THE ROLE OF CILIATES COMMUNITIES IN EVALUATING THE DEGREE OF SAPROBITY OF THE PARALITORAL ROMANIAN LAKES SIUTGHIOL AND TABACARIE

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ABSTRACT

Ciliates lives in specific communities and are useful bioindicators by river, lakes and waste water. Our researches about ciliates of marine and lake ecosystems began in 1997 and continues today. Since 1997, 140 species have been identified in the sediments of paralitoral lakes and Danube Delta 's lakes (DUMITRACHE – KERKMANN , 2004; 2006). In the last 20 years the lakes Tabacarie and Siutghiol have been subjected to strong anthropogenic influences. The ciliates were studied in live and protargol impregnated specimens were photographed and were subjected to biometric measurements.

Key words: ciliates, communities, bioindicators

SYSTEM FOR SAMPLING OF PRECIPITATION COMPOSITION – SENSITIVITY CONTROLLER FOR RAIN SENSOR OF TYPE "YES/NO"

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ABSTRACT

Modern studies of precipitations' ecological status include the long chain from obtainment, transport and storage of samples, through their chemical analysis to mathematical data processing and their use in physical models for diagnosis and prognosis of air pollution. The quality of information is rooted mostly in correct sampling - the only stage that cannot be corrected at identifying an error. The creation of a device for collecting precipitation samples for chemical analysis, which opens at the beginning of precipitation and closes at its end, is a serious challenge to science and technology in the second half of the 20th century. Regardless of its complexity, all equipment of this type contains two obligatory components - rain sensor of "yes/no" type and a mechanism for opening and closing the lid. The sensor is the part that needs to recognize the beginning and end of precipitation. The aim is to open the lid as soon as possible after the onset of precipitation in order to collect the first drops, which are expected to be the most contaminated, and close it after the last drops have fallen.
The aim of this work is to create a controller for the input/output signals of a binary precipitation sensor.

Key words: precipitation sensor of type "yes/no", binary controller, diagnostic signal.

CLIMATE CHANGES IMPACTS ON THE ALBANIAN COAST AND ADAPTATION CHALLENGES

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ABSTRACT

The Drini and Mati River Deltas (DMRD) are 2 of 3 deltas found on the northern Adriatic coast of Albania. River deltas are a distinct feature of the northern coastal region which extends from the Albania-Montenegro border in the north to the Rodoni Peninsula in the south. The DMRD harbors significant biodiversity values, and this is recognized under the National Biodiversity Strategy and Action Plan (NBSAP, 1999). Three main types of habitat are found between the2 deltas: (i) marine, (ii) wetlands including estuarine, riverine, lacustrine and palustrine, and (iii) non-wetland habitats including forests, shrubs and open fields where traditional agriculture is practiced.
The projected temperature increase (about 1.8°C and 3.2°C by respectively 2050 and 2100, especially higher in summer) and precipitation decrease (about 8% and 16%, by 2050 and 2100) is likely to have as consequence *milder winter, warmer springs, hotter and drier summer and drier autumn*. More hot days and hot waves, frequent and intensive drought (with increased fire risk) are expected.

These changes in climate are expected to place additional stress on marine and littoral biodiversity as well as livelihoods of local communities. Sea level rise (projected to increase from 18 cm to 59 cm, up to 2100), more frequent and intense floods, aggressive erosion, frequent inundation and longer submersion of low lying coastal areas could affect life cycles of species and pose risks of habitat loss and fragmentation of a unique compound ecosystem consisting of sandy dunes, lagoons and coastal wetlands. Agriculture and tourist infrastructure are prone to flooding caused by storm surges (like in December-January in 2009 and 2010).

To increase the adaptive capacity of ecosystems and livelihood, a set of on-the ground adaptation measures, such as coastal dune habitat restoration, modification of DMRD protected area network planning and coverage, and other landscape-wide adaptation policy measures are planned to be implemented within the frame of the project "Identification and implementation of adaptation response measures in the Drini-Mati River deltas" (GEF/UNDP).

Key words: climate change, scenarios, vulnerability, adaptation

HABITUS OF SUPERIOR GENOTYPUS OF WILD CHERRY (*Prunus avium L.*) FROM NATURAL POPULATIONS OF ENVIRONMENTAL AREA TUZLA, BOSNIA HERCEGOVINA

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ABSTRACT

The paper presents the results of monitoring long-standing habit genotypes of wild cherry (Prunus avium L.) from natural populations from localities Zivinice, Tuzla, Banovici and Kladanj. Habitus has special value in assessing the biological potential of the aforementioned taxa. It reflects the degree of fruit trees growing activity, biological predisposition for fruiting, resistance to various abiotic and biotic conditions of the external environment. This study shows very pronounced trends in the evolution and infraspecific differentiation of this kind, which goes towards the creation of new shapes and forms, some of which may have a separate taxonomic status. Some of registrated individuals show great potential in acquiring new lines in the field of agriculture, horticulture and biotechnology.

Key words: habitus, wild cherry, cultivars, biological potential, agriculture

FLORAL AND ICHTHYOLOGICAL RESEARCHES ALONG THE FLOW OF RIVER CRNA

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ABSTRACT

In this paper are presented floral and ichthyological researches along the flow of river Crna (Black River).
River Crna is river in the Republic of Macedonia and is the largest right tributary of the River Vardar. Its length is 207 km. The source of the River Crna, Crna Dupka (Black Hole) is in the mountains of western Macedonia, near the village Zeleznec at an altitude of 760 m.
From source to its estuary in the river Vardar, River Crna passes through several municipalities. It is the main recipient of sewage and industrial waste waters from many settlements.
The researches were performed in the course of summer period of 2009 from more localities along flow of river Crna, respectively from the source (in village Zeleznec) to village Topolcani.
According to our researches in this river ecosystem were evidenced total of 22 different plant species, and 14 different fish species.
The obtained results show that the qualitative composition of flora and ichthyofauna in river Crna is diverse and depends of different ecological conditions along the flow of the River.

Keywords: River Crna, researches, flora, ichthyofauna,

ICHTHYOLOGICAL AND FLORAL RESEARCHES IN ARTIFICAL LAKE SLATINO (R.MACEDONIA)

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ABSTRACT

In this paper are presented ichthyological and floral researches in artificial lake Slatino in Republic of Macedonia.
Artificial lake Slatino is situated in the watershed of Lake Ohrid, about 40 km north of town Ohrid, in region Debrca. This lake was build with septum of River Mramorecka with dam with length of 100 m and height of 15.5m. Because of sanction of the dam, lake was emptied in autumn 1993, and then again filled in the spring 1994. This artificial lake lie at altitude of 829.5 m, has a maximum depth of 9.2 m (average depth 5 m) and cover surface area of 0.28 km^2.
The researches were performed in the course of spring-summer period of 2009. For the collection of materials were used standard lymnological methods.
According to our researches in artificial lake Slatino were evidenced total of 18 different plant species, and 12 different fish species.
The obtained results show that the qualitative composition of ichtyofauna and flora in artifical lake Slatino is diverse and depends of different ecological conditions along the shore of lake**.**

Keywords: artifical lake, Slatino, researches, ichtyofauna, flora,

VERTICAL DISTRIBUTION AND SEASONAL CHANGES OF MICROBIAL COMMUNITY IN THE LAKE OHRID PELAGIC REGION

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ABSTRACT

The aim of the study was to determine vertical distribution, seasonal changes in the number of bacterioplankton and its qualitative composition in the waters of Lake Ohrid pelagic region. Samples were collected in a vertical profile (surface and depths of 10m, 20m, 30m, 40m, 50m, 75m, 100m, 150m, 200m, 250m and 275m) from the pelagic zone of Lake Ohrid during 2007-2008.

In the Lake Ohrid pelagic region the maximal counts of bacteria were found in the trophogenic zone, in summer, and in the zone near the bottom, probably reflecting the accumulation of particulate organic matter, and concentration of soluble organic substrates excreted by phytoplankton. Generally, the lake is in the category of clean waters with a domination of oligotrophic bacteria. According to the received results for saprophytic bacteria, the pelagic water of Lake Ohrid is still of I class (oligotrophic).

As for representation of physiological groups of bacteria, the general conclusion is that all groups have very similar seasonal dynamics and relatively low abundance. It is a common characteristic of all investigated physiological groups of bacteria: proteolytic, amilolytic, lipolytic, phosphor-mineralizing, phosphor-mobilizing, nitrogen-fixing and cellulolytic bacteria, that they exhibited two development maxima in the summer to fall (when decomposition of dead plankton occurs) and a minimum in the winter-spring period. Organic phosphorus-mineralizing bacteria are much more abundant than phosphor-mobilizing bacteria. However their number in the pelagial region is small and insignificant, as the lake is oligotrophic and relatively low quantities of the phosphorus containing matter.

Anyhow, obtained results indicate that Lake Ohrid is a biologically controlled ecosystem of oligotrophic character.

Key words: Lake Ohrid, pelagial, proteolytic, amilolytic, lypolytic, phsphor-mineralizing, phospho-mobilizing, nitrogen-fixing, cellulolytic bacteria

IMPACT OF ATMOSPHERIC PRECIPITAIONS ON THE SURFACE WATER CHEMISTRY IN MOUNTAIN AREA

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ABSTRACT

The aim of this study is to establish the degree of impact of precipitations' chemical composition on the chemical composition of high-mountain (over 2000 m a.s.l.) rivers with snow-rain feeding. The contribution of the hard and liquid rain to surface water composition is investigated individually. The surface water quality in the environs of Mount Cherni Vruh - Vitosha Mountain, Bulgaria – is determined. A temporary local monitoring network for surface water quality was established in the examined period (2004-2010). Precipitation samples are taken on Mount of Cherni Vruh – one of the stations of the precipitation chemistry network. The findings present the background levels of the studied hydrochemical parameters for surface water. The predominant anions in river water are hydrocarbonates and sulphates while the predominant cations are calcium and sodium. The measured pH values suggest the pure precipitation's influence on river water in terms of acidity. It is perceivable that the majority of the nitrate concentrations in river water originate in the precipitations.

Key words: surface water quality, precipitation chemistry, background surface water

TURKISH WETLAND PROBLEMS: A CASE STUDY EGIRDIR LAKE SAMPLE

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ABSTRACT

Wetlands had been threatened by increase of temperature due to global warming and not proper usage of them these causing health problems both for human and aquatic environment. Therefore new studies have been forced in the rehabilitation and sustainable usage of water sources recently in the world. Turkey lies in a transitional region between the Asia and Europe continents. Turkey is the richest country for wetland area in Europe and Mideast after following the Russia. There are 135 wetlands in criteria of Ramsar. On the other hand, from 1950's many of wetland were lost in Turkey, Basic problems for wetlands of Turkey as follows; habitat destruction and fragmentation, pollution of water quality, making the wetlands dry with the aim of expanding agriculture and forestry, Interference to water regime, introduction of invasive species in natural wetlands, Over-exploitation of plant and animal species, the problems of jurisdictional and wetland legislation. Egirdir Lake is located at the Western Mediterranean Region of Turkey and in the Lakes Region. Lake an Important Bird Area, Drinking Water Protection Area and has a Natural Protected Area conservation status. The lake is on the way of many migratory birds needs to be protected for the endemic species in the world. At the same time there are some basic problems regarding wetlands. These can be quantified as interference to water regime, damage to water quality, habitat destruction, and introduction of unfamiliar species to the natural wetlands and problems of management. The purposes of this study is determination of ecological properties with a view of Egirdir Lake surface water situation as a water resource for the region and try to give some suggestions of solution on the environmental and wetland problems.

Keywords: Wetlands problem, Water, Pollution, Egirdir Lake, Isparta

PREPARATION OF PARATUBERCULOSIS VACCINE FOR ANATOLIAN WILD SHEEP: PRELIMINARY RAPORT

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ABSTRACT

Four different vaccine (inactivated bacterin+aliminium hydroxide ($Al(OH)_3$), inactivated bacterin+mineral oil, live+mineral oil, gamma irridation+mineral oil) from *Mycobacterium avium subs. paratuberculosis* (MAP) strain isolated from Anatolian Wild Sheep (*Ovis gmelinii anatolica*), Etlik MVKAE from bovine strain (one) and subunit (one) vaccine were prepared. Commercial Gudair™ vaccine were used as positive control. Each vaccine were subcutaneously administered to 15 Akkaraman lambs 2 months age old. Ten lambs were unvaccinated as negative control. Lambs to 5 in each vaccine groups were divided for seropotens. After vaccination at 40 days, lambs in groups of vaccine (lambs to 10, 7 groups, 70 lambs) and control (10 lambs) were orally challenged with MAP isolate into milk at $2x10^9$ cfu/ml. Taking into account seropotens groups, antibody titres were monitored by ELISA. According to the first five post-vaccination serologic measurements; Gudair vaccine provided faster antibody production but developed 4 vaccine formulation (inactivated bacterin+mineral oil, gamma irridation + mineral oil, live+mineral oil, live Etlik) were determined stimulated to humoral immunity as measured in the positive control at 5^{th} measurements. In addition, INF-□, skin test by PPD johnin, lenfosit transformation test and clinical efficiences were observed. It has shown that data in laboratuar efficiency tests of vaccine prepared from Anatolian Wild Sheep isolate in domestic lambs could also be protective against paratuberculosis infection for Anatolian Wild Sheep.

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Key words: Wild Sheep, humoral immunity, paratuberculosis infection

THE CHARACTERIZATION OF MOSSES AS BIOINDICATORS AND BIOACCUMULATORS IN AIR POLLUTION MONITORING

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ABSTRACT

In this work the accumulation of heavy metals in different moss species collected in the same sampling sites is studied. Samples of terrestrial mosses *Hypnum cupressiforme, Homalothecium, Neckera crispa* and *Pseudoscleropodium purum* were collected from different sampling sites in rural area of the southern part of Albania. The moss samples were collected during the period September-October 2010 according to the guidelines of the UNECE ICP Vegetation. The concentrations of heavy metals (Cd, Pb, Cu, Zn, Fe and Mn) were determined using AAS and CV - AAS technique. The quantity of accumulated heavy metals differs in various moss species from the same sampling sites. In order to evaluate the better heavy metal bioaccumulator moss species the interspecies correlation between the moss samples is performed. Based on the concentration of heavy metals in the analyzed samples the characterization of bioaccumulation behavior was performed.

Keywords: bioindicator, moss, air pollution, heavy metal.

COMPARISON OF "IN VITRO" RHIZOGENESIS OF WILD SPECIES OF THE GENUS *PRUNUS*

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ABSTRACT

The present study was carried out to investigate the influence of different doses of auxinic phytohormone NAA (α-naphthaleneacetic acid) and MS nutrients on "in vitro" rhizogenesis of two species of *Prunus* genus: *Prunus avium* L. and *Prunus mahaleb* L. The most common use of these wild fruit trees is as rootstocks for sweet or sour cherry cultivars. Rooting induction appears very difficult, especially regarding to trees species. Three nutrient rooting media containing different concentrations of NAA and macro- and micronutrients, presented in the universal medium MS were compared: (I) - ½ MS macronutrients, MS micronutrients, MS vitamins supplemented with 0.1 mg l^{-1} NAA; (II) - ½ MS macronutrients, ½ MS micronutrients, MS vitamins with 0.1 mg l^{-1} NAA and (III) - MS macronutrients, ½ MS micronutrients, MS vitamins with 2 mg l^{-1} NAA. The rooting percentage changed according to the species and to the rooting media. The highest value of rooting for both species resulted in the first rooting medium. *Prunus mahaleb* plantlets showed higher rooting percentage in all examined media than *Prunus avium*. Root length was also evaluated and presented significant differences among treatments. Rooting medium III with higher dose of NAA gave rise of abnormal roots favoring the development of callus and limiting root formation for all the plantlets "in vitro". As result, the use of the lower doses than 0.5 mg l^{-1} of auxin NAA is recommended. The well developed roots "in vitro" induces a better ability to face the stress during the plantlets acclimatization.

Keywords: *Prunus* genus, MS medium, auxin NAA, rooting media, rhizogenesis.

PURIFICATION CAPACITY OF PATOKU LAGOON

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ABSTRACT

The process of natural lagoon consists in purifying the waste water by simple flow of the effluent in not very deep ponds where aerobic and anaerobic processes in water column and in sediments contribute in purifying capacity of natural lagoons in the presence of a solar radiation. For this study, which is spread out over 3 years (2007-2009), we chose the Patoku Lagoon to analyze the purification capacity by a natural lagoon, located in Albania. The parameters considered were: NO_2^-, NO_3^-,NH_4^+ PO_4^{3-}, and dissolved oxygen. Other parameters, such as, temperature, pH, salinity, and conductivity are monitored during the all period of study. Measured values of above mentioned parameters indicate variations of these parameters starting from the entrance of the lagoon till the point where lagoon water joins open sea, demonstrating the role of this lagoon as a filter that retains nutrients from water. The adaptation of constructed models mimicking the features of natural lagoons, might represent the challenge for the next future research in the field.

Keywords: Lagoon, nutrients, variations, purifying capacity, water quality, ecosystem.