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ECOLOGY AND PROTECTION OF ECOSYSTEMS

- NEW INSIGHTS -

2015

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INVITED SPEAKERS

VEGETAL GENIUS AND ANIMAL GENIUS

Constantin TOMA[1]

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ABSTRACT

The author presents: stages of plant development, from the life appearance on Earth until today; diversity of living organisms, especially plants with seeds; genius of diversification, evolution, autotrophy, reproduction, adaptation to the environment; the attack of plants, animals and human beings by viruses, bacteria and parasite fungi; human genius: the taming of plants, early agriculture, the transport of seeds in different regions of the world (in the same time with transport of parasites and pests); diversity of plant varieties and their origin; alarming disappearance of traditional agricultural varieties; advantages and disadvantages of industrial agriculture; the dangerous diminishing of our foods diversity as unexpected result of an "agricultural triumph"; the carefulness concerning to the protection of old species from all species of cultivated plants: seed collections gathered from all continents during 80 years ago by the geneticist Vavilov, modern gene banks initiated during last few recent decades (including the Gene Bank from Suceava), Svalbard Global Seed Vault founded in 1980 (Norway); the destructive human genius for forest vegetation.

ECOSYSTEM VULNERABILITY AND RESILIENCE

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ABSTRACT

The presentation tackles mainly two major ecological concepts more and more necessary in ecological studies nowadays, when we are confronted with enormous global challenges, including chronic poverty and inter- and intra-national economic and social inequalities, persistent food insecurities, as well as major challenges associated with urbanization, land and water degradation, biodiversity, habitat loss and fragmentation, natural disasters, and climate change. At the same time, there are also many positive changes and innovative approaches to such challenges in governance, as well as in the community and private sectors.

The two concepts are vulnerability and resilience. The explanatory Romanian language dictionaries give limited information on these terms:

Vulnerability – capability of being physically wounded; weakness, sensitivity of someone or something...

Resilience – The resistance of a metal or an alloy to shock;...

The ecological meaning of these two terms, presented in the paper, is defined as follows:

"Vulnerability" is defined broadly as "stress minus adaptive capacity"; distinctions between biophysical and social vulnerability are also discussed. Vulnerability is the susceptibility of an organism or community to a disturbance. Vulnerability depends upon exposure, sensitivity to impacts and the ability or inability to cope or adapt.

"Resilience" refers to the capacity of an ecosystem to recover from disturbance or withstand ongoing pressures. It is a measure of how well an ecosystem can tolerate disturbance without collapsing into a different state that is controlled by a different set of processes. Resilience is not about a single ideal ecological state, it is about an ever-changing system of disturbance and recovery.

The state, vulnerability and functioning of an ecosystem define its health. Assessing and monitoring ecosystem health to inform ecosystem based

management is challenging. In the past, most studies focused on the state of ecosystems. More recently, there have been considerable efforts in addressing the two components of ecosystem vulnerability - adaptability and sensitivity to environmental perturbations; the examples include trait-based approaches to assess ecosystem adaptability and early warning signals of tipping points, which track changes in sensitivity. The various approaches to ecosystem vulnerability assessment rely on assumptions grounded in ecological theory. The paper summarizes the concepts and approaches used in ecosystem vulnerability assessment, briefly discussing their theoretical foundations on ecosystem vulnerability.

Resilience and vulnerability represent two related yet different approaches to understanding the response of systems and actors to change; to shocks and surprises, as well as slow creeping changes. Their respective origins in ecological and social theory largely explain the continuing differences in approach to social-ecological dimensions of change. However, there are many areas of strong convergence. The paper of Miller F. et al., (2010) explores the emerging linkages and complementarities between the concepts of resilience and vulnerability to identify areas of synergy. This is made with regard to theory, methodology, and application. The paper seeks to go beyond just recognizing the complementarities between the two approaches to demonstrate how researchers are actively engaging with each field to coproduce new knowledge, and to suggest promising areas of complementarities that are likely to further research and action in the field

Resilience research in particular, through the study of transformation and learning, is able to emphasize such positive actions and to point the way to how they might be replicated or upscaled. At the same time, vulnerability research, through its focus on power and the limitations of individual agency, is able to identify political dimensions that prevent progressive social-ecological changes from occurring. However cogent, relevant and appropriate, research in resilience and vulnerability may seem to be in addressing major social-ecological challenges, there is a need to be constantly self-reflexive and critical of the concepts and tools we apply (Miller F. et al., 2010).

THE HUMAN PERCEPTION OF BIODIVERSITY

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ABSTRACT

The men's capacity to perceive and understand the nature biodiversity depends of several factors: their level of information and education; the social, cultural and religious traditions; the life style and life quality of each person; their „habitat" (rural, urban), their job and social environment; interests regarding the nature resources and their use; the features of their personality – moral notions, sensibility (including feellings for nature beauties, artistic inclinations etc.).

There are o lot of populations whose existence strictly depends on nature resources, and it is obvious to see that despite the low level of their education, they realize the danger of an overexploitation of these resources. On the contrary, the so-called civilized societies are interested in intensive and profitable exploitation of all nature resources and cut the advertisments of the ecologists of the world.

The mankind's evolution was strictly connected with the natural ecosystems, but at present about half of Earth's inhabitants lives in „artificial" environments, where the natural compounds are continously declining. That's why the chance of people that inhabit large metropolitan agglomerations to love and understand the nature and its biodiversity become lower and lower.

The man is the main responsible for loss of biodiversity, but in the same time he is a species seriously affected by the environment and biodiversity degradation. Psychological studied prove that the environment quality could have consequences not only on our „physical" life, but also on our mental health, behaviour, response to stress.

In the democratic societies, the public opinion and sometimes just the individual perceptions are able to influence the State's strategy concerning the environment, using two ways: lobby or/and vote.

A complete study in this domain should deal with:

- The human impact on the biodiversity (to study and define the biodiversity loss due to antropogenous sources; the social and cultural aspects that are involved in this processus).

- The human diversity, and how the human diversity is affected by changes that take place in the physical, biological and socio-cultural environments.
- Human perception of biodiversity, which should take into consideration the psychological and cultural basis of our knowledges and attitudes in the field of environment; and how they could be changed in order to get a balance between man and biodiversity.
- Interactive dynamics between human diversity and environment – relationships between man and other species, both in traditional societies and modern industrial ones.

BIODIVERSITY ADAPTATIONS TO THE CLIMATE CHANGES

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ABSTRACT

Millions of years before man species, the Earth climate warmed up or cooled. The actual phenomenon clearly indicates the temperature has risen. The topic novelty is to realize how human activity contributed to the climate changes and to answer to the crucial questions if plant and animal species will be able to adapt fast enough to keep up with the rapid pace of changing climate.

Physics, chemistry, agriculture, biol., geology, meteorology, oceanography, sociology are more and more preoccupied to better understand these changes, studying natural phenomena, thinking and creating theoretical tests of biodiversity conservation strategies.

At the break of day of the hominid species (in Pleistocene), the biodiversity faced with fluctuations and high concentrations of CO2 in atmosphere, with climatic and precipitation variations, supporting important evolutionary changes and adopting new strategies of adaptations to the new natural conditions. But those climatic changes developed a longer period of time, enough to allow biodiversity to adapt or migrate and the land was not so much fragmented as today; there was not the actual pressure and impact of human activities. Habitat degradation and fragmentation pushed many species to smaller and smaller areas from their former range, and restricted species distribution is reflecting in reducing their genetic variability.

Understanding the global biodiversity spoliation because of the climate changes, the international forums in the field had concluded these changes will be most important factors which will determine significant loss of biodiversity up to the end of 21st century. At the same time, optimistic signals on the support and adaptations capacity of biodiversity to the impact of climatic phenomenon would be, if they were producing slowly, in a longer period of time.

In relations between climate changes and biodiversity, this one can resist (at least temporary) by: - physiological, morphological and ethological behaviours; - favourable mutations will be encouraged; - suitable adaptations to use the

new habitat resources; - changes of the life cycles; - new morphological characters; - increasing resistance to the unfavourable factor pressure, etc.

Under the climate changes, all species will be drastic tested on their capacity to adapt and finding genetic resources to the populational level will be the basic premise to generate new species. It is possible to foresee coming into being at the global and national levels of new species, with surprising adaptive capacities, to resist to the unusual thermic variations or to the high aridity and to reduced precipitations.

As measures to help biodiversity adaptations can be mentioned: - reducing agricultural activities in the affected areas and adopting suitable measures to protect natural and deminatural habitats close to the agricultural areas; - identification of the compensatory measures, necessary to survive the affected population/species; - reduce the impact of the industrial activities on the phreatic waters and air quality, isolating them with forestry curtains; - increasing forested areas, restoration of those degraded and their extension to the favourable areas; - organizing surveys to evaluate the different ecosystem/species vulnerability to the climate changes; - involve all society to provide the necessary resilience/shock to the future negative effects of global heating etc.

The biodiversity services and products are at the base of the human species outliving. Therefore, the man must become fully aware that: Human species is part of the biosphere and loss of the ecosystem balance and of biodiversity will affect directly and gravely the continuation of the human civilization development.

ECOLOGY: THE INTEGRATIVE AND TRANSDISCIPLINARY SCIENCE AIMING FOR UNDERSTANDING AND OPERATIONALISATION THE 3D SUSTAINABLE DEVELOPMENT MODEL

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ABSTRACT

Starting in the late 50s of the 20th century, significant changes in the state of global environment and nature have been witnessed, related to the patterns and rates of economic growth in both developing and developed world. During preparatory work of the UNCED/Rio/1992 has been almost unanimously recognised that in spite of different applied ideological principles and targets in the development of any social-economic systems was done at the expense of environment and nature (Vadineanu & Vadineanu, 2004). In these circumstances has been identified the need for urgent actions aiming to establish the basic conditions for balancing, across space and time scales, the dynamics of ecosystems and their capacity to provide resources and services, on one side, and the structure and metabolism of the socio-economic systems, on the other side. The Science of Ecology proved to be better prepared for ongoing theoretical and operational developments, which were required for identification and understanding the complex and dynamic "coupled human and environment / nature" systems (Liu et al. 2007), and for shifting their management regime from the conventional towards adaptive and sustainable one. The presentation is aiming to describe: i) the major steps followed by theoretical and operational integration during evolution of the "ecological sciences"; ii) the emergence of the integrative and global Science of Systems Ecology and Sustainability and, iii) to propose and discuss the generic conceptual and operational frameworks which rely on current meanings and ways of operationalisation of the most used policy targets - sustainable development, natural capital and ecosystem services. Attention will be given to particular challenges which have to be urgently and properly addressed by the universities, research institutes and professional societies.

BIODIVERSITY OF AQUATIC ORGANISMS

ORAL PRESENTATIONS

PRODUCTION-DESTRUCTION PROCESSES IN THE PRUT RIVER

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ABSTRACT

The primary production and destruction of organic matter are important characteristics of aquatic ecosystem condition in terms of trophic state and water quality. There were established considerable differences between the values of primary production of phytoplankton and organic matter destructions during the 2012-2014 years and in different sectors of Prut River.

During the vernal period the primary production values ranged from 0,14 to 4,85 g O2/m-2 24 hours, with significant differences recorded between values certified in different sectors of the river. Higher values of primary production were identified in Braniste (2,87 g O2/m-2 24 hours) and Caslita-Prut (4,85 g O2/m-2 24 hours) stations. In the vernal period destructions values changing from 0,48 to 19,2 gO2 /m-2·24 h.

The limits of variation of primary production values during summer (0,068 to 4,58 g O2/m-2·24 h) were lower than during the vernal period. Along with increasing the intensity of production processes during the summer, there greatly increased also the values of organic substances destructions. Higher values of primary production were identified in Leuseni (4,28 g O2/m-2 24 hours) and Leova (4, 58 g O2/m-2 24 hours) stations.

During the autumn the primary production values, with fluctuations within 0,068 to 21,82 g O2/m-2·24 h were significantly lower than in the summer and vernal periods. Higher values of primary production were identified in Braniste (21,82 g O2/m-2 24 hours), Sculeni (8,13 g O2/m-2 24 hours) and Leova (3,93 g O2/m-2 24 hours) stations.

It was determined that the seasonal fluctuations of phytoplankton biomass do not make corresponding changes of intensity of algae primary production. The photosynthetic intensity of phytoplankton dominated by bacilariophyta algae is higher than that dominated by cyanophyta algae.

Acknowledgements: The study was performed in the frame of EU Joint Operational Program Romania-Ukraine-Republic of Moldova, project MIS ETC 1150 and MIS ETC 1676.

COMPOSITION OF BENTHIC BIOCOENOSIS FROM ZĂTONUL MARE LAGOON - DANUBE DELTA

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KEYWORDS: Black Sea, Danube Delta, Zatonul Mare, coastal lagoon, benthic communities, zoobenthos.

ABSTRACT

In the last decades, a series of studies were developed in the Danube Delta or in the coastal area of the Romanian Black Sea, in order to evaluate the status of the coastal ecosystems, mainly as components of protected areas network.

On this occasion, different types of habitats were studied, including areas of the northern Romanian seaside lagoons. Biological, chemical and physical observations were done and complex data were accumulated.

In our study we took into account the principles of Marine Biogeographically Seminars from Brindisi in 2010, and the European Commission guidelines on selection of specific Published marine Natura 2000 sites. Biological monitoring included studies at pelagic and benthic level, both on flora and fauna components.

The present paper refers to some data regarding zoobenthic communities, vegetation and birds species encountered in different sites of Zătoane lagoon from the Danube Delta. Sacalin – Zatoane complex as avifaunistic strictly protected area (IV IUCN) is part of the ROSCI0065 and is included in the habitats lists, coded as coastal lagoon *1150.

Faunal composition is influenced by the mixture of water, some of the shallow waters marine origine and the other part from the Danube. As a result, according to monitored areas, there is a dominance of freshwater or marine invertebrates that form populations in sediments.

The study was granted by the research project *Servicii pentru Monitorizarea stării de conservare a speciilor marine şi habitatelor costiere şi marine de interes comunitar din România*, POS Mediu, IBB, Bucureşti.

HERPETOFAUNA OF THE CĂLIMANI-GURGHIU NATURA 2000 SITE

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ABSTRACT

Herpetofauna of the Călimani-Gurghiu Natura 2000 site was studied between May 2013 and May 2015, being identified 8 amphibians and 7 reptile species. Of these, particular attention was paid to priority species listed in Annex 3 of the OUG 57/2007, namely *Triturus cristatus*, *Triturus (Lissotriton) montandoni* and *Bombina variegata*.

All habitats were investigated being recorded 850 observation points.

Triturus cristatus populations across the Natura 2000 site Călimani-Gurghiu are extremely low due to lack of favorable habitats. These populations are endangered and, in the absence of appropriate conservation measures, they are threatened with extinction.

For *Triturus montandoni*, the general trend of the conservation status is less favorable one. We argue that because the existing populations in the main river basins of the Natura 2000 Călimani-Gurghiu site territory are small compared to other areas in the Carpathians.

For *Bombina variegata*, it is a favorable conservation status. We argue that by the large area of favorable habitats, by the important herds of *Bombina variegata* population, and by lack of any threats with strong effects in the neither short term nor long term.

FISH FAUNA OF THE PRUT RIVER, JOINT STUDY ROMANIA-REPUBLIC OF MOLDOVA

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KEYWORDS: fish fauna, ecological guilds, Prut River.

ABSTRACT

The paper presents some results of a fish fauna study of the Prut River. The study was done during the years 2013 and 2014 by a joint team of the Zoolgy institute of the Academy of the Republic of Moldova and the "Alexandru Ioan Cuza" University in Iaşi Romania. There were captured a number of 434 specimens, belonging to 29 species. The data were processed and interpreted based on the usual statistical tools. The study concludes that the above mentioned river has a a rich and diverse fish fauna with both conservative and economic value and it is necessary to involve the authorities in the riverine countries in order to improve the management of the fish stocks and for the better use and conservation of its biological potential.

MONITORING OF HERPETOFAUNA FROM BEGA CHANNEL AND BISTRA FOREST AREA (WESTERN ROMANIA)

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ABSTRACT

The present study shows the results of monitoring actions on herpetofauna from the Bega Channel and Bistra forest (Timisoara area), from March 2014 until May 2015, following herps composition, phenophases and species distribution, as well as information on anthropic influences limiting species distribution in the studied area.

Mostly, with a bimonthly frequency, we monitored using transect method (transect length = 8 km) more areas with different levels of anthropic influence; thereby, we studied the next segments: S1-area under big anthropic impact caused by constructions and heavy traffic; S2 - area with moderate anthropic impact caused by the presence of gardens and frequently mowed land and S3, S4, S5 - 3 areas with weak anthropic impact. We identified a total of 14 species, of which 8 species of amphibians (Lissotriton vulgaris, Bombina bombina, Bufo bufo, Bufotes viridis, Hyla arborea, Pelophylax ridibundus, Pelophylax esculentus, Rana dalmatina) and 6 species of reptiles (Emys orbicularis, Anguis colchica, Lacerta agilis, Natrix natrix, Natrix tessellata, Coronella austriaca) and we noted the differences in the herpetofauna diversity from areas under varying degrees of anthropic influences.

As a result of field observations we made a series of recommendations for the management of herpetofauna species, especially those identified in forest habitat, which is part of the Bistra Forest Natural Reservation.

HOW MUCH CADMIUM, LEAD AND COPPER IS TRANSFERRED FROM *ALBURNUS ALBURNUS* (L.1758) TO THE PARASITE *LIGULA INTESTINALLIS* (L.1758) ?

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ABSTRACT

The fish are important for the sustainability of the aquatic ecosystems. They are occupying different positions in food webs. This study aimed the sampling of the white bleak (*Alburnus alburnus*) and analysis of the heavy metals (Cu, Cd, Pb) for muscle tissue, digestive system, skin, skeleton and the parasitic form (*Ligula intestinalis*) from Stanca-Costesti Lake. The bleaks were separated in four size droups: small without parasites, small with parasites, big without parasites, big with parasites. The parasites were extracted from each specimen for measurements and metal analysis. The metals from each sample were digested using microwave system. The metals were measured using the GF-HR-CS-AAS method applied on ContrAA600 apparatus. For each analyzed metal, validations methods and QC test using references materials were conducted. It was calculated the transfer factor between the parasite and the bleak for different tissues and compared between the groups. This original study provided for the first time result about the heavy metals interaction between white bleak and a parasitic worm knowing that this fish species it is not the final host for this parasite.

Acknowledgements: This work was supported by the project Resources pilot center for cross-border preservation of the aquatic biodiversity of Prut River MIS-ETC 1150 Romania-Ukraine-Republic of Moldova.

POSTERS PRESENTATIONS

BARBUS MERIDIONALIS RISSO 1826 ON SITE DECISIONS SUPPORT MANAGEMENT SYSTEM – A TRANSYLVANIAN NATURA 2000 SITE STUDY CASE

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KEYWORDS: *Barbus meridionalis*, protected areas, Romania, fish species habitat neccesities, pressures, threats, management tools.

ABSTRACT

The main inventoried threats to the fish species *Barbus meridionalis* good conservation status in ROSCI0132 Natura 2000 site were: poaching, characteristic habitats modification, the river continuum fragmentation, the expansion of some invasive/more tolerant fish species, pollution, illegal spoil dumps, river regulation, riverbed overexploitation, liquid and solid flow regime of the river course. The pressures were: the characteristic habitats changings or damaging, poaching, water pollution, river continuum fragmentation, and deforestation of riparian vegetation.

Highly important for *Barbus meridionalis* species protection are: natural riverbeds morphodynamics preservation, diminishing the actual lotic fragmentation, avoiding riverbed overexploitation, riverine vegetation conservation, ecological reconstruction of the natural morphodynamic of riverbeds, an April-July fishing ban, poaching control, waste management, decreasing organic and chemical pollution, and the implementation of a seasonal permanent monitoring system for the fish fauna.

In this research, a basic model for management decisions in order to support – the *Barbus meridionalis* fish species was realised.

The ADONIS:CE was used in this research in the ecological domain, introducing a management model of *Barbus meridionalis* fish species that contains its most important necessities regarding the habitat, the indicators that bring out a good ecological status – the accurate management to avoid and/or eliminate the pressures and threats which damage this fish species populations.

If the proposed management components do not succeed, this fish species will have a poor conservation status in the next 20–30 years.

This on-site, on habitats and on species blueprint management decisions sustaining model for *Barbus meridionalis*, should be incorporated in an integrating management model for the ROSCI0132 site ichthyofauna, for this goal similar management decisions sustaining models for other fish species of European interest should be done.

COMPARISON OF FISH SAMPLING EFICIENCY FOR TWO TYPE OF NORDIC GILLNETS RESPECTIVELY MONOFILAMENT AND MULTIFILAMENT TESTED IN DANUBE DELTA LAKES

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KEYWORDS: species richness, monofilament gillnets, multifilament gillnets, fishing, CPUE, Danube delta, freshwater fishes.

ABSTRACT

At level of European Union (EU) lake fish sampling for Water Directive (Directive 2000/60/EC) has been standardized (CEN EN 14757:2005(E)) by using nylon Nordic gillnets. Same time, there is an untested myth among Romanian ichthyologists, fishery stakeholders, fishermen and folks that monofilament nylon gillnets (MO) have double times fishing success than conventional multifilament gillnets (MF). This myth provoked controversial debated between the fishermen, administrators and conservationist for the regulation purpose. To answer this issue in year 2014, fish fauna from Danube delta lakes was sampled with two type of research Nordic gillnets, multifilament (MF) gillnets versus monofilament (MO) gillnets. Both types of fishing gears were constructed respecting EU standard from 12 panels with mesh sizes of 5, 6.25, 8, 10, 12.5, 15.5, 19.5, 24, 29, 35, 43, 55 mm knot to knot. To compare fishing efficiency of two types of gillnet, 4 largest lakes inside of Danube delta, respectively Furtuna, Merhei, Isac and Roșu lakes were sampled. The species richness estimated by those two type of gears have almost similar value, however from 34 total number of species, 30 was caught in both MO and MF gillnets, but 4 species was caught only in MO gillnets (*Abramis brama*, *Knipowitschia caucasica*, *Leucaspius delineates* and *Pungitius platygaster*), the difference of species richness ranked 5-6 species per lake, concluding that MO gillnet are at least 10% more accuracy in estimation species richness. Future, the relative abundance and biomass, standardized as Catch per Unit of Fishing Effort (CPUE), expressed as number or weight per 100 m2 of gillnets per night fishing, were estimated for comparing those two methods. Accordingly with sampling test, MO gillnets caught in average two

times more fish in abundance and/or biomass than MF gillnets. The figures are different by species, season and lake. Considering this proven evidence, it is a policy and societal choice for future MO gillnets fishing regulation. Management regulation of MO gillnets, should consider both, socio-economic benefits and environmental impacts for sustainable use of fish resources. Simply management approach of permitting double efficient MO gillnets for more effectiveness fishing, require at least half decrease of fishing effort. That means half cutting off of the number of the fishermen permits or fishing time or number of gears or a combination of these measures, in order to maintain at least actual fishing pressure and avoid overfishing risk. However, future fishing selectivity study of the commercial MO, MF as well as multi-monofilament gillnets (MM) is need.

RESEARCH REGARDING THE ICHTHYOFAUNA IN THE BASIN OF RIVER TARNAVA MARE, ROMANIA

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KEYWORDS: ichthyofauna, fish communities, fish zones, River Tarnava Mare.

ABSTRACT

The study was carried out in the basin of the River Tarnava Mare, on the main course of the river and on some of its tributaries during the year 2009. The aim of the study was to assess the actual state of fish communities in the basin of the River Tarnava Mare, and to highlight significant changes in fish communities structure.

The biological material was sampled by electrofishing from 41 sampling sites. Over the year 2009, 25 fish species were found. Two of the 25 fish species are non-native and 23 are native species. It was noticed the lack of a number of 6 species of the 27 found by Banarescu in the area where the study was carried out in 2009. On the other hand, over the study period, nine other fish species were found in addition to the situation recorded by Banarescu in 1964.

Unlike the situation in the past, the fish zones are changed. Instead of four fish zones found by Banarescu, only three fish zones were recorded during the study period. These are: brown trout zone, mediterranean barbel zone and chub zone. The current situation is due to the extension of the chub zone over the barbel zone, and the common nase zone, and also, due to the narrowing of the grayling zone.

Changes in the composition of fish communities are due to the extension of the spreading area of some of the most resistant species. In the same time, some of the most sensitive fish species have special ecological requirements and a more limited area of distribution. Undoubtedly, some of these changes are also due to the increasing of the human impact. However, the fish populations still have a good self-support capacity.

THE SEASONAL DYNAMICS OF MACROZOOBENTHOS IN CIPRINID PONDS

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ABSTRACT

Macrobenthos is an important part of freshwater ecosystem, playing an important role in material cycling and energy utilization. The changes in community structure of macrobenthos are indicators for the stability for freshwater ecosystem, because macrobenthos have slow mobility, long life history and stable habitat requirements. For this reason, the macrobenthos has a great significance for freshwater environmental monitoring and evaluation.

In this respect, a study was conducted to get information on the species composition, biomass and the seasonal dynamics of macrozoobenthos in two fish farms practicing cyprinid semi-intensive culture in open system in the south of Moldova. The samples were taken during two seasons (spring, autumn) from ponds stocked with marketable common carp and Asian carp species.

The results concerning the species composition and them density were put into relation with selected ecological factors of examined fishponds.

The results showed that the community structure of macrozoobenthos was very simple. The abundance and distribution of zoobenthos vary in relation to the sediment of each pond.

The species present in the samples analyzed from both fishfarms belong to the taxonomic groups following: Phylum Annelida: Oligochaeta class; Phylum Mollusca: Class Gastropods: Order Pulmonata and Order Branchiata; class Lamellibranchiata, Phylum Arthropoda Class Crustaceans Order Ostracoda and Order Copepoda, Class Insecta: Order Diptera, Order Ephemeroptera.

The number of benthic organisms is very high in both fish farms analyzed as in the specific areas where there are decomposing organic matter accumulations. In one of them there are about 1,000 individuals/m^2 (the dominant is *Tubifex*).

There are differences between seasons and ponds in terms of the number of benthic organisms. In one fishfarm the highest densities of macrobenthos were determined in spring season unlike the other fishfarm where the fall season is dominant through the number of oligochets and chironomids which are greater.

THE STRUCTURE OF THE FISH FAUNA OF BISTRITA AND MOLDOVA RIVER BASINS

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KEYWORDS: fish species, bleak, minnow, chub, trout, fish populations.

ABSTRACT

Within the project "Services for monitoring the conservation status of fish species from Romania" scientific fishing was conducted in a total of 21 stations on the Bistrita and Moldova rivers, on theirs upstream sectors and tributaries. Have been identified 16 fish species with a total of 537 individuals. All specimens were measured and weighed. The most common species were bleak, minnow, chub and trout. The assessment of the Ichtyofauna in this area intends to provide information on the characterization of fish populations, species composition, age structure and size, distribution, abundance and habitat preference.

DATA REGARDING AQUATIC MACROPHYTES FROM ZATONUL MARE LAGOON (DANUBE DELTA, ROMANIA)

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ABSTRACT

The Romanian Danube Delta, situated in the eastern part of Europe, the largest continuous marshland and the second largest delta on the continent (the Volga being the largest), is a remarkable region and a favorable place for developing a unique flora and fauna in Europe, with many rare and protected species. The great biodiversity of Danube Delta is considered to be in a better state than in other deltas from Europe, and it contains a great range of lower and higher plants, invertebrates, vertebrates and habitat types

Researchers consider that in an area of 3.466 km2, that represent 1.5,% of the Romanian territory, live around 1/3 of all species of the Romanian flora (around 1.000 species). Many scientific papers present the flora of different types of habitats: sand dunes, salty areas, forests, swamps, fresh or salty water; also a great number of articles present the vegetation of the area, and the different vegetal associations. Even though the terrestrial environment is present in the area, the predominance of the aquatic environment, led to the existence of a particular macrophytic flora. In this context, the purpose of this paper is to contribute to the study of aquatic macrophytes, both submerged and floating flora. The present study took place in 2013, when expeditions were made in different seasons, in order to observe the floral diversity because, due to seasonal variation in water quality, there might be a significantly seasonality of the vegetation also.

The importance of the studies regarding flora of the Danube Delta, consist in the fact that the plants of these area are of social and economical importance, but also are very important for environmental conservation.

DETERMINATION OF UNICELLULAR CHLORELLA ALGAE RESPONSES TO NANOPARTICLES TOXICITY USING FLOW CYTOMETRY ANALYSIS

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ABSTRACT

In aquatic environments, microalgae are sensitive indicators of environmental changes. Therefore, algal toxicity tests have been developed and are widely used in the risk assessment and for the development of environmental regulations for metals and nanoparticles. Nanoparticles are toxic to microorganisms and induce the generation of free radicals, leading to oxidative stress that negatively affects their cellular functions.

One method that can be used to assess the nanoparticle toxicity on microalgae is flow cytometry with the microalgae *Chlorella fusca* as an indicator of the degree of contamination.

In this work, this method was employed to determine the effect of different dilutions of nanoparticles on Chlorella cells with the aim of developing an accurate, predictive tool for assessing the toxicity of such contaminants.

The analysis by flow cytometry in the FSC/SSC system of Chlorella cells incubated in the presence of different nanoparticles dilutions showed induced morphological changes. These changes have been also observed using different microscopy techniques. Moreover, the metabolic activity based on the level of esterases interaction with Calcein-AM can be used to determine the toxicity of pollutants. Furthermore, it can be also used to study the toxicity of nanoparticles prior to their application in various fields, due to sensitivity and possibility to quantify the results.

ROMANIAN NATIONAL MONITORING PROGRAM DEVELOPED FOR SPECIES OF COMMUNITY INTEREST – CASE STUDY: GIS USED FOR SETTING UP THE MEDIUM-TERM ASSESSMENT PLAN FOR SPECIES OF GENERA *RANA* AND *PELOPHYLAX*

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ABSTRACT

Among the native amphibians of Romania there are three species of genus Rana (*R. arvalis, R. dalmatina and R. temporaria*) and three taxa of genus Pelophylax (formerly Rana) (*P. lessonae, P. ridibundus* and their hybrid: *R. kl. esculentus*) nominated in the annexes of the Habitats Directive (Council Directive 92/43/EEC and Council Directive 2006/105/EC). In March – October 2012 period, in case of five taxa (*R. arvalis, R. dalmatina, R. temporaria, P. ridibundus* and *R. kl. esculentus*), the author developed, with ArcView 3.1, polygon-type shapes with the records of the respective taxa (both data from scientific references and unpublished data resulted from the author's field investigations were up-loaded).

The shp-layers with distribution (record) data were overlaid the layer containing containing plots of 10x10 square km in the ETRS LAEA 5210 grid, resulting in case of *R. arvalis* 226 records (from 1878 – 2009 period) scattered over 151 plots, in case of *R. dalmatina* 1709 records (from 1863 - 2011 period) scattered over 793 plots, in case of *R. temporaria* 1141 records (from 1856 - 2011 period) scattered over 569 plots, in case of *P. ridibundus* 2444 records (from 1879 - 2012 period) scattered over 907 plots and in case of *P. kl. esculentus* 417 records (from 1856 - 2011 period) scattered over 263 plots.

Taking into account the distribution of the record-plots, the currently available human resources and technical possibilities, there was developed a nation-wide monitoring plan (implemented in February 2013 – March 2015 period) for periodical assessment of the ecological status of the above mentioned species in the following number of plots of 10x10 square km in the ETRS LAEA 5210 grid: of *R. arvalis* 22 plots, *R. dalmatina* 80 plots, *R. temporaria* 60 plots, *P. ridibundus* 97 plots and *P. kl. esculentus* 40 plots.

SOME PHYSIOLOGICAL CHANGES INDUCED BY THE ACTION OF FIPRONIL INSECTICIDE IN PRUSSIAN CARP AND PERCH

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ABSTRACT

Fipronil is a phenylpyrazole insecticide discovered and developed by Rhöne-Poulenc between 1985 and 1987 and released to the market in 1993. The insecticide is widely used in agricultural management to control pests and it can be leached into aquatic ecosystems. Fipronil acts by targeting gamma-amino butyric acid (GABA) receptors and has a much higher affinity for insect than for vertebrate.

The present study evaluates the changes of some important physiological indices (energy metabolism, respiratory rate, number of red blood cells, blood glucose level, survival) for two common species in the Argeş river (Carassius gibelio Bloch 1782 and Perca fluviatilis Linnaeus 1758) exposed to the action of Fipronil insecticide under different concentrations (0.005, 0.1 and 0.2 mg fipronil/l water). Fish adaptation to laboratory conditions was conducted for two weeks in glass aquariums with a capacity of 100 l, under natural photoperiodic conditions and the oxygen dissolved in water was not below 80% of the maximum possible at the respective temperature and pressure. Feeding during this period was "ad libitum" once a day; during the experiments fish were not fed to avoid the additional influence of the food factor, thus allowing a better interpretation and comparison of the results. The results were interpreted statistically using SPSS 13.0 program for Windows.

The experimental samples regarded the presence of respiratory, hematological and biochemical changes in Prussian carp and perch intoxicated and revealed differences in the reactivity of the two species. The fipronil insecticide had a similar effect on oxygen consumption in the species, translated into a stimulating rate. The insecticide has changed the respiratory rhythm of prussian carps and perch in all investigated concentrations. The number of erythrocytes in the fish individuals subjected for 14 days to 0.1 mg fipronil/l water was also significantly affected. In the concentration of 0.1 mg/l, fipronil produced, after 14 days of immersion a increase of the glycaemia values in fish.

SCARDINIUS GENERA PHYLOGENY INFERRED BY MITOCHONDRIAL CITOCHROME C OXIDASE I GENE ANALYSIS

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ABSTRACT

The cyprinids classification always has been controversial, the number of recognized families ranging from 2 to 12 depending on the author and the number of morphological traits considered and even have been changed to family level, being assigned European and North American leuciscins and phoxinins to the family called Leuciscidae. Because the morphological traits are usually subjected to homoplasy, the systematics based on them sometimes comes in contradiction with molecular data and also the morphological traits have an unclear homology. All these facts lead to the idea that the recognized monophyletic groups are surely misinterpreted. The aim of this study is to identify the phylogenetic relationship within Scardinius genera using COI gene sequences. The GenBank sequences for Scardinius (*S. racovitzai* is not included) and *Carassius carassius* (used as outgroup) species were used for comparison and aligned using ClustalW method in MEGA 6 software. Phylogenetic trees were constructed using BEAST v1.7.5 (Bayesian Evolutionary Analysis Sampling Trees) and the optimum substitution model was identified using the jModelTest software. Data validation consisted in estimating the convergence of posterior distributions using Tracer v1.5 and the trees were visualized and edited in FigTree v1.4.0. The data support some of the recognized species within the Scardinius group; the tree with bootstrap support indicate that the Greek species of Scardinius genera describe a basal clade. Also, the *S. erythrophthalmus* species appears to be paraphyletic, fact that suggests a complex phylogeography for this species across Europe.

RESEARCH ON THE CURRENT STRUCTURE OF THE ICHTHYOFAUNA OF THE RIVER VALSAN

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ABSTRACT

The Vâlsan river (surface - 358 km2, length - 84.6 km) springs from the bottom of Făgăraş mountains from the glacial hollow, U-shaped, situated between the mountains Picuiata and Scărişoara Mare from an altitude of 2310 m, flows parallel with Argeş river, wonder through the same relief group up to the river mouth, in Merişani, situated approximately half the distance between Curtea de Argeş and Piteşti. In the year 1967, the Vâlsan river had suffered important modifications by constructing upstream of Vâlsan Keys a storage lake and also a hydroelectric–plant. This accumulation lake has a basinal surface of 83.3 km3 here been also led the waters of the tributary Dobroneagu, which has been led to a drastically dropping of the downstream flow rate from the values beyond 2 m3/s until 1967 to values smaller than 0.6 m3/s presently. The special interest of Vâlsan River is the presence of the fish species *Romanichthys valsanicola* (sculpinperch or Romanian darter), an endemic species to Romania and the Danube basin. It is considered the most endangered species of European ichthyofauna because of its narrow range (only a sector of Vâlsan) and small number of individuals. The paper presents data referring to the structure of the ichthyofauna of the Valsan River, during the period 2014 - 2015, distribution of species along river and a comparative analysis of the structure ichtyofauna, now and in the past. A primary objective of the research was to establish the current areal of the species *Romanichthys valsanicola*. Biological material was sampled at 16 sites. 1224 individuals were captured. A total number of 8 fish species were identified, including *Romanichthys valsanicola*.

A NEAW INSIGHT ON CARASSIUS GIBELIO PHYLOGEOGRAPHY

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ABSTRACT

The present study is a summary of a wider research on identification of interspecific variability and migration patterns in Europe of Carassius species, by mitochondrial markers DNA sequencing. Cytochrome b and COX I sequences of were analyzed for 124 individuals from 19 different populations. Haplotypes distribution was correlated with geographical origin of populations. A total of 27 haplotypes were identified among the 124 individual specimens from Asia and Europe. The Minimum Spanning Tree between all haplotypes indicate the presence of four phylogroups unlinked with geographical location. Also two haplotypes shared between the European and the Asian populations have been identified, indicating a migration pattern from Asia thru Russia in the Danube River and forward in all tributaries of Danube. The sequence analysis of cytochrome B and COX I genes correlated with the NCBI data and also with the haplotype frequencies and distribution, suggests that the invasion of C. gibelio was facilitated by anthropogenic activities like fisheries and aquaculture.

The molecular, phylogenetic and biogeographic analysis indicates that the Prussian carp has two migration routes in Europe from East to West, through Ukraine and Turkey aquatic basins as a consequence of escape or deliberately releases from intensive aquaculture systems.

BIODIVERSITY OF TERRESTRIAL ORGANISMS

ORAL PRESENTATIONS

CONTRIBUTION TO THE KNOWLEDGE OF VEGETATIVE ORGANS STRUCTURE OF *PAEONIA PEREGRINA* MILL.

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KEYWORDS: *Paeonia peregrina*, natural monument, anatomy

ABSTRACT

The authors investigated the vegetative organs structure of *Paeonia peregrina* Mill. (*P. romanica* Brândză), protected as natural monument, included in the Critical list of vascular plants from Romania. *P. peregrina* is a perennial species, sporadic in our country, showing both thin roots and tuberous roots, with different thickness. If the very thin roots are a primary central cylinder diarch and triarch, the tuberous roots present a secondary structure, with moderate collenchymatosus parenchyma, many cells containing calcium oxalate. Both meristems produce secondary tissues, but cambium produce a lot of secondary xylem. In xylem thickness is observed areas where parenchyma predominates. These areas alternate with areas in which prevail vessels and wood fibers.

The stem presents stomata that prevailing over the epidermis; and at the basal level the two vascular tissue form two concentric rings, very sinuous, the phloemic one being in direct contact with sclerenchyma cords from the periphery of former vascular bundles of primary structure.

The foliar blade is hipostomatic, with bifacial heterofacial structure; the palisade tissue having short cells, many of them being provided with longitudinal septum to superior epidermis, as mentioned by other authors. At the analyzed material did not notice oxaliferous cells (mentioned by Filipescu in 1972).

The histo-anatomical traits of vegetative organs, correlated with living conditions in which plants live, reflect the meso-xerophile character of *Paeonia peregrina* Mill.

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RUDERALIZATION OF THE SAND DUNES WITHIN AGIGEA NATURAL RESERVE, A THREAT FOR THE PRIORITY HABITAT 2130

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ABSTRACT

Natural Reserve „Marine sand dunes of Agigea" is the only protected coastal area on the southern seaside of Romania, where the habitat 2130 (Fixed coastal dunes with herbaceous vegetation), type of habitat of European Community interest, is relatively well conserved, in the same time with some rare plants and plant communities with conservative significance. It is the main reason for that this small nature reserve of 10.5 ha was declared in 2007 as Natura 2000 site under the name ROSCI 0073 Marine dunes from Agigea.

The Natural Reserve at Agigea is located presently 300 meters away from the seaside due to building the harbour Constanta South - Agigea, starting with the year 1967. Presently, between the protected area and the seashore were built different harbour facilities which diminish positive influences of the sea breezes in the area of dunes complex and consequently had determined significant changes of microclimate and soil during the last 50 years. The steppe grasslands and the man-made disturbed habitats from the vicinity of the protected area have facilitated colonization of sand dunes with many steppe and ruderal plants, even invasive plants. Euphorbia virgata is one of the most abundant ruderal plants which threaten psammophilous plants and plant communities of the habitat 2130. *Euphorbia virgata*, but also other ruderal species, presently covers large surfaces of the low sand dunes from the eastern part of the protected site.

Aspects regarding ruderal species within Agigea Natural Reserve, and the risk of these species for the habitat 2130 and for typical psammophilous plant communities will be detailed in the paper.

STUDY ON PARASITICAL DISEASES IN CHILDREN'S CASE TOWN OF CAHUL, REPUBLIC OF MOLDOVA

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ABSTRACT

This study was oriented on researching the parasitic diseases in children in kindergartens in the town between 2012-2014. The done researches have on one hand contributed to the systematization, synthesizing and energization of the data concerning the current state of the epidemiological situation and the morbidity through helminthiases in the area of district Cahul, but on the other hand it provides an input in diversification the knowledge on parasites in different aspects of diagnosis, prevention and combating the helminth in humans. The study was done on a group of 1704 children coming from 5 kindergarten-nursery schools in Cahul and they had been tested for intestinal parasites during the collectivity formation season (September-October) in each year of this research. The laboratory diagnosis method had collected all the important data through the investigation of perianal lavage.

So, in 2012, from the 1704 children aged between 3 and 4 years old, 75 children had been tested positive on *Enterobius vermicularis*. In 2013, the same 1704 children but aged between 4 and 5 years old had been tested and 21 of them had been found positive with *Enterobius vermicularis*. But in 2014, the same contingent of 1704 children now aged of 5 and 6 years old and 120 of them had been tested positive with *Enterobius vermicularis*.

From this study in dynamics for 2012 – 2014 it was established a significant decrease in 2013, but there had been a sudden increase in 2014 due firstly to the absence of training courses for parents and kindergarden teachers concerning the prevention and combating parasitic diseases.

On the other hand, the adequate and sufficient training of the medical staff involved in collecting the biological samples had brought the expected results being a first assumption of development of a correct diagnostic algorithm in laboratory.

It is established that the pre-analytical phase in laboratory is especially important in issuing a qualitative result and with a high precision concerning helminth in humans.

BIOLOGICAL, CLINICAL AND DIAGNOSTIC ASPECTS OF PARASITIC DISEASES IN HUMANS

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ABSTRACT

The helminthiasis represents a group of parasitic diseases caused by intestinal parasites called helminths. The infections with helminthiasis are widely spread in our country mainly affecting children's health.

In the South of Republic of Moldova the most spread helminth invasion in the last years is the enterobioza – a contagious intestinal parasitosis transmitted from the infected human to the healthy one. On the second place is ascariasis – a geohelminthi parasitosis that needs soil to develop and subsequently infect. The difilobotrioza and the trichocephaloza are on third place în this list.

The main cause that helped to register these cases had firstly been the failure to comply with hygiene rules, water, fruit, vegetables, berries and household items infected with parasite's mature larvaes and also close friendship with pets.

Many people suffering of allergic diseases that can't be treated properly because of a wide complex of allergens that irritate continually the immune system. It's been proved that the parasites also (helminth - pathogenic protozoa) cause strong and long lasting allergisation of the organism through their metabolic products with strong allergenic properties. The parasitic allergy can clinically be manifested through chronic relapsing urticaria, swelling of the skin, joint and muscle pain, increased body temperature, cutaneous pruritus, burning sensation in the skin, asphyxia, asthmatic cough, functional disorders of the intestine etc. These symptoms can be testified to hepatitis, myocarditis, pancreatitis and allergic rhinitis.

The allergic manifestations are more evident if the infestations with intestinal parasites had been massive, repeated or polyvalent. Sometimes, the parasites can be the only cause of allergies, other times they can worsen the allergies of a different origine. In serious cases, the allergy can lead to anaphylactic shock and eventually to the death of the patient. I must note that the symptoms in parasiatic diseases aren't usually specific; this is why the laboratory tests have a decisive role in establishing the diagnosis.

STUDIES OF BEHAVIORAL RELATIONS BETWEEN THE HOST AND THE PARASITE

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ABSTRACT

At the moment there are over 250 species of helminths that can infect the human body and can produce various primary or associated pathologies thus reducing first the resistance, the immunity and the homeostasis of the parasitized body.

The pathogenic effects of helminths on human body it's determined through their mechanical and traumatic action on organs and tissues, through metabolism disorders as a result of parasites nutrition and the neurologic adjustments. Through the toxic-allergic action of secretions and excretions of helminths and also through decomposition of their products. The immunological reactions of the human body are of great importance in the pathogenesis of helminths. They are the main causes of adverse actions of helminths on the evolution of the infectious pathogenesis in humans.

The feature of helminths evolution mainly depends on the intensity of the invasion, on the pathways of parasites migration into the human body, on the pathways of migration and localization of larvaes, on parasites species and also on the report of protective and destructive factors. The mechanical action of helminths on human tissues and organs can take place at any stages of their development and this is linked to biological features.

The mechanical irritation and the action of products left by the parasites on the nerve endings of the human intestinal wall can cause functional disorders of the digestive tract. The helminths can also cause obvious disturbances of metabolism. So, they use a large part of nutrients meant to maintain the mature organism or for the development of a growing child, leading to food shortage. This way the associated hypovitaminosis is developed and also B12, A, and hypovitaminosis of group B etc.

The disturbance of protein metabolism in helminths is primarily caused through the increased use of proteins by the growing parasite and secondly by losing these substances through the affected intestine. On the other hand, the human body, especially the growing one, not receiving enough proteins, vitamins,

other substances leads to slowing down or even stopping the growth and to different health difficulties.

It's important that in some helminthiasis the activity of enzymes that catalyzes the protein and lipid metabolism changes, but in others it disturbs the hormonal metabolism mostly accompanied by anaemia of various forms and degrees. As a result of a long time entering of antigens in form of secretions and excretions of parasites and also of the product of their decomposition, it takes place the immunological restructuration of human organism. The organism weakening by parasitic antigens leads to changing the characters of responsiveness and to repeated antigenic irritation.

The immunological reactions in helminthiasis protecting the human organism against the parasite can become very expressive causing damages to its own organism. They can become pathogens for different pathological processes in organs and systems of human organism.

ALIEN TRUE BUGS IN ROMANIA: FIRST MENTION OF *HALYOMORPHA HALYS* (STÅL, 1855) AND NEW RECORDS OF *OXYCARENUS LAVATERAE* (FABRICIUS, 1787) AND *LEPTOGLOSSUS OCCIDENTALIS* HEIDEMANN, 1910

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ABSTRACT

The invasive species and their potential to cause problems are known for a long time ago. In the last 300 years, over a 1000 insect species had been introduced in Europe (Roques et al., 2008). Twenty of this species are represented by true bugs, of which 4 species are present in Romania (Putchkov, 2013; Roca-Cusachs and Goula, 2014). The present study mentions for the first time, the presence of *Halyomorpha halys* in Romania. The bug was recorded in Bucharest and Eforie Nord, both cities are in south-southeast Romania. It seems that so far the range of the species is restricted to this area as searches in other locations (west - Timișoara, southwest - Băile Herculane city and Craiova city) fail to find it.

The western conifer seed bug, *Leptoglossus occidentalis*, it was recorded for the first time in 2008 at Alba-Iulia city (Transylvania). Till now is known from five locations in Romania: Alba-Iulia, Cluj-Napoca, Cefa, Galați and Greci (Ruicănescu, 2009; Rădac and Petrovici, in press). The present study adds other twelve locations mainly from south and west of Romania.

Oxycarenus lavaterae was recorded for the first time in 2009 at Șopotu Nou (south-southwest of Romania) by Kment; Bărbuceanu and Nicolaescu publish a new record in 2008 from Pitești city, three years later. These two sites are the only published locations till now. We present other 58 locations from west, south, east and center of Romania.

THE DYNAMICS OF ANSERIFORMES IN HIEMAL SEASON IN THE LOWER PRUT IN REPUBLIC OF MOLDOVA

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ABSTRACT

During the hiemal season both the floodplains of Prut River and the Lake Beleu of the scientific reserve "Lower Prut" over the study period were partially or totally covered by ice. In the hiemal season were recorded the bird species belonging to orders: Podicipediformes - 3 species, Pelecaniformes - 2 species, Ciconiiformes - 3 species, Anseriformes - 14, Charadriiformes - 1 species. Numerically, 51 birds species have been identified, the order Anseriformes and Ciconiiformes are best represented compared to others.

A very special event was that some the summer guests could be seen in the Lower Prut on the begining of the hiemal season. Among the waterfowl and semi-aquatic birds Vanellus vanellus it can stay in the area until the end of November. *Egretta alba* and *Ardea cinerea* were recorded until the second decade of November and solitary specimens even in January and February. From acquatic birds in the Lower Prut is dominated by *Anas platyrhynchos*, *Anser anser*, *Anser albifrons*, *Fulica atra*, *Anas crecca*, *Ardea cinerea* and compact groups *Cygnus olor*.

The Lower Prut and is a friendly site serving as wintering area for many species of birds - partial migratory and winter guest.

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STUDY IN THE INFLAMMATORY BIOLOGICAL SYNDROME IN ASCARIASIS

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ABSTRACT

Ascariasis is a helminth mostly caused by Ascaris lumbricoides parasite. It's eggs are often transmitted to human through the infected soil clinically characterized through a multiforme picture expressed through symptoms of affection of digestive, pulmonary, cardiovascular, nervous systems etc. The research on this parasite was oriented on studying a group of 118 patients, 44 of them were positively diagnosed both through coproparasitological and immunological methods. In this study we had also taken into account other laboratory indices of the non-specific reactivity as IgE, VSH or CRP. Regarding the association through Ig E value and the antibody titers anti-Ascaris lumbricoides, the Ig E test showed higher values in patients with lower titers compared to other patients with elevated titers on these antibodies noticing an association and a significantly higher prevalence of pathologic Ig E values among the patients with reduced titers by this parasite.

In those patients missing eosinophilia but presenting one or more clinical signs of ascariasis, a growth of serum concentration of Ig E means a recent infection. A separate case is the variation of inflammatory markers in infections with *Ascaris lumbricoides*. So, in the group of studied patients the VHS, CRP and the fibrinogen had been determined and submitted to dynamic tests. Pathological values had been registred VSH in 84 patients, CRP in 69 patients, but the fibrinogen in 52 patients. The VSH value had been maximum in patients with titers of anti-*Ascaris lumbricoides* antibodies is of 1:25, but in other titer cases there had been similar values. The presence of elevated titers anti-Ascaris antibodies hadn't significantly influenced the the values of the fibrinogen.

The inflamatory biological syndrome can be present in ascariasis through VSH, CRP and fibrinogen's modified values.

BIOLOGICAL PARTICULARITIES IN ASCARIASIS PATHOGENESIS IN HUMAN'S CASE

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ABSTRACT

Ascariasis pathogenesis in migratory phases and intestinal phase is diverse. In migratory phase of the parasiatic larvae there is a weakening of the organism with metabolic and decomposition products of dead larvaes. Ascaridae allergens are part of most strong parasitic allergen group. In the mentioned phase develops both general hypersensitivity reactions and also local reactions through the appearance of eosinophilic infiltrates in lungs, antigenic pneumonia, granulomatous hepatitis, rashes, eosinophilia in peripheral blood etc. This is extremly dangerous and the toxic action on human organism of *Ascaris lumbricoides* larvaes, especially during their moulting period. In case of massive invasion it's seen in mechanical trauma of bowel wall, blood vessels, liver and especially of the lungs because of migratory larvaes.

During the intestinal phase of the ascariasis, the allergen continues to excite a certain action but less expressed. The appearance of clinical signs in intestinal ascariasis is mainly linked to the toxic action of metabolic products left by mature parasites, to the absorption of resulted products because of decomposition of dead ascariasis. The reflex mechanisms are usually at the base of the disturbance of gastrointestinal function and the appearance of the spastic bowel obstruction. These mechanisms also play an important role in spastic bowel obstruction caused by a voluminous bundle of ascaridae.

Ascaris lumbricoides mature individuals provokes mechanical traumas of the bowel wall till it's perforation. Unpredictable complications can cause *Ascaris lumbricoides* penetration in bile ducts, pancreas, liver, appendix, respiratory system and other organs. We have to say that *Ascaris lumbricoides* influence negatively the vitamin metabolism getting the deficiency pyridoxine, retinol and ascorbic acid. Ascariasis also exercises a negative action on the evolution of different diseases both infectious and also noninfectios. It's proven that lately *Ascaris lumbricoides* has an immunosuppressive influence on human body.

STUDIES CONCERNING CLINICAL, BIOLOGICAL AND LABORATORY MANIFESTATIONS ON PATIENTS INFESTED WITH Toxocariasis

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ABSTRACT

The clinical manifestations focused primarily on anorexia, abdominal pains, hepatosplenomegaly, wheezing, erythema multiforme, chronic prurigo.

The laboratory tests mainly showed iron deficiency anemia, leukocytosis, eosinophilia, elevated ESR. Toxocara ELISA tests had a positive rate in 95% of studied cases of the proposed sample. The examination of the back of the eye showed posterior pole granuloma.

Among the early symptoms presented by patients infected with toxocariasis are cough, wheezing and fever. In a lower percentage were presented abdominal pains, dysponea and the hepatomegaly also had a low prelevance. Rashes, itching and pale skin having insignificant values, but also the loss of appetite, nausea, vomiting and convulsions.

The clinical examination of these patients had shown the following anamnezis data: general ferevish condition accompanied by irritability. Pale skin, lymph system within the limit norm for adults and slightly enlarged lymph nodes for children; stomach cramps and flatulence; hepatosplenomegaly 4 cm below the rebord of the normal range.

Positiv diagnosis for the hole sample of patients was established after performing ELISA immunological investigations in order to detect Antitoxocara antibodies in correlation with all the factors included in the clinical examination, anamnestic and epidemiological data.

It's important to say that to establish and to confirm helminth diagnosis it's necessary to collect anamnestic, clinical and epidemiological data by applying parasitological, coprologic, serological or immunological methods.

A HISTORY OF TEMPORARY EXHIBITIONS DISPLAYING FRESH MUSHROOMS

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ABSTRACT

Temporary museum exhibitions displaying fresh mushrooms have been organized in Bacau ever since 1999. These exhibitions were presented by experts in the field (the authors of this paper) of "Ion Borcea" Natural Sciences Museum Complex, Bacau. These exhibitions aimed at exhibiting a greater variety on macromycete species that are found in Bacau county and at informing the visitors of wild edible mushroom species of the dangers of consuming inedible and even poisonous species because of the potential confusion between edible and poisonous mushrooms.

POSTERS PRESENTATIONS

COMPARATIVE PROTOCOLS FOR AN EFFICIENT GENOMIC DNA EXTRACTION FROM *SALVIA OFFICINALIS* L.

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ABSTRACT

In the last years, have been reported a great number of protocols for efficient plant DNA isolation and purification, including commercially extraction kits. However, depending on the species, different protocols sometimes fail to produce a good quality DNA. This happens mostly, when we refer to medicinal and aromatic plants, such as common sage (*Salvia officinalis*, L.), as a result of the high amounts of secondary metabolites which interfere with DNA isolation. The standard CTAB protocol was modified and different variants were compared, in order to obtain a high quality viable DNA.

The DNA isolated from dry leaf tissue with the modified CTAB protocol, was spectrophotometric quantified and the UV absorption ratios indicate the absence of contaminant products. PCR amplification indicated that the DNA isolated with this method may be used in common sage and other aromatic and medicinal plants,for molecular, biological and biotechnological studies.

CONTRIBUTIONS TO THE KNOWLEDGE OF THE CORMOPHYTE AND EDAPHIC ALGAE DIVERSITY FROM THE AURATE MINES OF VALEA VINULUI-RODNA

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ABSTRACT

The exploitation of the complex mines in Valea Vinului-Rodna guarantees more gold and silver resources rather than plumbum, zinc, copper and sulphur.

By 1832 to 1893, there were extracted 58 kilograms of gold and 8.378 kilograms of silver, whereas between 1894 and 1910 only 26 kg of gold and 4.037 of silver were extracted. The uncut mineral had in its composition 0.59 g of gold/ton and 70 g of silver/ton.

The mineral exploitation in Valea Vinului-Rodna had been operative by the year 2006. The dumps near the mine-holes are still uncovered by vegetation, which encourages the vegetation's recovery.

The rehabilitation of the flora/vegetation with its autochthonous species are the main purpose in the environmental impact attenuation process. Our contribution consists in inventorying the cormophyte pioneer from the dump and edaphic algae situated on their rhizosphere. This information helps with the detection of the most appropriate vegetal association to be recovered on these types of dumps.

VASCULAR FLORA OF THE PUTNA-VRANCEA NATURAL PARK

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KEYWORDS: Tişiţa Valley, vascular flora, endemic elements, red list, Orchidaceae, Natura 2000 site

ABSTRACT

This paper aimes to contribute to the study of the vascular flora from the Tişiţa Valley protected area from the Putna - Vrancea Natural Park. As part of the Carpathians Mountains, Putna - Vrancea Natural Park is situated in Vrancea Mountains and has a dense hydrographic basin, such as Putna Fall, Putna River and it's afluents. The preliminary study was conducted in July - September 2015 and aimed to make a floristic inventory with many rare, vulnerable and endemic elements. Several species of community interest in this protected area include *Leontopodium alpinum* and *Cypripedium calceolus* – rare plants which are included on national and European red lists and other taxa included in the national red list such as *Sempervivum zeleborii*, *Trollius europaeus* and *Seseli gracile*. The protected area also has 12 species from the Orchidaceae family such as *Plathantera bifolia*, *Neottia nidus-avis*, *Gymnadenia conopsea* and *Epipactis helleborine*. In this natural scenery, alongside the large carnivores that found their sanctuary, there are also a large spectrum of vascular species that led to the declaration of the Putna - Vrancea Natural Park as Natura 2000 site.

HISTO-ANATOMICAL ASPECTS OF THE LAVANDULA GENUS

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KEYWORDS: *Lavandula*, secretory glands, volatile oil, hydrodistillation, Clevenger trap

ABSTRACT

This paper presents the histo-anatomical aspects of the *Lavandula* genus. Some specific parts of the plant were used: the root, stem and leaves. The biological material was fixed and conserved in etilic alchool; then the specified parts were transversally sectioned and colored with green iodine and ruthenium red. The presence of secretory glands in the structure of the aerian organs is associated with the economical use of the lavender, which is the essential oil. The volatile oil was extracted from the fresh flowers using hydrodistillation with Clevenger trap.

RESEARCH REGARDING THE INFLUENCE OF ASFAC – 04 BC BIOSTIMULATOR ON CHERRY – TREE NANA VARIETY

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KEYWORDS: cherry – tree, Nana variety, ASFAC – 04 BC biostimulator, biometric measurements

ABSTRACT

Nana variety was obtained in Romania from a Crisana clone at Research and Development Station for Fruit Tree Growing Baneasa. It is a variety with a wide ecological plasticity, cultivated throughout the country. The fruit is medium size, spherical shape, color red burgundy. Harvest maturity starts at the end of June until the end of July.

The study presents the comparative analysis of Nana cherry-tree variety in terms of treatment biostimulator ASFAC – 04 BC and in his absence. The aim of the study was highlighting the morphological, biochemical and productivity differences of Nana cherry-tree variety with and without treatment. We determined some morphological parameters of fruits and stems, fruits and stems biomass, some biochemical parameters (dry matter and water, sugar content, acidity), assimilating leaf pigment content. After the treatment with biostimulatory ASFAC – 04 BC there was an increase in some parameters analyzed: fruit weight (3,31%); sugar content (1,11° Brix), chlorophyll a content (0,057 mg/g).

MORPHOMETRIC VARIABILITY OF SEA BUCKTHORN SEEDS FROM WILD POPULATIONS AND CULTURE

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KEYWORDS: sea buckthorn, cultivars, spontaneous biotypes, variability

ABSTRACT

Hippophaë genre shows an amazing diversity. Morphological differences in the gender make particular reference to the shape, color of fruits and seeds, color and leaves disposition on shoots, etc. The paper presents some aspects of seed biometry of six varieties of sea buckthorn and four wild biotypes grown in the experimental field FRUCTEX Bacau, compared with 31 spontaneous biotypes collected from Bacau, Neamt, Vaslui, Vrancea. We analyzed the following morphological parameters: length, width and seed biomass, after which subsequently recorded values were statistically processed. Length seeds character showed a low variability and the width and biomass seeds showed a medium to high variability.

RESEARCH ON THE VARIABILITY OF SOME MORPHOLOGICAL CHARACTERS AND THE BIOMASS OF SEA BUCKTHORN FALSE FRUITS HARVESTED IN ROMANIA

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KEYWORDS: *Hippophaë rhamnoides* L., false fruits, average length, average diameter, average biomass

ABSTRACT

In Romania, the species *Hippophaë rhamnoides* L. confirms the genetic variability of the genus Hippophaë and it highlights biotypes with fruits of various sizes, colors spreaded throughout the country. This study aimed some aspects of sea buckthorn cultivars and biotypes phenotypic variability collected from some districts of Moldova region. We targeted that each individual plant undergoing morphological observations to be different in terms of size, shape and color of the false fruit, in order to highlight significant differences between morphology and the area where the plant material was harvested. We analyzed the length, diameter and biomass of false fruit of *Hippophaë rhamnoides* L. and the values obtained were statistically interpreted. The average length of false fruits oscillated between 5,69 mm (Silvia cultivar) and 11,46 mm (Letea-6 biotype), the average diameter of false fruits between 4,85 (Letea-2 biotype) and 9,64 mm (Ovidiu cultivar) and average biomass of 100 false fruits registered values between 14,50 g (Gheraiesti-3 biotype) and 44,50 g (Victoria cultivar).

MONITORING OF BREEDING BIRDS' SPECIES IN AGRICULTURAL LANDSCAPE IN MOLDOVA

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KEYWORDS: *Hippophaë rhamnoides* L., false fruits, average length, average diameter, average biomass

ABSTRACT

The study presents the results of census the breeding bird species in agricultural landscape, in order to emphasize species trends. Study area includes farmland (46 55'35.83"N) highly fragmented and an area of meadow Bik (46 56'41.33"N). These two sectors are at a distance of 30 km from Chisinau and near the village Singera. Agricultural fields contain various cultures, such as: wheat (7%), corn (19%), rape (23%), stubble (2%) and unprocessed land parcels (20%), share of cultures changed from year to year. Observations were carried out in 2006 - 2011, beginning the second decade of April until July, using the method of transects. In the agricultural fields were recorded 18 breeding species, and 23 species in meadow sector. The total abundance is about 191.8ind/km2 and 576 ind/km^2. From the obtained data was found increasing trend of species to *Galerida cristata*, stability trend - *Alauda arvensis*, *Anthus campestre*, *Motacilla flava* and a moderate decline in *Saxicola torquata*, *Oennathe oenanthe*, *Lanius collurio*. The results of surveys shows that the species composition and abundance of birds in agricultural landscapes in the nesting period is relatively high, despite the fact that agrocenosis have low protective characteristics of the habitats and are characterized by high level habitat destruction during agricultural work.

This study was supported from the projects 11.817.08.14F and 15.817.02.11F, funded by the Academy of Sciences of Moldova.

MOLECULAR IDENTIFICATION OF *ACROCEPHALUS SCIRPACEUS* X *A. ARUNDINACEUS* HYBRID IN THE NORTH-EASTERN ROMANIA

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ABSTRACT

Hybridization and introgression are two processes with major implications in animals and plants evolution, causing the occurrence of new genotypes and phenotypes. Both, species capable of hybridizing and hybridization areas, represents excellent opportunities for studying evolutionary processes, such as adaptation, gene flow or even speciation process. A wild Great Reed Warbler X Reed Warbler (*Acrocephalus arundinaceus* X *A. scirpaceus*) hybrid was captured in north-eastern Romania. The bird belonged to the Reed Warbler phenotype, but the body measurement indicates larger values compared to the specific variability parameters. DNA analyses of blood samples based on the cytochrome b (cytb) and cytochrome oxidase subunit I (COI) mitochondrial genes sequences and also the conserved microsatellite loci, revealed that the bird was a hybrid between the Great Reed Warbler (the female genitor) and the Reed Warbler (the male genitor).

COMPARATIVE STUDIES ON THE EPIGEAN INVERTEBRATES COMMUNITIES IN DIFFERENT TYPES OF FOREST

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KEYWORDS: epigean, invertebrates, forest

ABSTRACT

Our studies regarding the epigean invertebrate communities were carried out in four stages in the period May – July 2012 in two different types of forest from Bacau county (oak and black locust plantation).

The aim of the present study is the assessment of the quantitative as well as the qualitative structure of the invertebrate communities in the epigean fauna, and also to highlight the representative taxa and the trophic categories characteristic for each type of the ecosystems.

After processing and analysing the biological material, it was found the same dominating taxa in both types of forest (Insecta class, Coleoptera order, Carabidae family), as well as the dominance of the predator species. It can be observed an important share of the detritivorous species in the oak forest (especially Entognatha), while in the black locust plantation the predators are followed by the omnivorous species. The prevalence of detritivorous species (31.72%) after the predators in the oak forest is justified by the emphasis of the decay processes in contrast with the black locust plantation. The trophic analysis has revealed a similar and well balanced structure of the epigean invertebrate communities in both of the forest ecosystems. Thus, the predators are dominant in both of the forest ecosystems and this fact suggests that the environmental conditions are suitable for the prey species.

NOTES ON THE LIFE HISTORY OF *TRICHOPRIA SOCIABILIS* MASNER, 1965 (HYMENOPTERA: DIAPRIIDAE), A NEW SPECIES TO ROMANIA

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ABSTRACT

Diapriids are small Hymenoptera with average body size of 2-4 mm (Masner, 1995), smooth and polished body surface. The members of Diapriidae are usually easily distinguished from other Hymenoptera by their antennae, which are inserted above the clypeus, on a conspicuous transversal ledge. Most diapriids are larval-pupal or pupal parasitoids of Diptera.

In Europe, *Trichopria* is represented by about 65 species (Kozlov, 1978), but in Romania this genus is very poorly known.

The aim of this study is to document the first record of *Trichopria sociabilis* Masner in Romania and present some observations that we carried out in laboratory regarding its behavior and biology. Numerous individuals of *Trichopria sociabilis* Masner, 1965 (Hymenoptera: Diapriidae) have been obtained from sentinel pupae of *Calliphora vicina* Robineau-Desvoidy (Diptera:Calliphoridae) placed in the Ciric area near Iași city (eastern Romania). This is the first record of the parasitoid in Romania and during our survey we acquired important data regarding parasitism percentage, sex ratio, courtship and copulation, oviposition, post-copulation behavior, competition between males and also between females.

PRELIMINARY STUDIES ON THE PROTECTED ENTOMOFAUNA OF RARAU – GIUMALAU MOUNTAINS, WITH NOTES REGARDING THE DISTRIBUTION AND HABITAT OF SOME RARE SPECIES

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KEYWORDS: protected entomofauna, Rarau – Giumalau, distribution, habitats, anthropic impact

ABSTRACT

We bring a modest contribution to the knowledge of the protected entomofauna of Rarau – Giumalau Mountains, adding new data regarding the distribution and habitats of a few protected species belonging to different taxonomic groups. The main investigated species are: *Carabus variolosus, Lucanus cervus, Pholidoptera transsylvanica and Rosalia alpina*, this species were observed and collected with various methods (field observations, pitfall traps, pan traps, sticky traps, sweep net etc.) from different locations. We also discuss the distribution and habitat of some rare species, as an example: *Omyomymar andriescui*, species discovered few years ago from Rarau and Ceahlau Mountains. We also discuss the negative impact of the human activities in this mountains, an appropriate management plan is needed for the conservation of this rare entomofauna.

A STUDY OF WHITE STORK (AVES: *CICONIA CICONIA*) POPULATION FROM FETESTI AREA

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ABSTRACT

White stork (*Ciconia ciconia*), a large bird from Ciconiidae family, is a summer guest or passage migratory species in Romania, which develops great populations especially in the west of the country. However, because it is one of the few species which accepts anthropic habitats, the white-stork populations are adversely affected by a lot of factors such as electrocution by collisions with overhead power lines, the decreased or extinction of feeding and breeding habitats especially by the draining of wetlands and conversion of meadows to crops, nets destruction, urbanization, intensive agriculture and usage of toxic substances (insecticides, treatments against rodents etc.). That's why white stork is one of the species to which the Agreement on the Conservation of African-Eurasian Migratory Waterbirds applies. In Romania, white-stork is mentioned in 78 SCI and 36 SPA. Respecting current national and international legislation and applying of additional measurements would permit preserving of a conservative state of natural habitats and of Romanian white stork populations.

The first census of Romanian *Ciconia ciconia* populations was accomplished in 1994-1995. Since then, the distribution map and the number of individuals have been updated by data collected by ornithologist or volunteers dedicated to this study. Due to its bio-geographical characteristics (the neighbourhood with Borcea branch, wetlands with trees), Fetesti city offers white-stork good conditions for breeding and nesting. That is why, in our study, accomplished in 2014-2015 period, we want to complete and update the old information about *Ciconia ciconia* population from this area. Our scope was to determine the white-stork population by counting the individuals, and its evolution trend, by studying breeding success. The results emphasized that nests are found especially in districts located nearby Borcea branch, but the nests occupancy differed from one year to another. Every white-stork family had 2-4 eggs and the offspring survival rate was 100%. There was no infanticide phenomenon.

COMPARATIVE HISTOLOGY OF THE EYEBALL IN VERTEBRATES

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KEYWORDS: vertebrate eye, conus papillaris, pecten oculi, melanosomes, cornea, choroidal vascular body, lens, retina.

ABSTRACT

This paper presents the adaptative morphology and structure of the eyeball in vertebrates. Some specific parts of the eye were studied: in fish (*Cyprinus carpio*) - the argenteea membrane, the choroidal vascular body, the annular ligament and the Erdl gland; in amphibians (*Rana ridibunda*) - the orbital gland; in reptiles (*Lacerta sp.*) - conus papillaris; in birds (*Gallus gallus domesticus* and *Columba livia*)- pecten oculi; some common structural characteristics of cornea, lens and retina in mammals (Ovis aries and Bos taurus) were also compared with similar structures from the previous presentated vertebrate groups. The biological material was prepared by paraffin embedding or directly sliced using criosections method. The frontal, sagittal or transverse sections were stained with hematoxylin & eosin (HE). The microphotographs were taken by a Confocal Laser Scanning Microscope CLSM - Leica TCS SPE DM 5500Q.

PRELIMINARY OBSERVATIONS REGARDING THE BAT FAUNA OF THE BISTRITA RIVER VALLEY FROM BARNAR CREEK TO DORNA ARINI CITY

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KEYWORDS: bat species, field studies, abundance, ultrasonic microphone.

ABSTRACT

In August 2015 we conducted field studies on bat fauna of the upper Bistrita river valley. They were conducted through ultrasonic microphone records on fixed stations. Were identified a number of 17 species of bats: *Nyctalus leisleri, Nyctalus noctula, Eptesicus serotinus, Eptesicus nilssonii, Myotis dasycneme, Myotis nattereri, Myotis myotis/blythii, Myotis daubentonii, Barbastella barbastellus, Myotis brandti/mystacinus, Myotis bechsteinii, Pipistrellus nathusii, Pipistrellus kuhli, Pipistrellus pipistrellus, Vespertilio murinus*. The most abundant species are: northern bat (*Eptesicus nilssonii*), Leisler`s bat (*Nyctalus leisleri*), serotine bat (*Eptesicus serotinus*) and common pipistrelle (*Pipistrellus pipistrellus*).

BIOTEHNOLOGIES FOR ENVIRONMENTAL PROTECTION AND RESOURCES' VALORIZATION

ORAL PRESENTATIONS

OAK MICROPROPAGATION *IN VITRO*

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KEYWORDS: oak, woody plants, clonal micropropagation

ABSTRACT

In genetics and breeding of woody plants biotechnological methods and, particularly, *in vitro* propagation have acquired more and more significance. The aim of this study was to elaborate the protocols of clonal micropropagation of oak belonging to economic species in Republic of Moldova.

The oak seedlings received *in vitro* were cut into nodal segments and placed on MS (Murashige, Skoog, 1962) medium supplemented with IAA, NAA, BAP. Depending on the combination and concentration of the hormones in the medium different morphogenetic reactions including the callus formation, the development of stems and leaves, the formation of normal leafy shoots were observed. After elongation the shoots with well-developed leaves were transferred to medium for rooting. Rooted oak plantlets were planted on a substrate consisting of the mixture of peat and sand.

Thus, the technology of the clonal micropropagation elaborated consists of four stages: obtaining seedlings of embryos cultured *in vitro*; dismembering and growing budded nodal segments; multiplication and developing shoots, rooting oak plantlets received in the cultural isolated.

NEW PHEROMONES USED IN MONITORING OF MAIN DEFOLIATORS OF DECIDOUOS FORTESTS IN ROMANIA. PRELIMINARY RESULTS

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KEYWORDS: pheromones, defoliators, *Lymantria dispar*, *Tortrix viridana*

ABSTRACT

The use of pheromones in the integrated forest pests management measures is already known as a practice in forest protection activities in Romania. They are used for screening, prognosis and sometimes, for control them. Gipsy moth (*Lymantria dispar* L.) and peagreen oak-roller (*Tortrix viridana* L.) are some of the most important pests of deciduous forests. Atravir sexual pheromone is used for *T. viridana* for over 30 years in screening and prognosis defoliation of oak forests. Atralymon sexual pheromone has been used for *Lymantria dispar* with an experimental aspect in the last years, which is actually specific for the nun moth (*Lymantria monacha*). For experiments conducted in 2015 it has been used new pheromones from Austria to improve capture yield of males and detection and prognosis methods using different types of Romanian and foreign traps. So, it has been checked how Romanian pheromones work, comparing with foreign pheromones Tortowit (for *T. viridana*) and Lymowit (for *L. dispar*) by using panel, delta or funnel traps. The experiences installed for peagreen oak-roller in six stands of oak (Căiuţi - Bacău, Panciu-V. Caregnei-Vrancea and Vaslui forest districts), situated in various environmental conditions and with different degrees of infestation of the pests, appeared that the best capture yield is recorded by delta Austrian traps, the differences between indigenous and foreign catch is, however, statistically insignificant (9.4 ♂♂ / dm^2 Tortowit adhesive surfaces to 7.3 ♂♂ / dm^2 Atravir adhesive surfaces). The experimental surfaces were installed for *L. dispar* in oaks forests (common oak in Dumitreşti-Vrancea forest district and sessile oak in the

Podu Iloaiei forest district, three experimental points each) and also in the stands of hybrid black poplar (Măcin-Tulcea forest district, also three points). Regarding the catch yield registered by using Atralymon and Lymowit pheromones, with adhesive traps (panel, delta) and funnel, there were highlighted different situations depending on the level of pest infestation. So, the surfaces of the Dumitreşti forest district there were not catches being recorded in any of the three checkpoints, *Lymantria* population from that forest was liquidated by a viral epizootic caused by viral nuclear polyhedrosis virus (npv) in the summer of 2014. In the woods of Podul Ioaiei forest district the best catches were recorded using pheromone traps with funnel. Lymowit (11.1 ♂♂ / dm^2). In the stand of poplar e.a in Macin forest district the maximum yield catch was recorded in Cluj provenance delta trap baited with Atralymon (5,8♂♂ / dm^2 adhesive surface). For both pests it have been drawn up flight curves, which were based on recorded catches at pheromone traps.

RESEARCH ON THE USE OF INTELLIGENT IRRIGATION SYSTEM AND PRECISION AGRICULTURE

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KEYWORDS: water, magnetic treatment, irrigation, agriculture

ABSTRACT

Intelligent irrigation project and precision agriculture it is based on patent 119535/2005 with the title *Magnetic fluid treatment facilities* author inventor Laschi Mihai. This project aims to provide a good water for irrigations and ensuring high yields and superior crops quality at no extra cost. This project addresses small and large farmers in equal measure, being adaptable to existing irrigation equipment. You must have courage to make changes, to respond quickly to innovations and to invest time and money.

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NEW MEDICINAL SPECIES IN THE SPONTANEOUS FLORA OF ROMANIA

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KEYWORDS: phytotherapy, medicinal flora

ABSTRACT

Over the past decades, there has been a fashionable interest in phytotherapy. Hence, the chances of solving health problem have increased and a great diversity of species and substances have been made known. The current paper presents a comparative analysis of the medicinal flora of the 80s with the one of 2015, resulting in discovering no less than 150 species which are not present in „Farmacia naturii" written in 1977-1978.

The Medicinal Flora of India comprises more than 2000 species, of which 210 are spread in both Europe and Asia. These species also grow in Romania (over 25% according to the last updating), but 40 are not known yet to Romanians, who ar4e familiar only with related species with less currency in the area such as: *Ceratophyllum demersum, Descurainia sophia, Pyrola rotundifolia, Pulicaria dysenterica, Rumex maritimum, Stellaria aquatica, Polygonatum verticillatum, Sisymbrium loesel*ii(semintele contin acid erucic), *Scutellaria galericulata, Viola reichenbackiana, Viola biflora*, etc.

The dictionary of flavonoids includes nearly 20,000 worldwide substances, whereas our paper recorded almost 300 species of flowering plants and 13 species of bryophytes present on our territory. By comparing the lists of Farmacia naturii 1977-1978, we found 135 new species, which have been only sporadically studied over the last 2 decades. We do not know the quantitative values although some species have a high number of substances, so we bring to attention some rare protected species, from which such substances should be collected only if the rare plants of therapeutic interest are cultivated. Unless we do this, we risk destroying in a couple of decades the diversity of the medicinal species.

MICROORGANISMS USED IN BIOREMEDIATION OF SOILS CONTAMINATED WITH PETROLEUM PRODUCTS

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KEYWORDS: bioremediation, microorganisms, petroleum products, polluted soil

ABSTRACT

Bioremediation is a biological process by which microorganisms degraded, decompose, transform or eliminate contaminants ensuring the preservation of the ecosystem. Bioremediation is an alternative increasingly more common in the treatment of waste and degradation of chemical contaminants, often used in bioremediation process indigenous microorganisms which were isolated. Petroleum products are the most important group of chemicals due to the abundance and their use as a primary energy source, but also due to the toxicity. Environmental pollution of petroleum products was caused by accidents during the extraction process or during transportation of crude oil contaminating soil with materials that interfere with human health, quality of life and function of the natural ecosystems. Bioremediation techniques include a number of processes that use microorganisms for treatment such as *biodegradation*, *phytoremediation*, *composting*, *land farming site*. Microorganisms participating in hydrocarbon biodegradation process are: bacteria, fungi, yeasts and algae, but the most important groups are bacteria (*Bacillus sp.*, *Spirillum sp*.) and fungi (*Aspergillus sp.*, *Penicillium sp*.). Literature research has established that microorganisms degrade hydrocarbons capable belong to 30 genera and 100 species. In our study a SWOT analyses for bioremediation process was performed. Also, the common and efficient microorganisms used to bioremediation was synthesized.

POSTERS PRESENTATIONS

INDIRECT ORGANOGENESIS OF *SYMPHYTUM OFFICINALE* L.

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KEYWORDS: *Symphytum officinale*, callus, micropropagation.

ABSTRACT

Symphytum officinale L. (Boraginaceae) is a well-known medicinal plant and a source of natural compounds with high antioxidant activity. The initiation of "in vitro" cultures of Symphytum officinale L aimed not only to assess the dedifferentiation capacity depending on explant origin and growth regulators, but also to develop a multiplication protocol based on indirect regeneration through shoots, followed by roots development induction. The proliferative capacity was tested on leaf and shoots explants, cultivated on Murashige-Skoog basal medium, testing two auxins:: naphtalenacetic acid (NAA) and indolylacetic acid (IAA) and two cytokinines: kinetine (K) and benzylaminopurine (BAP).

The MS medium with 1.0 mg/l IAA and 0,1 mg/l BAP proved to be the best for callus induction from leaf explants. Shoot regeneration was achieved after subculturing the calli on MS medium supplemented with 1 mg/l BAP and 0,1 mg/l IAA. It was found to be the best for multiple shoot regeneration from callus through organogenesis.

Multiple shoot proliferation was noticed at 3th subculture in medium and shoot proliferation was decreased with the increased number of subculture. Root system development was achieved on MS medium without growth regulators. Rooted shoots (plantlets) were gradually acclimatized.

FOOD ADDITIVES INFLUENCE ON CELL DIVISION AND CHROMOSOMES IN SECALE CEREALE L. (2n = 14) AND ALLIUM CEPA L. (2n=16)

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KEYWORDS: sodium benzoate, potassium benzoate, *Secale cereale*, *Allium cepa*

ABSTRACT

In the present work, we aimed to investigate and compare the results obtained by exposure of two test species root meristems, to the influence of two types of food additives – sodium benzoate (E211) and potassium benzoate (E212), additives often used in food industry.

The study highlights the effect of these additives on the rate of mitotic division and the ability to induce chromosomal aberrations in ana - telophase in root meristems of *Secale cereale* L. and *Allium cepa* L.

INFLUENCE OF HORMONES ADDITION FOR THE IMPROVEMENT OF PLANTLETS GROWTH (*CALENDULA OFFICINALIS*)

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KEYWORDS: in vitro explants, *Calendula officinalis*, flavonoids, coumarines,

ABSTRACT

The flowers and the leaves of *Calendula officinalis* contain various classes of active compounds (flavonoids, coumarines, quinones, triterpenoids, carotenoids, volatile oil, lipids and amino acids), due to which this plant is widely used in traditional medicine especially as extracts and ointments.

The technique of plant-tissue culture represents an alternative for the improvement of crops in a short period of time, knowing that the growth and morphogenesis of plant tissue cultures can be improved by small amounts of hormones. It is very important to find the appropriate hormone for developing specie on culture media.

Our research aims is to highlight *in vitro* behavior of various explants of *Calendula officinalis*, cultured on several nutritive solutions, in view of elaborating a technology of unconventional propagation of the species and exploring the possibility to obtain economically valuable somaclonal variations. The results of this research showed that small amounts of hormones can improve the plantlets growth in the case of *Calendula officinalis*.

ASPECTS OF THE MORPHOGENETIC REACTION OF SOME *THYMUS VULGARIS* EXPLANTS CULTIVATED *IN VITRO*

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KEYWORDS: *Thymus vulgaris*, morphogenetic reaction, calusogenesis

ABSTRACT

Our research aims at testing the morphogenetic reaction of various thyme (*Thymus vulgaris* L.) explants, cultured on 14 nutritive solutions, with a view to elaborating a technology of propagation of the species, and to exploring the possibility to obtaining somaclones with a high content of bioactive compounds. The best morphogenetic reaction of the apex and nod explants inoculated in vitro was caulogenesis, which was observed on the MS medium supplemented with BAP – 1mg/l in combination with IAA and IBA (1-2 mg/L). At the base of the shoots regenerated on some nutritive solutions, was observed the emergence of roots, and, in some cases, of the adventive roots. The calusogenesis was highlighted on a few variants of nutritive medium tested supplemented on NAA1-1mg/l and 2,4-D – 2 mg/l, the callus was friable, with low proliferation and low regenerative.

The accommodation of the thyme vitroplants to the ex vitro medium was achieved through their transfer in hydroponic culture system.

The acclimatisation was achieved in about ten days.

HABITAT CONSERVATION MEASURES OF MOCREA-ROVINA-INEU HILL (ROSCI0218) COMMUNITY IMPORTANCE SITE

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KEYWORDS: habitat, conservation, Rovina Daffodil Meadow

ABSTRACT

Paper outlining the main conservation steps of Natura 2000 habitat, ROSCI0218 Mocrea-Rovina-Ineu Hill site of Community importance, with an area of 3.730 ha, which includes the natural reservation Rovina Daffodil Meadow.

General characteristics of the site and the patch of four habitats target is the strong anthropogenic influence, manifested through legal and illegal forest exploitation, gathering dead wood (high pressure on habitats 91M0 and 91Y0) irrational grazing animals domestic (grazing throughout the year and with high loads of animals) (high intensity pressure on the habitat 6240 *) natural succession of vegetation and intrusion of invasive species (constant pressure on the habitat 40A0 *).

As a result, the state of conservation of these habitats is unfavorable-inadequate, sometimes even unfavorable-bad. Based on these pressures and threats, the main conservation measures are: establishment of retention patches, which includes 3-4, 1-3 ha surfaces in each of the two forest habitats, limiting interventions silvicultural and banning assembly of dead wood by locals, grazing regulation, phasing exotic invasive plant populations inciting farmers in site areas in and around the site to apply for Agri-Environment, removing some large specimens of Quercus pubescens, Q. cerris, Acer campestre, which were installed in patches of habitat 40A0 *.

USE OF SOME CLAY MATERIALS ON SUNFLOWER OIL BLEACHING

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KEYWORDS: vegetable oil, clay materials, discoloration

ABSTRACT

Oil production is an important part of the food industry. Oil refining is a technological operation intended to impurities separation (pigments, pesticides) from oil. In refining process, discoloration is also an important operation. In this paper, we studied the efficiency of different types of clays materials to oil discoloration. We used unrefined sunflower oil and we used different clay-based absorbent materials. Our study took into account the obtaining of optimal parameters for discoloration process. The studied parameters were: stirring time, temperature, the type of adsorbent material and L / S ratio.

OPTIMIZATION OF LACTIC ACID FERMENTATION IN THE PRESENCE OF ANIONIC CLAY AND ULTRASONIC FIELD USING A 3^3 FACTORIAL EXPERIMENT

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KEYWORDS: acid lactic, fermentation, anionic clay, ultrasonic

ABSTRACT

In this paper was performed an optimization of acid lactic fermentation of milk inoculated with starter culture for yogurt, in the presence of anionic clay and ultrasonic field. A 3^3 factorial experiment was selected in order to correlate the lactic acid concentration in the fermentation medium (process response) to process factors, i.e., fermentation temperature (38-48 °C), clay/milk ratio (1-8 g/L), and fermentation time (2-4 hr). 27 experimental runs were performed at 3 factor levels (low, middle, and high). The factorial statistical model consisted of a second order polynomial regression correlation between process response and factors. This regression relationship was applied to optimize the fermentation process. Optimal values of factors are close to the middle level of temperature (43°C), high level of clay/milk ratio (8 g/L), and low level of fermentation time (2 hr).

MODELING AND OPTIMIZATION OF PILLARING PROCESS USING EXPERIMENTAL DESIGN PROCEDURE

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KEYWORDS: bentonite, pillaring process, calcination, basal spacing, optimization.

ABSTRACT

Calcium bentonite from Orasu Nou deposit (Romania) has been used in order to prepare Al-pillared clays, which are microporous materials with special properties. The pillaring process consists in the following steps: bentonite purification, ionic exchange of bentonite, preparation of pillaring agent, intercalation of the exchanged bentonite with pillaring agent and calcination. During calcination process the polyhydroxocation is transformed into an oxide which is strong fixed into the clay interlayer. The pillared clays present a rigid structure, a high termic stability given by the oxido-metallic pillars formed after calcinations.

This paper presents the application of the kn experiment design procedure for simulation and optimization of the Al(III)-pillaring process. There were performed 9 experiments according to the experimental design procedure. The input variables were calcination temperature (x1) and calcination duration (x2) and the output variable was the basal distance (Y). The material with the optimum calcination parameters will be chosen in the aim of its using in liquid effluents depollution.

PLANT & AGRI-INDUSTRIAL BY-PRODUCTS USED IN FODDER YEAST PRODUCTION

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KEYWORDS: fodder yeast, Candida utilis, beet pulp, barley husks, acid hydrolysis, aerobic fermentation, Response Surface Methodology.

ABSTRACT

Assessing the possibility of using a mix of hydrolyzed barley husks and sugar spent beet pulp as carbon source for the production of fodder yeasts useful as supplements in animal nutrition was the aim of this work.

The appropriate hydrolysis of these two by-products lignocellulosic content can lead to high amounts of fermentable sugar, 31.77 g/L in case of barley husk and 88 g/L for sugar beet hydrolysate, useful for the growth of Candida utilis yeast strain which can successfully utilize a wide variety of carbon sources and therefore can conduct to high protein yield.

To this purpose, various parameters affecting the yeast development process were considered. The final fabrication recipe was established with the help of Response Surface Methodology by optimizing the amount of ingredients in the fermentation step and having as response functions residual sugar respectively yeast content in protein and biomass. The obtained optimized values were: 32-34 g/L reducing sugar, 1022-1079 mg/L nitrogen and 406-427 mg/L phosphorous with a final product characterized by 50.40-51.55% protein content, w/w and 6.47-6.62 g/L biomass at 92.94-95.4%, w/w, fermentable monosaccharides consumption.

CAPITALIZATION OF NATURAL AND STRUCTURALLY MODIFIED BENTONITES USED AS ADSORBENTS IN AMMONIA ATMOSPHERIC RETENTION

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KEYWORDS: natural bentonite, structurally modified bentonite, fixed bed, fluidized bed, ammonia, adsorption capacity

ABSTRACT

Bentonites are natural materials, environmentally friendly, easy to handle and insufficiently capitalized in Romania. The aim of this paper is the use of a suitable adsorbent that can be regenerated, that could be available in nature and cheap. By structural modifications the bentonites have a large applicability domain. The granulometric analysis was realized by laser diffraction, the mineralogy was determined by X-ray diffraction and thermal behaviour was studied with thermogravimetric analysis. The behavior of bentonite particles are studied in the fixed bed by contacting the pollutant gas (a mixture of ammonia and air). To intensify the adsorption process the fluidized bed is used and the maximum adsorption capacity is determined at the beginning fluidization of bentonite particles. The experimental researches conclude that the bentonites are potential adsorbents for the remediation of atmospheric ammonia.

APPLICATION OF ACCESSIBLE ANALYTICAL METHODS FOR ISOFLAVONES DETERMINATION FROM SOY

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KEYWORDS: soybeans, secondary metabolites, soybean meal, isoflavones, soy flour

ABSTRACT

Isoflavones are found only in plant, soy being the greatest food source for these secondary metabolites and these compounds has been linked to human health benefits.

In the last decades, there have been important advances in the use of soy flour in the manufacture of bakery products, the addition of soybean meal being justified by the increase of food value and reducing product cost. Isoflavones content of these soy foods is closely correlated with authenticity and product quality.

The aim of this study is the valorisation of some affordable analytical methods for isoflavones determination from soy plant and soy flour.

The isoflavones extraction was conducted using two methods: microwaves and ultrasound assisted extractions. The analysis of the extracts was performed using thin layer chromatography (TLC) and UV-VIS spectroscopy.

The preliminary results confirmed that soy bean origin and the way of soy flour obtaining influence the concentration of these secondary metabolites. These accessible analytical methods can be useful in the expertise of product derived from soybeans.

STUDY OF SOME PHYSICO - CHEMICAL AND MICROBIOLOGICAL CHARACTERISTICS OF THE WATER AND MUD FROM SALT LAKE BRAILA

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KEYWORDS: heterotrophic microbiota, heavy metal, mud, Sarat Lake.

ABSTRACT

The study presents the results of microbiological, chemical and physical research developed in the winter and summer of 2015. The research material consisted of water and mud taken from Lake Sarat , Braila. The samples were transported in optimal conditions in laboratory and analized in fresh and frozen stage. On sampling we registered some physical parameters and in the lab we esteblish some chemical parameters (e.g. heavy metal content).

According to the specific methodology were targeted the following: quantitative determination of heterotrophic aerobic microbiota, cultural characterization of bacteria colonies developed on solid and liquid culture media and qualitative characterization of bacteria isolated from the mud and water from the Sarat Lake.

The results revealed the presence of heterotrophic aerobic microbiota which serve in decomposition of organic matter present in Sarat Lake and the continuous genesis of mud on the bottom of the lake. We observed that fauna and flora responsible for the genesis of therapeutical mud present in Sarat Lake, Braila still inhabits in the water (Artemia salina and Cladophora crystalline). Optimum medium culture for bacterial growth in teh lab had the following composition: 125 g / L NaCl , 25 g MgCl2 * 6 H2O , 50 g / L yeast, 5 g / L peptone, 2,2 g / L glucose and 10 g / L agar for the solid medium.

ECOLOGY AND SUSTAINABLE DEVELOPMENT

ORAL PRESENTATIONS

DANUBE RIVER CONECTIVITY RESTORATION BETWEEN GALATI TOWN AND ISACCEA TOWN

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KEYWORDS: flood, drought, Danube river

ABSTRACT

With a background of climate change, special attention is given to extreme events like floods and droughts. In the last years, the most important romanian Danube river's floods were in April 2004, April 2005, April 2006 (the highest), March 2009, July 2010, January 2011, these being more frequently than in the past, basically caused by climate change but also by the diminished of the room for the Danube river. If the flood events can not be avoided we must find measures and actions to reduce their effects. Under Directive 60/2007 (Flood Directive) the main way to do this is "more space for rivers" or 'polderinstead of dikes".

Among local initiatives that followedthe flood of 2006 is included the study "Room for the river and people in Cat's Bend, Romania", which targets the meadow between Galati and Isaccea, known by the name of Crapina meadow. In 2009 year, the Dutch Guvernment Service for Land and Water Management (DLG) in collaboration with local stakeholders, based on the method SketchMatch have outlined several scenariosto mitigate the effects of future floods and also to solve the problems caused by drought. The three technical solutions developed: (1) Ciulinet channel, (2) Infiltrationand drainage systems, (3) Zătun flooding area are summarized and are then analyzed through the statements of several local actors which represent different professions and interests.

THE WATER QUALITY ASSESSMENT OF BEGA CHANNEL USING BENTHIC DIATOM COMMUNITIES

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KEYWORDS: Benthic diatoms, Bega channel, water quality

ABSTRACT

Benthic diatoms communities represent a powerful bioindicator used in the assessment of water quality, fact that is proven by E.U. Water Framework Directive (WFD). To establish the level of anthropogenic disturbance in the aquatic ecosystem of Bega channel, this study can be seen as a practical application that is using diatom communities as tools for the biological analysis of water. After the better understanding of diatoms ecology, there have been developed several synthetic indexes, such as the Biological Diatom Index (BDI), which is commonly used in Europe. It presents multiple advantages and it's considered to be the most significant in assessing water quality. Biological Diatom Index was developed and has been used regularly in France, and then has been included in the (hydrographic system) Quality Evaluation System of French watercourses.

Samples of benthic diatom were collected from three stations, one upstream of Timișoara and two downstream. Because the sampling was done during autumn and spring, it can be assumed that there will be some differences, but after the floristic and environmental analysis has been done, it has been concluded that those differences are not affecting the pollution level of the water, only the actual number of identified individuals.

Following the assessment, the water from Bega Channel has been proven to be good and acceptable, and the results after calculating the BDI, places the waters from Bega Channel in the middle of the range, which means that the water cannot be considered to have neither excellent nor lower quality (mediocre and inferior).

COMMON BUZZARD (*BUTEO BUTEO* L. 1758) ABUNDANCE AND DISTRIBUTION IN OLT VALLEY DURING WINTER BETWEEN 2014 AND 2015

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KEYWORDS: Black Sea, Danube Delta, Zatonul Mare, coastal lagoon, benthic communities, zoobenthos.

ABSTRACT

This study involved counting common buzzards along 35 km between Bradu (Sibiu County) and Olteț (Brașov County) by driving with a constant speed of 60 Km/h on each side of the road and estimating the distance of those individuals from the driveway. The count was performed by three persons: one driving, one noting and observing and one only observing. We performed 10 field trips in the morning as well in the evening.

Through this study we aimed three distinct questions: how many buzzards are there? How are they distributed and how big is the wintering territory? What impact has the traffic on these birds?

Pure quantitative results enabled as to study the spatial distribution of buzzards revealing certain aspects of wintering territory, intensity of resources use and especially the gregarious behavior. On the other hand we were interested in bird affinity for a particular area. For this part of the study we used the following model: we divided the route in 5 km and analyzed variance in number of buzzards for these segments. To identify wintering territory we measured the distances between individuals.

Human impact reflects on either the effect of car traffic, the high voltage electric wires, hunting or poisoning. The closer birds are from the driveway the higher is the risk of being hit by a car. Measuring this risk involved counting how many birds crossed the road, how high and how many are observed dead on the edge of the road.

RISK ASSESSMENT OF POPULATION EXPOSURE TO ORGANOCHLORINE PESTICIDES THROUGH MILK IN BACAU AREA, ROMANIA

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KEYWORDS: Organochlorine pesticides, human health, Gas chromatography - mass spectrometry

ABSTRACT

Organochlorine pesticides (OCPs) are highly toxic, persistent organic pollutants (POPs) with adverse effects to the environment and human health. The OCPs are mutagenic, teratogenic, and carcinogenic not only for humans, but also in biotic communities with different levels of sensitivity. The primary route of human exposure to organochlorine pesticides is through food, especially foods of animal origin.

Therefore, this work was carried out to determine the presence and concentration of organochlorine pesticide residues in milk and dairy products samples collected from Bacau district area and to assess human exposure to OCPs through the consumption of these products.

The concentration of OCPs in samples were determined by a Gas chromatography - mass spectrometry (GC/MS) method.

The presence of γ-HCH (Lindane) detected in 100% of the analyzed samples in the range of 0.004 to 0.258 (μg ·g-1). The presence of lindane above its maximum allowable limit in about 62% of the samples is a cause of serious concern.

It could be concluded that organochlorine pesticide residues were detected in raw cow's milk and dairy products as they were persistent in nature due to their slow decomposition rate, long half-life and high stability in the environment.

Considering the increase in milk and dairy products consumption from independent producers and small factories and the potential risk associated with estimated exposures, appropriate management strategies should become a priority in the near future due to the accumulation of OCPs in the food chain and the consequent population exposure through food consumption.

POSTERS PRESENTATIONS

DETERMINATION OF NUTRITIONAL ACTIONS OF ASFAC BC-04 STIMULATOR IN FRUIT TREES CULTURE IN ECOLOGICAL SISTEM

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KEYWORDS: ecological fertilizer, phytochemical indicator, bioproductive indicator, biometric measurement, apple, growing season.

ABSTRACT

The increase of fruits consumption urges manufacturers to develop effective techniques to improve production. Moreover, a major demand of the market is ecological fruits, leading to the emergence of a large number of organic fertilizers. The aim of this paper is to demonstrate the superior quality of ASFAC BC-04 organic fertilizer, regarding biometric measurements of fruits, bio-indicators and phytochemical indicators. Thus, the action of this fertilizer was highlighted for three varieties of apple: Jonathan, Idared and Golden Delicious. The treatment made with ASFAC BC-04 fertilizer was applied in two important stages of the growing season: beginning of flowering phenophase and shaking off the petals phenophase. A first observation was a major increase of the yield for the fruits obtained after the treatment. Also, important growth increase were observed for bio-parameters. Another important result observed for all studied varieties was the increase of chlorophyll a and b content, leading to an intensification of the photosynthesis process.

PREY SELECTION AND CAPTURE BEHAVIOR OF THE CARPATHIAN SCORPION – EUSCORPIUS CARPATHICUS (SCORPIONES: EUSCORPIIDAE)

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KEYWORDS: *Euscorpius*, ethogram, prey acceptance, prey selection.

ABSTRACT

This is the first study to focus on feeding ethology on a species belonging to Euscorpius genus. Prey selection and capture behavior of the Carpathian scorpion *Euscorpius carpathicus* (Scorpiones: Euscorpiidae) was observed in the lab over a period of 12 weeks.

Specimens were kept individually in terraria (22x12 cm) with substrate gathered from the collecting site. Natural habitat conditions (daylight period, humidity and temperature) were simulated. The behavioral components involved in prey capture were identified and an ethogram was generated. We analyzed the occurrence of prey acceptance in three different types of prey. The occurrence of different prey capture components used by each scorpion after the acceptance phase were recorded and analyzed.

The Carpathian scorpion like most scorpions is nocturnal and hunts prey by the use of a sit and wait strategy, where prey is either located in the opening of the scorpion's burrow/hiding place or, on some occasions, actually bumps into the scorpion. Like most members of Euscorpius genus the Carpathian scorpion relies mostly on its strong pedipalps to capture prey whereas the sting is seldom used for defense purposes. Its preferred food type is comprised of isopoda individuals although if hungry or threatened it can attack and consume larger more aggressive types of prey.

THE EVALUATION OF SOME HEAVY METALS TISSUE RETENTION IN BENTHIC INVERTEBRATES AND FISHES FROM BLACK SEA ROMANIAN SHALLOW WATER

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KEYWORDS: Heavy metals, accumulation, *Mytilus galloprovincialis*, *Euxinia maeotica*, *Ponticola cephalargoides*

ABSTRACT

Heavy metals are considered dangerous substances with potential poisonous effects and a major impact on environment.

From the total quantities of these metals snooped from pollution sources, it's well known that marine water contains only a small part. Majority is held in sediment beds, and another part is metabolized by marine organisms.

Physical or chemical form of heavy metals compounds in marine water depend on redox potential, pH, salinity and the intrinsic properties of these elements. Changes of these factors determine the transformation of metal chemical form, which becomes available for accumulation in aquatic organisms which is toxic to them.

Heavy metals accumulation in marine organisms' tissues depends on taxon, morphology, feeding manner and ecophysiological adaptation on environment of species. The accumulated quantities differ from one tissue to another and depend on penetration and excretion rates (in and out from the body) and on organism physiological condition. That's why in the last decades the researchers use some species as bioindicators to determine toxicity level of an environmental pollutant according to organism stress reaction (toxkit method). These are very important because they offer information about aquatic pollution (in water column, sediments and organisms) and reduce monitoring costs and time. The savings are better used to improve prevention and decontamination activity.

The study was made in 2001-2013 period and pursued to determine the different tissue retention level of a few heavy metals in some benthic organisms: mollusks (*Mytilus galloprovincialis*, *Scapharca inaequivalvis*),

crustaceans (*Euxinia maeotica*, *Gammarus olivii*, *Idotea baltica*, *Sphaeroma pulchellum*) and fishes (*Apollonia melanostomus*, *Ponticola cephalargoides*, *Parablennius sanguinolentus*).

Mytilus galloprovincialis, *Euxinia maeotica* and *Ponticola cephalargoides* are species with maximum level of heavy metals accumulation. The tissues are hepatopancreas gland (at mollusk), gills and liver (at fishes). Fishes have accumulated much less amount of these elements than mollusks and crustaceans, which represent their food. This suggests that the vertebrates resist to such kind of contamination, probably due to a lot of efficient processes for heavy metals level control.

FEEDING ECOLOGY OF SOME CYPRINIDS IN A SOUTH-EAST EUROPEAN RIVER

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KEYWORDS: Cyprinids, Siret River basin, the dietary

ABSTRACT

Feeding ecology of a species is linked to its population dynamics, the further analisys giving us an understanding for the habitat preferences, prey selection, predation, evolution, competition and energy transfer between ecosystems. Cyprinids comprises over 2400 species in 220 genera, representing the richest family of freshwater fish. The main objective of this study is to investigate the diet, the characteristics of the prey and the feeding behavior of 11 cyprinid species: Alburnoides bipunctatus, Alburnus alburnus, Barbus barbus, Barbus petenyi, Carassius gibelio, Gobio gobio, Phoxinus phoxinus, Pseudorasbora parva, Rhodeus amarus, Squalius cephalus and Vimba vimba, captured in Siret River basin, Romania. All the fish (563 individuals) were captured by electrofishing in 3 major sampling sites on the water ecosystem during autumn of 1999, 2004 and 2005 and were measured, weighed and eviscerated. The sampling sites have been established to intercept as accurate as possible the biological and morphological aspects: aquatic vegetation (periphyton, macrophytes), riparian vegetation (shrubs, reed, herbaceous plants) and substrate structure (rockfill, gravel, sand, mud). To estimate the dietary importance of each prey category, we calculated the proportion of each food and the frequency of occurrence. We also calculated the abundance of prey and prey diversity (Shannon and Pielou index), niche breadth (Levins - Hurlbert measure) and niche overlap (MacArthur & Levins measure and Pianka index). A total number of 30 taxa of benthic macroinvertebrates were identified, summing a total of 3319 individuals. The most abundant cyprinid prey items were chironomids, ephemeropteran nymphs (Baetis spp.) and trichopteran larvae (Hydropsyche spp.), being observed a strong dominance of the Class Insecta (83,33%).

CONTRIBUTIONS TO THE ENTOMOFAUNA OF ARNICA MONTANA L. FROM NORTH-EASTERN ROMANIA, WITH NOTES REGARDING THE PRINCIPAL INJURIOUS SPECIES

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KEYWORDS: *Arnica montana*, associated entomofauna, *Tephritis arnicae* (L.), *Phytomyza arnicae* Hering, North-Eastern Romania.

ABSTRACT

In this paper we present recent data regarding the entomofauna associated with certain populations of *Arnica montana* L. from Neamt and Suceava county's – Romania. Within the project "ARMOREC" we have identified the main injurious species for this plant and also the pollinators and other pests. There are just a few invertebrate species that produce damage to the leaves, stem and flowers of arnica. We have made field observations and also produced some laboratory-reared insects from leaves and flowers of *A. montana*. In our research, we have identified that leaf herbivory is caused in particular by slugs (gastropods) mainly belonging to the Limacidae family, but also we have identified some larvae of Lepidoptera that partially defoliated the leaves of arnica in spring and summer. An important pest species (a defoliator) is *Cnephasia incertana* (Treitschke), the larvae of this polyphagous tortricid defoliate the leaves of arnica especially in spring and early summer. On the leaves are present also mines caused by the larvae of Phytomyza arnicae Hering. In many leaves we found not only the larvae of this leafminer, but also the pupae of P. arnicae. The damage to the stem is caused by some Homoptera (mainly Philaenus spumarius) and some Pentatomid bugs from the order Heteroptera. Rarely, we have identified a massive damage to the stem, most probably done by a cynipid gall wasp. The main species associated with the flower heads of *A. montana* is *Tephritis arnicae* (L.), species observed in the field and also reared under laboratory conditions at BRC "Stejarul" Piatra Neamt. This flower heads are attacked also by various species of thrips - Thysanoptera and rarely by other larvae belonging to the Lepidoptera,

Coleoptera and other Diptera. We also give some notes regarding the main pollinators represented mainly by the Hymenoptera (*Bombus* spp., *Apis melifera*, *Lasioglosum* sp. etc.), Coleoptera (*Cryptocephalus* spp., *Trichius fasciatus* etc.), Lepidoptera (*Aglais urticae* etc.) and various Diptera.

FOREST RELATED SOCIAL DEMANDS AND THE SUSTAINABLE FOREST MANAGEMENT CHALLENGEIN IAŞI COUNTY, ROMANIA

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KEYWORDS: rural populations, multifunctional, forestry, natural hazards.

ABSTRACT

Multifunctional forestry takes into consideration the whole set of goods and services that can be provided by forests and ensures the appropriate delivery to communities and specific industries to cover growing and diverse demands. It's crucial that we reach a large scale acknowledgement of the forest's contribution to water protection, climate mitigation, protecting societal infrastructure against hazards or as a raw material and energy supplier. The right measures, including financial, technical and educational support as well as the creation of multifunctional forestry based alternative activities which generate income for the communities, can help with the sustainable management of both public and private forests, greatly affected by the post-socialist transition in Romania, a period of rapid socio-economic and institutional change . A key aspect that must be regarded is the particularity of each geographic region, underlined by different authors, especially in areas like Iasi County, with a relatively low forest cover percentage, but large rural populations dependent on forest resources for their livelihood.

CATALYSTS IN WET CATALYTIC PEROXIDE OXIDATION PROCESS

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KEYWORDS: CWPO method, catalyst.

ABSTRACT

This study presents remarkable results regarding the use of the CWPO method for Fenton - like reaction. Using a small dose of catalyst (5 g/L) obtained from pillaring Na - bentonite with Fe3+, we obtained a total conversion of phenol after only 50 minutes. Several procedures have been developed to eliminate the organic contaminating compounds found in wastewaters, adsorption processes, biological processes incineration through dry way and wet oxidation (WO) processes, and from these only the WO processes show greater viability and relative efficiency when the contaminants are found in the diluted aqueous phase. One alternative of special interest is the wet catalytic oxidation with hydrogen peroxide (CWPO), which is framed within the category of the advanced oxidation processes (AOP) which have in common the generation of (•OH) radicals and the use of their oxidizing capacity. These radicals are not very selective and attack the majority of the organic molecules, causing their oxidation up to CO2 and H2O. The use of this system as an oxidizing agent for the treatment of wastewater is very attractive since the iron is an abundant and non-toxic element, and the hydrogen peroxide is not harmful to the environment, it is totally miscible in aqueous media and its decomposition products are oxygen and water which does not cause additional contamination. During reaction, ferric ions are formed which can be reacted to produce ferrous ions. The reaction of hydrogen peroxide with ferric ions is referred to as a Fenton-like reaction, Eqs.

$Fe^{3+} + H_2O_2 \leftrightarrow Fe(OOH)^{2+} + H^+$

$Fe(OOH)^{2+} \rightarrow HO_2^{\cdot} + Fe^{2+}$

$H_2O_2 + Fe^{2+} \rightarrow OH^{\cdot} + OH^- + Fe^{3+}$

$OH^{\cdot} + RH \rightarrow R^{\cdot} + H_2O$

In the given conditions the efficiency of the process allows us to achieve a remanent phenol concentration situated under the limits imposed at the evacuation (max. 0.3 mg/L) for surface waters according to HG 352/2005.

RESEARCH REGARDING ABOUT THE MONITORING OF THE LIVING CONDITIONS OF THE SAPROBIONTE ORGANISM IN THE BEGA RIVER WATER

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KEYWORDS: Bega River, saprobionte organisms, benthic

ABSTRACT

The benthic macro invertebrates are good indicators of localized conditions, as many of the benthic macro invertebrates have limited migration patterns or a sessile mode of life. Most species have a complex life cycle of one year or more. Sensitive life stages will respond quickly to stress; the overall community will respond more slowly.

In March 2015, were collected 20 quantitative samples of benthic sample in the Bega River water.

The aim of this paper is to show the living conditions of the saprobionte organism in the Bega River water and to show the links between pollution degree and the saprobionte organisms community.

Once the laboratory work was carried out, it was identified ten groups of benthic macro invertebrates: Oligochaeta subclass, Hirudin class, Lamelibranchiata class, Gastropoda class, Nematoda phylum, Diptera order (larvae of the families Chironomidae, Ceratopogonidae and Tipulidae), Isopoda order, Trichoptera order, Odonata order, Coleoptera order.

After the identification of saprobionte organisms, have been performed the density, abundance and frequency of the sample and based on these values, we can say that the upstream segment waters falls into the category of superior quality compared to the waters of the central segment, especially in the downstream segment.

OBSERVATIONS ON CONTINUING EXPANSION OF THE AREAL OF THE INVASIVE FISH SPECIES PERCCOTTUS GLENII

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KEYWORDS: dominant species, *Perccottus glenii*, new areas, reophile habitats

ABSTRACT

Within the project "Services for monitoring the conservation status of fish species from Romania" fish fauna assesment was carried out in a range of reophile habitats on the Danube river and tributaries. It highlighted the large expansion of the Perccottus glenii in flood ponds and canals in the Danube flood plains, in the "Small Island of Braila" area, in the Calafat area and on a tributary of the Siret river near Adjud. In areas where the species was located it is well represented, with all ages and sizes and it is even the dominant species, by the number of specimens in most of those locations. From past and current field observations, the species is continually expanding, colonizing new areas each year.

ANTHOCYANIN CONTENT AND COMPOSITION OF FRESH AND DRY POMACE FROM VITIS VINIFERA L. WINE CULTIVARS

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KEYWORDS: anthocyanins, *Vitis vinifera*, wine cultivars

ABSTRACT

By-products resulting from grape processing currently represent an environmental issue, their recovery and reintroduction in the food industry is one of the main goals of sustainable agriculture. Anthocyanin content and composition of grapes and their fresh and dry pomace (after processing) of three Vitis vinifera L. wine cultivars growing in Iasi vineyard, NE of Romania, was evaluated in order to identify new sustainable sources of vegetal pigments for food and pharmaceutical industries. Changes that occur in the anthocyanin profile after pomace drying were also assessed. HPLC-DAD/ESI-MS anthocyanin profile was unique and included five glucosyl forms and four acylated forms of anthocyanins, with malvidin-3-glucoside as main representative, reaching up to 870 mg cyanidin-3-glucoside equivalent/100 g in fresh skins of Cabernet Sauvignon grapes. Other acylated forms were also present in the profile as traces. Grapes processing and pomace drying resulted in a decrease in total pigment content, mainly for esterified anthocyanins (acetylated and p-coumaroylated). Feteasca neagra grapes showed a decrease in concentration of 3-glucoside forms of delphinidin, cyanidine and petunidin along with pomace drying, suggesting a low stability of these compounds. After grape pressing, fresh pomace of Merlot grapes retained the highest percentage of anthocyanins comparing with raw material (45%). Important quantities of anthocyanins justifies the extraction of these phenolic compounds from the considered material and demonstrate that grape pomace, both fresh and dry, is a valuable and accessible source of pigment, with a high nutraceutical and commercial potential for food and pharmaceutical industries.

CHANGES IN YIELD AND QUALITY CARACTERISTICS OF VITIS VINIFERA L. CULTIVAR MUSCAT DE HAMBURG UNDER THE INFLUENCE OF GIBBERELIC ACID (GA3)

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KEYWORDS: grapes, gibberelic acid, Muscat de Hamburg

ABSTRACT

Implementation of some less expensive cultivation technologies in order to increase the yield and quality of grapes and the need to bring on the market high quality grapes at low price remains an actual problem for Romania. The aim of the work was to determine the optimal dose of gibberelic acid (GA3) to be applied to achieve a higher yield and a harmonization of quality features at the vine cultivar for table grapes Muscat de Hamburg grown in Iasi vineyard, NE of Romania. Treatments were performed by spraying the inflorescences with 25 ppm, 50 ppm and 100 ppm GA3. The optimal dose of GA3 applied was 25 ppm, resulting in a higher yield and quality of grapes in comparison to untreated variant. The use of lower GA3 doses resulted in an equilibrated sugars/acid ratio, a higher accumulation of anthocyanins and phenolic compounds in berries, improving the commercial aspect of grapes by increasing color intensity and uniformity. The concentration of anthocyanins was over 40% higher compared to untreated variant and the number of seeds in berry remained constant. The treatment led to an increase in production of over 18% and to a percentage of marketed production up to 74%. This variety develope a tolerance at high concentrations of GA3. Chlorophyll a/chlorophyll b ratio in leaves varied within the range of 1.3 to 1.4, lower doses of GA3 favoring the accumulation of chlorophylls in detriment of carotenoid pigments. The photosynthetic activity was more intense causing an increasing in intracellularly CO2 concentration.

PHYSIOLOGICAL AND ANTIOXIDANT RESPONSES OF ASPLENIUM SCOLOPENDRIUM TO ELEVATED AMOUNTS OF LEAD IN SOIL

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KEYWORDS: heavy metal, pollutant, *Asplenium scolopendrium* , lead

ABSTRACT

The heavy metal lead is a persistent environmental pollutant. Our studies were carried out to evaluate physiological response and defensive potential of *Asplenium scolopendrium* exposed to different concentrations of lead added in soil as lead acetate. Plants were exposed to 0, 250, 500, 1000 and 1500 mg Kg-1 Pb+2 for 3 months. Plants possessed efficient enzymatic antioxidant defense mechanism that played important role in limiting oxidative stress. The physiological response of Asplenium scolopendrium was investigated by photosynthesis rate and assimilatory pigments (chlorophyll and carotenoids), while the antioxidant defense was evaluated by catalase activity.

After 3 months of influencing, the photosynthesis rate is significantly inhibited by high concentration of lead (1500 mg Kg-1 Pb+2). Lower concentrations of lead not produced significant changes in the intensity of photosynthesis.

Chlorophyll and carotenoid contents were not affected significantly by Pb treatment.

The activity of catalase noted an increase with increasing amount of lead in the soil (an increase of 30.86% in V4 plants, in presence of 1500 mg Kg-1 Pb+2, compared to the control plants).

These findings demonstrated that *Asplenium scolopendrium* has efficient antioxidant machinery that protect photosynthetic apparatus from damage and may have potential for phytostabilization of Pb contamined soils.

THE STUDY OF THE ENVIRONMENTAL CHARACTERISTICS OF NON-POLLUTED AREA THROUGH THE FISH FAUNA

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KEYWORDS: heavy metals, brown trout, scales, gills, muscle, ATR, AAS.

ABSTRACT

The area of Uz River upstream of the Poiana Uzului Lake is known as the non-polluted area. The study of the fish fauna may provide the environmental criteria for comparison with less clean zones. The brown trout (Salmo trutta fario) was fished from 7 points. The brown trout is well known for the fact that it doesn't migrate too far from the area they were fished. They prefer fast waters, clear, cold and well oxygenated water. Most of the time they will spend the day sheltered under the rocks and tree roots. In order to make connections between the fish and the quality of the environment the soil samples from the riverside and water was taken for analyses. The Attenuated Total Reflection method was used to analyze the brown trout scales. The water samples were analyzed by electro-chemical methods. The concentration of heavy metals was determined for water, soil and trout by Atomic Absorption Spectroscopy. These results were related to the standard admitted values. The results of ATR spectra shows that the intensity of glycogen bands from the scales and gills in brown trout fish can be used as the standard for comparison with the fish from polluted areas. The normal levels of heavy metals in the gills, muscles and scales were determined.

STUDY ON THE DEW POINT TEMPERATURE IN AREAS WITH CRYSTALLINE SCHISTS SCREE IN THE LEAOTA MOUNTAINS, 2014

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KEYWORDS: Leaota Mountains, screes, environment, vertebrates invertebrates

ABSTRACT

This paper present and discussed the results of the monitoring of the dew point values, recorded in October and November 2014, in an ecological station in the Leaota Mountains. In this station, two polls were located in areas with scree formed by epi- and mesometamorphic crystalline schists. The first survey has 0,5 meters deepth and the second was drilled up to 1m depth. In each survey was placed a datalogger wich recorded continuously for two months relative humidity, temperature and dew point value. The values of this abiotic parameters were collected every two hours. In the ecological stations we located in the Leaota Mountains, almost always we found condensation on the walls of the polls tubes placed at different depths, most often in spring or autumn or in other cold days, the dew point is more revealing regarding the recording actual amount of moisture in the air, than the relative humidity indicator.

This work is part of a larger project that seeks correlations between ecological factors (humidity, temperature and dew point) registered in various types of screes (limestone and crystalline shists) and some zoocenotic components (invertebrates). This research aim to know the importance of superficial underground environment for invertebrates or small vertebrates fauna.

ANTIBIOTIC RESISTANCE OF SOME SOIL BACTERAL STRAINS

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KEYWORDS: Antibiotic resistance, pathogenic bacterial, penicillins, aminoglycosides, tetracyclines, quinolones .

ABSTRACT

Antibiotic resistance of pathogenic bacteria is a global concern, but the antibiotic resistance or susceptibility of bacteria from different ecological niches (DebMandal et al., 2011) is very important, too. Many pathogenic bacterial strains could be found in environmental niches, and antibiotic resistance can occur even in the absence of antibiotic exposure. What is more, the bacterial resistance to some antibiotics (rifampicin for instance) can occur or can increase under aging and starved condition (Katz and Hershberg, 2013) or at high temperature (Rodríguez-Verdugo et al., 2013).

The present study investigated five soil bacterial strains regarding to their antibiotic resistance: Pseudomonas (Chryseomonas) luteola, Elizabethkingia meningoseptica (Chryseobacterium meningosepticum), Ewingella americana, Weeksella virosa, and Pasteurella pneumotropica. They are opportunistic pathogens for humans or animals; the cases of illness because of them are rare. However, they can have some resistance alleles in drug target-specific sites (Lee et al., 2010) and they can transfer these genes to pathogens. The aim of this study was to show the antibiotic resistance profile of these soil bacteria using five antibiotics from different categories: penicillins, aminoglycosides, tetracyclines, quinolones.

The disc diffusion method of antibiogram was used to establish the bacterial strains sensitivity or resistance to drugs. The results of the experiment showed a high sensitivity of tested soil bacterial strains to antibiotics. The diameters of inhibition zones ranged between 22 - 39 mm, except the zones determined by Penicillin on Pasteurella pneumotropica (only 9 mm), and Weeksella virosa (17 mm).

The bacteria from environmental niches continue to concern scientific world because of their great opportunities to change the genotypic and phenotypic profiles of some important microbial pathogens.

ANTIBIOTIC RESISTANCE OF LACTIC ACID BACTERIA FROM FOOD

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KEYWORDS: . Antibiotic resistance, lactic acid, food

ABSTRACT

Antibiotic is a natural phenomenon, but it can occur like changes in innate antimicrobial sensitivity especially in pathogenic bacteria as adaptive response to antimicrobials drugs (Poole, 2012), because of intensive use of these. The increasing prevalence of antibiotic resistant bacteria is a constant concern for the scientific community and the humankind. Development of microbial resistance to antibiotics by means of different biochemical or physiological mechanisms may compromise the successful use of therapeutic substances (Davies and Davies, 2010), and can increase morbidity, mortality and cost of treatments (Patel et al., 2012). A wide range of factors including economic impact must be taken into account in the case of multidrug resistance phenomenon (Fair and Tor, 2014).

One of the ways for transmission of antibiotic resistance from animal to human bacterial communities is the food chain, but the importance of bacteria applied in food increased regarding to transfer of resistance genes from food bacteria to pathogenic bacteria (Patel et al., 2012).

In this paper we investigated the antibiotic resistance of some bacterial strains isolated from three different type of yogurt. The Lafon Lafourcade medium was used for selection of lactic acid bacteria and the disc diffusion method was used for testing the bacterial susceptibility to five antibiotics (from betalactams, aminoglycosides, tetracyclines and sulphonamides).

The results of the experiment showed a sensitivity of the most tested lactic acid bacteria to antibiotics, except to trimetoprim. The selected bacterial strains can not due to increase the resistance of other intestinal bacteria to antibiotics.

THE "BLUE REVOLUTION" - AQUACULTURE IN BETWEEN ECOLOGICAL AND ORGANIC

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KEYWORDS: aquaculture, aquatic environment, "blue revolution"

ABSTRACT

The aquaculture, farming of diverse aquatic organisms, is one of the oldest human activities. Its impact on aquatic environment was insignificant until the adoption of performing fishfarming systems supposed by semi-intensive or intensive aquaculture. The "boom" registered in the last time in aquaculture, so called "the blue revolution" because its similarity with "the green revolution", very fast development of agriculture in the 20th century, induced many concerns on how environmentally safe is modern aquaculture. Specific scientific studies showed that the negative impact of aquaculture on the environment refers mainly to the water pollution, destruction of sensitive habitats and biodiversity changes. As a result, a new model of aquaculture has been designed. Called "ecological aquaculture", this is an alternative model of aquaculture that incorporates aspects of ecological principles in a wide social, economic and environmental context of aquaculture. Ecological aquaculture is a responsible model that includes among the structural aspects of the ecosystems and applied ecology in aquaculture, socio-economic and environmental issues, planning and durable management of the related activities. One of the newest aspects in modern aquaculture is the increasing market's interest in organic food. Yet, a definition of "organic aquaculture" is not widely accepted, to obtain organic products in aquaculture supposes a different farming system that involves basic ecological principles and exclude the use of synthetic substances. This paper is trying to bring up some aspects of the newest way of aquaculture in between "ecological" and "organic".

SOIL-EARTHWORM RELATIONSHIP REFLECTED IN LUMBRICIDAE DYNAMICS

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KEYWORDS: Lumbricidae, dynamics, maize, agrosystem

ABSTRACT

Interactions between soil fauna and their habitat can be described in "positive" and "negative" terms according to the feed-back of the ecosystem balance. The study aims to highlight the feed-back relationship between soil and lumbricidae in a maize-cultivated agrosystem (Zea mays). The objectives are to analyze the soil profile, to characterize the soil physical chemical structure, to analyse lumbricidae dynamics in terms of: density (ind./m2), frequency (%), relative abundance (%) and the correlations between density, soil texture, relative abundance and soil pH. The agroecosystem in which soil samples were collected is located in Arges county, Piedmont Cândeşti (Romania). The geographic coordinates are: 44055'06''N, 25006'28''E. Glacis relief on the right side of Cârcinov River, slightly inclined surface (10°), Eastern exhibition and absolute altitude 327m. Parental material: groundwater, 5-10m in depth, good drainage. Climate (Pitesti Weather Station) - 307m abs. alt., Tm =9.80C; T(I)=-2.40C; T(VII)=20.80C; Pm= 700mm; ET=662mm; Iar=34. Natural vegetation (underneath the oak forests), mixed with beech, acacia, hornbeam. Morphological and physicochemical characterization of soils 5 pedogenetic horizons were identified in the soil profile: Apcol (0-28cm), AC (28-49cm), C1 (49-73cm), C2 (73-90cm), C3 (90-113cm). The prevalent soil was coluvic-eutric aluvisol on coluvial-proluvial deposits, sandy loam. Lumbricides community comprised nine species classified in three environmental categories (epigeic, endogeic and anecic). The analysis shows that epigenic species have a higher share in this habitat. Statistics showed low density (ind/m2) and species frequency (%) on this type of soil. Epigeic species recorded the highest abundance. The correlation between species density and soil pH showed that the higher the soil pH, reaching neutral values, the lower the species density. The correlation between species density and soil texture was insignificant

(R=0.315; p=0.058), while the correlation between soil pH and relative abundance was significant for two months: June (R=0.240, p<0.002) and July (R=0.202; p<(0.006).

CORRELATION BETWEEN THE ACCUMULATION OF HEAVY METALS IN RIVER WATER AND FISH POPULATION

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KEYWORDS: Downstream the Galbeni Accumulation, fish scales, heavy metals, ATR

ABSTRACT

The section of the Siret River, downstream the Galbeni Accumulation, where the sampling took place, was reported as the area with the accumulation of heavy metals like Cd, Mn, Mg, Zn, Pb and Fe. It was studied six species of fish that was mentioned in this area since 1964. It was extracted 2-3 scales from the lateral line of each sample (25 samples of each species) after which the fish was reinstated in the water. The investigation was made using the method of Attenuated Total Reflection in the range of 550 cm-1 – 4000 cm-1. In the spectral range of 550 cm-1 – 700 cm-1 was identified the picks with the maximum at 552, 559, 562, 574, 575, 598 and 600 cm-1 for Prussian carp (Carassius gibelio), Common rudd (Scardinius erythrophthalmus), Kessler's gudgeon (Romanogobio kesslerii) species. These vibrations correspond to the metal-oxide bounds in ATR spectra. The vibrations of FeO, Mg-OH and PbO were identified in the ATR spectra of Scardinius erythrophthalmus (Common rudd) and Romanogobio kesslerii (Kessler's gudgeon) scales.

ECOLOGICAL SCHOOL PROJECTS – "NATURE, A FRIEND IN NEED"

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KEYWORDS: Ecological School Projects

ABSTRACT

During the school year 2014-2015, the Secondary School no. 10 Bacău was involved in the county project "Nature, a friend in need", in partenship with "Vasile Alecsandri" University of Bacău, Bacau Environmental Protection Agency, "Ion Borcea" Natural Sciences Museum Complex from Bacău and Bacău Forest Directorate. The aim of the project was to involve students, teachers, parents and local communities in ecological activities, cultivating respect to the environment and the formation of an ecological behavior.

The activities conducted involved informing students and parents on the importance of maintaining biodiversity in ensuring the balance of ecosystems by Tudor Anca and Paul Otilia, custodians from „Ioan Borcea" Museum, creating literary and art products using nature as a model of inspiration, having discussions on the importance of natural reserves in Romania with Ionos Maria from the Environmental Protection Agency. In addition to these activities, the participants made drawings, posters, essays on the importance of water to maintain life, planted trees and ornamental plants in the schoolyard, visited Department of Biology of the University of Bacău coordinated by Ureche Camelia and Nicuță Daniela.

The outcomes of the project were the education of students, the development of collaborative relationships among students, among teachers- parents-students, for developing a positive attitude toward the environment as well as a mutually beneficial collaboration between public institutions, having as main beneficiaries the students. The products of the 108 students of our school involved in the project were essays, drawings, posters, essays, Power-Point presentations, a CD with photos, whereas the most important aspects were popularized on the school notice board.