and Western Iran

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The world has 35 biodiversity hotspots, and Iran and Turkey meet at the Irano-Anatolian hotspot. Hitherto, many studies on mammals have been done separately in each country however, studies on the comparison of the mammal species between them are scarcely. The detailed latest records of bats were given in 1998 and 2012 from Turkey and Iran, respectively. According to various authors 50 and 39 bat species are distributed in Iran and Turkey, respectively. This study is based on the karyological and ecological comparisons of lesser mouse-eared bat distributed both in the western Iran and eastern Anatolia. Characteristics of the habitats and roosts of the species in both countries were recorded. The karyotype of the species was similar with respect to the 2n, NF and NFa. However, minor differences were only detected in the X and Y chromosomes, due to the heterochromatin distribution, of the species distributed in Turkey and Iran.

Key words: Lesser mouse-eared bat, ecology, cytogenetic, Iran, Turkey

Poster Presentation 216

Karyotype and Polyploidy as Tools to Assess Biodiversity: Survey of some Asparagales and Poales from Algeria

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Assessment of biodiversity requires perfect knowledge of taxonomic units, i.e. identification and delimitation of species and their evolutionary relationships. However, species determination is sometimes difficult due to phenotypic plasticity, polymorphism and hybridization events and variation of the ecological conditions. This is particularly true for the Algerian flora, where species occur along an impressive bioclimatic gradient from humid areas in the north-east, to arid and Saharan desert in the south. This situation provides exceptional opportunities to evaluate and understand mechanisms involved in plant diversification linked to changes in their environment.

In this study, we used cytogenetic markers to investigate karyological diversity and occurrence of polyploidy among species-groups collected across the NS and EW bioclimatic transects of the Northern Algeria. We focused on critical and endemic taxa from several genera of Asparagaceae, Amaryllidaceae, Hyacinthaceae and Poaceae.

Results revealed within each species-group, several chromosomal numbers with high diversity of karyotypes sometimes associated with dysploidy, and with unexpected frequency of polyploidy. Cytogenetic data provides not only resolutions on taxonomic status and diversity within several species-groups, but led also to (1) comprehensive geographical distribution of diploids and the role of polyploidy in the phenomena of scarcity and isolation, (2) prominence of the transitional ecogeographic and marginal zones where species exhibit a high potential in evolutionary changes.

These data have predictive value for the inventory of taxa in the framework of conservation strategy of the biodiversity at a country scale.

Key words: Biodiversity, Algeria, Asparagales, Endemism, Polyploidy.

Poster Presentation 217

Moleculer Identification of Kalabaki (Gökçeada, Turkey) Wine Grape Yeasts Using ITS1-5.8S-ITS2 rDNA Gene Region

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Yeasts are the most significant organisms to produce fermented products such as wine, beer, etc. They also contribute to beverages' quality. The grapes are principally source of natural yeasts in wine products. Thus, determining of yeast biota on grapes surface is considerable important for wine-makers. There are a range of moleculer techniques to identify of yeast species. Sequence analysis of ITS1-5.8S-ITS2 rDNA gene region is commonly used for this purpose. In this study, therefore, we have aimed to identify yeast biota using analysis of ITS-5.8S rDNA gene sequence on Kalabaki wine grapes in Gökçeada. In this context, Kalabaki grapes were gathered from vineyard in Gökçeada. After homogenization process, grape extracts were inoculated on the YGCA solid medium and incubated 2-3 days at 30 ºC. Growing yeast strains were inoculated on YPD Agar rich medium and incubated 2-3 days at 30 ºC. Genomic DNA extraction of yeast strains was carried out and ITS1-5.8S-ITS2 rDNA gene regions were amplified using ITS1 (5'-TCCGTAGGTGAACCTGCGG-3') and ITS4 (5'-TCCTCCGCTTATTGATATGC-3') primers. According to PCR product lengths and morphological differences, yeast strains were chosen for sequence analysis. Consequently, 34 yeast strains were isolated from Kalabaki grape surface. 3 groups were obtained by PCR products (~450bp, ~600bp and ~750bp) and 11 groups were obtained by morphological features. Totally 14 selected yeast strains were sequenced. Yeast strains were identified as *Candida apicola, Metschnikowia pulcherrima, Starmerella bacillaris, Aerobasidium pullulans, Schwanniomyces sp., Sporidiobolus salmonicolor, C. Carpophila* and *Hanseniaspora uvarum.*

Key words: Yeast Identification, Kalabaki Grape, Wine Grapes, ITS 1-5.8S-ITS2

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Poster Presentation 218

Restriction Profiles of Yeast Strains Isolated From Kalabaki Wine Grapes, Gökçeada, Turkey

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Knowing the yeast population on grape berries and musts has importance for wine fermentations, since different yeast species, genera and strains with their metabolic activity effect quality and property of wine. There is a variety of molecular methods for yeast identification. Recently, polymerase chain reaction–restriction fragment length polymorphism (PCR-RFLP) of ITS-5.8S rDNA gene and sequence analysis of rDNA gene region have utilized for this objective. These techniques have proved to be useful for the rapid identification of yeast species. The aim of this study was to investigate restriction profiles of yeast strains isolated from Kalabaki wine grapes in Gökçeada. For this purpose, grape samples were collected from previously determined vineyard. Samples were homogenized, diluted then inoculated on YGC solid medium and incubated 2-3 days at 30 ºC. Growing yeast strains were inoculated on YPD solid medium and incubated 2-3 days at 30 ºC. Genomic DNA extraction of yeast strains was done and ITS1-5.8S-ITS2 rDNA gene regions were amplified by using ITS1 and ITS4 primers. PCR amplicons were digested by using 5 restriction enzymes (*HinfI*, *HaeIII*, *MspI*, *AluI* and *HhaI*). As a result, we have analysed 34 yeast strains that are isolated from Kalabaki wine grapes. 3 groups were obtained by length of PCR product. According to RFLP results 8 groups and 8 different profiles were attained. This is the first study for definition of restriction profiles of yeast strains with regard to Gökçeada Kalabaki Wine Grapes.

Key words: ITS-5.8S rDNA, PCR-RFLP, Wine Grape, Kalabaki,

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Poster Presentation 219

Valorization as a Bio-Insecticide of Essential Oils of *Thymus pallescens* Nöe., *Artemisia herba alba* Asso and *Pinus halepensis* Mill. on the Pine Processionary Moth (*Thaumetopoea pityocampa*) Schiff in East of Algeria

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Thaumetopoea pityocampa Schiff. pine processionary moth, is the most important defoliator of pines in the Mediterranean region. Chemical pesticides are considered as effective solutions but the problems of the resistance of insects and their adaptive capabilities cause by the massive use of these chemical pesticides, which necessity to find new alternative product natural of plant origin against this insect's attacks. Because of the many ecological disorders caused by the massive use of chemical pesticides in crop protection, bio-pesticides of botanical origin are a good alternative to remedy this evil minimizing risk and thus maintaining biodiversity. Aromatic plants through their bioactive molecules are considered tools of choice in the management programs of the resistance of pests. The study focused on evaluating the toxicity of three essential oils made of *Thymus pallescens* Nöe., *Artemisia herba alba* Asso. and *Pinus halepensis* Mill. on the L_2 and L_3 larvae of the processionary caterpillar Aleppo pine (*Thaumetopoea pityocampa* Schiff.). The results obtained showed Differentiated efficacy of the three essential oils, where the thym showed a big efficacies against all of the population of both L_2 and L_3.

Key words: processionary caterpillar, essential oils,*Thymus pallescens* Nöe.,*Artemisia herba alba* Asso., *Pinus halepensis* Mill, insecticide potential.

Presented by

Poster Presentation 220

Evaluation of the Effect of Two Organic Fertilizers on Few Morpho-Physiological Parameters of the Bean (*Phaseolus vulgaris* L.) in Comparison with a Chemical Fertilizer

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Organic fertilization is a fundamental technique in the management of vegetable crops. It directly influences the growth and development of the plants. It is also the yield in quantity and quality. Organic fertilizers are complete fertilizers which enrich the soil with macros and microelements which constitute The mineral feeding of the plants. The objective of our work is to estimate and compare the capacity of three fertilizers which belongs to two types of fertilizer one biological and the other chemical to cover the nutritional requirements of the green bean crop *Phaseolus vulgaris* L. (Djadida range) under glass. Changes in phytochemical quality, growth parameters and bean production parameters will be assessed after the addition of these different fertilizers, namely lombricompost juice, seaweed extract and chemical fertilizer (NPK).The main results show that the fertilizer biofertilizing positively influences the foliar growth.Also, the chemical fertilizer (NPK) has a marked positive effect on leaf growth and plant length. The study of the production parameters shows that the application of the lombricompost biofertilizing stimulates early and early fruit set and produces better pod production and thus a positive effect on the weight production of the Green bean. The analysis of the biochemical parameters obtained indicates a significant effect of the three fertilizers on chlorophyll production with a marked effect of NPK. On the other hand, the bio fertilizer based on lombricompost has an advantageous effect on the accumulation of proline.

Key words: chlorophyll, extracts from marine algae, juice of lombricompost, NPK, growth parameters, production parameters, proline.

Poster Presentation 221

Environmentalist Tobacco

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Tobacco is a plant from which is benefited by using the leaves of species of *Nicotiana* genus such as *Nicotiana tabacum* L. and *Nicotiana rustica* L. in various ways. Today, it has been possible to use the tobacco plant to good purpose in different areas together with the development of biotechnological techniques.

Our environment is being polluted day by day with the effects of various pollutants. Different plants are used for a better environment and this method is named as phytoremediation, namely improvement using plants. It is possible to clean compounds such as heavy metals, polyaromatic hydrocarbons, explosives from the soil with the use of plants. Eliminating pollution is slow; therefore, now transgenic plants are being used in order to allow the plant break down the pollutants easily. Transgenic tobacco plant is one of such plants; however, they must definitely be controlled following the refinement through those plants.

Global climate change is a serious problem threatening our lives. It is necessary to reduce consumption of fossil fuels and turn towards renewable energy sources in order to cope with this problem. Today such renewable energy sources are bio-fuels. These are also environmental friendly. Most ideal plant to be the raw material for bio-fuels is tobacco; facts that it is used as a nutrient, it is grown easily and in short time make this plant the renewable energy source of the future.

This study discusses the environmental-friendly properties of the tobacco plant.

Key words: Environment, tobacco plant, transgenic tobacco, pollution, renewable energy.

Poster Presentation 222

Cage Cultural Measures to be Taken for Environmental Effects and Environmental Reduction

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Cage culture has some advantages and disadvantages compared to other culture methods. Cage cultures make it the most popular method of fish culture, as existing water bodies are used and high-quality protein allows for cheaper production. Nevertheless, environmental effects have been observed in intracellular cultures that have already been implemented, affecting water quality, plankton, benthos, nectar biomass, and diversity, as well as other users of water bodies.

1. Location Selection

2. Increasing Nutrition Systems and Feed Quality

3. Controlled Chemical Use

4. Disposal of Solid Waste

5. Adaptation of alien species and control of fish escapes

First, support should be given to cage culture practices and research that will shed light on legal regulations. Prior research should be given to determine the carrying capacity of dam lakes and to determine suitable areas for cage culture. In addition to the rainbow trout, which is an economic prospect, culture of native fish of the region should be investigated. Work should be done to produce high digestibility, low phosphorus content and extruded feeds that reduce phosphorus entry into the environment.

Key words: Aquaculture, inlandwater, modeling, fish, sustainability.

Poster Presentation 226

Characteristics of Calamine and Natural Pigment for Anti-Rust Painting

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This work has a double objective. On the one hand, the valorization of natural raw materials, in particular, the oolithic iron ores which do not find their use in iron and steel because of their high phosphorus content and on the other hand the recycling of steel by-products (calamine). The ultimate goal is to synthesize an anti-rust paint.

In this first part, we will study the characterization of these two components by their chemical analysis, their grinding (fineness) and their thermal analysis (TGA, DSC).

Chemical analysis showed that the pigment contains 53.18% of total iron and gangue dominated by silica. Calamine in turn contains 73.83% of iron in the form of iron oxides (FeO, Fe_3O_4 and Fe_2O_3). Iron pigment is composed mainly of hematite with a little of goethite.

Grinding tests showed that the calamine is much more suitable for grinding than pigment. The granulometric analysis measured by a laser granulometer (Hydro 2000MU) gave us a volume distribution of the particles with a size between 0.7 and 32 microns for scale and between 0.6 and 40 microns for the pigment and Their specific areas are 1.6 and 1.5 m_2 / g.

Thermogravimetric analysis (TGA) and the thermal variation of flow (DSC) showed that the iron pigment loses weight with phase dissolution by consuming energy when the temperature increases. Scale gains weight by the formation of new phase with heat.

Exploration picture by scanning electron microscope of red iron pigment shows a grain aggregate formed rounded over at least iron oxide and gangue. The analysis by EDS shows a predominance of iron with a relatively large matrix containing the four predominant oxides in the case of iron ore deposits. Chemical elements forming these four oxides are silicon, calcium, aluminum and magnesium.

The observation scale milled for 5 min SEM showed a homogeneous structure composed of sizes of iron oxide grains and shapes ranging from 1 µm to 10 µm.

Key words: Pigment iron, scale (calamine), iron oxides, grinding, Simultaneous thermal analysis.

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Poster Presentation 227

Comparative Study on the Effect of Trace Mercury Levels in Selected Beach Plastic Wastes

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Recently plastic wastes were witnessed in the coastal waters and shoreline beaches. Plastic wastes classified by light and heavy density polyethylene (LDPE and HDPE) materials physically obstructed marine lives. Evidences were least, indicating mercury (Hg) concentrations in the plastic wastes as a long-term pollutant in the ecosystem and hence, chosen the study. Mercury loss or accumulation, low level detection and matrices instability was observed when different methods were used to detect the Hg levels. However, this study achieved repeatable and reproducible results following the micro-analytical methods, digestion of solid samples to liquid state and samples analysis in the direct mercury analyzer (DMA-80) with absorption spectrophotometry (0.0015ng detection limits). Annually, quantification and dispersion of plastic wastes in beaches not only destroyed the aesthetic value of the beaches but also characterized the additive source of Hg contamination in plastics that claimed many marine lives.

Key words: Coastal environment, Hazardous wastes, Litter, Mercury, Polymer

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Poster Presentation 229

Adsorption of Basic Yellow 28 Onto Polymeric Hydrogel Microbeads from Aqueous Solutions

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The cationic dyes, which are also known as basic dyes, are widely used in acrylic, nylon, silk, and wool dyeing processes. The basic dyes can cause allergic dermatitis, skin irritation, cancer, and mutations. Therefore, the removal of the basic dyes from the process effluent is environmentally important. Adsorption is one of the most suitable methods for dye removal because it is a simple and useful process. In this study, poly(ethylene glycol dimethacrylate-*n*-vinyl imidazole) microbeads were prepared by copolymerizing ethylene glycol dimethacrylate with *n*-vinyl imidazole. The prepared microbeads were characterized by using different analysis techniques and their use as adsorbents in Basic Yellow 28 (*BY 28*) removal from the aqueous solutions were investigated. The dependence of the adsorption capacity of the dye on adsorbent doses (*A*), temperature (*B*), and pH (*C*) of the solution was studied. Multilinear regression analysis program (Analyse-it) was used for the optimization of the conditions for the maximum removal of the dye. The model presented an adjusted square correlation coefficient R_2 (adj) of 93.4%, fitting the statistical model quite well. In this way, *BY 28* uptake by polymeric microbeads could be expressed using the following equation: q_e=31.1931 ‰2.8134*A*+1.2763*B*+4.5922*C*. The initial *pH* of the dispersion exerted the greatest influence on the amounts of dye adsorbed, q_e. Adsorbent doses had a negative influence on q_e. The optimum conditions of this study were adsorbent doses of 10mg, temperature of 45°C and *pH* of 9.

Key words: Basic Yellow 28, Adsorption, Hydrogel microbeads, Multilinear regression.

Poster Presentation 230

Separation of Green Chemical Dimethyl Carbonate from a Methanol Solution by Eco-Friendly Process: Pervaporation

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Dimethyl carbonate (DMC) is an important green chemical due to the low toxicity and fast biodegradation properties. It has wide application area in chemical industries. CH_3-, CH_3O- and –CO- groups in DMC structure provide the safe substitute candidate for the same harmful chemicals such as dimethyl sulfate and phosgene. DMC has also high oxygen content (53%), so it can be used as fuel additive alternative to MTBE. The usage of MTBE in gasoline is restricted due to the environmental concerns. Therefore, DMC is a good oxygenate alternative for the gasoline. DMC can be produced by oxidative carbonylation of methanol, transesterification of ethylene carbonate with methanol, etc. At the end of the synthesis reaction, DMC is obtained as a mixture with methanol. This mixture has a separation problem, because methanol forms an azeotrope with DMC. Various separation methods such as distillation, extraction, adsorption are used to separation of DMC, but these methods need high energy and high capital investment. Pervaporation (PV) is a developing alternative technology for the conventional separation process due to the eco-friendly and energy saving properties. In this study, PV is carried out by using PVP-Chitosan blend membrane for the separation of DMC-methanol mixture. Optimum blend ratio was determined and process parameters were investigated. Optimum blend ratio was 5/5 for chitosan/PVP membrane. The best value of this membrane for the separation performance is observed at 40$_o$C and methanol to DMC weight ratio of 10:90. Methanol selectivity and total flux are obtained as 19.74 and 0.042 g/cm^2.h, respectively.

Key words: Dimethyl carbonate, eco-friendly process, green chemical, membrane, methanol, pervaporation.

Poster Presentation 231

Controlled Release of Theophylline at In-vitro

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The use of polymeric materials for therapeutics is growing continuously to design more convenient drug delivery systems since they controls the side effects, overdosing and therapeutic range of the drug. Poly(vinyl alcohol) (PVA) is a widely used polyhydroxy polymer for a variety of therapeutic applications, because of its excellent chemical resistance and physical properties. However, it has weak resistant in aqueous systems and is stabilized by crosslinking process which lowers the hydrophilic character of the PVA. To retain the hydrophilicity, crosslinking process can be done in presence of hydrophilic polymers. Poly(vinyl pyrrolidone) (PVP), which is a hydrophilic and biologically compatible polymer, is miscible with PVA in any proportions. In this study heat treated PVA/PVP blend membranes were examined to use in the release of theophylline. Methylated xanthine (theophylline) is a commonly used drug in respiratory diseases and it has an extremely limited, narrow therapeutic range of 5-15 ¦ g/mL and out of this range, occasionally develops side- effects, by the way theophylline appears as an attractive drug for the controlled release studies. For this aim 36000 g/mol and 10000 g/mol PVP was used in blend membranes and the effect of the molecular mass of the PVP on the release characteristics of theophylline and swelling behaviors of the PVA/PVP membranes were investigated. At the end of the study it was determined that PVP of higher molar mass was found to be more suitable for the transdermal release of theophylline through biologically compatible PVA/PVP membranes.

Key words: Poly(vinyl alcohol), Poly(vinyl pyrrolidone), Theophylline, Transdermal, Biocompatible

Poster Presentation 234

Removal of Tartrazine (E102) from Aqueous Solutions by using Poly(methyl methacrylate-co-methacrylic acid) – Al Composite Membranes

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Orange yellow azo-dye (tartrazine - E102) is a coloring agent commonly used in food industry. It is an azo and aromatic group including organic dye and known as one of the toxic and carcinogenic substances for aquatic environment. Because of its composition, E102 has a number of adverse effects, most occurring to asthmatic people or allergic to aspirin. Since they are resistant to moderate oxidizing agents and light, treating the wastewaters containing such compounds appears as an important problem and cannot be removed completely by conventional methods of anaerobic degradation. In this work, the removal of tartrazine from synthetic aqueous solutions by filtration was studied. Poly(methyl methacrylate - co - methacrylic acid) – Aluminum [P(MMA-co-MA)-Al] composite membranes were prepared at different Al compositions by using phase-inversion method. Although aluminum is known as a good adsorbent material, in the present study it was determined that the presence of aluminum mainly affected the permeation rate of the solution through the membranes. Increase in the amount of Al in the membrane material resulted in an increase in the filtration rate of the solution through P(MMA-co-MA)-Al composite membranes and the use of the newly prepared composite membranes in the filtration of aqueous solutions including E102 was found to be as an alternative method to remove E102 from wastewater.

Key words: Tartrazine, E102, Membrane, Filtration, Aluminum

Poster Presentation 235

Use of Poly(methyl methacrylate-co-methacrylic acid)- Graphite Composite Membranes to Remove Organic Dyes from Aqueous Solutions

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Membrane separation processes are widely used in many industrial applications in dairy and food technology, pharmaceutical industry, chemical industry, waste water treatment, etc. These processes usually operate at room temperature and require less energy compared to conventional methods; therefore, they are attractive methods. Removal of food additives by using membrane separation processes are also attractive processes. Orange yellow (tartrazine - E102) is an azo and aromatic group including organic dye and it has a very vide application area in food industry as a food coloring agent. Treating the wastewaters containing azo-dyes is not a simple problem. In this work, ultrafiltration of aqueos solution of E102 was studied by using poly(methyl methacrylate-co- methacrylic acid) – graphite [P(MMA-co-MA)-graphite] composite membranes. Composite membranes were prepared at a predetermined thickness by using phase inversion method; the effect of the amount of graphite and the pH of the solution on the removal performance of the composite membranes was studied. At the end of the study it was determined that, although the increase in the amount of graphite decreased the filtration rate, the removal of E102 becomes more effective for higher graphite compositions. As a result of this study it was concluded that, filtration E102 by using P(MMA-co-MA)-graphite composite membranes is an effective route to remove E102 from aqueous solutions at ambient-ordinary room conditions.

Key words: Poly(methyl methacrylate-co-methacrylic acid), E102, Membrane, Filtration, Graphite

Poster Presentation 236

Basic Yellow 28 Adsorption onto Fe_3O_4@SiO_2-SH: Isotherms, Kinetic And Process Optimization

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Basic Yellow 28 (*BY 28*) is cationic dye and is among the most commonly used dyestuff to dye cotton and polyacrylonitrile, and is therefore common industrial pollutants. The possible methods of cationic dye removal from textile effluents include chemical oxidation, froth flotation, adsorption and coagulation. The adsorption method has been widely studied due to its cost-effective, efficient, and simple removal of cationic dye. The objective of this study was to develop SiO_2-coated and SH functionalized magnetic nanoparticles (Fe_3O_4@SiO_2-SH) to effectively remove aqueous *BY 28*. The micromorphology and surface functional groups of prepared Fe_3O_4@SiO_2-SH were analyzed. The effects of reaction time, temperature, initial pH, and *BY 28* concentration on *BY 28* adsorption by Fe_3O_4@SiO_2-SH were investigated in detail. Furthermore, the adsorption isotherm and kinetics were discussed. Satisfactory adsorption efficiency of *BY 28* was observed when the initial *BY 28* concentration of 10mgL_{-1}, temperature of 55$_0$C, adsorbent dosage of 20mg and reaction time of 75min. The experimental data fits well with the Langmuir isotherm and the pseudo-second-order kinetic model. The Fe_3O_4@SiO_2-SH nanoparticles as a magnetic adsorbent could be a promising future for environmental based process.

Key words: Basic Yellow 28, Adsorption, magnetic nanoparticles, thiol groups.

Poster Presentation 237

Hydrogen Separation by Fabrication of a ZSM-5 Incorporated Poly(vinyl alcohol) Membrane

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Hydrogen is an important chemical which is considered as "clean energy carrier" for the future. In refineries, hydrogen is consumed in many units and the waste gas stream consists of hydrogen that cannot be used. Recycling of hydrogen from the waste hydrocarbon mixtures has a great importance in terms of both economic and environmental aspects. In general, pressure sweep adsorption, chemical absorption, cryogenic distillation methods are used to separate hydrogen. Membrane gas separation is one of these methods that has some advantages compared to the others. It is possible to obtain high purity hydrogen with less energy consumption using the membrane separation technique. Commercialization of the system depends on improving high selective membranes that show a resistance to corrosive chemical, high temperature, and pressure. In this study, a hydrogen selective membrane has been fabricated to be used for membrane gas separation system for removing hydrogen from CO_2. For this purpose, zeolite ZSM-5 incorporated poly(vinyl alcohol) membrane has been prepared. Hydrogen molecule has very high permeability. Therefore, it has been aimed to prevent the passage of other components through the membrane by restricted molecular void spaces of the polymer. The single gas permeabilities of the membrane (for H_2 and CO_2) have been performed by using membrane gas separation apparatus. Hydrogen and CO_2 permeability values of the membrane and H_2/CO_2 selectivity have been determined. According to the gas separation performance, the membrane showed higher H_2 permeability and selectivity compared to CO_2. The H_2/CO_2 selectivity has been increased by increasing incorporation of zeolite.

Key words: hydrogen separation, ZSM-5 zeolite, poly(vinyl alcohol), membrane gas separation, mixed matrix membrane

Poster Presentation 238

Removal of Heavy Metals and Hydrated Ions from the Water Using an Emerging Membrane Technology

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With increasing industrialization and urbanization, heavy metal content in seawater shows a rapid increase. These chemicals (lead, mercury, arsenic, etc.) accumulate in the water and show fatal effect on the marine ecosystem where the industrial effluent is discharged. Therefore, removal of heavy metals from industrial waste stream or seawater has attracted attention based on the environmental regulations implemented by the governments. Several efficient methods such as coagulation, adsorption have been suggested for the removal of heavy metals from seawater and industrial effluent. Among these, membrane separation techniques are compatible due to the cost-effective, simply modification and easy processibility properties. Membrane based methods such as reverse osmosis and electro dialysis are considered as a promising technology. The main constituent of the membrane based system is the productivity, selectivity, stability and durability of the membrane. The most of heavy metals consist in seawater at ppm level and their kinetic diameters are very small to be separated by a filtration type process. The usage of non-porous membranes becomes a key way to provide high rejection. Therefore, this study mainly focused to fabricate a water selective non-porous membrane to reject all heavy metals and hydrated ions from the water. For this purpose, polyether block amide coated sodium alginate membrane was fabricated and used to purify water from seawater. The water was taken from İzmit Gulf of Marmara where the many of industrial plants are settled around. In conclusion, greater than 99% hydrated ions, lean, nickel, mercury, cadmium rejections have been achieved.

Key words: Heavy metal removal, water purification, seawater purification, non-porous membrane, ion rejection

Acknowledgements: This research was financially supported by the Scientific Research Projects Unit of Kocaeli University (Grant number:2017/009).

Poster Presentation 240

Formulation and Controlled Release of Mupirocin from Ethyl Cellulose Coated Poly(vinyl alcohol)/Sodium Alginate Microspheres

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Mupirocin is an effective antibacterial agent often used in clinical practice as topical ointment to treat a wide variety of topical wounds because of its effectiveness against wound pathogens. In this study, Poy(vinyl alcohol)/sodium alginate (PVA/NaAlg) microspheres containing Mupirocin were prepared by emulsion crosslinking method using a mixture of water/oil. Microspheres Calcium chloride ($CaCl_2$) was used as crosslinking agent. Then these microspheres were coated with ethyl cellulose. The release of Mupirocin through coated ethyl cellulose crosslinked matrix membranes were carried out at pH 5.5. Microspheres were also characterized by equilibrium swelling values and release profiles. Then characterized by fourier transform infrared (FTIR) spectroscopy, differential scanning calorimetry (DSC) and scanning electron microscopy (SEM). It was studied the effect of PVA/NaAlg ratio, amount of mupirocin and membrane thickness on the release of mupirocin. The release of mupirocin from the micropheres increased as the drug/polymer ratio decreased.

Key words: Mupirocin, Microspheres, Controlled Release, Biocompatible Polymers, Films.

Poster Presentation 241

Investigation of Release Characteristics of Ketorolac Tromethamine from Ethyl Cellulose Coated Poly(vinyl pyrrolidone)/Sodium Carboxymethyl Cellulose Microspheres

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In this work the release of ketorolac tromethamine (KT) from poy(vinyl pyrrolidone) (PVP)/sodium carboxymethyl cellulose (NaCMC) microspheres coated with ethyl cellulose (EC) was investigated. KT is a non-steroidal anti-inflammatory drug. The plasma half-life of KT has been reported to be around 4–6 h, and it is a relatively favorable therapeutic agent for the management of moderate to severe pain. The maximum duration of treatment should not exceed five days for tablets, or two days for continuous daily dosing with intravenous or intramuscular formulations. So, it is very advantageous the controlled release of KT. The release studies were carried out at pH 5.5. The effect of the EC film coating thickness was studied on the release of KT. It was determined that the release of KT decreased with the increase in film thickness.

Key words: Ketorolac Tromethamine, Polymer Films, Microspheres, Controlled Release, Coating.

Poster Presentation 242

Wastewater Management Practices in Turkey

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Increasingly limited water resources in terms of quality and quantity have led experts to search for alternative water sources. Especially in the country where the greatest amount of water is used in agriculture, the ways of saving water used in agriculture are being investigated and speeding up the studies about the use of treated waste water in agriculture.

Wastewater can be defined as settlement areas, industrial facilities, power plants, agricultural and animal productive waters that contain a wide variety of unknown substances that are biologically and chemically harmful to health. Used water is classified as domestic waste water, industrial wastewater and rainwater. Due to population growth, rapid urbanization and industrialization, the amount of wastewater is getting increased and it needs to be removed without harming the environment. With the treatment processes, the pollutants in the wastewater are removed and made harmless to the environment. Treated wastewater is most used for agricultural irrigation, non-agricultural irrigation (park, garden, green areas, golf course etc.) and underground waters.

As it is in the world, the available water resources in Turkey are gradually decreasing, so the wastewater is being tried to use. In our country, legal regulations related to the treatment and use of wastewater have been made in recent years.

In this study, the characteristics of wastewater in Turkey, institutional and legal infrastructures related to wastewater management, usage areas of wastewater are informed and wastewater management are evaluated in our country.

Key words: Wastewater, management, water resources

Poster Presentation 245

Effect of Global Climate Changes on Rangelands

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Main factors defining the plant growth in rangelands are water and temperature. In the last years there are significant changes in the amount and form of precipitation fall in rangelands caused by global climate changes. The precipitation of rangelands at higher altitude is usually in the form of snow, recently it falls in the form of intense and drastic rains but it precipitates in a short time. This type of precipitation moves briefly away by the surface flow. In the regions with adequate precipitation, there is increase in the amount of water lost through the plants and evaporation from the surface due to the increase in temperature. Plants become more vulnerable to water due to the limiting effect of water, and many qualified forage crops are being lost from vegetation by the increasing grazing effects. In some circumstances, occupying species could not cover the soil surface and soil surface become open to erosion.

There is a strong consensus that the climate is more unpredictable and that the drought is spreading, although there are uncertainties as to how the climate and other global changes are developing and how plant communities and animals are affected. While there are transitions between more variable and more extreme climatic conditions and rangelands are changing as we have not known before, misuse/unconscious use causes degradation of scarce resources and destruction over time. It has to be used and planned in accordance with the potentials of the land with its special position in the natural environment elements.

Key words: Rangelands, global climate changes, global warming, precipitation, land use.

Poster Presentation 248

Global Warming Effect on Some Field Crops: A General Outlook

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Physically, majority of the light rays comes from the sun in 6-8 min and they make greenhouse effect/blanked effect via greenhouse gases (GHGs) such as CO_2, CH_4, H_2O, etc. and they could not reflect to the back, and causes earth's average temperature rises (= the global warming). But, the CO_2 is a rather critic and dangerous for all field crops which are sown at the large areas, strategic and produced in the high quantities). Similarly, one of the another important GHGs parameter is temparature, and its raising is also important. Especially, additive or culmulative effects, and with the interactions of them (particularly with the CO_2) have vital role for photosynthesis pathway and water-use efficiency(ies) (WUEs) for plants. According to the their photosyntetic pathway, species are divided three classes such as C_3, C_4 and CAM. Generally field crops are C_3 and C_4; and, CAMs crops constitute to desert plants such as *Papaya* (*Carica* spp.), Ananas (*Ananas* spp), Cactus (*Cactaceae)*, etc.) are not our topic. Due to the CO_2 fertilization C_3 crops (wheat (*Triticum* spp), barley (*Hordeum* spp.), Rice (*Oryza* spp.), Potatoes (*Solanum* spp.), Legumes, etc.), have advantage with yield increasing at least 30-32% than decreasing; but, C_4 plants (Maize (*Zea* spp.), Sorghum (*Sorghum* spp.), Sugarcane (*Saccharum* spp.), etc.) will be much more affect either from the CO_2 or temperature. In this paper, with totally colourful illustrated biochemical, agronomical, botanical and biodivesity and ecological effects of the global warming were discussed and tried to drawn a result.

Key words: Global Warming, Field Crops, Greenhouse gases (GHGs), Yield and Yield Components

Poster Presentation 249

Problems Due to Coastal Area Usage and Suggested Solutions: A case study in Çanakkale City Center

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Open spaces in the use of citizens are adversely affected with increasing industrialization and urbanization. At the beginning of these open spaces are coastal areas. Recently, Çanakkale City Center coastal areas has been also affected by these negativities. Increase of construction without consideration of the coastline and correspondingly increase of pollution, deformation of beach areas, increase of hard floors and decrease of green areas are the main problems. In this study, remote sensing methods were used to determine these problems that exist in Çanakkale City Center containing natural and historical beauties. The multi-temporal change detection analysis was performed using multispectral satellite images between 1992 and 2017. Image classification methods were used to detect the changes of land use classes (green areas and construction areas) in time. Eventually, it has been determined that there was a decreased ingreen areas, an increase in uncontrolled construction, and a decrease in coastal sand dunes in Çanakkale City Center coastline. Problems in the waste treatment system resulting from unplanned urbanization also lead to environmental pollution. Citizens, who can't use coastline as much as possible for the recreational purposes (swimming, walking, picnic and others) due to negative changes and pressures, tend to use nearby coastline areas by transportation means. Unfortunately, these negatives decreased the health quality of citizens. For Çanakkale, which faces similar problems experienced by coastal cities (such as İstanbul, İzmir, Kocaeli and others…) exposed extreme and unplanned urbanization, urgent policies should be developed to prevent and solve these ever-growing problems.

Key words: Çanakkale, Urbanization, Coastline, Remote Sensing

Poster Presentation 250

Relationships between Landscape Diversity and Image Texture Derived from RapidEye Data in an Agricultural Area

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Special policies and guidelines should be developed to maintain and enhance biodiversity in agricultural areas. A convenient strategy may be the increase of landscape diversity in an agricultural area. A diverse landscape contains many different production cover types such as different field crops and orchards and more natural cover types such as forest remnants, meadowlands, wetlands, brushes. Such patterns are characteristic of traditional farming systems, and provide habitats for different species, e.g. nest cover and food sources for birds, nectar for pollinators, and plant biomass for insects. In order to monitor landscape diversity in agricultural landscapes, reliable and up-to-date maps are needed. Satellite remote sensing may be an efficient tool for mapping landscape diversity. This study aimed at determining the relationships between landscape diversity and the texture measures derived from RapidEye satellite image. Twenty sample plots with the size of 1 ha were randomly selected. Landscape diversity was quantified using Shannon's index. Corresponding image texture measures which are first-order texture including the Standard Deviation of pixel values, and second-order texture including the GLCM Homogeneity, GLCM Entropy, and GLCM Correlation, were calculated. Pearson correlation coefficients obtained were 0.57 ($p<0.01$), 0.60 ($p<0.01$), 0.50 ($p<0.05$), and 0.56 ($p<0.01$) for the Standard Deviation, GLCM Homogeneity, GLCM Entropy, and GLCM Correlation, respectively. Our study showed that satellite image texture has potential in estimating and mapping landscape diversity across agricultural areas.

Key words: Biodiversity, Landscape Ecology, Remote Sensing, RapidEye, Texture

Acknowledgements: This research was partly supported by the Fethiye Forest Directorate.

Poster Presentation 251

Phytoremediation of the Bozalan Quarry

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Our goal is to remedy the Bozalan clay quarry (Ezine/Çanakkale) progressively and create a naturalized landscape with ecological diversity. After completion of the project the remediation area will be used for recreational purposes with increased community access where a variety of habitats for plants and wildlife can be observed. Initially, remediation started on the western banks of the quarry. We mixed top layer of soil with peat and vermicompost for successful establishment of drought-tolerant fodder and remedial plant species such as *Agropyron cristatum*, *Malva sylvestris*, *Medicago sativa*, *Rumex acetosa* and *Vicia sativa*. At the end of the germination test, three species were selected (*Agropyron cristatum*, *Medicago sativa* and *Vicia sativa*). As a result of the study, *Medicago sativa* (alfalfa) was determined to be a more tolerant species and Soil+Peat+Vermicompost growth media was a suitable media for our species and the opportunistic species (such as *Portulaca oleracea*, etc.). The plantation of a variety of species will be progressive and populations of new plant species will also be considered as earthwork is completed on other parts of the quarry. The establishment of plant communities will help minimize problems due to erosion and enable further successful planting of perennial trees and contribute to an increase of animal and insect species.

Key words: Phytoremediation, Bozalan Quarry, Çanakkale, *Medicago sativa*, Alfalfa

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Poster Presentation 252

The Use of Wastewater to Irrigate Landscaping Areas

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The landscaping areas within specific structure and texture constitute an important part of the urban space. Because landscaping areas are mostly used for social purposes, they take place as the product of natural character or artificial culture. Plants which are the main material of these areas are directly affected by the quality of the irrigation water. Similarly, the people and animals those who spend time in these areas are directly or indirectly affected by the use of wastewater for irrigation. For this reason, the water quality used for irrigation as well as irrigation methods play an important role in urban landscaping areas. In this study, the use of wastewater in urban recreational areas was discussed together with possible irrigation methods. It has been trying to reveal its positive and negative aspects by studying the examples in the world and Turkey.

Key words: Irrigation, Wastewater, Landscaping area, Water quality, Irrigation method

Poster Presentation 253

Current Situation of Organic Agriculture in the World and in Turkey

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Due to the rapid population growth experienced worldwide, chemical and genetic in puts have been used extensively in order to obtain the highest yield from unit area and domestic animals. However, the negative effects of these methods on the cultural and natural environment and human health have begun to be debated in the public and scientific world. Environmental and human health concerns have directed scientists to alternative and sustainable methods as well as organic farming practices. The first examples of organic farming have been seen in the early 20th century, but have been increasingly grown in developed countries since the 1970s. Organic agriculture in our country started in 1980s with the demands of European companies and made significant progress over time. Although Turkey has very favourable ecological conditions for organic production and high export potential, its share in the world organic food market is unfortunately very low. The main objectives of this study are firstly to reveal the situation of organic agriculture in the worldand in Turkey today. As a result, fundamental problems in the organic agriculture and related sectors in our country will be revealed and suggested for their solutions. On this page, proposals will be made for the development of organic agriculture in Turkey and for policy-related research and development related to the increase of organic product exports.

Key words: Organic agriculture, organic food, world, Turkey

Poster Presentation 254

Importance of Sustainable Agricultural Management

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Agriculture is an important economic activity for many people. Agriculture, on the one hand, constitutes the main source of the production of food, which is a condition for the survival of the people, and on the other hand it provides the people with a source of livelihood. Again, agriculture is being done in the environment we live in and these activities are affecting the environment due to various pressures such as the ever-increasing population, more income, more products from the unit area, and this effect is increasingly threatening human health. Because of these characteristics, agriculture is indispensable for people and it is a strategic production sector. For this reason, management of agricultural activities is of great importance. The importance of agriculture in our lives is increasing day by day and social consciousness about agriculture is developing rapidly. Thanks to technological developments, people can get information faster and easier and they are conscious about agricultural activities. People no longer prefer products derived from agricultural activities that are harmful to the environment and human health when questioning the safety of products produced after agricultural activities. Thanks to this auto control, producers are adapting their production processes to the new situation in line with these expectations. In this new process, sustainable agricultural production methods such as organic farming, good farming practices and ecological farming have emerged in order to maximize the benefits of preserving their production capabilities without damaging the resources at hand, taking into consideration the rights of future generations in agricultural production. These new approaches require the fulfillment of management function scientifically in order to achieve the goals that are aimed at sustainable agriculture.

Key words: Sustainable Agriculture, Organic Agriculture, Good Agriculture, Management.

Poster Presentation 255

The Comparative Age Determination of *Carassius gibelio* (Bloch, 1782) Living in Ankara Asartepe Dam Lake

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The ever changing environmental conditions and increasing human activities are among the major causes for the destruction of Aquatic ecosystems. The species of *Carassius gibelio* originated from Asia spread to whole Europe with various ways and also spread to Turkey under these condition. It is an invasive species with no economic value. Its presence in the aqueous land poses a great threat to other species. Reducing its effect and extensive biologic knowledge about this species is necessary for the protection of the endemic species and biodiversity. Therefore, correct determination of the age of this species is of great importance for the studies of fish biology. This study is carried out to determine the most reliable bone formation for the determination the age of *Carassius gibelio* (Bloch, 1782) living in Asartepe Damn Lake. There were vertebra, scale, otolith, operculum and suboperculum of 52 samples investigated for this purpose. The bone formations of each species were carefully taken out from the pedestal and prepared the readable age process. The values determined by the three different researchers by the use of stereo microscope were compared with each other and the coinciding and differing data were evaluated. The age of the almost all fish species were determined from vertebra, otolith and scales. There were only four species where the researches failed to read the age of fish from their operculum's and three species from their sub operculum's. When looking at the relationships between bony structures, the least correlation were otolith-opercula and vertebra-suboperculum with 42% and the highest correlation was observed between vertebra-operculum with 68%. The correlations between various bone structures were as follows: vertebra–scale with 65%, vertebra-sub operculum with 64%, scale-otolith with 52%, scale-opercula and scale-suboperculum with 50%, otolith-suboperculum and operculum-suboperculum with 48% .This data suggests that the most reliable bone structure for the age determination is the vertebra where the annulus were much more apparent and the number of pseudoannulus was minimum and more readable. This was followed by scales, otolith, sub operculum and operculum.

Key words: Asartepe Dam Lake, Otolith, Vertebra, Scale, Operculum, Suboperculum, comparative age determination

Poster Presentation 256

Investigation of Some Biofuels from Agricultural Perspective

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It is known that environmental issues are being increasing by everybody at today. Despite of many reasonson of the environmental problems, primarily the basic reason of its is all, to use of low quality, cheap the fossil fuels as carelessly. With this context, environmentally friendly fuels have been started to produce that left the less waste to the environment. With this situation, population of the world has been rapidly inreased and this leads the people to new searches. Within them, there are some vital (life) requirements such as nutrition and sheltering, etc. and also the energy necessities. There are "biofuels" within them and it might be ultimely the most important level. "Biofuels" are known as environmentally friendly fuels that are produced from agricultural products. There is another advantage that biofuels are obtained from renewable resources and their raw materials' are mostly the field crops that have been and is caused the important in near and far future. In our paper, as mentioned above that in the production of the biofuels supported by the field crops, a general evaluation will be make of the selection for purposeful field crops, field crops traits will be describe with the possible results used in the biodiesel and will be make some suggestions in terms of the topic.

Key words: Biofuels, environmental problems, environmentally friendly, field crops

Poster Presentation 258

Characterization and Microstructural of Hot Rolling Mill Scale

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In the IMETAL-El Hadjar complex, during the steel manufacturing process, a significant amount of scale is produced on the surface of slabs and billets of hot-rolled steel. In the various rolling mills, the quantity of scale produced is estimated to be about 0.1% of the annual production of the steel complex. The quality of the thin steel sheet during the rolling process is affected by the behavior of the iron oxide layers formed on their surfaces (scale).

This amount of scale which is a fatal by-product of the forging and rolling processes can be reused in certain areas and applied by appropriate recycling techniques such as agglomeration of iron ores in the blast furnace as a raw material. This aspect of recycling is taken into consideration.

The objective of this study is to identify the microstructural properties of the scale, using different analytical methods such as X-ray diffraction and scanning microscopy.

Several samples were used for characterization of the locally produced scale.
The analyzes of the results given by SEM showed that hematite and magnetite, the main phases present in the scale, are stacked in thin layers of a magnitude of the order of a micron meter. These phases of iron oxides are confirmed by the analysis of the spectra given by the X-ray diffractometer.

The presence of silicon in the scale is due to the covering powder used on the wall layers of the ladles.

Key words: Scales; oxidation; hot rolling; Microstructural properties; SEM; EDS analysis.

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Poster Presentation 260

First Record of *Caligus zei* Norman & Scott T., 1906 (Copepoda, Caligidae) in Turkish Marine Waters

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The John Dory, *Zeus faber* is a cosmopolitan fish species of important commercial value, distributed in Eastern Atlantic, Western Pacific, Indian Ocean, and Mediterranean and Black Seas. It is carnivorous, benthopelagic, oceanodromus fish that feeds mainly on schooling bony fishes, occasionally on cephalopods and crustaceans. Four parasitic copepods (*Caligus zei, Chondracanthus zei, Lepeophtheirus pectoralis, Peniculus fistula*) have been listed from *Zeus faber*. Fish were collected by trawl from the Sea of Marmara in Turkey on 2017. The parasites collected were preserved in 70% ethanol. Specimens were cleared in lactic acid. The photos were taken with the aid of camera connected to a microscope. *Caligus zei* has been reported in the the British Isles, the South African waters. It is mainly a parasite of *Zeus faber*. All parasites were attached to the body surface of the host. The prevalence of parasite was 9.3%. The general morphology, mouth parts (antenna, mandible, maxillule, maxilla, maxilliped), setal and spinal formula of from first leg to fourth leg, being first seta much smaller than fourth seta on exopod of first leg, serrations of apices of second and third setae on exopod of first leg in female samples; transverse striations on lateral swelling and lateral swelling on distal of maxillule, being bifid tips on claw of antenna, prominent short process in myxal area of maxilliped in male samples in this study are compatible according to present literature. This study contributes for new information as the Sea of Marmara about geographic distribution of *Caligus zei*.

Key words: Turkey, parasitic copepod, *Caligus zei*, Zeus faber, the Sea of Marmara.

Acknowledgements: This research was financially supported by TAGEM (General Directorate of Agricultural Researchand Policy), Turkey (TAGEM/HAYSUD/2014/05/01).

Poster Presentation 261

Occurrence of *Elthusa sinuata* (Koelbel, 1878) comb. n. (Isopoda, Cymothoidae) on the Red Bandfish in Turkey

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Cepola macrophthalma occurs in both temperate and subtropical waters and is known to be distributed in the eastern Atlantic from the British Isles to the north of Senegal, the Mediterranean. Cymothoids (Crustacea, Isopoda) especially infect marine teleost fish. Ceratothoa, Nerocila, Emetha, Mothocya, Anilocra, Livoneca genere of Cymothoidae family are reported from Turkish waters. *Elthusa* was most recently redefined and revised. It is reported from the Pacific, the Indian, the Atlantic Ocean, there are no records from the Mediterranean. The fish were collected by beam trawling from the Sea of Marmara, Turkey in 2015. Isopods preserved in vials containing a 70% ethanol. Mouthparts and appendages were dissected using Wild M5 stereo microscope. The appendages were drawn with the aid of a camera lucida. Parasite was deposited in the the Museum National d'Histoire Naturelle (MNHN), France. Although *Elthusa* (*Livoneca*) *sinuata* (Crustacea; Isopoda, Cymothoidae) was reported by several researchers, it may be forgotten to list in WoRMS online database. Possibly, it is seen as nomen dubium. There are limited studies on the morphology including mouthparts, pleopods, and pereopods of *E. sinuata.* The pralevence of *Elthusa sinuata* is found as 13.3%. It was found on the left gill cavity of host. The purpose of the paper is to present the first occurrence *Elthusa sinuata* (Koelbel, 1878) comb. n. on the redband fish from Turkey. *Elthusa sinuata* found in this study shares numerous character states with the other congeners, which are described in detail description of the genus. Drawings of morphology are compared with present litareture.

Key words: *Elthusa, Livoneca,* cymothoid, red bandfish, Turkey.
Acknowledgements: This research was financially supported by TAGEM (General Directorate of Agricultural Researchand Policy), Turkey (TAGEM/HAYSUD/2011/A11/P-02/2).The authors gratefully acknowledge the following individuals for technical and facility support: Dr.Kerry Hadfield Malherbe verified *Elthusa* genus; Dr. Deniz Soysal, provided laboratory space for the examination; Dr. Alessandro Ceregato, Rita Mascolo, Giovanni Maffei for obtain scanned literature.

Presented by

Poster Presentation 262

Preliminary Studies on Distribution and Biology of *Capnodis tenebrionis* L. (Coleoptera: Buprestidae) in Çanakkale Province

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In this study, distribution of flatheaded woodborer, *Capnodis tenebrionis* L. was examined in Lapseki, Bayramiç, Central and Gelibolu districts of Çanakkale province in 2016-2017. Surveys were conducted to determine preadult and adult stages of *C. tenebrionis* on peach, cherry, apricot and plum orchards. Observations were made to collect adults from orchards just after sun rise because of the congregation behavior on tree branches of adult beetles in the early hours of morning. Collected adults were transferred to laboratory in collection boxes and placed into 70x70x70 cm sized reproduction cages. Sterilized and sifted sand was placed on the floor of the cages in 2 cm depth for egg laying. Also some fresh apricot shoots and leaves were placed into the cages for adult feeding. The sands from cage floors were sifted daily to collect *C. tenebrionis* eggs and fresh shoots were replaced every other day. The numbers of the collected adults were 4 adults from a peach and an a cherry in Kangırlı village of Lapseki district on 03.06.2016 and on 15.06.2016, 2 adults from a plum orchard in Ocaklı village of Gelibolu district on 10.06.2017, 2 adults from a cherry orchard in Kocaveli village of Lapseki district on 23.06.2017 and 4 adults from a peach orchard in Kangırlı village on 28.06.2017, at the end of the study. Observations in orchards of Central and Bayramiç districts have yield no results. Egg laying behavior was observed in laboratory conditions of 24±1°C temperature and %60-65 relative humidity. Eggs were laid in groups of 2, 4 and 8 under sand cover. First instar larvae have emerged after 10-12 days.

Key words: *Capnodis tenebrionis*, flatheaded woodborer, biology, distribution, Çanakkale

This research is a part of a doctoral thesis of first author and it was financially supported by The Scientific and Technological Research Council of Turkey (TUBİTAK TOVAG Project number 116O361)

Poster Presentation 263

Effect of Entomopathogenic Nematodes on June Beetle (*Polyphylla fullo* L. Col: Scarabaeidae)

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June beetle (*Polyphylla fullo*), causes negative effects on development of fruit trees by burrowing into the roots. The effectiveness of entomopatogenic nematodes on june beetle was conducted in Çanakkale province in 2016-2017 in this study. *Polyphylla fullo* and its host were collected from diffirent disticts of Çanakkale and brougth to the laboratory in plastic boxes. Trials were conducted in laboratory conditions at 24±1 °C temperature and 60-65% relative humidity. In this study, isolates of *Steinername feltiae* (113), *S. affine* (46), *S. carpocapsae* (1133) and *Heterorhabditis bacteriophora* (44) were used in petri dish and pot trials. In all trials 500 IJs/larva were inoculated in petri dishes and pots. While petri dishes were checked after the 5th day of inoculation, pots were checked after the 7th day. Only distilled water was used in control groups. In conclusion, infectivity of *S. affine*, *S. carpocapsae* and *H. bacteriophora* isolates were similar on *P. fullo*, but infectivity of *S. feltiae* was found higher than other EPN isolates. Effectiveness in pot trials were found similar than other applications.

Key words: June beetle, Entomopathogenic nematodes, *Steinernema*, *Heterorhabditis*

This work is a part of master thesis of first author in Department of Plant Protection Graduate School of Natural and Applied Sciences of Canakkale Onsekiz Mart University.

Poster Presentation 266

Monitoring of *Drosophila suzukii* Populaton Growth on Grape Orchards in Çanakkale Region

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Drosophila suzukii Matsumura (Spotted Wing Drosophila, SWD) (Diptera: Drosophilidae) is a pest that has been indicated as a major threat to European and Mediterranean fruit production. In Turkey, it has first founded on strawberry in 2015 in Erzurum. We know that it's also damaging on grape vine during the ripening and pre ripening period. *D. suzukii* oviposition on fruits, can not be determined at harvest, therefore effecting post harvest and shelf life. To control *D. suzukii* first we should know population density on the field.

With this purpose, the survey was carried out once week from August 2016 and March 2017 vineyards on Biga district (Çeşmealtı village). We chose three different vineyards for monitoring of *D. suzukii* and we set two bait- trap for each side of orchards. After collect traps recorded number of male/female individuals weekly. Totally we collected 416 male, 389 female individual durring the surveys. The most individual caught collected between September and January.

According to results *D. suzukii* emergence started ripening time of grape and we should started to control before ripennig period until end of the harvest. To do this monitoring the fligth of *D. suzukii* and intervene before ovipositions.

Key words: Turkey, Çanakkale, fruit flies, *Drosophila suzukii*, integrated pest control, grapevine

This research is a part of Master Science thesis of Eray Özdamar.

Poster Presentation 267

New Invasive Pest in Turkey *Drosophila suzukii* Matsumura (Spotted Wing Drosophila, SWD)

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Spotted wing drosophila, *Drosophila suzukii* Matsumura (Spotted Wing Drosophila, SWD) (Diptera: Drosophilidae), a native of Eastern and Southeastern Asia, is a pest of small and stone fruits. First detected in California in 2008, the insect is now found across the Pacific Coast states. Its penchant for attacking healthy ripening fruits makes it a potential economic threat to a host of soft and thin-skinned fruit crops including cherry, raspberry, blackberry, blueberry, strawberry, peach, plums, pluots, nectarines, juice grape, table grape, and wine grape.

In 2015 *D. suzukii* has been found in Erzurum, Turkey, on strawberry than, in 2016 it is detected on vinegrape in Çanakkale province. Turkey has about 330.000 ton strawberry and 4.000.000 ton grape production. If we consider from this perspective the presence of *D. suzukii,* knowlage about population and host range according to Turkey's climatic conditions is very important to keep estimate and control *D. suzukii*'s potential attacks. In this study we are intoducing general status about *D. suzukii* in Turkey.

Key words: Turkey, Çanakkale, fruit flies, *Drosophila suzukii*, integrated pest control, grapevine, strawberry

Poster Presentation 268

Determination of the Possibilities of Using Herbivore Insect *Capsodes infuscatus* Brulle (Hemiptera: Miridae) for control of Asphodel (*Asphodelus aestivus* Broth.) in Meadows

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Asphodel (*Asphodelus aestivus* Broth), which is not a plant preferred by grazing animals, has expanded in meadows of Mediterranean coastal countries. Perennial asphodel may quickly suppress the local flora because of its deep tubers and the inability to use chemical control against it in meadows. Herbivore insect *Capsodes infuscatus* Brulle has an important place in biological control of asphodel because of its relation to the biology of asphodel plants. This study was conducted to determine the suppression rates of *C. infuscatus* on asphodel in natural conditions. With this purpose, 5, 10, 15, 20 and 25 new adults were released on asphodel in 70x50x50 cm sized tulle cages. Same number of leaves were used for each *C. infuscatus* adult number and the study was conducted with 3 repetitions. Number of lesions on leaves were counted after 30 days and the data were evaluated by comparing the results with the control plot. In addition, a damage scale was established from the number of lesions on the leaves. It was determined that the rate of lesions on leaves were %61, %67, %88, %94, %78 with 5, 10, 15, 20, 25 adults, respectively. The best results were obtained in 20 adult-released cages and the number of lesions decreased as the number of adults (25 adults) increased due to population density. The lowest damage scale was found in cages with 5 individuals as 22 leaves and the highest damage scale was in cages with 20 individuals as 31 leaves. At the end of the study, it was concluded that 15 and 20 adults would be sufficient to suppress a asphodel plant with 20-30 leaves.

Key words: Meadows, *Asphodelus aestivus, Capsodes infuscatus*, Biological control

Acknowledgements: The information in this study contains a part of the master's thesis of the author responsible and It was financially supported by the Canakkale Onsekiz Mart University Scientific Research Projects Coordination Unit, Turkey (FYL-2016-925).

Poster Presentation 269

A Faunistic Study on Aquatic Coleoptera of Turkish Thrace

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The order Coleoptera is the largest order of insects which contains terrestrial, semiaquatic and aquatic species. The aquatic beetles can be found in many different water systems; pools, canals, ponds, lakes, streams. There are many studies, by the native and foreign authors about the aquatic Coleoptera fauna of Turkey but there is not a comprehensive study in the Turkish Thrace. The aim of this study is to make a contribution to the aquatic Coleoptera fauna of Turkish Thrace.

In this study, adult material collected from 1986 to 2002 were evaluated taxonomically to determine the aquatic Coleoptera fauna of Turkish Thrace. Accordingly, a total of 25 species belonging to the families Dytiscidae, Haliplidae, Notaridae, Gyrinidae, Helophoridae and Hydrophilidae of the order Coleoptera were determined, of which 22 species were determined as new records for Turkish Thrace.

Key words: Aquatic Coleoptera, Fauna, New record, Systematic, Turkish Thrace.

Poster Presentation 270

Determination of Efficiency of *Trichogramma evanescens* Westwood on *Tuta absoluta* (Meyrick) in Laboratory Conditions

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Tomato production has an important place in Çanakkale economy. Recently, population of tomato leaf miner *Tuta absoluta* (Meyrick).(Lepidoptera: Gelechiidae), which is originated from South America, has reached to important levels in Turkey. The pests' damage can reach to 80-100%, when control applications are not used. On the other hand, excess usage of chemicals to control the pest causes adverse effects on nature and pesticide resistance problems. Thus, biological control, which is an effective, nature friendly and sustainable control method, has become a preferred method. In this study, it was aimed to determine the parasitism rate, emergence rate and sex ratio (M/F) of egg parasitoid *Trichogramma evanescens* on *T. absoluta* in laboratory conditions (25±1ₒC and 60±5 R.H.). With this purpose, *T. absoluta* was reared on tomato plants and its eggs were collected. 150 eggs were glued on each egg card with a total of 10 egg cards and 1500 eggs. Egg cards were placed into glass tubes and 1 female and 2 male *T. evanescens* were transferred to each tube. These parasitoids were removed after 3 days and eggs were checked daily to determine parasitism rate by counting parasitized (black) eggs. Parasitoids have started to emerge from parasitized eggs around day 10 and they were counted and sexed under a binocular microscope to determine emergence rate and sex ratio. It was determined that, mean parasitism rate, mean emergence rate and sex ratioof *T. evanescens* on *T. absoluta* eggs were 7.72%, 54.25% and 0.85 respectively, as the results of the study.

Key words: *Tuta absoluta*, *Trichogramma evanescens*, Parasitism rate, Emergence rate, Sex ratio

Poster Presentation 271

Determination of the Optimum Number of *Ephestia kuehniella* Zeller (Lepidoptera: Pyralidae) Eggs for Mass Production of Predator *Orius laevigatus* (Fieber) (Hemiptera: Anthocoridae)

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Successful use of predators in biological control mostly depends on mass rearing and release of the beneficial insects. The relation between the predator and its host is an important factor in mass rearing of beneficial insects. Nowadays, some biological control agents have become commercially successful such as predator insect *Orius laevigatus* (Fieber) (Hemiptera: Anthocoridae), which is used against various pests in greenhouses. Determination of the optimum number of *Ephestia kuehniella* eggs needed by *O. laevigatus* for successful mass rearing was aimed in this study. With this purpose, different numbers of *E. kueniella* eggs were provided to 2nd instar nymphs of *O. laevigatus*. The study was conducted with 20, 25 and 30 *E. kuehniella* eggs every 2 days under 26±5°C temperature, 55-60% r.h. and 16:8 (L/D) conditions in glass tubes with 10 repetitions. Number of eggs consumed by nymphs was counted every other day and new eggs were added to tubes until they are dead. Dates of nymph instar changes were also recorded. At the end of the study, mean number of consumed *E. kuehniella* eggs was 120,1, 156 and 184,1 for 20, 25 and 30 eggs, respectively. According to the statistical analysis of the data the difference between the effects of different numbers of eggs on total egg consumption was not significant (P>0,005). Thus, supplying more than 10 *E. kuehniella* eggs for each *O. laevigatus* individual is not needed for successful development of the predator, which is important to decrease rearing cost of *E. kuehniella*.

Key words: *Orius laevigatus*, *Ephestia kuehniella*, Mass production, Eggs, Optimum

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Poster Presentation 273

Potential Culiciphage of Aquatic Heteropters (Insecta: Heteroptera) in Respect of The Immature Stages of *Culex modustus* (Diptera: Culicidae)

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The Culicidae are Arthropods of the class of Insects, Pterygotes, Holometabol belonging to the order Diptera and the suborder Nematocera. Hematophagous females are responsible for the transmission of many diseases and formidable nuisance, playing a vectorial role Human and veterinary (microfilariasis, malaria, West Nile fever, yellow fever, several encephalitis ...). Culicidal fauna has been the object of several researches throughout the world since the beginning of the twentieth century. In the context of anticulicidal control, the biological method has taken a large scale to overcome the disadvantages of chemical control. Predation and biological control are important components of vector population control either as an applied strategy or as an existing ecosystem service. Therefore, we evaluated the predator potential as a function of exposure time, the prey stage with four pre-imaginary larval stages and a nymphal stage, and the predator species. For this we have used three species of heteroptera (*Ilyochoris cimicoides*, *Notonecta glauca* and *Nepa cinerea*) in relation to a species of mosquito *Culex modestus* nuisant agent formidable in the region of Annaba and vector of arboviroses. The results obtained show that the predatory potential of Heteroptera differs according to species and time. In the *Notonecta glauca* and the *Ilyochoris cimicoides* the potential is very high than that of the *Nepa cinerea*. However, the prey stage is a major factor in the trophic choice of these two species.

Key words: Predator potential, Heteroptera, *Culex modestus*, biological control, Culicidal fauna

Poster Presentation 274

New Taxonomic and Faunistic Data on the Genus *Meteorus* Haliday, 1835 (Hymenoptera: Braconidae: Euphorinae) of Bozcaada (Tenedos) from Turkey

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The Euphorinae Föerster, 1862 is one of the most interesting and diversified subfamily of Braconidae with about 1100 species distributed all around the world. The Meteorini Cresson, 1887 are small to medium size (2–10 mm) euphorine braconids, classified into two genera: the species-rich and cosmopolitan *Meteorus* Haliday, 1835 and the small Holarctic and Neotropical Zele Curtis, 1832. *Meteorus* species are koinobiont endoparasitoids of the larvae of either Lepidoptera or Coleoptera, and most species of *Meteorus* are solitary parasitoids (rarely gregarious). Bozcaada (Tenedos) is an island of Turkey in the north-eastern part of the Aegean Sea. Administratively, the island constitutes the Bozcaada district of Çanakkale province and it is the third largest Turkish island after Gökçeada (Imbros) and Marmara Island. Adult specimens of *Meteorus* were collected from various habitats and altitudes of Bozcaada between 2010 and 2015. Sweeping nets and light traps were used to obtain samples on grass-type plants. 10 species that had not previously been found in Bozcaada were observed in this study. In the present study, *Meteorus rubens* was found to be the most commonly parasitic wasp in the Bozcaada fauna.

Key words: *Meteorus,* Braconidae, Hymenoptera, Bozcaada, Fauna

Poster Presentation 275

Acute Toxicity of Organophosphate Insecticide Dichlorvos on Larvae of European Leafroller *Archips rosana* (Linnaeus, 1758) (Lepidoptera: Tortricidae)

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Archips rosana (Linnaeus, 1758) is a European Leafroller (ELR) pest feeds on large variety shrubs and trees in Thrace region (Northwest of Türkiye). Dichlorvos is an organophosphorus insecticide that is used against of *A. rosana* and other pests in agriculture. It was aimed to investigate mortality ratio after exposed with Dichlorvos on larvae of *A. rosana*. Commercial form of pesticide, DDVP 550 EC (Dichlorvos active ingredient 550g/L) was used as test substance at recommended dose (r.d.) (1100 µM), and half of r.d. and 1.10^{-1}, 1.10^{-2}, 1.10^{-3}, 1.10^{-4}, 1.10^{-5}, 1.10^{-6} fold diluted concentrations of r.d. in laboratory conditions. After a single dose application mortality ratios were determined after 24, 48 and 72 hours. Results demonstrated that diluted concentrations of commercial form of Dichlorvos (DDVP 550 EC) has lethal effect on pest *A. rosana* larvae. 1.10^{-4} fold diluted concentrations of Dichlorvos caused 100% mortality on larva of *A. rosana* after 24 hours. 10^{-5} folds diluted concentration induced 75% mortality after 48 hours. Mortality ratio was increased depending on the time. The results of the present study demonstrated that Dichlorvos induced high mortality at concentrations below field r.d. The effective concentration of pesticide use might be decreased for to save environment and side effects on Rosaceae family.

Key words: DDVP, dichlorvos, *Archips rosana*, mortality, larvae

Poster Presentation 278

Contributions to the Oribatid Mites (Acari, Oribatida) Fauna of Kızılcahmam, Ankara

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Oribatid mites are one of the largest and diverse group of soil fauna. They have a worldwide distribution and play important role in organic matter decomposition, nutrient cycling, and soil formation. Although oribatid mites are one of the richest group of Acari with approximatetly more than 10.000 described species, studies on oribatid mites are very restricted with about 150 species from Turkey. As a result of compilation of studies on oribatid mites of Kızılcahamam town totally 3 species were recorded from the region, namely: *Phthiracarus longulus*, *Steganacarus* (*Tropacarus*) *brevipilus* and *Austrophthiracarus heterotrichus* from an old pine forest. In the present study oribatid mite species of pine litter from Kızılcahmam town were surveyed and two species belong to the genera *Nothrus* and *Adoristes* were identified.

Key words: Acari, Oribatida, Ankara, Fauna, Species.

Poster Presentation 279

Oribatid Mite (Acari) Fauna of Aegean Region of Turkey

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Aegean region is one of the Turkey's main seven geographical regions. Aegean region comprises eight provinces: Afyonkarahisar, Aydın, Denizli, İzmir, Kütahya, Manisa, Muğla, Uşak. Information on the mite fauna of the region is very limited. Although oribatid mites are one of the richest group of Acari with approximately more than 10.000 described species, only about 150 species of them are know from Turkey. Totally 28 oribatid mite species were reported from Aegean region up to date, namely; *Cosmochthonius lanatus, Cosmochthonius zanini, Ctenobelba ayyildizi, Cymbaeremaeus cymba, Eupelops nepotulus, Euphthiracarus monodactylus, Hoplophthiracarus cretensis, Gustavia fusifer, Hypochthonius luteus, Licnodamaeus undulatus, Medioppia subpectinata, Microtritia minima, Nothrus biciliatus, Phyllozetes emmae, Plesiodamaeus glaber,Oppiella obsoleta, Oppiella özkani, Oribatida tibialis, Rhysotritia ardua, Scheloribates fusifer, Scheloribates pallidulus, Sphaerochthonius splendidus, Tectocephus velatus, Trichoribates trimaculatus, Xenillus clypeator, Zygoribatula cognata, Zygoribatula terricola, Zygoribatula undulata.* Three of these species have been described as new to science. As it will be understood from the examined material, limited numbers of sampling from a limited area contains three new species for our country which is an indication of the biological richness of the region. By the evaluation of material collected with a more comprehensive field study both the Turkish and world fauna will gain a much greater number of taxa.

Key words: Acari, Oribatida, Turkey, Aegean region, Fauna.

Poster Presentation 280

Morphological and Anatomical Characteristics of Planorbiidae Fauna in the Biga Peninsula (Çanakkale)

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The Phylum Mollusca is the richest taxa after Artropoda. Among Mollusca, Gastropoda and Bivalvia are major clasis which show important adaptations. Although studies for freshwater mollusca are in increasing trend in Turkey, more studies are demanding. In this study, we aimed to investigate the Planorbidae (Mollusca: Gastropoda) fauna in the fluvial watercourses in Biga Peninsula (Çanakkale, Turkey). Three sampling sites were chosen according to earlier data that harboring a well-developed planorbiid populations in the study area. Freshwater snails were collected using a hand net from gravelly and coarse sandy bottoms of a spring and small streams on the Biga Peninsula, northwestern Turkey (Asia Minor). Specimens were put into glass vials with ethanol (75%). Shells were measured under a stereo zoom microscope (Zeiss Stemi 508). Digital images were measured using ZEN software. Type materials and non-type materials are stored in the Limnology Museum of Canakkale Onsekiz Mart University (COMULM), Turkey. Planorbiids both sampled and in the museum collections were evaluated both morphologically and anatomically under stereo zoom microscope in the laboratory. Four species of Planorbiidae, *Planorbis intermixtus* Mousson 1874, *Gyraulus piscinarum* (Bourguignat, 1852), *Gyraulus* (*Armiger*) *crista*, *Hippeutis coplanatus* (Linnaeus, 1758) were determined in the study area. Earlier data suggested these species except *H. coplanatus*, recorded firstly in the study area.

Key words: Freshwater snail, Planorbiidae, Mollusca, Biga Peninsula (Turkey), Systematics.

Acknowledgement: This study partly supported by The Scientific Research Projects of ÇAnakkale Onsekiz Mart University with 1062 code.

Poster Presentation 281

Contributions to Turkish Cremastinae (Hymenoptera: Ichneumonidae) Fauna

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Cremastinae (Hymenoptera: Ichneumonidae) specimens collected between the years 2006 and 2012 from different localities with varying habitat characteristics during studies carried out for determination of Ichneumonidae fauna of Turkey were evaluated and 13 species were determined. Among these species, *Cremastus infirmus* Gravenhorst, 1829 and *Temelucha thoracica* Kolarov, 1989 are new records for Turkey fauna. The distributional ranges of the species in Turkey and over the world were given and discussed considering available literature data.

Key words: Hymenoptera, Ichneumonidae, new record, fauna, biodiversity

Acknowledgements: I thank to Celalettin Gözüaçık for contributing to the study material. The study material evaluated was collected in research projects financially supported by TBAG 111T416 and TÜBAP 740 and 2010/98.

Poster Presentation 282

Oribatid Mite (Acari) Fauna of Mediterranean Region of Turkey

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Mediterranean region of the Turkey comprises eight provinces: Burdur, Isparta, Antalya, Mersin, Adana, Kahramanmaraş, Osmaniye and Hatay. Information on the Oribatid mite fauna of the region is very limited. Hitherto totally 7 species were recorded from the region, namely: *Cosmochthonius zanini*, *Ctenobelba ayyıldızı* sp. nov, *Cymbaeremaeus cymba*, *Medioppia subpectinata*, *Oppiella özkani*, *Oribatida tibialis*, *Tectocephus velatus*. Two of these species are new records for the Turkish fauna, one species has been described as new to science. As it will be understood from the examined material, limited numbers of sampling from a limited area contains two new records, one new species for our country which is an indication of the biological richness of the region. Therefore, we believe that by the evaluation of material collected by a more comprehensive field study both the Turkish and world of fauna will gain a much greater number of taxa.

Key words: Acari, Oribatida, Turkey, Mediterranean region, Fauna

Poster Presentation 284

Checklist of Agathidinae species of Trakya Region, Turkey (Hymenoptera: Braconidae)

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Agathidinae are koinobiont endoparasitoids of lepidopteran larvae. Within the Hymenoptera, Agathidinae is a moderately large subfamily of Braconidae. The present study provides the checklist of the genera and species in the subfamily Agathidinae (Hymenoptera: Braconidae) from Trakya region, Turkey. A total of 14 species belonging to 3 genera have been listed, that had been recorded from 5 provinces. The recorded species belong to the genera *Agathis* Latreille,1804 (11 species), *Bassus* Fabricius,1804 (2 species) from the tribe Agathidini, *Disophrys* Förster,1862 (1 species) from the tribe Disophrini.

Key words: Agathidinae, Braconidae, fauna, checklist, parasitoid

Poster Presentation 285

Second Record of *Cepheus dentatus* with SEM Investigation

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Introduction: In undisturbed and forested habitat soils, oribatid mites are one of the most important faunal components and they play important roles in decomposition and nutrient cycling.

Genus *Cepheus* Koch, 1835 represented by 27 species all over the world [3]. Prior to this study only one species; *Cepheus dentatus* (Michael, 1888) belonging to this genus was recorded from Turkey.

Members of genus *Cepheus* characterized by broad and marginal lamellae, long interlamellar setae, ten pairs of short notogastral setae distributed in marginal ring, subcircular notogaster with short humeral projection and monodactylous legs.

In the present study, morphological features of *Cepheus dentatus* collected from Sakarya province were investigeted by scanning electron microscopy. The comparision of this species with the previosly given ones and related species were done.

Key words: Acari, oribatida, new locality, second record, Sakarya

Acknowledgements: This research was financially supported by the Sakarya University Scientific Research Projects Coordination Unit, Turkey (FBYLTEZ- 2017-50-01-008).

Poster Presentation 286

First Record of Subgenus *Antennoppia* (Acari, *Lasiobelba*) from Turkey

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Oribatid mites provide partial decomposition of organic matters. Oribatid mites are one of the richest groups of acari with approximately 10.000 described species. They occur in deserts, tundra, freshwater, sea but they are most common in litter and soils, where population densities may reach 500,000 per square metre. They play an important role in decomposition, nutrient cycle, soil formation and dispersion of fungal spores.

In this study, in order to determine the mites belonging to subgenus *Antennoppia* in Sakarya province, mites were collected in soil and litter samples from the different localities of province. Samples were placed in plastic bags and transported to the laboratory and extracted using a Berlese funnel apparatus. Among the separated mites *Lasiobelba (Antennoppia) quadriseta* determined, this is the first record of subgenus *Antennoppia* from Turkey.

Currently, genus *Lasiobelba* comprises two subgenera *Lasiobelba* (*Lasiobelba*) Aoki 1959, *Lasiobelba* (*Antennoppia*) Mahunka, 1983 and contains 34 species, which have a cosmopolitan distribution. The subgenus *Lasiobelba* (*Lasiobelba*) and *Lasiobelba* (*Antennoppia*) differs from each other by the morphology of bothridial setae (spindle-form versus setiform).

Subgenus *Antennoppia* has seventeen know species all over the world but up to this study none of them were recorded from Turkey. The newly recorded species *Lasiobelba (Antennoppia) quadriseta* Subías, 1989 redescribed by SEM investigation.

Key words: Acari, Oribatida, *Antennoppia*, new record, Turkey

Acknowledgement: This research was financially supported by the Sakarya University Scientific Research Projects Coordination Unit, Turkey.

Poster Presentation 287

Establishment of a Mollusca Catalogue under a Natural History Museum Concept

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Museums of Natural History aimed at knowing the biodiversity and enhancing public awareness on the life and living creatures which are commonwealth of humanity that need protection. There is a collection comprising hundreds of species mostly benthic macroinvertebrates in the laboratory of the Faculty of Marine Science and Technology since 2002. Cataloging of the collection was started at 2010 after the necessity of storing of the rapidly growing individuals of species in a well-organized system and to give a catalog number demanding of publication of the newly described species'. As many of the scientific projects conducted year by year, hundreds of taxa have took its place even endemics to the study area. In this collection of freshwater Mollusca, there are 70 taxa belong to 35 sampling station from various locations. Another goal of this catalogue is to serve to the international researchers/ malacologists who want to investigate of specific taxa in order to make an unambiguous identification. For this purpose, a web page was created to exhibit the owning species' worldwide.

Key words: Freshwater Mollusca, Catalogue, Natural History Museum, Systematics, Limnology.

Acknowledgement: This study was partly supported by the Çanakkale Onsekiz Mart University Scientific Research Projects Coordination Unit, Turkey (FYL-2016-1062).

Poster Presentation 289

Population Development of European Red Mite, *Panonychus ulmi* (Koch) (Acari: Tetranychidae) on Apple Orchards in Çanakkale-Turkey

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The aim of this study was to determine the seasonal population dynamics of European red mite, *Panonychus ulmi* (Koch) (Acari: Tetranychidae) on apple orchards in Çanakkale-Turkey during 2010 and 2011. Surveys were carried out in every week from April to November in sprayed and unsprayed apple orchards (golden delicious, starking delicious and grany smith apple varieties). The results of this study indicated that the population densities of *P. ulmi* began to increase generally in early May and reached the maximum level from mid June to late August. Presence of *P. ulmi* in all apple orchards continued to late September in both years. During the both years, *P. ulmi* more prefered the starking delicious than golden delicious and grany smith apple varieties in all apple orchards. The population densities of *P. ulmi* reached the maximum level with 115.9 and 75.3 mites/per leaf on the starking delicious apple variety in sprayed orchards in 2010 and 2011, respectively. Whereas, population densities of *P. ulmi* in unsprayed orchard remained at very low levels because of the presence of *Typhlodromus athiasae* Porath and Swirski (Acari: Phytoseiidae) which was one predator species on only spider mites. Although *Stethorus punctillum* (Coleoptera: Coccinellidae) and *Zetzellia mali* (Acari: Stigmaeidae) were the most abundant predatory species on *P. ulmi* in sprayed orchards, they could not control the spider mites on all apple cultivar and both years.

Key words: Biological control, coccinellids, population dynamics, spider mites, predator mites

Acknowledgements: This research was financially supported by the Scientific and Technological Research Council of Turkey (Project No: 109O152).

Poster Presentation 290

Some Ecological Parameters of European Red Mite, *Panonychus ulmi* (Koch) (Acari: Tetranychidae) on Three Different Host Plants

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Biology and life table parameters of the European red mite, *Panonycus ulmi* (Koch) (Acari: Tetranychidae) were observed on quince, cherry and black cherry at laboratory conditions. Experiments were conducted at 25±2 °C, %60±10 RH and 16:8 (L:D) photoperiod. Total development time of *P. ulmi* females were determined as 11.4, 11.6 and 11.2 days on the leaves of quince, cherry and black cherry, respectively. Life tables were constructed on these host species and intrinsic rate of increase (r_m) was 0.163, 0.136 and 0.144 female/female/day. Net production rate of *P. ulmi* was 17.40, 7.98, 8.93 female/female and mean generation time was 17.50, 15.28, 15.23 days on quince, cherry and black cherry, respectively. According to the results of this study, *P. ulmi* showed better performance on quince than the cherry and black cherry. This was mainly due to high total egg production (29.0 eggs/♀) and the intrinsic rate of natural increase (0.163 ♀/♀/day).

Key words: *Panonycus ulmi*, life table, quince, cherry, black cherry

Poster Presentation 291

Oribatid Mite (Acari) Fauna of Blacksea Region of Turkey

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The Black Sea Region is one of the seven geographical regions of Turkey and is located in Asia. This region covers the north of the country and represents 18% of the total area of Turkey with 116,169 square kilometers of land. Black Sea region consists of seventeen provinces including, Amasya, Artvin, Bolu, Çorum, Giresun, Gümüşhane, Kastamonu, Ordu, Rize, Samsun, Sinop, Trabzon, Zonguldak, Bayburt, Bartın, Karabük and Düzce.

Information about the mite fauna of the region is limited. Studies on the orbatid mite founa of the Black Sea region have been on going since 2009. Studies on the oribatid mites of the region were carried in the provinces: Amasya, Artvin, Gümüşhane, Bolu, Çorum and Düzce by different authors.

As it will be understood from the examined material, oribatid mites were investedgated in only six provinces of the region and from these provinces totally thirty five species and three subspecies were recorded which is an indication of the biological richness of the region. Therefore, by evaluating the collected material with a more comprehensive field study from the region will make more contribution to both Turkish and world fauna.

Key words: Acari, Oribatida, Turkey, Blacksea, region

Poster Presentation 292

First Occurence of the Genus *Collohmannia* Sellnick, 1922 (Acari: Oribatida) in Turkey

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Oribatid mites are the most common mesofauna of the soil. They play important roles in decomposition, nutrient cycle, soil formation and dispersion of fungal spores. They show heterogenous distribution and densely founded in forest soils.

Collohmannia is a small genus with 3 known species. Mites belonging to this genus are large (1-2 mm) and has big genital and anal plates, occupying entire ventral side posterior to epimers. Other characteristics features of the genus are more or less elongated and laterally compressed notogaster and genital plates without transverse suture.

In this study, in order to determine the *Collohmannia* Sellnick, 1922 (Acari; Oribatida) mite fauna of Amasya province, mites were collected in soil and litter samples from the different localities of province. Samples were placed in plastic bags and transported to the laboratory and extracted using a Berlese funnel apparatus. Among the separated mites *Collohmannia gigantea* Sellnick, 1922 determined, this is the first record of genus *Collohmannia* from Turkey.

Key words: Acari, Oribatida, *Collohmannia*, New record, Turkey

Poster Presentation 294

Pyraloidea (Lepidoptera: Pyralidae, Crambidae) Fauna of Gökçeada with New Records

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The islands are areas somewhat independent from the continents that tend to have peculiar ecological conditions interesting biogeographic characteristics. Compared to the continent, species diversity can be different on the islands that are completely isolated. This study was carried out to determine the Pyraloidea fauna of Gökçeada in Turkey. The study area included eleven localities in Gökçeada. During 1999-2008, 34 species of Pyraloidea (Lepidoptera) were collected and identified from Gökçeada. Adult specimens were collected with a light trap and sweeping net during the day, from various habitats such as woodlands, orchards and cultivated areas, water sides and the areas where small sized annual plants (*Inula* sp. and *Carthamus* sp., Asteraceae) were present on Gökçeada. A total of 34 species of Pyraloidea were identifed. All identified species are new records for Gökçeada.

Key words: Lepidoptera, Pyralidae, Crambidae, new records, Gökçeada.

Poster Presentation 295

Effects of Cold Acclimation on Survival of *Pimpla turionellae* Larvae

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Hymenopteran parasitoids are known as important biological control agents of pests. Many parasitoid species overwinter as larvae stage inside cocoons of their hosts. The overwintering biology of most parasitoid species is still unknown. In this study, I examined the larval cold survival of *Pimpla turionellae* L. (Hymenoptera: Ichneumonidae) larvae reared on *Galleria mellonella* (L.) (Lepidoptera: Pyralidae) pupae as host. To determine the effects of cold acclimation on development of *P. turionellae* larvae, parasitized *G. mellonella* pupae were kept at 25°C then were stored in climate chamber at 10°C, 60±5 RH and 12:12 h. photoperiod conditions for each five days respectively. After cold acclimations, host pupae were dissected and the last instar larvae of *P. turionellae* were obtained. The survival rate and weight of larvae were determined. Both were found lower than of the control group that were not exposed to low temperature. Results showed that both low temperature acclimation and climate chamber conditions might alter the physiology of the parasitoid larvae.

Key words: Hymenopteran parasitoids, *Pimpla turionellae*, Cold acclimation, Physiology of overwintering, Survival rate

Poster Presentation 296

Changes in Haemocyte Counts in Force-fed *Galleria mellonella* Larvae with Azadirachtin

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Azadirachtin (AZA), a plant- extracted compound which is extracted from the neem tree (*Azadirachta indica*). Recently AZA is being widely used for pest control. Previous studies showed that AZA has strong effectiveness as an insecticide and is rapidly degraded in the environment. It is known that AZA has no harmful effects on mammals. AZA has antifeedant effect on insects and causes inhibition of egg maturation and development of larvae and pupae. The aim of this study was to determine the effects of AZA on the number of haemocytes of the greater wax moth, *Galleria mellonella* (L.) (Lepidoptera: Pyralidae). *G. mellonella* is an excellent model organism being used for physiological investigations besides being a pest for beekeeping industry. In the present work, we determined the number of haemocytes of *G. mellonella* larvae force-fed with different doses of AZA. Insect colony was maintened by feeding the insects with Bronskill's diet while were kept at 27±1°C, 60±5% RH and dark conditions. To determine the effects of different doses of AZA (0.5, 1, 1.5 and 2µg/larva), last instar larvae were force-fed. Hemolymph of larvae was collected in anticoagulant buffer at 24 h. and 48 h. after each force- feeding. Total haemocyte number of larvae exposed to AZA was found similar to the results of control group at 24 h. while increased at 48h. Results showed that AZA might have effects also on immune system probably because it interferes with endocrine function.

Key words: Azadirachtin, Pest control, Bioinsecticide, Haemocyte, *Galleria mellonella*, Force-feeding

Poster Presentation 298

Anthozoan (Cnidaria: Anthozoa) Diversity in the Mediterranean Sea

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The classis Anthozoa within the phylum Cnidaria is divided into three subclasses, namely Hexacorallia, Octocorallia and Ceriantharia. Anthozoans have both solitary and colonial forms, and are common in most marine habitats from shallow to deep waters. Most anthozoans occur on hard substrata, but some of them are adapted to life in muddy and sandy bottoms. Almost 185 anthozoan species have been reported from the Mediterranean Sea up to date. A total of 167 species are known from the western part and 91 species from the eastern part. Octocorallia are represented by 58 species, Hexacorallia by 120 species and Ceriantharia by 8 species. Till now, 75 species have been reported from the Turkish coasts; 6 species from the Black Sea, 52 species from the Sea of Marmara, 41 species from the Aegean Sea and 33 species from the Levantine Sea. Six species (*Melithaea erythraea, Sagartiogeton laceratus, Diadumene cincta, D. lineata, Oculina patagonica* and *Pachycerianthus multiplicatus*) are alien and 32 species are endemic to the Mediterranean Sea. This study aims to present the actual status of Anthozoa in the Mediterranean Sea.

Key words: Anthozoa, corals, anemones, distribution, Mediterranean Sea

Poster Presentation 299

Bioeroder Sipuncula Species in Ildır Bay (Aegean Sea, Turkey)

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Bioerosion is the degradation of substrates as a consequence of the drilling and abrasive actions of various marine organisms caused on the calcareous substrates. A wide variety of borers such as microalgae, fungi, sponges, molluscs, polychaetes and sipunculans play important roles in bioerosion of calcareous habitats and rocks. The bioerosion process of sipuncula species apparently combines the secretion of acidic fluids in the mucus to loosen the crystals with mechanical abrasion to remove the dislodged units. The aims of this study are to determine the diversity of bioeroder sipuncula species in Ildır Bay and assess their distributional and morphological features. Faunistic analysis of benthic samples collected at 15 stations (0-35 m depths) in the area by snorkeling and scuba-diving revealed 2 sipuncula species (*Phascolosoma* (*Phascolosoma*) *stephensoni* and *Aspidosiphon* (*Aspidosiphon*) *misakiensis*). The density of *P.* (*P.*) *stephensoni* ranged from 25 ind.m^{-2} to 500 ind.m^{-2} and that of *A.* (*A.*) *misakiensis* ranged from 25 ind.m^{-2} to 150 ind.m^{-2} in the area. These species were found at all stations. The morphological and distributional features of sipunculans are given together with their abundance/density maps at stations.

Key words: Bioerosion, bioeroder, Sipuncula, calcareous habitats, Ildır, Turkey.

Acknowledgements: This research was financially supported by TÜBİTAK (Project Number: 11Y141).

Poster Presentation 300

Soft Bottom Sipunculans in Demircili Bay (Aegean Sea, eastern Mediterranean)

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The phylum Sipuncula is a group of unsegmented, coelomate, bilaterally symmetrical and worm-like invertebrates mainly inhabiting marine waters. It comprises approximately 150 species worldwide and 36 species in the Mediterranean Sea. This study deals with the sipunculan species collected on soft substrata in the Demircili Bay in August 2016. The faunistic analysis of 8 benthic stations taken from 43 to 81 m depths yielded 5 sipunculan species and 133 individuals belonging to four genera. *Onchnesoma steenstrupii steenstrupii* was the most abundant (52%) and frequent species (100%) in the area. The soft bottom community included two cryptogenic species: *Apionsoma* (*A.*) *misakianum* and *Aspidosiphon* (*Akrikos*) *mexicanus*. Brief descriptions of the species and their morphological, biometrical and distributional characteristics are given.

Key words: Sipuncula, soft bottom, morphology, Demircili, Aegean Sea.

Poster Presentation 301

The Adventure of a Leech

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This study was designed in 2017. The study was carried out at the Medical Leech Production Facility approved by the Ministry of Agriculture and Livestock. These leeches are composed of reeds and different plants and placed in pools according to their life stages (rootstock, adult, young, etc.). It has been observed that the larval leeches have left their offspring in damp parts of the soil in the so-called columns.Thus began the life adventure of a leech. The offspring from coconut are picked up and enlarged until they become mature in juvenile aquarium pools. Later, these leeches are collected from the pools with the help of a handcuff. Leeches are subject to special sterilization against bacterial and microbial infections which may be present before they are used. After this stage, the leeches have an active role in the treatment of the near-illness such as pharmacological, cosmetic, microsurgery and medicine which are used actively. The leeches, which we call living healing and used as medicine alternatives, inject 100 times more bioactive substance in the body during the usage phase and absorb the body's blood and absorb it. After use, the life of these leeches is terminated by killing because the medicinal properties of the leeches will be reduced or partially exhausted, which will cause the blood in the area to infect many diseases. So the adventure of the leech ends.

Key words: Leech, *Hirudo medicinalis*, Hirudoterapi, Alternative medicine, Microsurgery

Poster Presentation 302

Medicinal Leeches: Assessment Of Ecological And Economical Situations in Turkey

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Medicinal leeches (*Hirudo verbana*) are freshwater annelids and used for medical applications since ancient ages. Since Turkish Ministery of Health accepted the Medicinal Leech therapy in medical treatments in 2014, the demand of Medicinal leeches has been increasing every year. The main object of this research is to analyze population statistics of Medicinal leeches for the last 15 years in terms of economical and environmental point of view. We investigated both the market prices and total export amounts. Moreover, we interviewed with local leech collectors. It was observed that the export amount has dramatically decreased from 2003 to 2016. The highest registered total export amount of medicinal leeches for the last 15 years is recorded in 2003 as 5430 kg, whereas it was only 2394 kg between 2012-2016. Furthermore, the increase in kg/price of leeches due to decreasing population in Turkey's wetlands was unignorable. In 2003, the kg/price of leeches was 25 TL (16,68 $) however in 2016 it was 1750 TL (578,13 $). The results pointed the fact that medicinal leech population is dangerously decreasing due to the over-collection and violating the ban season. In order to avoid the decrease in medicinal leech population, enterprises on breeding should be supported and encouraged by governmental incentives.

Key words: Hirudo medicinalis, Hirudo verbena, leeches, Leech population

Poster Presentation 303

New Records of *Gammarus mladeni* Karaman & Pinkster, 1977 from Büyük Menderes River Basin (Turkey)

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Büyük Menderes River, which is the largest stream flowing to Aegean Sea, is 584 km long. The river originates from the Dinar (Afyon province), and is poured into the Aegean Sea from near the historical Miletus city.

Because of the large number of limnic *Gammarus* species living in the area studied, the genus was subdivided into three artificial species groups (*Gammarus roeseli* group, *Gammarus pulex* group, *Gammarus balcanicus* group). Members of *Gammarus roeseli* group are characterized by the presence of carinae on the metasome segments. (Karaman ve Pinkster, 1977b).The *Gammarus mladeni* (from *Gammarus roeseli* group) is described from the Obruk and Sultanhan (Konya prov.), Esmekaya (Aksaray prov.), Kırşehir Province localities in Konya Closed Basin and Arsuz (Hatay) localities in the Asi River Basin. (Karaman ve Pinkster, 1977b). New records of *Gammarus mladeni* were given for the Büyük Menderes River Basin in this study.

Key words: *Gammarus*, Amphipoda, First record, River Basin, Büyük Menderes

Poster Presentation 305

Comparison of Poultry House and Free-Range System in the Poultry Farming

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Despite the needs for feeding and housing of poultry are met in modern poultry farming operations (poultry house), both chickens may have some health problems or mass deaths and deficiencies in meat and egg quality because animals don't have adequate living area. Intensive poultry farming in poultry house can also lead to various environmental contamination and gas release can highly occur the environment depending on the number of high animal numbers. Since both animal welfare and environmental problems and consumers turn to natural products, poultry farming based on organic and free-range system is widely spreading in the World and Turkey.

Plant genera and species living in natural meadow are quite resistant against biotic and abiotic stress conditions. Moreover, living worms and insects that can largely meet the protein requirements of poultry enhance importance of meadows for free-range poultry farming. These plant genera and/or species can be used to establish artificial pastures by evaluating under pressure of poultry.

In conclusion, free-range poultry farming yields is the better quality than closed systems. Thus, humankind can nourish healthier. In addition, artificial and/or natural meadows can be used instead of ready-made additives to meet daily nutritional needs in free-range systems.

Key words: Poultry systems, environment, meadow, Quality

Poster Presentation 306

Risk Management and Sustainability for Sheep Farming: A Case Study in Turkey

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Sheep farming is especially exposed to general and special uncertainties and risk factors in Turkey, so producers have to apply different risk management strategies, depending on the scale and purpose of their sheep production businesses. The objective of this study is; through an exploratory and descriptive study, to provide empirical insight into Turkish sheep producers' risk perceptions, risk management responses and sustainability in agriculture.

The sheep producer risk management and sustainability survey was conducted in Karaman Province of Turkey. Karaman is the most important region for sheep farming in Turkey. The questionnaire was put into practice in August 2014 to 50 randomly selected sheep producers. A face to face questionnaire was conducted on risk sources and strategies, using Likert type scales ranging from 1 (much more important) to 5 (much less important) for ranking statements. The questionnaire as a tool of data collection included three main parts, adjusted according to the sources of risk, involved risk strategies, some indicators for sustainability and socio economic characteristics about farm and farmer.

All computations were made using the SPSS statistical program package. As a first step, farmers' perceptions of risk and risk management were studied using descriptive statistical analysis. Common factor analysis was employed to summarise the information in a reduced number of factors. Considering the research area conditions, risk sources and risk management strategies were summarised under 47 and 24 variables, respectively.

Key words: Factor Analysis, Sheep Farming, Risk Management, Sustainability

Poster Presentation 307

Organic Livestock and Sustainability

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Sustainable agriculture is the agricultural process that is preserve the environment with used agricultural technology as well as the conservation of natural resources. But, agricultural production is being made without considering the adverse outcomes constituted by the processing techniques and technologies used intensively in Turkey like in most developed countries of the world. This means that the use of chemical products has increased and environmental pollution has caused. Therefore, organic agriculture and livestock activities have developed rapidly in the world and in Turkey in recent years due to the impact of agriculture on environment, human and animal health of these problems. The organic livestock sector is an important part of organic agriculture. But, its share in the world market is rather low although Turkey has suitable ecologic conditions (such as climate and geographical location) and export potential for organic livestock. Therefore, the aim of this study was to evaluate the state of organic livestock in Turkey. The main material of this study was formed the secondary data obtained from various sources. As a result, it will be evaluated the major issues affecting organic livestock activity in this study and suggestions will be gave for their solution.

Key words: Organic, livestock, sustainability, agriculture, Turkey

Poster Presentation 308

Change of Soil Organic Carbon Content in Pure Black Pine Stand

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Forest ecosystems have a considerable influence on the storage of carbon dioxide. Carbon deposits are made by both of forest trees and forest soils. Leaves, dead cover formations, climate, stand types, soil characteristics, tree species, earth shapes, land using and land processing are influencing the accumulation of more carbon accumulation in forest soils compared to agriculture and pasture lands. As a result of this study the value of the average amount of carbon at top soil layer (0-20 cm); for 1st age class (0-10) 39.85 t/ha, 2nd age class (10-20) 61.26 t/ha, 3rd age class (20-30) 53.05, 4th age class (30-40) 41.55 t/ha, 5th age class (40-50) 48.81 t/ha, 6th age class (50-60) 47.44 t/ha and for control parcel 38.49 t/ha.

Key words: Black pine, Soil organic carbon, Kastamonu, Turkey

Oral Presentation 75

A Study of Radionuclides, Trace Metals in Soils and Building Materials in the North Sinai Peninsula and the Gaza Strip

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Natural, artificial radionuclides and trace metals were assessed in seventy soil and building materials (raw and demolition debris) samples collected from the north Sinai peninsula and Gaza strip. This analysis was carried out using Gamma-ray spectroscopy and inductive coupled plasma spectroscopy. The activity concentrations of ^{226}Ra, ^{232}Th, ^{40}K were all lower than the average concentrations recommended by UNSCEAR 2000. The average activity concentration of excess lead ^{210}Pb was estimated to be 5.55, 4.35 Bq/kg for soil and building materials samples collected from the Gaza strip, respectively. These results were confirmed with the high concentrations of Pb especially in the bombed areas of the Gaza Strip. High concentrations of Cd, Ni, As, Hg, Ti, Mo were found in most of samples collected from the Gaza Strip, while contamination of Pb, Cd, Cr, Mo, Zn and Ba were found in the north Sinai peninsula. Also, some artificial radionuclides were found in the Gaza strip such as, ^{137}Cs, ^{122}Sb, ^{241}Am, ^{54}Mn, ^{155}Eu. The average activity ratio of ^{238}U/^{235}U was estimated to be 13.2 ± 1.8 for soil samples collected from the Gaza Strip, while for natural uranium, the activity ratio of ^{238}U/^{235}U should be 21.7. Contamination levels and radiological hazards to the public were calculated based on the pollution indices. Pearson correlation and hierarchical cluster analysis were carried out to illustrate correlation among trace metals and radionuclides.

Key words: Gamma-ray spectroscopy, Activity concentration, Trace metals, Inductive coupled plasma spectroscopy, Gaza Strip.

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Oral Presentation 111

Elemental Contamination of Some Coral Skeleton in the Red Sea by Epithermal Neutron Activation Analysis

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Reliable and non-destructive analytical technique (epithermal neutron activation analysis at the reactor IBR-2 in Dubna, Russia) was used to determine the content of thirty seven of trace elements (Sc, Ti, V, Cr, Mn, Fe, Ni, Zr, etc.) in the exoskeleton of 21 species of scleractinian corals. All exemplars were collected from various locations along the Yemen, Sudan and Egypt Red Sea shore at depth about (5-20) m. Samples were prepared and measured according to the standard procedure applied for epithermal neutron activation analysis. Preliminary results showed a relative diversity among the content of investigated elements with respect to coral taxa and collection points. Only few elements such as Zn presented for all specimens a relative constant distribution. To assess the presence of any anthropogenic contamination, we have calculated for the potential pollutants the Enrichment Factors as well as the Pollution load indices. Both of them suggested the presence of a certain degree of heavy element pollution, most probably due to coastal activities and an intense navigation between Bab-el-Mandeb and Suez gulf.

Key words: Red Sea, Scleractinian corals, Trace elements, Anthropogenic contamination, Epithermal neutron activation analysis.

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Poster Presentation 246

Microplastics in Marine Environment

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Marine litter can be defined as *"any persistent, manufactured or processed solid material disposed of or abandoned in the marine and coastal environment"*. Marine litter is a globally recognized environmental issue of increasing concern and mainly consists of plastics. Microplastics have been defined as synthetic polymer particles, being less than 5 mm. They go into the marine environment as preproduction pellets (preliminary microplastics) or breakdown of larger plastic pieces (secondary microplastics) already exist in the oceans as marine litter.

The presence of microplastic was reported beaches, sea floor and sea water and even freshwater. The transportation, accumulation and distribution dynamics have been extremely important and also need further examinations. Morever it was reported that microplastics was found many marine species from zooplankton to invertebrates, fish and marine mammals. Microplastics are consumed by filter-feeding at the base of the food web and the transfer of microplastic in the trophic level has been reported in experimental studies. Ingestion of degraded microplastic also raises toxicity concerns, because plastics are known to adsorb hydrophobic pollutants (PCBs, DDTs etc.) from environment and also contains of compounds added to plastics during manufacture (such as Bisphenol A). The potential bioavailability of compounds added to plastics at the time of manufacture and adsorbed from the environment are complex issues that merit more widespread investigation.

Keywords: Marine litter, Microplastic, Pollution, Environment, Danger

Oral Presentation 34

The Problems of Soil and Water Resources in Eritrea

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The population of Eritrea is about 3.5 million out of whom 80% live in rural areas and derive their livelihood from agriculture. This shows that soil is the most important natural resource in the country. Keeping this in mind, soil and water conservation has a long history in Eritrea and as it is not just terracing, it has not played a great role to protect the land from degradation. Eritrea has a complex series of landscape and climatic features. Altitude ranges from 120 meters below sea level in parts of the eastern lowlands to over 3,018 meters on the central plateau. Annual precipitation varies from less than 200 mm in the semi-desert to 1100 mm in the Sub- Humid Zone. Most of the land is having steep slopes and rainfall is erratic with uneven distribution.

The main causes of soil degradation are: wrong practice of soil and water conservation measures, severe erosion caused by both water (18.8 ton/ha) and wind, new land ownership system, clear harvesting, burning, quality of irrigation water, shortage of skilled man power, miss-use of agricultural land, population pressure, deforestation (forests have decreased from 30% of the overall area to less than 1% today), open grazing, over-grazing, destructive practices of colonial exploiters and war.

The impacts of soil degradation that are clearly observed throughout the country are : desertification, soil salinity, declining of agricultural productivity, decrease of wild life, siltation of water reservoirs, soil crusting, reduction of cultivable land and loss of soil organic matter.

Key words: Soil degradation, Deforestation, Erosion, Open grazing, Desertification


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