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2013

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INVITED SPEAKERS

THE THREATEN PLANET

CONSTANTIN TOMA

Member of the Romanian Academy
„Alexandru Ioan Cuza" University of Iasi, Faculty of Biology

The author presents, based on a scientific literature, some risks which threaten humanity as consequences of planet irrational exploitation, through: disforest of some areas which were been used for plant cultures, extraction of soil resources up to depletion, spreading waste all around. In other words, all these risks modify nature of their own and endangering natural balance which is basis of their survival.

Here are just some of the natural hazards: air from cities, freshwater and ocean are increasingly polluted, rain waters are more acidic, uncontrolled deforestation and soil erosion increase the frequency and magnitude of floods, alarming phenomena of global warming, melting of polar ice calottes become realities, volcano eruptions, earthquakes, as well as landslides make more and more victims.

These risks are added on the ancient anguish concerning to the future of natural resources: when the coal, oil and natural gases will run out of ? When and how it will store waste and how many mineral reserves more are deep inside ? How to stop the continuous disappearance of many plants and animals species ? Further, the author try to answer the question about how to respond to these issues, emphasizing attitudes grouped into three categories: extra-optimistics, those persons with a catastrophic attitude and those persons who seeking balance. But, the generally accepted conclusion is that we have to establish a priorities list for our next actions related to all these risks which threaten The Blue Planet.

FRUIT GROWING SECTOR IN ROMANIA: STRATEGIES AND RELAUNCH MEANS FOR PERIOD 2014-2020

MIHAIL COMAN

Research Institute for Fruit Growing Pitesti, Romania

Proposed measures:

Increase of the economic and environmental competitiveness of fruit plantations.

Restructuring / modernization of the orchards.

Support for the inclusion of plantations and fruit farms in EU quality schemes (AOP, IGP).

Setting up the producer groups/associations

Fruit growing plantings insurement.

Development of extension services, provision of advices and personalized assistance.

Training, information and knowledge transfer

Cooperative action between at least two partners within the fruit growing network.

Cooperation actions for innovation in the fruit growing sector.

Orientative steps in sub-program preparation: reparation of the sub-program text, consultations and debates, preparation of the technical assistance project to determine standard costs, inclusion of the sub-program in NRDP, sub-program approval by the Commission.

ECOSYSTEM INTEGRITY AND PERFORMANCE EVALUATION - CRITERIA, INDICATORS AND ENVIRONMENTAL STATUS

MARIAN -TRAIAN GOMOIU

C.M. Romanian Academy; GeoEcoMar;
"Ovidius" University of Constanta

Based on experience in EU FP7 research project "PERSEUS" the author presents some modern concepts of operational ecology, extremely useful to specialists in ecology and decision makers, in analyzing the complex system of systems - ecological / natural and social-economic; the target of their eco-political analysis is to offer efficient solutions to the serious problems of the Planet - biodiversity loss and ecosystem degradation, the growing need for more resources in terms of sustainable development and, last but not least, climate change effects.

At the beginning of the paper, some clarifications are made with regard to the integrity of the ecosystem and other terms used in the processes of qualitative and quantitative assessment of the state of the system of systems, such as uncertainty, self-regulation, indicators used to assess the environmental goods and services.

The term integrity is used as a synonym for the state of being intact/complete and includes several aspects, comprising:• Ecosystem health; • Sustainable development; • Current status and future of an ecosystem; • Functions and long-term processes, • Self-regulation;

• Evaluation of ecosystem goods and services; etc.. These, and still others, lead to the conclusion that the integrity of ecosystems as a science deals with the basics of natural ecosystems and their use by humans.

However, the author draws attention to a number of uncertainties inherent in the further development of both the environment and humanity and the demand for resources and environmental assets, considering that science has the task of preparing ecosystem integrity against threats caused

by uncertainties, for example: • Socio-demographic changes; • Changing demands of future generations;

• Difficulty to predict environmental changes; • Uncertainties due to complexity;

• Lack of knowledge necessary to avoid environmental risks; • The dilemma regarding the success of ecological models and theories.

In the second part of the paper, based on the provisions of the Marine Strategy Framework Directive (2008/56/EC), the author discusses descriptors , criteria and indicators characterizing the good environmental status of the marine environment and highlights their importance, as an example for a similar analysis of terrestrial ecosystems, including the fresh water environments.

According to European Commission Decision (2010/477/EU) on criteria and methodologies for determining good environmental status, 29 criteria and 56 indicators were established for a detailed description of the 11 descriptors.

The report notes that at present there are very few assessment procedures and very few indicators of Commission Decision 2010/477/EU in operation. Important procedures for assessing the environmental status have been achieved in numerous directives, such as:

- Water Framework Directive (WFD);
- Habitats Directive (HD) - Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora, or
- Convention for the Protection of the Black Sea (Bucharest Convention).

Then. the author limits himself to problems in assessing the ecological status of the marine environment, briefly presenting, as an example to follow, the descriptors and criteria contained in the Commission Decision 2010/477/EU, Annex I, Part B:

• Biodiversity D1 - Distribution of species , population size, population status, distribution, extent and condition of habitats, ecosystem structure;

• D2 non- indigenous species (NIS) - Abundance and characterization of non- native status of species , especially invasive species , environmental impact of invasive alien species and the impact of invasive non-native species on the species, habitats and ecosystems, if possible;

• D3 Fisheries – The level of fishing pressures, the reproductive capacity of the stock and the distribution of fish populations by age and size;

• D4 Trophic networks - Productivity key species or trophic groups , the proportion of selected species at the top of trophic networks and abundance / distribution of groups / key trophic species;

• D5 Eutrophication - nutrient levels , eutrophication , direct and indirect effects of nutrient enrichment;

• D6 seabed integrity - physical damage on the substrate characteristics and benthic community conditions;

• D7 Hydrographic conditions - spatial characterization of permanent changes and the impact of permanent hydrographic changes;

• D8 Concentration of contaminants - Contaminants and effects of contaminants;

• D9 Contaminants in fish and other marine organisms - levels , number and frequency in exceeding the threshold level for contaminants;

• D10 Marine waste - Waste characteristics of marine and coastal environment and the impact of waste on marine life;

• D11 Underwater noise - Underwater distribution, in time and space, of impulsive sounds of high, low and medium frequency and continuously low frequency sounds. Criteria, indicators and environmental status represent, for all of us, issues that need to be discussed, developed, managed and implemented by all those who think about the past - as a lesson, the present - as a state of uncertainty and the future – as a question mark. Whereto?

THE BIODIVERSITY EPOS

DUMITRU MURARIU

C.M. of the Romanian Academy; General Manager of ”Grigore Antipa” Natural History Museum, Bucharest

Biodiversity epopee refers to its transformations, powdered with atmospheric, geological, paleoclimatic and paleoecological “episodes” of crisis and flourishing of different groups of beings. These “episodes” started 3.8 billion years ago and continued with their evolution along geological periods up to what we understand today as biodiversity. Out of review of hypothesis and theories on the origin of life on Earth, to understand biodiversity evolution we need paleontological, systematic, biogeography, paleoecology, microbiology, botany and zoological data. On the background of basic knowledge in biology, such an approach may allow to develop new topics for future biological research, to develop new concepts and principles of the field.

Among the many theories and hypotheses on the origin of life on Earth those drawn from the field of genetics are not absent (e.g., ribotype and progenote theories), according to which either precellular, protocellular and cell stages or hypothetical structure (progenote) in which the hereditary information was determined by ribonucleic acids distinguish.

If we accept as reasonable the scenarios of the occurrence of the first vital structures (as individual unstable systems) on Earth, later episodes (captivate energy, metabolism and reproduction) were “heroic” moments in the evolution of those macromolecular complexes to coacervates or microspheres as well as in the evolution of eubacteria and archaebacteria. For approximately 300,000 years (between 3.8 – 3.5 billion years), the paleontological proves – fossils – were absent. In the next billion of year (between 3.5 – 2.5 billions) there were only prokaryotes: cyanobacteria, gram-negative and gram-positive bacteria, purple bacteria, archaebacteria – all of them without sexual reproduction, but with a lateral transfer of genes,

which determined that different sets of subdivisions to contain gene seta of other subdivisions, and so it was estimated that the concept of biological species is excluded. But taxonomists still consider archaebacteria different from the other prokaryotes due to the structure of the cellular wall and by the ribosome structure . Cavalier Smith (1998) classified archaebacteria as one of the four large subdivisions of bacteria.

Accepting that the first eukaryotes arose from a symbiosis of an archaebacteria with an eubacteria, on the one side, we find the explanations why there are combinations of the features of the two symbionts in eukaryotes, and on the other side, we understand the phenomenon of acquiring additional genomes (in primitive eukaryotes), by the unilateral transfer of genes (Margulis şi col., 2000).

Therefore, we can say that the emergence of eukaryotes by structuring nucleated cells, the acquisition of sexual reproduction by meiosis was the most dramatic and the most important event in the history of life on Earth, after a billion years of life, exclusively bacterial. In their turn, primitive eukaryotes or protists had to get cellular organelles: mitochondria – from α subdivision of the purple bacteria, and chloroplasts (in the case of plants) from cyanobacteria. On the other side, protists still have the cellular organelles absent because they lost them along evolution. About 2.5 billion years ago, it was firstly a spectacular diversification of protists. Among them, Margulis and col. (1998) recognized 36 phyla: amoebae, microsporidia, myxomycetes, dinoflagellates, ciliates, sporozoans, cryptomonas, flagellates, xanthophyta, diatoms, brown algae (some even multicellular), oomycetes, red algae, green algae, radiolaria, etc., describing three new phyla from them (Deinococci, Pirellulae, Thermotogae), which some authors consider them classes.

From the aggregation of the unicellular forms (according to some scientists, bacteria have also aggregated) resulted multicellular species, with their development climax in the three large kingdoms: Metaphyta, Fungi and Metazoa. Since Precambrian (about 635 - 542 mil. years ago) there was an

explosion of biodiversity, while after the huge marinoean glaciation a strong greenhouse effect developed, the O_2 increased in the ocean as well as the availability of nutrients resulted from the tectonics of the continental plates. Cambrian (542 mil. years) was a unique period taking into consideration the diversification of animal world, remaining as a significant episode of the diversity epos.

In Cambrian, marine world enriched with new forms of creatures, which gave rise to the current fauna: 13% sponge species; 8% species of priapulid worms, then brachiopods, molluscs, chordates – ancestors of vertebrates. The identification of some predators among them demonstrates the presence of some complex trophic relationships, since then; their morphology shows a motor and sensory high capacity. In that diversification of biodiversity, preys have evolved under pressure of predators, and predators evolved according to the available food resources; this tide interaction favoured the so-called Cambrian explosion of biodiversity.

Since there is no fossil of the animal ancestors with bilateral symmetry, it was made the reference to the plathelminth *Convolutriloba longifissura*, oval shaped with a vivid colour, which lived in shallow marine waters with sandy bottom. It was an acoelomate, with a simple anatomy (without head and mouth, the opening of the digestive system without a fixed position, and a diffused nervous system), but with cilia on the epidermis to move in water; today, it is represented by around 100 species. But, according to other scientists, the ancestor of bilateral animals had to be more complex than acoelomates. Therefore, it is not sure if bilateral animals resulted from a plathelminth or from an annelid – also – without condensed nervous system, a complete digestive tube, but with a distinct oral and anal openings.

By analyzing and comparing the genes of the current animal assembly, molecular phylogeny leads us to the simple reasoning, according to which the closer genetic structures of two species, the closely related respective species have to be. Thus, at the base of the phylogenetic tree

there are sponges (without true tissues and body symmetry plan), followed by cnidarians, devoid of organs, but with distinct tissues (diploblastic) and radial symmetry. Bilateral animals (triploblastic) include protostomes (with the gastrular blastopore transformed in oral opening) and deuterostomes (including vertebrates) in which blastopore transforms in anal orifice.

Entering Phanerozoic era (between Cambrian and Holocene) it has to be remarked mass extinction and biodiversity damage from late Permian, and another extinction, from late Cretacic. Gnathostome fish occurred since Ordovician (450 mil. years). Sarcopterygians – since Silurian (410 mil. years). Moss and amphibians date since Devonian (370 mil. years). Reptiles, since Carboniferous (310 mil. years). Angyosperms, birds and mammals – since upper Triasic (225 mil. years).

At present, 320.000 plant species, 300.000 - algae and 500.000 fungus species are described. Protozoans are mentioned with 100.000 species, and animal kingdom, with 5,570,000 species, of which 4 million are insects. The total of about 7 million species of the current living world seems to be 1/3 of all species estimated to live on Earth.

On the one hand, specialists in systematic still have a huge work to do in order to inventory unknown species, and on the other one, after gloriously overcome crises along geological eras, today, biodiversity is subject to a new crisis, accelerated by humans' activities, who are like a virus for the entire planetary organism. Prevention or early treatment of "illness" of the Earth will provide a long perspective of evolution of biodiversity, with epic stories.

PROTECT WATER FROM POINT POLLUTION SOURCES TO PRESERVE YOUR PLANT PROTECTION TOOLS AND MEET EXPECTATIONS OF SOCIETY

ROBERT IONUŢ BĂICOIANU

BASF – The Chemical Company

Concentrations of pesticides occur from time to time in water bodies, which is a well-known fact media coverage and reports from drinking water producers. Water bodies in the EU (surface water and groundwater) are regularly analysed for pesticide residues by environmental by environmental authorities, as well as drinking water producers.

As water is an essential resource for human begins and nature, it must be protected. In Europe, we have one of the strictest water protection legislation worldwide (EU Water Framework Directive), which protects both: drinking water resources and natural resources.

The increasing pressure of legislation and by society to further reduce pesticide pollution of water bodies leads to more water monitoring and consequently more pesticide findings in water. Therefore good agricultural practice is essential to avoid an increasing number of crop protection products being banned because of water issues. The loss of many products will increasingly limit the means of resistance management and increases cost of production, which is not in the interest of a productive and sustainable agriculture.

For protection of water sources when we are using plant protection products, BASF recommends responsible planning actions and resources management associated with environment protection and related also with the sustainability concept in agriculture.

BIODIVERSITY OF AQUATIC ORGANISMS

ORAL PRESENTATIONS

INVERTEBRATES BIODIVERSITY OF UZ RIVER, ROMANIA, ANALYZED BY PCR METHODS

ROXANA NECHIFOR[1,2], EMA FACIU[2], CAMELIA URECHE[2], DOREL URECHE[2], IULIA LAZAR[2]

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Aquatic macroinvertebrates are a good indicator of water quality because they can indicate whether changes in physical and chemical composition of water have occurred over time. The aim of this study was to investigate how physical and chemical factors (or groups of factors) may influence the macroinvertebrates biodiversity. Samples for biological and physico-chemical analyzes were collected from three points on Uz River, Romania,at the same time of maximum development of aquatic organisms, over the 2007-2009 period.The biological indices (IB) were calculated based on macroinvertebrates and physico-chemical analyzes of Uz River waters. A high diversity of macroinvertebrates that decreases downstream Poiana Uzului Reservoir can be observed. A maximum diversity was observed in September 2009 in the section upstream reservoir, and a minimum in July 2007 in the section downstream reservoir. Also, a Principal Component Regression of 7 different IB variables on 7 variables corresponding to the oxygen regime and nutrients was performed. The species richness index (Menhinick) was found to be high correlated with physico-chemical investigated variables (R2=0.93).

TIMIŞ RIVER (ROMANIA) FISH COMMUNITIES DIVERSITY ASSESSMENT AND MANAGEMENT PROPOSAL

DORU BĂNĂDUC, ANGELA CURTEAN-BĂNĂDUC, VICTOR STROILĂ

„Lucian Blaga" University of Sibiu, Faculty of Sciences, Department of Environmental Sciences

This study assessed the fish communities' diversity and structure spatial dynamic in the Timiş River, in correlation with the biotope characteristics to establish management measures.

The results are based on quantitative fish samples from 21 stations of the Timiş River, situated between its sources and the Serbian border (241 km). The sampling campaign was made 2012.

The fish community's diversity is expressed through Menhinik and Jost alfa, beta gama indexes. The assessed biotope variables were: altitude, slope, riverbed width, depth, substratum type, presence of pools, riffles, runs and bends, bank vegetation, channel modification, riverine land use and chemical characteristics of the water.

In the reference zone 32 fish species were identified, belonging to 27 genera and 9 families. The fish associations present a high diversity along the entire Romanian sector of the Timiş River, fact indicated by the 6,108 high value of Jost alfa index and by the 17,292 value of Jost gama index; the 2,831 value of Jost beta index reveal a relatively small structural variability.

The fish communities' diversity distribution patterns reflect the biotope conditions diversity and the human impact factors presence and degree on the Timiş River sectors.

The fish communities' diversity assessment in correlation to biotope characteristics allows the establishment of the priorities, objectives and measurements for the studied rivers biodiversity proper management.

MICRO HYDRO POWER PLANTS / BIOLOGICAL INTEGRITY

GRIGORE DAVIDEANU, IRINEL POPESCU, ANA DAVIDEANU

"Alexandru Ioan Cuza" University of Iaşi, Faculty of Biology

The paper presents data concerning the impact of micro hydro power plants on biological integrity of rivers.

The sampling was conducted during June and September 2012 on the rivers: Capra, Buda and Otic that are tributaries of theArges river, upstream the Vidraru reservoir.

We fallow the IBGN protocols using a Surber dip net for sampling benthic invertebrates in 13 sites along these small rivers. The sampling comprises two sessions, June and September. We obtained a total of 26 samples and 208 subsamples. The biologic material was identified at least at family level. There were counted a number of 9366 specimens from at least 39 different taxonomic groups. Based on these data we appreciate the biological integrity of the sites.

We also assesses the fishery productivity and biogenic capacity (bonitatesalmonicola) using the method recommended by Forestry Research Institute, Vişoianu upgraded by Cristea I.

Most of the samples was rated as good or medium from 26 samples a number of 15 was rated as good 9 as medium and only 2 as poor quality. With the exception of the sites that were directly impacted (by construction works) at the sampling moment the other show signs of rapid recovery.

It seems to be rather difficult to evaluate the environment impact of this type before the works are done and the power plants are operating at full capacity.

The study was commissioned by the Save Danube and Delta association with financial support of Environmental Partnership Foundation

RESULTS OF THE INVENTORIES OF COMMUNITY INTEREST FISH SPECIES FROM ROSCI 0006 "BALTA MICA A BRAILEI" IN 2012 YEAR

LUIZA FLOREA, AURELIA NICA

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The inventory of the ichthyofauna held in protected area named Natural Park "Balta Mica a Brailei" whose area coincides with Natura 2000 site, ROSCI 0006 "Balta Mica a Brailei", was aimed at final to assess the conservation status of community interest fish species (CIFS). According to Standard Datasheet, within the Natura 2000 site ROSCI 0006 "Balta Mica a Brailei" have reported the presence of 12 SIIC.During the period June 2012 - October 2012, in the Natura 2000 site, ROSCI 0006 "Balta Mica a Brailei", were held four fishing campaigns. The total number of fish species caught in these four fishing campaigns were 34 species from which 7 CIFS presented in Standard Datasheet plus more 2 CIFS presented in Habitats Directive and olso 6 fish species protected according Bern Convention and 462 Law. Out of the 34 fish species, 19 of them do not have any protection system.

From the quantitative point of view were captured a total of 1664 individuals, of which 37% adults and 63% juveniles. Community interest fish species (CIFS) were analyzed according the criterias used for evaluating the conservation status. Thus, CIFS caught is assigned a conservation status. Two of them were assessed as having a favourable conservation status (green): 1130 *Aspius aspius* (asp) si 1134 *Rhodeus sericeus amarus* (bitterling). Five of them were assessed as having a unfavorable-inadequate conservation status (amber): 2491 *Alosa pontica* (Pontic shad), 2522 *Pelecus cultratus* (sichel), 1149 *Cobitis taenia* (spined loach), 1157 *Gymnocephalus schraetzer* (schraetzer), 1145 *Misgurnus fossilis* (weatherfish). In contrast, five SIIC were not caught, so were assessed as having a unfavourable-red conservation status (red): *4120 Alosa tanaica* (Azov shad), *2555 Gymnocephalus baloni* (Danube ruffe), *1159 Zingel zingel* (zingel), *1124 Gobio albipinnatus* (white-finned gudgeon), *2511 Gobio kessleri* (Kessler's gudgeon).

CLASS *CHARETEA FRAGILIS* IN ROMANIA

CIPRIAN MÂNZU[1], CONSTANTIN MARDARI[2]

[1] - "Alexandru Ioan Cuza" University of Iaşi, Faculty of Biology
[2] - "Anastasie Fătu" Botanical Garden of Iaşi

The authors present a summary of data on the distribution, floristic composition and coenotaxonomic framing of phytocoenoses from Charetea fragilis Class in Romania.

ELEMENTS OF THE COLLECTION PROGRAM OF COMMUNITY INTEREST FISH SPECIES FROM ROSCI 0006 "BALTA MICA A BRAILEI" IN 2012 YEAR

LUIZA FLOREA, AURELIA NICA

"Dunărea de Jos" University of Galati, Faculty of Food Science and Engineering

Establishing collection program of community interest fish species (CIFS) from Natura 2000 site, ROSCI 0006 "Balta Mica a Brailei" represents a logical sequences of elements as follows: the objectives of study, the parameters for measuring, tools used, locating collecting stations and frequency of collection.

The objectives of CIFS study are focused in two directions. The first objective is to inventory and establish conservation status of CIFS which has like subobiectives the evaluation of CIFS distribution and assessment of conservation status of CIFS. The second objective is to develop management measures to conserve CIFS which has like subobiectives assessment of CIFS threats, development of management measures and design of monitoring plan.

Parameters to be measured refers to both metric and gravimetric parameters of fish and olso to aquatic parameters. Thus the biotic parameters that were chosen are the total length and body length, weight and age of the fish. Abiotic parameters that were chosen to measure are water level, water depth, water temperature and air temperature.

The selecting of tools for collect CIFS took into account both the heterogeneity of the aquatic environment and the heterogeneity of fish size which have dimensions of 4-7 cm (*Rhodeus sericeus amarus*) to sizes of 30-40 cm (*Aspius aspius*). Thus, the methods and tools used have varied them including: drift nets, gill nets, electric fishing, fishing traps, creels. The choice of fishing station and of collection period must covering the aquatic environment heterogeneity and choosing a monthly frequencies.

HISTORYCAL AND PRESENT HUMAN IMPACT ON TIMIȘ RIVER

BIANCA BURGHELEA

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This study presents a summary of human interventions on Timiș River from 1716 up to now that influenced gradually the Timiș River condition. These are represented of engineering works on river banks, dams, accumulations, agricultural activities and industrial and urban centers in the area.

The development of the present study was based on specialized bibliographic documentation, on research on the ground, on the collection, inventory and interpretation of the information provided by specialized institutions or residents and analysis of large-scale historical maps and satellite imagery.

The results show that in the Timiș Basin, from 1716 to the present, occured an intensification of human activities, what has induced significant changes in the lotic systems of the Timiș River basin. From 1716 to the present, was made a series of hydraulic works (engineering works, dikes along the banks, dams and accumulations), with the purpose of defending human settlements and agricultural land of floods and flood meadow, that determined changes of minor bed of the river. Also, development of economic activities and hence the settlements in the catchment of the Timiș River contributed to serious degradation of water quality and the elimination of some aquatic species.

This study take into account also some of the most appropriate measures to improve the ecological status of the Timiș River.

ANALYSIS OF PHYTOPLANKTON DEVELOPMENT FROM CIUPERCA LAKE IN 2011-2013 PERIOD

COSMIN SPIRIDON

Danube Delta National Institute of Tulcea

Since 1976 one of the major concerns of U.E. member states about the water policy was the protection of bathing water and the safety of their citizens. Ciuperca lake, due to recent civil works that rehabilitated the quality of the water, is nowadays one of the recreational area of Tulcea city, that is used by citizens as beach and bathing area.

Further, on the one hand due to scientific development of the water assesment methods and the evaluation of water quality and on the other hand due to the improvement of the management programs, occured the necessity of reviewing the bathing water legislation to ensure consistency with the UE Environment Action Program, the Sustainable Development Strategy and the Water Framework Directive.

A program developed with the support of Danube Delta National Institute for Research and Development started as a weekly sampling program for monitoring the quality of water from Ciuperca Lake. This program focuses mainly on phytoplankton development trend . The results show that chlorophyll-a concentration increases during the investigated period and there is a high amount of cyanobacteria in the target-lake.

POSTERS PRESENTATIONS

STUDIES ON ANADROMOUS STURGEONS IN LOWER DANUBE RIVER

ANDREI CIOLAC, DANIELA CRISTINA IBĂNESCU, ADINA POPESCU

"Dunărea de Jos" University of Galaţi, Faculty of Food Science and Engineering

Some ecological aspects related to migration and reproduction of three sturgeon species: beluga (*Huso huso* Linnaeus, 1758), Russian sturgeon (*Acipenser güldenstaedti* Brand, 1833) and stellate sturgeon (*Acipenser stellatus*, Pallas, 1771) were studied several years and compared with previously reported data on the Romanian Danube River and other areas. Results of many fishing campaigns were analyzed and compared in order to find out significant aspects of anadromous sturgeon migration in the Danube River. New biometric data, particular aspects of reproductive behavior and some environmental indicators such as water level and water temperature were put together in order to obtain an exhaustive point of view on actually issues about the decreasing number of the sturgeons that migrates in the Danube River for reproduction.

GEOGRAPHICAL AND HUMAN IMPACT ELEMENTS INFLUENCE ON THE FISH FAUNA DIVERSITY OF THE OLTEȚ RIVER

DORU BĂNĂDUC, MIRCEA MĂRGINEAN

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The Olteţ River basin is situated in the south-south-west part of the Romanian national territory, flowing from north to south in its upper and middle sectors and from north-west to south-east in its lower part, passing three administrative units namely Gorj, Vâlcea and Olt.

The Olteţ River fish fauna was studied on only 20% of its length by Bănărescu in 1964, in its very low sector, a sector which suffered an intensive human impact in the last half of a century.

This intensive (two yers long sampling campaign) and extensive (the distance between the sampling stations are between 1 to 3 km) ichthyological study, offers for the first time a complete data base, for this important Carpathian river. The fish communities similarity in the 56 sampled lotic sectors along the Olteț river, based on the relative abundance of the component fish species, reveal the relation among the ichtyologic zones (Bănărescu, 1964) and some specific habitats presence, related also with different categories of geographical units.

From the perspective of the local fish ichtiofauna associations, the upper sector represent the upper trout zone in a relatively pristine area.

The upper-middle river sector have a close degree of similarity because the local fish ichtiocenoses react to the effects of the riverbed exploitations. The lower-middle river sector have a close degree of similarity because the local fish ichtiocenoses react to a certain communal (Barza, Soparlita si Falcoiu) human impact in a low land habitats type.

The most extreme lower sections represent the most typical habitats for the plain habitats of Olteţ River, the missing sector is caused by the human impact in the proximity of locality Fălcoiu.

PATTERNS OF DIVERSITY OF EPHEMEROPTERA, PLECOPTERA AND TRICHOPTERA ASSEMBLAGES, AND IMPLICATIONS IN SUSTAINABLE MANAGEMENT OF RIVERS – VIŞEU WATERSHED CASE STUDY

ANGELA CURTEAN-BĂNĂDUC, HOREA OLOSUTEAN

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The study analyzes the influence of some biotope parameters, such as hydro-morphologic characteristics, channel modifications, bank vegetation and riverine land use, on the diversity of Ephemeroptera, Plecoptera and Trichoptera (EPT) larvae communities, in the case of Vişeu Watershed. The results are based on quantitative samples of benthic macroinvertebrates (290 samples), taken in June-September 2007, from 29 stations of the studied zone. The relations between EPT diversity (expressed through Gini-Simpson index) and biotope characteristics were analyzed using Correspondence Analysis. The results show that higher Plecoptera diversity is associated with river sectors with natural or quasi-natural riverine lands, with natural banks dynamics, and with substrate characterized by large cobbles. A higher Ephemeroptera diversity is found in river sectors characterized by natural bank dynamics, and with natural or quasi-natural riverine terrains. Trichoptera have a higher diversity in river sectors with natural bank dynamics and with substrate with boulders. Riverbed embankments, mineral substrate exploitation and forest exploitation from the hillsides of the river basin cause a loss in the diversity of EPT communities.

The simplification of the structure of these communities has a negative impact on the self-regulating capacity of the lotic system, several steps are necessary in order to preserve the diversity of EPT communities in the analyzed types of Carpathian rivers: preserving natural morphodynamics of the river bed, limiting substrate exploitation, avoiding changes in the substrate structure due to the extraction of boulders and large cobbles from the riverbed, preserving riparian tree vegetation on the river banks.

ALGAL INDICATION OF POLLUTION IN THE ANTHROPOGENIC AQUATIC ECOSYSTEM CARJA 1

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The Carja 1 is an anthropogenic aquatic ecosystem from from Moldova SE supply Prut river.In present investigation algal communities which are used as indicator of organic pollution were reported five stations of Carja 1 farm fish.

The different genera of planktonic algae were observate along with the physico-chemical parameters like DO, BOD, nutrients viz. nitrogen (nitrate, nitrite, ammonia) and phosphorous in May 2010.

Total 18 genera and 29 species have been indentified, among these 13 species belonged to Cholorophyceae, 5 species to Cyanophyceae, 5 species to Bacillariophyceae, 5 species Euglenophyceae and 1 species to Dinophyceae.

Two biological indices, viz. algal genus pollution index and saprobic index, were adopted to classify the water quality around the power plant in comparison with the measured physicochemical water quality. The total score of Algal Genus Pollution Index of station CI, CII, CIII, CIV, CV, CA/E were 15, 15, 17, 8, 7 and 9 respectively. From the quantitative point of view, the dominant species are β – mezosaprobic in all sampling stations.

ICHTHYOFAUNA ASPECTS ON THE ROMANIAN DANUBE SECTION WITHIN JOINT DANUBE SURVEY 3

OLIVER CRISTIAN DUMITRAŞCU

"Romanian Waters" National Administration,
Jiu Water Basin Administration

Between 8 and 24 September 2013, within *Joint Danube Survey 3,* the largest expedition in the world that takes place every six years, on the Romanian section of Danube, the national team performed investigative monitoring and research activities on the ecological status of fish fauna.

On the Romanian section, the 6 specialists from national team achieved fish sampling on 11 sections: Coronini, Simian, Gruia, aval Koslodui, Zimnicea, Giurgiu, Chiciu, aval Braila, Reni, bratul Chilia (Periprava-Valkovo), bratul Sulina (Sulina).

Ichthyofauna analysis was made in several transects for each section, both during the day and at night, even consecutively. A standardized method was applied for fish fauna sampling with electricity and was use a Scubla EL65II 7.5 KW fishing aggregate.

In conclusion it may be emphasized that the inventory operation within the Joint Danube Survey 3 it was far more complex than the Joint Danube Survey 2, resulting in, for example, capturing of several benthic species: *Bentophilus stellatus*, *Sabanejewia bulgarica*, *Zingel zingel*, *Zingel streber*, but also pelagic species: *Pelecus cultratus* or even semi-parasitic species: *Eudontomyzon mariae,* resulting that the biodiversity on the Danube lower section it is still close to historical natural parameters.

COMPARATIVE STUDY ON PROGENY'S EARLY DEVELOPMENT IN FOUR MATING COMBINATIONS OF THE DANUBE STELLATE STURGEON (*Acipenser stellatus*, Pallas, 1771)

IULIA RODICA GRECU[1], VICTOR CRISTEA[1], DESIMIRA DICU (STROE)[1], LORENA DEDIU[1], ANGELICA DOCAN[1], OANA DOROJAN (VÂRLAN)[1], MARILENA MAEREANU[2]

[1] "Dunărea de Jos" University of Galati, Faculty of Food Science and Engineering; [2] Kaviar House Company

Sturgeon farming is an important issue in the national aquaculture field, both from technico-economic and natural stocking protection points of view. Planning the hatchery sturgeon broodstock in a proper manner, for long term, must be one of the breeder goals to prevent the loss of genetic variance in farmed populations, especially when few parents are available. Genetic aspects of the broodstocks and their progenies must be analyzed and recorded, for further responsible breeding programs, in parallel with the phenotype expression (length, weight, growth rate, feed conversion etc.) during the ontogenetic development. The goal of our study was to determine useful differences among the offspring in the early life stages was. It was analyzed the embryonic and larval development of the Danube stellate sturgeon's progeny of four mating combinations of spawners after an artificial reproduction accomplished in Isaccea Reproduction Station of Kaviar House Company during May 2013. Histological observations were performed at relatively low magnification under a stereomicroscope with bright field transmitted illumination using the descriptions of Detlaff T.A. et al. (1993) and Snyder D.E (2002). Developmental processes as growth, tissue differentiation and physiological changes were recorded, in the relationship with time (τ, hours) over 5 days after eggs fertilization, in the same hatchery conditions, simultaneously for the four batches. Obtained data will be integrated into a large study conducted for a breeding programme of sturgeon species in order to produce superior offspring for grow-out.

RESEARCHES CONCERNING ESTABLISHING WATER QUALITY THROUGH INDICES OF ALGAL COMMUNITIES

DANIELA CRISTINA IBĂNESCU, ADINA POPESCU, ANDREI CIOLAC

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The phytoplankton communities are sensitive bioindicators of aquatic ecosystems reflecting their response to eutrophication, acidification and organic pollution.

By using the functional groups of algal communities after Reynold (2002) and Bilous et.al. (2012) and diversity indices we tried to evaluate the water quality of the Cârja farm, Vaslui County.

The analysis of diversity was done by calculating indices such as Shannon - Wiener (H'), Shannon evenness or Pielou index (J') . Simpson diversity index (1-D), Margalef index (M), Berger - Parker index (d).

The research on phytoplankton taxonomic structure led to the establishment of aquatic ecosystem studied which is the identification of 29 species belonging to five taxonomic groups: Chlorophyceae (57%), Bacillarophyceae (16%), Euglenophyceae (15%), Cyanophyceaea (11%) and Pyrrophyceae (1%).

The values obtained indicate a good diversity of the phytoplankton communities in fish farm Cârja. Using algal indicators (split into trophic guilds) to identify the trophic level of the ecosystem as being mesotrophic.

PRELIMINARY CONSIDERATIONS REGARDING THE *PERCCOTTUS GLENII* MITCHONDRIAL CONTROL REGION VARIABILITY

MONICA LUCA[1], MITICĂ CIORPAC[1], DANIELA NICUŢĂ[2], DOREL URECHE[2], LUCIAN GORGAN[1]

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The monospecific genus *Perccottus* encompasses a group of fish of reduced size and low economical value, reasons for which it hasn't got scientist's interest until the last decades of the XXth century, when it became an invasive species in Eurasia, and, later, in Europe. Many morpho-ecological aspects have been described so far for *Perccottus glenii* and some of them make it a real threat for the fresh water ecosystems. Still, little molecular data has been obtained so far for this species and it is all-important to also assess its genetic variability in and between populations in order to have a better image on the survival and the proliferation capacity of *Perccottus glenii*. The aim of this study is to investigate the diversity of individuals coming from two different *Perccottus glenii* populations from the Siret River, analysing a 400 bp fragment from the control region (D-loop) of the mitochondrial DNA. The samples, belonging to the two different populations, were collected in 2012 and 2013 respectively, the first ones being preserved in formamide solution, and the second ones in absolute ethanol. All samples were processed from the DNA extraction to sequencing, with small differences of protocol according to their preservation method. DNA was extracted using the phenol-cloroform-isoamyl alcohol protocol, with a three days PBS, respectively sodium hydroxide pre-wash in the case of the formamide preserved samples. PCR was performed in a 25 µl reaction volume and the products were reamplified for the formamide preserved samples. DNA was column purified and its concentration was then spectrophotometric quantified. The samples were sequenced both for the forward and the reverse primers. For the formamide preserved samples, the ones washed with PBS held better sequence results than the ones washed with sodium hydroxide. The DNA variability was assessed using the Mega 5 software. Further studies will provide more data required for a better image of *Perccottus glenii* phylogeography and genetic diversity.

THE WATER QUALITY OF THE TRIBUTARIES OF OLT, JIU AND IALOMIȚA RIVERS IVESTIGATED TROUGHT THE MACROINVERTEBRATES

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This study was conducted in 23 stations in order to determine the quality of water from tributaries of three rivers (Olt, Jiu and Ialomița). The samples were collected using an standard aquatic sweep net with a mesh size of 250 μm, during July - August 2011.

Invertebrates found in the present study have different ways of reaction to the pollutants, some of them are resistant to pollution while others are sensitive even to a simple change of any physico-chemical parameter of the water. The latter ones are called water bioindicators and depending on their number we can say if that water is clean or affected by anthropogenic factors.

After processing the samples in the laboratory a total number of 15 groups of benthic macroinvertebrate were determined. The individuals found in the collected samples are mainly part of the following groups: Ephemeroptera, Plecoptera, Trichoptera, Oligochaeta, Diptera (Chironomidae, Ceratopogonidae, Simuliidae), Coleoptera, Amphipoda, Hydrachnidia, Odonata, Heteroptera and Collembola. Individuals of the bioindicator group EPT, consisting of orders Ephemeroptera, Plecoptera and Trichoptera, were found in larger number compared with those more resistant to pollution, indicating a good water quality in all three rivers. The present data shows that the river with the best water quality is Ialomița followed by Olt and Jiu but a higher number of samples is needed to certify this statement. The great diversity of benthic macroinvertebrates found in all sampling points together with the good water quality indicates that the rivers are healthy ecosystems in the studied area.

THE STUDY OF POLYCHAETA FAUNA (POLYCHAETA-ANNELIDA) ASSOCIATED TO MARINE SULPHUROUS SPRING HABITATS FROM THE MANGALIA LITTORAL OF THE ROMANIA BLACK SEA

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The study of polychaet fauna in the sulphur springs habitats was accomplished based on a number of 15 samples collected during summer months from the spring area and from a distance of 1-2 from it (infralittoral from Mangalia and Obane). These habitata are localised in the southern extremity of the Romanian littoral, both in marine area (low depth Black Sea littoral) and in the continental area (Obane-Mangalia). Particular conditions of these habitats have determined the selection of a polychaet communities, which constitutes a heterogenous group both taxonomically and ecologically; Palpata is the dominant group: 8 species Aciculata-Phyllodocida and 4 species Canalipalpata; from Scolecida group only one species was identified, belonging to Capitellidae faniliy; we mention the presence of two species that we consider needing further studies from the ecological and taxonomical stand point: *Stygocapitella subterranea* and *Ctenodrilus serratus*; if the first species has reaches a density value of 41 667 indv/m^2 in May, in the continental zone (Obane), the second species was identified in the same habitat, in the same month, based on a number of only 7 individuals (absent in July and August). Analysing form the ecological standpoin, vagile and detritivorous or optional omnivorous species are dominant, only 3 species being exclusively predator; juvenile forms, dominant as density in the prevernal season, are encountered in the low depth infralittoral, at a distance of 1-2 m from the spring area (4880 indv/m^2 Nereidae, 560 Sylidae, 1449 indv/m^2 Spionidae), while the adult forms are dominant close to the spring area both in prevernal and vernal seasons.

CONSIDERATIONS REGARDING ZOOBENTHOS AND MACROPHYTOBENTOS FROM SOME MARINE SULPHUROUS SOURCES (NATURA 2000 HABITAT CODE 1170-3) AND FROM „OBANE" SULPHUROUS PONDS, IN THE SOUTH OF DOBROUDJA

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Formed on sublittorale organogenic concretions of shallow waters, their source being at 350 - 400 m depth, marine sulphurous springs from the south part of the Romanian littoral are included in Natura 2000 network as protected areas with habitat code 1170 – 3. They represent special aquatic ecosystems which could be considered having selective living conditions for flora and fauna. In the same time, near Mangalia, are some continental ponds – „obane" – which presents similar properties with marine sources, their waters having a high temperature, above 20 ºC, a great concentration of H_2S and decrease values of O_2 concentration. These environmental conditions create in studied ecosystems extreme properties in both researched zones - marine sulphurous infralittoral habitats and in obane, too. Some chemical and biological data of two mesothermal marine sources and sulphurous obane will be presented in the study.

The paper will show a qualitative structure of invertebrates populations living in or nearby suphorous waters, both in the sea and in obane. Comparative quantitative data, as taxa number and a seasonal abundances dynamic of benthic inverstebrates populations will be analyzed. Frequently groups as Polychaeta, Oligochaeta, Bivalvia, Harpacticoida and Ostracoda seem to have specific physiological adaptations that allow them to withstand these extreme conditions nature.

Data regarding macroflora observed on the rocks in vecinity of marine sources, or on the ponds banks will be highlighted.

DATA ON BYCATCH, STRANDINGS AND SIGHTINGS OF BLACK SEA CETACEANS SITUATION AT THE ROMANIAN COAST, FROM 2010 - 2012

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In Black Sea the cetaceans are represented by three species, *Phocoena phocoena relicta*, *Tursiops truncatus ponticus* and *Delphinus delphis ponticus*. The main threat and cause of decline for the Black Sea dolphins are the fishing nets, so-called bycatches.

Mare Nostrum NGO has developed a programme for cetacean monitoring, through which colects data about sightings, bycatches, strandings during sea and land surveys and also puting the bases for the first catalog of cetaceans photo-identification. The data colected for the last three years are presented in the present study.

The programme came as a base for implementing the recommendations and resolutions of ACCOBAMS, such as: recomandation 1.2 of ACCOBAMS Scientific Commitee on bycatch in response to Implementtation Priorities no. 2 and 3 adopted by First Meeting of Parties; resolution 2.21 of Second Meeting of Parties; resolution 3.11 of Third Meeting of the Parties and also many other international agreements and conventions as for reducing the impacts of human activity on cetacean populations, and according to the National Action Plan for Cetacean Conservation.

STUDY OF MACROINVERTEBRATE DIVERSITY AND SEASONAL DYNAMICS FROM BĂDĂRĂU LAKE – IAŞI

MARIUS ANDREI RĂU, GABRIEL PLAVAN, ŞTEFAN ADRIAN STRUNGARU, MIRCEA NICOARĂ

"Alexandru Ioan Cuza" University of Iași, Faculty of Biology

The aim of this study is to analyze the macrozoobenthic organisms with an important role in determining water quality and pollution levels and to compare the number of species depending on selected sampling sites of Bădărău Lake.

In the investigations carried out on Bădărău Lake during 2011-2012, three sampling sites were established as follows: First Sampling Site (Inflow), Second Sampling Site (The forest) and Third Sampling Site (Dam - outflow). A total number of 30 taxa were recorded.

Gammarus pulex and chironomids were most abundant at all three sampling sites.

The biological analyses carried out for Bădărău Lake indicated chironomids and *Gammarus pulex* as eudominant, and *Baetis* spp. as dominant species.

Based on the Dzuba Index of ecological significance, macroinvertebrate species from Bădărău Lake fall into the following categories: accessories taxa (*Asellus aquaticus*, *Baetis* spp.); characteristic taxa (chironomids); accidental taxa (*Valvata naticina, Dytiscus* spp*., Limnephilus* spp*., Ranatra linearis*, Family Psychodidae).

COMPARISON BETWEEN THE MACROALGAL QUALITATIVE STRUCTURE IN NORTHERN AND SOUTHERN PART OF THE ROMANIAN BLACK SEA COAST

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The present paper provides recent information (year 2012) on the qualitative macroalagae structure at the Romanian coast of the Black Sea, both northern and southern sector, pointing out the differences between these two areas regarding algal development. The ecological factors that influence the development of macrophytes along Romanian shore are presented.

The study was extended both in cold and warm season, to highlight the seasonal evolution of the species and to provide an overview on the current macroalgae situation at the Romanian Black Sea shore.

Also the pressures (both anthropogenic and natural) that have negatively affected the development of macroalgal flora over time, leading to decline (in some cases irreversible) of some species are described. Key species *Cystoseira barbata* is analyzed and highlighted its role for marine communities. It is also presented the current situation of same rare macroalgal species, important to the marine ecosystem: *Lomentaria clavellosa, Hildenbrandia rubra.*

THE AQUATIC MACROPHYTES ON THE LOWER DANUBE

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The presence of the aquatic vegetation, besides the creation of normal conditions for growth of juvenile fish and other aquatic life intended, also constitutes a source of their food, constituting together an important organic fertilizer.

Macrophytes sampling is performed in order to establish quantitative and qualitative structure of macrophyte vegetation, especially in the littoral area.

Sampling of macrophyte vegetation was conducted during their maximum development, represented by July, the hottest month of the year.

All macrophyte species identified belonged to the same class – *Monocotyledoneae* - but different families, respectively - *Cyperacee, Butomaceae* and *Potamogetonaceae*.

Through staggering in space the macrovegetation depending on water depth, the three genera of identified plants were: Harsh flora - *Genus Scirpus*; Emersion flora with aerial leaves - *Genus Butomus*; Emersion flora with floating leaves - *Genus Potamogeton*.

THE EFFECTS OF ANTHROPOGENIC ACTIVITY OVER ICHTHYOFAUNA BIODIVERSITY FROM LANDSCAPED AREA OF SIRET RIVER

FERDINAND PRICOPE, IONUŢ STOICA,
KLAUS WERNER BATTES

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This paper presents the modification of the Siret River Basin ichthyofauna under the influence of hydrotechnical facilities, through quantitative and qualitative monitoring of fish fauna of three dam lakes on the upper and middle basin of the river (Rogojeşti, Bucecea and Galbeni).

On established species list, numerical and biomass abundance in each basin and on calculated the relative numeric and biomass abundance of fish species in investigated basins. The results were compared with literature data regarding the composition and structure of fish fauna of the Siret river and lakes during the period 1960-2000.

DATA CONCERNING THE SPREADING AREA OF *THYMALLUS THYMALLUS* L., AND *LOTA LOTA* L. IN THE UPPER AND MIDDLE STRETCH OF THE RIVER MURES IN 2009-2011

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A lot of the freshwater fish species are of a great importance, but their conservation status has changed in the last few decades comparing with that of the past. Moreover, the quantitative data (relative abundance, stock) are lacking.

Thymallus thymallus is listed as protected species under Annex 5 of the EC Directive 92/42 EEC and of the Bern Convention on the Conservation of European Wildlife and Natural Habitats. Therefore, the aim of this study is to provide quantitative data and recent information on the distribution of *Thymallus thymallus* (European grayling), and *Lota lota* (burbot) in the upper and middle stretch of the River Mures, during 2009-2011.

Fish catches were carried out in 2009-2011 in the upper basin of River Mures as well in the middle basin of River Mures (Mures, Gurghiu, Tarnava Mica, Tarnava Mare). The biological material was sampled by electrofishing from 137 sampling sites (107 in 2009 and 30 in 2011).

Our study, based on the ecological analysis, revealed some important differences comparing with the situation in the past (Bănărescu, 1964). The European grayling (*Thymallus thymallus*) was found in 22 of the sampling sites, recording a frequency of 16.05%. The numerical stock has recorded low values (0.55 – 53.46 ind./100 sqm) both in the upper and in the middle stretch of the River Mures. The values of the weight stock ranged between 27.33 g/100 sqm and 2204.22 g/100 sqm.

The burbot (*Lota lota*) was found only in 10 of the sampling sites, all of them placed in the upper basin of River Mures, recording a frequency of 7.29%. The numerical stock has recorded a low value (18.16 ind./100 sqm). The amount of the weight stock is 1212.49 g/100 sqm. Compared to the situation recorded by Bănărescu in the second part of the last century, the distribution of the two species has changed meaning that they have a more limited area of distribution. That means that a high attention is requested and special protective measures to prevent species decline.

RESEARCH ON STRUCTURAL CHANGES IN FISH POPULATIONS INDUCED BY HUMAN IMPACT ON THE BISTRITA RIVER

IONUŢ STOICA, KLAUS WERNER BATTES,
FERDINAND PRICOPE

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Bistrita River, the most important tributary of the Siret, by the middle of last century had a very rich and abundant fish fauna. After 1960 the middle and lower course were set a series of a reservoirs and dams, the river is changed radically. The old bed of the river was fragmented by the construction of dams upstream of Piatra Neamt, to Lake Izvorul Muntelui – the Bistrita River and to Lake Tasca – the Bicaz River. Downstream from Piatra Neamt to Buhusi is an area untouched hydrotechnical and Buhusi downstream of the river was fragmented by the occurrence of five lakes.

The human impact on aquatic ecosystems is due to river water pollution. Chemical pollution has led to the total elimination of many native species in affected ecosystems and the construction of dams has caused decreased of stock and limitations areas of distribution of many species. Downstream of Piatra Neamt, Bistrita old bed of the river taken over all sources of pollution from Piatra Neamt, chemical platform Savinesti – Roznov, Buhusi şi Bacau.

This paper aims to highlight the degree of damage to fish fauna by the fragmentation river Bistrita by the appearance Bicaz Lake and the lake from upstream – Poiana Teiului built on the floodplain on the river and inaugurated in 2005.

FISH DIVERSITY INDEX OF CASIN RIVER FOR SEVERAL PERIODS FROM 1998, 1999, 2004 AND 2008

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The biodiversity, which means the variety of life correlated with environmental is important in order to characterize the habitat. Alpha diversity and the richness from a habitat are properly for all species, and can be estimated by the ratio between the number of species and individuals, and also by the heterogeneity of the distribution of individuals or biomass on systematic units. Alpha index, Berger-Parker Dominance, Simpson's diversity index, Hill's index, Margalef index and McIntosh index at Casin River fish population at 1998, 1999, 2004 and 2008 were calculated. After calculating *alpha* and *Berger-Parker Dominance (1/d)* indexes it has been found that the alpha index had the biggest values in the following points: “Casin laterally Scutaru” and “Casin bridge for Pârvulesti” while the *Berger-Parker Dominance (1/d)* index recorded maximum values in the points: “downstream of Casin” and “upstream Bucium”.

BIODIVERSITY OF TERRESTRIAL ORGANISMS

ORAL PRESENTATIONS

THE WOOD FUNGI-FITOPATHOGEN AGENTS INVOLVED IN LOST OF BIOMASS IN O.S. GÂRCINA, NEAMT COUNTY

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„Ştefan cel Mare" University of Suceava, Forestry Faculty

The thematic of the paper is motivated by the great spreading of the wood fungi in the Neamt County mixed forests, considered the main factors that affect the quality of wood. The studies were effectuated in the Gârcina, Neamt County (lots 95A, 95B), the basic criterion of the chose being determined by the proportion of trees affected by the wood fungi which can affect together with other biotic and abiotic factors the quality of wood. The studies made bring a series of data regarding the amplitude and the intensity of the damage produced by the wood fungi especially concerning the attack of the *Hereobasidion annosum* (Fr. Bref.) and *Nectria ditissima* Tul. dominant species in the studied area.

THE INVENTORY AND MONITORING OF *RHODODENDRON MYRTIFOLIUM* SCHOTT ET KOTSCHY, ON REȚITIȘ PEAK, CĂLIMANI MOUNTAINS

ANCA MĂCIUCĂ, MARIA CARCEA

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The Călimani Mountains National Park is part of the Natura 2000 network and the main goal of its management plan it is to preserve biodiversity. In this context, the present study proposes the initiation of an inventory and monitoring programme of the *Rhododendron myrtifolium* species on the Reţitiş Peak. In this purpose a network was generated, every point of the network was localised in the field with a GPS and data regarding the rhododendron, mountain pine, and other associated species were gathered. Using this data base, several maps were generated: the species distribution map, the cover degree maps for rhododendron, mountain pine, common juniper, bilberry and cowberry, and the distribution maps for rhododendron and mountain pine. The study highlights the threats to the rhododendron habitat too, and proposes some management measures for its conservation.

THE STEPPE FLORA AND PLANT COMMUNITIES OF ENISALA NATURAL RESERVE (TULCEA COUNTY)

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Enisala Natural Reserve is a nature reserve legal established by O.M. no. 2151/2004, situated in the North Dobrogea Plateau, in Tulcea county, on the territory of Sarichioi village, about 12 km east of the town of Babadag town. It has an area of 57 hectares and is represented by a limestone rocky hill about 90 m elevation bounded in the east by Razelm Lake and in the rest by farmlands. It is a nature reserve which provides very nice views of Razelm Lake,Babadag ouk forest and surrounding areas. On the rocky plateau of the hill, the ruins of medieval Enisala (Heraclea) fortress occur, built about 700 years ago,during the Byzantine Empire, by the Genoese merchants, in military purpose and surveillance of roads on land and water, in a time when the Razelm was still a bay of the Black Sea, communicating with the sea through the Dunavăț and Cernet apertures. In the natural reserve can be found specific plant associations of stony steppe and loess steppe, in the frame of some habitats of community interest. Stony steppe plant associations, very valuable in terms of conservative importance, belong mainly to *Pimpinello - Thymion zygoidi* Dihoru 1969 alliance.The loess steppe plant communities, most common, belong to *Festucion valesiacae* Klika 1931 and *Artemisio - Kochion* Soo 1959 alliances and tobotanical order *Festucetalia valesiacae* Br.-Bl. et Tx.1949. On rocks and limestone outcrops of the upper half of the hill develop a rich steppe flora, consisting of over 20 rare species of flora, including protected species in Europe. The paper will present an updated floristic inventory of the natural reserve, the habitat types and the most important steppe plant associations identified in the studied area. Some considerations on bioforms, phytogeographical elements, ecological and sozological categories,will also be specified.

HABITATS AND PLANT ASSOCIATIONS OF CONSERVATIVE INTEREST FROM DANUBE DELTA BIOSPHERE RESERVE – SULINA BEACH

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Sulina beachis part of the coastal area of the Danube Delta Biosphere Reserve which has a length of 164 km between Musura Bay and Cape Midia. The wide beach (80-100 meters), consisting of fine sand, covers about 3300 meters in the left and right side of the channel Busurca which opens into the sea. Floristic and phytocenologic observations were made only in the Sulina beach from the north of Busurca channel over a length of approximately 1300 meters until embankment that separates the beach by the silt brought by the Sulina channel of Danube. Some plant associations and habitats of conservative interest in accordance with Directive 92/43/EEC (habitats 1210, 2110 , 2160) occur on the wide and low sand dunes of Sulina beach. A lot of plant associations of which conservation is important for European Community are well represented in the sandy beach area: *Salsolo ruthenicae - Xanthietum strumarii* Oberd et Tx. 1950,*Cakilo euxinae - Salsoletum ruthenicae* Vicherek 1971,*Convolvuletum persici* (Borza 1931) Burduja 1968, *Elymetum gigantei* Morariu 1957,*Secali sylvestris - Brometum tectorum* Hargitai 1940, *Aperetum maritimae* Popescu et al. 1980, *Calamagrostio epigejos - Hippophaetum rhamnoidis* Popescu et al., 1986. Several rare plant species have been identified in the studied area, some of them represented on Sulina beach by large local populations: *Convolvulus persicus, Scolymus hispanicus, Cakile maritima* subsp. *euxina, Argusia sibirica, Glaucium flavum, Petasites spurius, Polygonum mesembricum*, *Corispermum nitidum*, etc. The main risk factors of the psammophile species and plant communities are anthropogenic, such us: beach planning work , antropofile species (ruderal plants and segetal) bring on the beach by the humans, invasive species, etc.

The paper will describe the characteristics of sand dunes habitats and plant associations including their floristic composition, the habitats conservation status, the habitats trend, the pressures and risk factors which threaten species and habitats.

FLORA OF THE LOWER BASIN OF THE RIVER TROTUS

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This paper brings a contribution of 259 species from the inferior basin of Trotus River and reports the restoration of a habitat with steppe-like vegetation. The overall number of species amounts to 862 species belonging to 416 genera and 95 families. Out of the steppe elements identified in the period 1970-1972 in Dochia Meadow, many species are currently missingas a result of human activities in the area. On the slopes facing the other side of the Trotus River near Adjud, in areas where vine culture was widespread before 1990, a rich habitat of Stipa capillata and Centaurea orientalis has been restored. The floristic list comprises a large number of weeds, of which some are invasive and indicating the use of land for agricultural purposes. Steppe species are infrequent, but indicative of the migration corridor along the lower valleys of large rivers. There is a small number of rare and protected species. Although this area is circumscribed to the perimeter of an avifaunal reserve, any future monitoring and restoration activities for small patches of vegetation that are worth protecting are welcome.

GROWTH AND ANTIOXIDANT RESPONSES IN *TRITICUM AESTIVUM* L. UNDER THE TREATMENT OF PESTICIDES ON SEEDS

DANIELA NICUŢĂ, IRINA LUMINIŢA IFRIM,
IULIA MIHAELA LAZĂR

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Pesticides might cause adverse effects on the environment and even on the living organisms. The changes observed in the biological parameters of the plant, can be indicators of the effect of environmental stress. Various plant species have the ability to defend on stress induced by different abiotic factors. The aim of our research was to highlight the effect of differential treatment, applied to wheat caryopses with three different types of pesticides (ACTARA 25 WG, GRANSTAR and TOPSIN AL 70) on germination**;** seedling growth and development; and flavonoid and total phenol content. Three solutions of different concentrations (50%, 100%, and 125%) from each type of pesticide have been prepared. These solutions were applied to wheat seeds - for 14 and 24 hours. Also, the total phenolic content and concentration of flavonoids were determined and interpreted using spectrophotometric and chemometric methods. Principal Component Analysis (PCA) results revealed different behaviour of GRANSTAR herbicide. The concentrations of total phenols and flavonoids have the highest value when added the TOPSIN fungicide in optimum solution. It is possible that endogenous auxin transport to be inhibited due environmental stress caused mainly by the presence of fungicide.

POSTERS PRESENTATIONS

OWLS SURVEY IN EASTERN MOLDOVA (ROMANIA)

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EMANUEL ȘTEFAN BALTAG

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Owls are chronically under – researched and poorly understood group of birds, due to their nocturnal habits. In Romania, there is no national census or monitoring programme for these species. There are only few local studies which cover this group. Thus, in the period 2010 – 2012 we conducted a monthly monitoring scheme in three large forestrial bodies of Iaşi County using playback method. This implays the loud playing of territorial sounds of target species for a period of 2 minutes per species followed by a period of five minutes per species of silent listening of territorial acoustic reaction. The study consists of three large forests of Iaşi County: Bîrnova Forest, Mădârjac, and Hârlău Forest, which are Natura 2000 sites. At Bârnova we used 16 observation points, covering 28,26 Km² of the area (15% of the entire forest), at Mădârjac 16, covering also 28,26 km^2 (12%), while in Hârlău we used 6 observation poins, covering 12,36 km^2 (22%).

In total we identified 6 owl species: Eagle Owl (*Bubo bubo)*, Little Owl (*Athene noctua),* Long-Eared Owl *(Asio otus),* Scops Owl *(Otus scops),* Tawny Owl (*Strix aluco)* and Ural Owl (*Strix uralensis)*. The dominant species was Tawny Owl, with a density of 0,42 bp/km^2 in Bârnova Forest, 0,56 bp/km^2 in Mădârjac and 0,48 bp/km^2 in Hârlău. The second highest densities were those of Ural Owl: 0,35 bp/km^2 at Bârnova, 0,2 bp/km^2 for Mădârjac and 0,16 bp/km^2 in Hârlău Forest. Regarding the other four species, the number of recordings was too insignificant for a density analysis. Thus, we recorded 2 Eagle Owl territories, one in Bîrnova and one in Hârlău. We also recorded 2 territories of Little Owl at Mădârjac and one at Hârlău, only at the forest edge, near the settlements. Also at the forest edge we recorded 3 territories of *Otus scops* in Madajrac and 2 in Hârlău. *Asio otus* was recorded in studied forests with only 4 territories.

COLONIZATION PATTERN OF REED-WARBLERS ACROSS THE PACIFIC ISLANDS INFERRED BY mtDNA ANALYSIS

MITICĂ CIORPAC, CONSTANTIN ION, MONICA LUCA, LUCIAN BOLBOACĂ, DRAGOȘ LUCIAN GORGAN

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The reed warbler’s genera, *Acrocephalus (Acrocephalidae* family*)* numbers 37 species, grouped in two mojor clades: small body size and large body size. The members of this family breed widely across the Old World:in Australia/Polynesia are present 13 species all from the large body size main clade. Previous studies of molecular phylogeny were focused on taxonomy of this genera and phylogenetic relationships with other genera. The divergence dating time of the reed warblers was not previously robust estimated. Fossil records and molecular data provide strong indications of higher taxa ages. In the present study, mitochondrial DNA sequence datawere used to infer the divergence dating time of all species of reed-warblers.Blood samples were collected and preserved in Queen's Lysis Buffer and the total DNA was isolated and purified using DNA IQ System protocol (Promega). Genetic analysis was performed in a 25 µl volumeusing the GoTaq Flexi DNA Polymerase (Promega) on the gene that encodes the cytochrome b, using two pair of specific primers: L-14841 and mt E-syl; mt D-syl and mt FNP. The PCR products were separated by agarose gel electrophoresis, purified using Wizard SV Gel and PCR Clean-up System (Promega) and direct sequenced using CEQ 8000 Genetic Analysis System (Beckman-Coulter). A number of 40 samples were combined with another sequences from GeneBank to generate a dataset comprising 180 individuals belonging to a total of 35 *Acrocephalus*species and *Emberizaschoeniclus* as out-group.The phylogeny, which includes 35 taxa, permits us to infer the colonization patterns of all species of reed-warblers from Australia/Polynesia. We believe that the *Acrocephalus*speciesfrom the Pacific Clade migrate in south, to Indochina Peninsula and has been divided in two clades, in Oligocene (28.7mya).The first clade migrates to south from Indochina Peninsula through Malaysia, Indonesia, New Guinea, Solomon Islands, Fiji and Samoa; and the second the clade migrates to Laysan and Nihoa Island from Hawaii Island through Mariana Islands.

GENETIC CHARACTERIZATION OF SOME ORNAMENTAL ROSE VARIETIES BASED ON ISSR MARKERS

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Genus *Rosa,* belonging to Rosaceae family comprises approximately 200 species and more than 10 cultivars, but only 10 species contributed to the modern commercial rose. The domestication, followed by an intense selection and breeding determined changes regarding the genetic variation level. In addition, the relationships between the ornamental rose varieties are unclear and confusing due to the frequent intraspecific hybridization.

This work represents the first step of a complex research aiming to establish correlations between morpho-physiological and horticultural characteristics and their DNA fingerprints based on ISSR (Inter Simple Sequence Repeats) markers in rose varieties from the Botanical Garden of Bucharest.

For this study were selected 10 rose varieties with or without scent, created after 1980 and belonging to various flowering groups. Plant tolerance to diseases and to extreme temperatures (frost and drought), as well as the behavior of the indoor varieties in outdoor conditions were determined.

Four ISSR primers were tested and the molecular results were analyzed using MVSP ver. 3.22, PyElph ver. 1.2 and Arlequin ver 3.5 software. The generated polymorphism varied between 70% and 100% and the PIC (Polymorphic Information Content) value between 0.17 and 0.34. The hierarchical analysis of the molecular variance (AMOVA) indicated a prevalence of the intra-varietal genetic variability over the inter-varietal one. In some cases, the constructed UPGMA dedrogram revealed genetic relationships in accordance with their phenotypic particularities. These preliminary results proved the importance of the combined morpho-physiological and genetic studies, claiming also the need for a higher number of ISSR markers in order to obtain more accurate results.

GENETIC VARIABILITY OF TWO ENDANGERED SPECIES:*BISON BONASUS* AND *BISON BISON*

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Bison are large ungulates from the *Bison* genera within the *Bovinae* subfamily. There are two extant and four extinct species recognized. Three of four extinct species, were North American: *Bison antiquus, B. latifrons,* and *B. occidentalis*. The fourth, *Bison priscus*, ranged across steppe environments from Western Europe, through Central Asia, and onto North America. There are two surviving species: the American bison, *Bison bison*, found only in North America and the European bison *Bison bonasus*, or wisent that is found in Europe and the Caucasus, re-introduced after being extinct in the wild. Habitat degradation and fragmentation due to agricultural activity, forest logging, and unlimited hunting and poaching were the primary reasons for the decrease and extinction of European bison and American bison populations. The aim of this study was to evaluate the inter- and intraspecific polymorphisms of European and American bison in order to provide new information on the genetic diversity within the *Bison* genus. Mitochondrial cytochrome b analysis have been used for 42 individuals (21 of each species).

The sampling process refers to blood samples loaded in Queen's lysis buffer and stored in 98% ethanol for DNA isolation and purification, performed using the DNA IQ kit (Promega). PCR was performed in 25µl reaction volume containing GoTaq Green Master Mix (Promega), direct and reverse primers. The sequencing process was performed using the Beckman Coulter CEQ 8000 Genetic Analysis System. The phylogenetic relationships were determined by the Neighbour-Joining method (Saitou 1987) and the evolutionary history was inferred using the Maximum Composite Likelihood method. Evolutionary analyses were conducted in MEGA5 (Tamura 2007). The presence of mutations associated with differentiation processes may indicate a future increase of genetic diversity for both bisons pecies. Phylogenetic analysis shows that the European bison has a high level of variability, containing 8 haplotypes compared with 7 for the American bison. This data is valuable for conservation strategies of this species, especially for the breeding success control of these animals.

SOME CONSIDERATIONS ON LAND SNAIL FAUNA OF GRASSLANDS FROM SIGHIȘOARA TÂRNAVA MARE NATURA 2000 SITE

VOICHITA GHEOCA

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The land snail fauna of grasslands is strongly related to specific environmental variables such the climate, vegetation and soil. Generally, calcareous, dry grasslands are known to harbor a rich invertebrate diversity, including land snails that can develop here large populations. But specific snail fauna is also present in xero-mesophilic nutrient-rich grasslands.

The goal of the present work is to analyze the land snail fauna from grasslands located in Sighișoara -Târnava Mare, Natura 2000 Site. A number of five grasslands were analyzed by quantitative sampling, in each a number of 9 samples of $1m^2$ were taken. Among the 29 land snail species identified, some are specific for open habitats, as *Cochlicopa lubricella, Vallonia costata, Granaria frumentum, Truncatellina cylindrica, Chondrula tridens, Vertigo pussila, Vertigo pygmaea, Vertigo angustior, Helicopsis instabilis, Cepaea vindobonensis,* Other species like *Vitraea transsylvanica, Aegopinella pura, Vitrina pellucida, Euomphalia strigella,* originate from adjacent habitats, and their capacity of surviving in grasslands depend on specific habitat conditions. The most abundant species are *Granaria frumentum, Chondrula tridens, Vallonia costata, Helicopsis instabilis,* despite the fact that their frequency of occurrence is not the highest, but they can develop locally large populations, as is the case of *Helicopsis instabilis* identified in only one sampling station. The presence of uncharacteristic species from adjacent habitats is probably due to erratic or accidental movements as transported by torrents during strong floods. If suitable conditions are found (for instance islands of vegetation from the neighboring habitat), these species can survive as long as the conditions persist.

DETECTION OF *nifH* GENES FROM RHIZOBIA SPECIES ISOLATED FROM NATURAL SOURCES

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Biological nitrogen fixation is a process of dinitrogen reduction to assimilable ammonium by nitrogen fixing bacteria, a very diverse physiological group of bacteria, represented by heterotrophs or autotrophs, aerobic or anaerobic, free or symbiotic bacteria. All of these are doing the nitrogen fixation by means of nitrogenase, a highly conservative enzyme complex consisting of dinitrogenase (MoFe-protein) and dinitrogenase reductase (Fe-protein) encoded by the *nifDK*, respectively *nifH* genes. In different *Rhizobium* species, most nodulation (*nod*) and nitrogen fixation (*nif* and *fix*) genes are present on one plasmid, known as the symbiotic plasmid (p*Sym*). The *nifH* genes are the most often used as markers of nitrogen fixation. The goal of this study was to isolate and identify some rhizobial strains from various natural sources (nodules, rhizosphere, soil) and to detect presence of *nifH* genes in this newly isolated strains, in order to confirm their symbiotic potential and for future applicative studies. The natural sources used for rhizobial strains isolation were the following: nodules from spontaneous *Fabaceae* species (*Trifolium repens* L. subsp. *repens*, *T. repens* L. subsp. *ochranthum* Nyár., *T. pratense* L., *T. alpestre* L., *Lotus corniculatus* L., *Medicago lupulina* L.), rhizosphere from the same taxa and soil from four selected experimental sites easy to monitorize (Botanic Garden "Dimitrie Brândză" from Bucharest – two sites; Chitila-Mogoșoaia Forest and Tufa Valley from Gârbovei Mountains). For the identification of nitrogen fixing bacterial strains there were used conventional microbiological methods: culture and colony features, cell morphology, Gram character, biochemical characteristics (catalase and oxidase tests). For the *nifH* genes detection it was used the *nested-PCR* method. A total of 65 bacterial strains were isolated from natural sources, out of which only 51 strains could be identified as fixing nitrogen bacteria, but the PCR detection of *nifH* genes revealed their presence only in 8 bacterial strains. This study revealed a poor correlation between the two used methods of identification (morphophysiological properties and genetic analysis of *nifH* genes). Generally, it is widely agreed that phylogenetic studies based on stable chromosomal genes are necessary to establish the rhizobial taxonomy, but in this case we are speaking about plasmidial genes which can be transfered and cured. The study will be continued because probably the isolation medium also allows the growth of non-symbiotic nitrogen fixing bacteria or the isolated strains are belonging to other bacterial genera related to rhizobia.

MITOCHONDRIAL GENETIC VARIABILITY OF *STRIX* GENUS

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The aim of this study was to determine the genetic variability within and between populations, to estimate the genetic divergence time *of S. occidentalis, S. varia, S. uralensis, S. aluco* and *S. nebulosa* and to infer the phylogeographic distribution of *S.aluco.*In the light of modern scientific methods discovery during the last decades, especially in the field of molecular genetics and taxonomy of organisms, many aspects of phylogeny, evolution and speciation among birds of many taxa are still a mystery.Owls are difficult to study because of their cryptic ecology, since they are active mostly during the night time. Even though most bird species are taxonomically classified by their morphology and song, this kind of approach can be misleading, thus researchers began using modern lab techniques for this purpose. The data used was obtained from 5 species distributed throughout specific areas in Europe. Sequences of the control region (mitochondrial DNA) were acquired from the NCBI database and their analysis was performed using a range of software: MEGA5, BEAST, Tracer, FigTree, Google Earth and SPREAD.Phylogenetic analysis showed differences concerning genetic diversity among populations and based on genetic divergence time estimation diagram, we concluded that there is no clear genetic delimitation between *Strix aluco aluco* and *Strix aluco sylvatica* subspecies.

PHYLOGEOGRAPHY AND MOLECULAR DIVERSITY OF*VIPERA URSINII MOLDAVICA* FROM EASTERN ROMANIA

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The meadow viper (*Vipera ursinii*) is a small, venomous snake with a very fragmented areal in southeastern France, the central Appenines of Italy, western and central Hungary, northern and southern Croatia, central and southern Bosnia-Herzegovina, Montenegro, southern Serbia, northern Albania, northwestern Macedonia, western Greece, central and eastern Romania. It is considered extinct in Austria and Bulgaria, and is close to extinction in Hungary and Moldova. The meadow viper is classified as Vulnerable (VU) on the IUCN Red List and listed on Appendix I of CITES. The aim of this study is to identify the intraspecific variability of eastern Romania *Vipera ursinii moldavica* populations, inferred by microsatellite data and mitochondrial DNA analysis and also to reconstruct the spread pattern of this subspecies in Romania. Scale samples were collected and preserved in absolute ethanol. The total DNA was isolated and purified using DNA IQ System protocol (Promega). Genetic analysis was performed in a 25 µl volume using the GoTaqGreen Master Mix (Promega) on the gene that encodes the cytochrome b and microsatellite locus L3 using one pair of primers for each marker: H15914, L15162 (cyt b) and L3f, L3r (microsatellite locus L3). The PCR products were separated by agarose gel electrophoresis purified using Wizard SV Gel and PCR Clean-up System (Promega) and direct sequenced using CEQ 8000 Genetic Analysis System (Beckman-Coulter). The analysis of both molecular markers indicate a low level of variability in Moldavian populations while the Danube Delta populations have a higher variability. The south-eastern Romanian populations could represent the origin point of spreading.

BIOTEHNOLOGIES FOR ENVIRONMENTAL PROTECTION AND RESOURCES' VALORIZATION

ORAL PRESENTATIONS

STUDIES ON *IN VITRO* BEHAVIOUR OF *MENTHA PIPERITA L.*

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Mentha piperita L. is a plant rich in essential oils, carotene, flavonoids, organic acids, betaine, etc. Despite deficiencies of *in vitro* techniques (product biotransformation, biosynthetic potential decrease) mint isolated cultures can be used to obtain active principles with a pharmaceutical significance.

As basic nutrient media were used MS (Murashige, Skoog, 1962) and LS (Lin, Staba, 1961) supplemented with growth regulators and sucrose at various concentrations. As primary explants served stem segments, adventitious buds, leaf and petiole segments.

In vitro have been identified basic morphogenetic reactions. The intensity of *in vitro* regenerative processes of mint depended largely on the nature and physiological condition of primary explant and chemical composition of the nutrient media. It was determined that the optimal ratio of cytokinins to auxins is 3:1. In this case, the regeneration of plantlets from the segments reached the level of 60%. For mint plantlets *in vitro* neoformation the optimal concentration of sucrose was found to be 15.0 g/l. Higher concentrations of sucrose induced apparition of plantlets with various morphological disorders. Stem and petiole segments showed a reduced caulogenetic capacity, while foliar explants practically didn't regenerated plantlets even after five weeks of cultivation.

Biochemical analysis of mint callus confirmed the presence of essential oil, its content being almost similar to initial plants. As basic components served the alcohol menthol, ketone menthone and their isomers.

At the same time, along with basic ingredients (menthol, isomenthol, menthone, isomenthone, methylacetate, pulegone, piperitone),in callus biomass,were also detected auxiliary compounds (limonene, cineole). In mint isolated tissue culture and in nutrient medium were found high concentrations of menthone and menthol predecessors (pulegone, piperitone).

CLAY MATERIALS USED IN ENVIRONMENTAL PROTECTION

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Due to the absorption/intercalation properties of the clays, they can be used in retention of pollutants. Anionic clays, also called: lamellar double hydroxides or in technical literature LDH (Layered Double Hydroxides) exhibit the ability to retain pollutants. This paper refers to obtaining the complex structures such as the nanostructures of LDs in order to improve the retention of pollutants. Lamellar double hydroxides chemically modified and thermally treated turns into stable nanostructures. One interesting use is in the environmental protection to retain various dyes. These pollutants may come from different sources such as the textile, pulp and paper, manufacturing of paints, pharmaceuticals, etc.. They are considered a major problem in terms of discharge into natural waters.

In laboratory were synthesized nanostructured materials from local raw materials, deposits of clays from Moldavia. Retention capacity of nanomaterials to type dyes pollutants was studied in synthetic solutions. We worked with dyes in the textile industry: MY-36 and AB-83. It was studied how different parameters affect the retention capacity of pollutants in clayey materials. The results were promising.

A STUDY ON "APPLE PROLIFERATION MYCOPLASMA" IN INTENSIVE APPLE PLANTATIONS

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Mycoplasma represents a heterogeneous group of unicellular organisms displaying an accented pleomorphism of cells, within which several morphological types are distinguished.

The pathogenic agent of proliferation causes negative effects in the host plant at all its growth stages. The disease spreads largely and rapidly, the apple production reduces to an extent of up to 90%, which can result progressively in total absence of fructification.

The symptomatic manifestation arose as early as the nursery stage. The biological material for the study of the pathogenic agent consisted of shoots, leaves, fruit and seeds of twenty-year-old apple varieties of Golden Delicious, Ionathan and Voinea.

The results obtained contributed to establishing the degree of attack in trees affected by apple proliferation and its influence on the vegetative phenophases of these trees.

The pollen germination intensity and the degree of flowering were assessed for all researched varieties attacked by proliferation. The fruit harvested from diseased trees are smaller, abnormally coloured, low in biochemical content and nutritive value and their gustative qualities are altered.

PHOTOCATALYSIS – A NEW ECO-FRIENDLY METHOD FOR NEUTRALIZATION OF PATHOGENS FROM WATER AND AIR

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The important oxidative potential of photocatalytic reactions suggested applications in bacteria neutralization. Many studies emphasized the possibility of use layers or paints containing titanium dioxide for disinfection of contaminated water and air. It was proved that photocatalytic reactions destruct many types of coli form microorganism, like *Escherichia coli*, and many other types of bacteria. The method is applicable either for water or air. Better results were obtained using coupling photocatalysis with another classic process. Method is eco-friendly because it involves law energy consumption and a diminished quantity of chemicals required. Also photocatalysis could be a possibility for general disinfection of water, either in the third stage of a wastewater treatment plant, before discharge in an emissary, or before chlorination stage in a drinking water treatment plant. This study is a short review regarding photocatalysis applications in microbiology.

POSTERS PRESENTATIONS

DEHYDROGENASE AND UREASE ACTIVITIES IN SOIL INFLUENCED BY DIFENOCONAZOLE

MARIOARA NICOLETA FILIMON, ADRIANA ISVORAN, DIANA VLADOIU, VASILE OSTAFE

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Fungicides are commonly used in agricultural crops although they cause both quantitative and qualitative changes in soil microorganisms communities. Soil samples used in performing the experimental variants were collected randomly from experimental fields at depths of 0-20 cm. The fungicide used in this study is Score 250 EC - active substance is difenoconazole (1/2xnormal dose, normal dose, and 2xnormal dose). The enzymatic activity is an important property for the evaluation of soil quality. Dehydrogenase and urease activities were determined in soil samples (experimental variants) using spectrophotometric methods. The metabolic activity of microorganisms in soil and other habitats was determined by measuring dehydrogenase activity. As dehydrogenase activity is higher, so is the metabolic activity in soil. Dehydrogenase activity recorded in the experimental variant 2xnormal dose of difenoconazole a decrease from the control group value up to 10%. Urease activity recorded declines in experimental variants compared to the control group, the experimental variant 2xnormal dose of difenoconazole decrease being statistically significant ($p < 0.05$). Difenoconazole effect on soil quality assessment based on dehydrogenase and urease enzyme activity proved to be a good choice.

RESEARCHES REGARDING THE HEPATOPROTECTIVE EFFECT OF SOME PHYTOPREPARATIONS OBTAINED FROM *HIPOPHÄE RHAMNOIDES* AND *CYNOSBATI FRUCTUS*

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The present experiment is part of a more detailed experiment that focuses on reducing the toxicity of some micotoxines classified as group I carcinogens. Sterigmatocystine is a representative member of this class. It has a difuranic structure, being chemically related to aflatoxines. Its high incidence in vegetal sources of food from the temperate-continental region draws attention to human and veterinary medicine. Taking into consideration the fact that sterigmatocystin acts as a free radical formed from the metabolite epoxy-sterigmatocystine, the present experiment aims to evaluate the pharmacological implications of pharmaceutical preparations from *Hipophäe rhamnoides* and *Cynosbati fructus*. The vegetal product *Hipophäe fructus* is appreciated as a potent antitoxic/antioxidant remedy due to the high content of ascorbic acid ((400 -1 500 mg%) and bioflavonoids that, besides their strong antiradicalic effect, also protect vitamin C against the redox reactions. The phytocomplex also contains important concentrations of ergosterol and carotenoids (β-carotene, lycopene, physaline, cryptoxanthin, and zeaxanthin). The false fruits of dog rose are appreciated as important sources of antioxidant principles such as vitamin C (500-1000 mg%), carotenoids (600-10 000 mg %), and vitamin E. The experiment comprised five groups of white adult male rats, Wistar breeding, five animals per group. The first group represented the reference group, while the second one was used for reproducing the experimentally induced chronical intoxication with sterigmatocystin (the control group). The animals of the third group received, besides the daily dose of sterigmatocytine, a 5% extract of *Hipophäe fructus*. In order to compare the antioxidant effect of the two vegetal products, the last group of animals received as treatment a 5% extract of *Cynosbati fructus.* At the end of the experiment, blood samples were collected and submitted to the biochemical evaluation of alanine aminotransferase, aspartate aminotransferase, *catalase, superoxide dismutase, and free sulfhydryl groups.* The results reveal significant antitoxic/antioxidants effects for both of the vegetal products.The research leading to these results has received funding from the European Union's Seventh Framework Programme (FP7/2007-2013) under grant agreement n°264115 – STREAM

EVALUATION OF THE ANTIRADICALIC POTENTIAL OF THE PERSEA AMARICANA MILLER FRUIT BY THE MEANS OF OXIDATIVE STRESS PARAMETERS

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The present study reveals a sequence from an extensive experiment that intends to establish the antioxidant potential of some plants used in food processing. The avocado fruit (*Persea americana* Miller) may represent a valuable source of active principles that counteract the reactive oxygen species responsible, in some conditions such as pathological diseases, atmosphere charged with free radicals resulted from the water radiolysis, some metheorological phenomena, for the setting-up of the oxidative stress. The antitoxic virtues of this edible fruit are owed to the high content of glutathione, a tripeptide that counteracts the aggressive free radicals due to the thiol group, and also due to the presence of ascorbic acid and vitamin E. The experiment presented herein also intends to evaluate the antioxidant activity of the *Persea americana* Miller fruit in comparison with an antioxidant drug known under the trade name as Pycnogenol. The experimental model consisted of three groups of Wistar rats, with an average body weight of 333.5 g. The first group represented the reference group, whose animals were fed with standard food and maintained in the same conditions as the others. The second group was the control group, the animals being supplimentary given Pycnogenol, while the third group received, besides standard food and Pycnogenol, the avocado fruit included in their daily diet in a dose equivalent to that of Pycnogenol. After five weeks of experiment, blood samples were collected and biochemically investigated for the determination of serum catalase, superoxide dismutase, and glutathione peroxidase. The results clearly emphasize the antioxidant effect of the active principles from *Persea americana* Miller.

USING GIBBERELLIC ACID (AG3) TO THE TABLE GRAPES VARIETY OF VINE COARNĂ NEAGRĂ, AS A MEANS OF INCREASING SUSTAINABLE PRODUCTION

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Table grapes is a food of major economic importance, being a valuable source of nutrients necessary for human body, both fresh and processed . The quality of the grapes is the result of combining the physical and chemical composition of these products shown in the main metabolite (glucose, minerals, vitamins, organic acids) and, in the same way, the secondary metabolites as well as the relation in which they are found in the plant . Thus, there is need to introduce in the consumer market, quantities of grapes in accordance with the requirements of rising prices and enabling their acquisition by consumers. This can be accomplished by introducing in the current technologies of culture the table grapes vine of bio-stimulating hormone treatments that can provide outstanding production increases and contribute to increasing the quality of production.

Treatments were performed in the ampelographic collection of the Faculty of Horticulture of USAMV Iasi, at concentrations of 0, 25, 50, 100 ppm. Application of gibberellic acid (AG3) was carried out by direct spraying of the inflorescence in phenological phase of flowering , when 70 % of the corollas were shaken .

To highlight the influence of gibberellic acid treatments on productivity and grape quality was used to determine the physical and chemical determinations complemented by structural and productivity, combined with elements of plant physiology (photosynthetic intensity, the presence of photosynthetic pigments). Gibberellin concentration AG3 can be successfully applied to achieve a high production yield of grapes, with a significant improvement in their quality parameters, was 25 ppm, which provided a production increase of more than 2 t/ha and increase in production of goods up to 80 %. Appearance grapes was also improved by obtaining higher grain and uniform color.

IMPACT OF PHYTO-TECHNICAL MEASURES TO THE FETEASCĂ NEAGRĂ VINE VARIETY GROWN IN COTNARI VINEYARD FOR IMPROVE THE QUALITY POTENTIAL

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Optimization of technology for a new variety introduced in range of a vineyard requires study various technological links so that the chosen solution to be viable in terms of quality and economy. Ripening grapes is a very complex biochemical process , which depends on the quality of grape and wine. Grape maturation is strongly influenced by climatic conditions, but also agrotechnics applied so that the quality of raw materials for wine varies widely from one year to another, from one vineyard to another. The technological maturation of the grapes is aimed accumulation of large amounts of sugars and reducing excessive acidity of grapes to achieve a balanced report as glucoacidimetric that ensures obtaining quality wines and phenolic maturation is a prerequisite basic technology enabling quality red wines their quality forecasting and modeling technologies winemaking .

The work was targeted for potential qualitative Fetească neagră, new introduced in Cotnari vineyard, in the application of complex green works operations. By applying operations and green works are to achieve an optimal technological choice not to follow to obtain the highest yields of grapes, but the most balanced in terms of all the factors involved in the ripening grapes.

Following investigations revealed that to the practice of short cutting at Fetească neagră grapes in conjunction with partial leafless operation caused an increase in the concentration of sugars and adding weeding operation also leads to a decrease in total acidity and an increase concentration of phenolic compounds and anthocyanins .

THE *TRNF-TRNL* IGS AS A TOOL FOR INFERRING TAXONOMY IN THE *PRUNUS* GENUS

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Chloroplasts are organelles present in the cytoplasm of plant cells and like mitochondria, are usually inherited from a single parent; with some exceptions occurring in very low levels in some flowering plants. In gymnosperms the chloroplasts are passed on paternally while in angiosperms the chloroplasts are inherited maternally, although there are some cases in which chloroplasts are paternally transmitted to offspring in angiosperms.

Because of its inheritance mechanism (there is no recombination), the chloroplast genome can be used in taxonomy studies. Markers on the chloroplast genome, such as genes and intergenic spacers are frequently used in plant barcoding studies.

The *trnF-trnL* intergenic spacer (IGS) is a popular molecular marker used in plant phylogenetics, capable of distinguishing between closely related species. We tested its resolution at cultivar level and see if it can discriminate between *Prunus avium* (sweet cherry) cultivars. To this purpose, we used leaf tissue for DNA extraction from 27 *P. avium* cultivars and the IGS was PCR-amplified and sequenced. To better place the cultivars on the Prunus genus phylogenetic tree, other sequences were downloaded from GenBank and included in the analysis.

Sequence alignment was performed in MEGA v5.2.1. using the MUSCLE algorithm and a phylogenetic tree was constructed using the Maximum Likelihood statistical method with a number of 1000 Bootstrap replications, a Nucleotide Substitution Type, a General Time Reversible model and the Gamma-distributed rates among sites.

NEW POSSIBILITIES OF FODDER YEAST PRODUCTION

ANDREI SIMION, CRISTINA GRIGORAS

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Fodder yeasts are successfully utilized to feed animals since they are considered a rich source of well digested protein and vitamins.

The study aimed to find new carbon sources for fodder yeast development with viable economic effects while reducing the pollution to the environment by capitalisation of wastewaters with high monosaccharides content from pulp and paper industry and by employing a hydrolytic product obtained from sugar beet pulp. *Candida utilis* yeast strain was used as inoculum. A temperature of 38 °C, a pH of 5.5 and an air flow of 0.02 L/h were insured inside the bioreactor. Wastewaters from technological process of de-crusting of resinous wood with $NaHSO_3$, having a content of 59 g/L fermentable monosaccharides (galactose 17%, glucose 10%, mannose 44%, xylose 7%, arabinose 4%, glucuronic acid 21%) were used in pair with the hydrolytic product with 8.8 g/L monosaccharides (22.9% glucose, 15.1% galacturonic acid, 19.1% arabinose, 4.8% galactose, 1.2% xylose, 0.9% mannose and 0.8% rhamnose) as a main carbon source, after dilution at the experimental conditions. $MgSO_4$ 1.0 g/L, $ZnSO_4$ 1.0 g/L, $MnSO_4$ 1.0 g/L, $FeSO_4$ 0.8 g/L, KCl 1.0 g/L and up to 1100 mg/L nitrogen and 420 mg/L phosphorous from $(NH_4)_2SO_4$ and $(NH_4)_2HPO_4$ (variation imposed by the experimental algorithm) were added.

The fabrication recipe was established with the help of Response Surface Methodology by optimising the amount of ingredients and having as response functions protein, biomass and residual sugar. The found optimized values were: 24 g/L reducing sugar, 1038 mg/L nitrogen and 420 mg/L phosphorous. In these conditions the final product had 50.98% protein content, w/w and 6.49 g/L biomass, w/w with a consumption of reducing sugar of 92.66%.

THE ASSESSMENT OF SOME ENZYME ACTIVITY IN *STACHYS SIEBOLDII* MIQ. IN CONVENTIONAL AND *IN VITRO* CULTURES

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Stachys sieboldii Miq. (the Chinese artichoke) is a herbaceous perennial plant of the Lamiaceae family. *Stachys sieboldii* grows spontaneously in China, and it is named „tsanyungtzu". Its tubers are edible, being introduced as a vegetable since 1888 by dr. M.T. MASTERS. As a legume, it was brought into culture in Europe, North America, Japan. The cultivated forms were ammeliorated, its tubers reached higher sizes than the spontaneous forms. This species is also used to cure high fever, diarrhoea, sore throats, internal bleeding, heart or liver diseases.

In case of the species *Stachys sieboldii* Miq., the vegetal material used for the *in vitro* cultures was provided by the Botanical Gardens "Anastasie Fătu" from Iași, and the one from conventional cultures was harvested from an experimental plot situated in Racova village (the county of Bacău). The plant material provided *in vitro* was obtained in the Genetics Laboratory of the University „Vasile Alecsandri" from Bacău. There were used the following methods: Spectrophotometric analysis of catalase activity (SINHA method); Analysis of peroxydase activity (L. V. GUDKOVA and R. G. DEGTLARI method); Determination of superoxide dismutase activity (WINTERBOURN, HAWKINS, BRIAN and CARRELL method, adapted by ARTENIE). The biochemical analyses for both species were focussed on the differences in the activity of peroxydase, catalase and superoxide dismutase, and on the variations in the content of total proteins, depending on the culture medium used for these plants/plantlets, and at the level of each vegetative organ, as well. The data provided by the analysis of the enzymatic systems and the assessment of the total protein amount in the *in vitro* and *ex vitro* obtained plants do not imply a significant impact of the culture medium on the metabolic processes. There were only quantitative differences in favour of the plants grown in their native habitat.

BIOMETRICAL STUDY ON SEVERAL *IN VITRO* REGENERANTS OF *MELISSA OFFICINALIS* L.

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Melissa officinalis L. is a herbaceous, perennial plant of the *Lamiaceae* family, a native of the northern Mediterranean region. It is a xeromesophitic, moderate thermophile plant that is spread in sunny and also in shady places, and is resistant to drought. The aerial part of plant comprises 0.05 to 0.15% of volatile oil (that contains citronellal, citral, geraniol, linalool), polyphenols, tannins (3 to 6%), mucilages (12%), bitter substances etc. The seeds contain fat oil made up of linolenic, linoleic, oleic, palmitic and stearic acids (1-3, 5-8,10). The main action of its active principles, especially of volatile oil of *Melissa officinalis* is spasmolitic and sedative, recommended for gastro - intestinal spasms and cardiac neurosis. They are also known for an antiseptic, sedative, carminative, choleretic, mild laxative, stomachic, cicatrisant, galactagogue, and insecticide action.

Our complex research on the *in vitro* regenerants of *Melissa officinalis* L. comprised biometrical tests, as well. There were analyzed some growth parameters, immediately after the regenerants were transferred from the *in vitro* to the *ex vitro* environment. There were analyzed 30 plants/medium variant within three tests: I – plants aged 30 days; II – plants aged 50 days; III - plants aged 60 days. The investigated parameters were: root length, stem length, number of shoots growing from basal node, number of nodes/shoot, fresh biomass/plant.

The regenerants were transferred in field in spring, harvested in early September. At the harvesting moment, some parameters were analyzed: stem length, number o branches/stem, number of nodes/stem, fresh biomass/plant. All the data were statistically processed and interpreted.

INFLUENCE OF THE FISHMEAL ADDITION ON PHYSICOCHEMICAL PROPERTIES OF WHEAT FLOUR

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Fish flour contains great amount of proteins and amino acids that allows enriching vegetable products with protein. Also, it is rich in vitamins A, B, D, E and contains potassium, phosphorous, selene, iodine, and other minerals. Usually, the use of fish meal include feeding of minks, farmed fish, dogs, cats and cattle, but very small amounts of specially processed meals have been used in prepared foods for humans, and fish meal is also used in the preparation of certain antibiotics for the pharmaceutical industry. The paper presents the study of several chemical properties of wheat flour (type 650 Dizing) with fishmeal addition (4%, 8%, 12%, 16%, and 20%). The samples have been characterized from chemical point of view, using Infratec 1241 Grain Analysers. The parameters of samples analysed were: humidity, protein, gluten, Zeleny index. The results highlighted the influence of the fish meal addition upon wheat flour quality. Protein content increased from 11,6% up to 21,9% and gluten content increased significantly with the addition of fish flour, respectively from 28,4% up to 34%.

INFLUENCE OF ASFACBC04 BIOSTIMULATOR IN QUALITY AND PRODUCTIVITY OF SOUR AND SWEET CHERRY FRUITS

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Two varieties of fruit trees from Rosaceae family, namely sour cherry (Prunus cerasus) and sweet cherry (Prunus avium), was treated in 2012 year by two application with ASFACBC04 biostimulator. The aim was to optimize the quality of fruits and the productivity culture reported per hectare.

The ASFACBC04 biostimulator was obtained by nanotechnology, and his concentration was respected according with the concentration recommended by the producer, namely 1l/hectare. To evaluate the influence of ASFACBC04, the matured fruits submit physico-chemicals and biological analyses. These analyses were followed comparatively with an untreated control lot. The obtained data present significantly positive value in the case of treated fruits, for the quality of fruits, but also for the obtained productivity. Qualitative analyses were emphasized by biometric analyses (height, fruit weight, pulp density) and physico-chemical analyses (acidity, dry substance, content of glucides and pigment content).

INFLUENCE OF DRYING ON PHOTOSYNTHETIC PIGMENT CONTENTS IN PARSLEY

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Parsley leaves (*Petrosilium crispum* Mill.) were dried in a domestic microwave oven using different output powers. The aim of this study was to determine the effect of the microwave output power on drying time, drying rate and the dried leaves quality in terms of chlorophyll content. Six different microwave output powers ranging from 120 to 700 W were used in the drying experiments. The drying period lasted from 7 to 20 minutes and took place mainly in constant rate and falling rate periods. The semi-empirical Page's equation used to describe the drying kinetics of the dried leaf materials gave an excellent fit for all date points with values for the coefficient of determination R^2 greater then 0,0998.

Traditional methods for analysis of photosynthetic pigments were employed based on spectroscopy and extinction coefficients that had been calculated for a range of solvents. Acetone was used as extraction solvent and the content of chlorophylls was colometrically determined by measuring absorbance in the absorbance maximum for these pigments. No significant differences were observed between the color parameters of fresh and microwave-dried leaf materials. The chlorophyll content values varied depending on the out power of the microwave oven. The best results were obtained for a microwave output power of 460W, in terms of chlorophyll content.

ECOLOGY AND SUSTAINABLE DEVELOPMENT

ORAL PRESENTATIONS

TOXICOKINETICS POISONING WITH METHANOL REVEALED BY GC-MS ANALYSIS IN A EXPERIMENTAL STUDY ON LABORATORY ANIMALS

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The accuracy and applicability of GC -MS -SIM method of determining methanol in biological samples, allowed studying the impact of the toxic in the animal organism, toxicokinetics and toxicodynamic of methanol intoxication. The analysis was conducted on a group of experimental animals, made up of five female rabbits from the breed "Dutch gray". Methanol toxicokinetics study was carried out on the basis of the results obtained by the GC- MS determination method of methanol concentration in the blood at intervals of 75 / 195 / 375 minutes after intraperitoneal dose LD50 of methanol. Thus, values were between 0.68 mg/ml and 1.02 mg/ml. Studying the value curve of methanol concentration in the blood it has been found that the maximum accumulation was at 195 minutes, although the highest rate of accumulation occurred in the range of 0-75 minutes with a value of 0.01117. Decreasing concentration of methanol in the animal body occurred after 195 minutes at a disposal rate of 0.00046. In conclusion, methanol is absorbed into the animal body very fast with an extremely slow elimination rate. Compared to the data analyzed, animal body requires 1874 minutes for complete elimination of toxic in the body.

RESERVOIR SILTING IN THE SIRET RIVER BASIN ENVIRONMENTAL AND PLANT CONDITION CHANGES

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Based on hydrometrical materials regarding runoff and sediment transport from Siret River gauging stations, we analyzed the factors and conditions of sediment transport from the study area. The evolution of the sedimentation processes from the reservoirs was monitored by the Hydrological Service of Siret Water Administration and by a department of Hidroelectrica SA, subsidiary Piatra Neamt. Quantities of sediments are impressive. Annual sedimentation rates vary between 3000-2000000 t/year, depending on basin size, the capacity of the reservoirs, runoff and many other factors which can influence the upstream transport of sediment. The capacity of the reservoirs from the Siret River Basin, to retain sediments, varies from 60-99%. For reservoirs with large capacities this value approaches 100%, while those with small volumes decrease to values of approximately 60%. This leads to a high degree of reservoir silting. Many of them are filled over 50% of the initial capacity, and some even more. Thus we are giving the example of reservoirs in Siret Basin with a very high degree of silting: Siret River: Bucecea Reservoir and Galbeni Reservoir – recent data indicate that both reservoirs are silted 50-60% of the initial capacity; Bistrita River: Vaduri Reservoir, Batca Doamnei Reservoir, Racova Reservoir, Garleni Reservoir are silted 60-70% of initial capacity; Tazlau River: Belci Reservoir upon destroying the dam in 1991 was filed at 60%. The silting effects of reservoirs have an important impact on the ecological conditions and on their effective exploitation. Ecologically speaking areas with morphological and biological peculiarities specific to wetland extend on Siret River basin. As for the operation of accumulations the silting process reduces the possibilities of exploiting complex water resources.

PRINCIPLES, OBJECTIVES AND MEASURES NECESSARY FOR THE SUSTAINABLE DEVELOPMENT OF WATER RESOURCES

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The new approaches to water protection involves concepts and principles adapted both to actual social - economic development level , as well as to requirements of sustainable development of water resources.

To achieve a good ecological status of water is required to be meet certain fundamental principles of water management which states:

- Basin-wide integrated management of water resources, quantity - quality;
- Hydrographical basin planning wich ensure longitudinal and transversal connectivity of rivers;
- Ensuring the aquatic protection flows and adjacent terrestrial ecosystems;
- Ensuring water requirements for population and economic activities;
- Renaturation of rivers.

An important role in this sense they occupy and work integrated qualitative and quantitative monitoring for know the condition of water resources relative to the goals set for their protection.

In this paper will present some aspect regarding principles, objectives compared with current status of surface water resources in some significant sections from the Siret River Basin.

ASPECTS OF FOREST PROTECTION FOLLOWING THE PROCESS OF FOREST MANAGEMENT CERTIFICATION ACCORDING TO FSC STANDARDS

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The paper evaluates the situation developed in the forest protection activity in Romania, as a consequence of the certification of an important forest area, according to FSC standards. The FSC standards adopted in forest management resulted in strong restrictions in using the majority of the pesticides authorised for forest protection. In the present paper are displayed the solutions adopted in other member countries of the European Union, in similar situations, and the possibility to adjust them to the local conditions are discussed. An additional task consists in identification of some pesticides with low toxicity and residues, according to the sixth FSC principle, in order to apply them for the limitation of the damages caused by the phytophagous insects in mature stands.

HABITAT OCCUPANCY PATTERNS OF GREY WOLF *CANIS LUPUS* (L, 1758) IN PUTNA-VRANCEA NATURAL PARK, ROMANIA

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Knowledge about the probability that a certain site is occupied by a species of interest can be of real help for a successful implementation of management and conservation programs. Occupancy models are focused on species occurrence in different study sites across a study area. Due to limited habitat accessibility for researchers and managers and the characteristic elusive behavior of wolves, there is a need for proper data collection and analysis to provide reliable occupancy estimations. This study aims to: i) estimate wolf population size in Putna-Vrancea Natural Park (PVPN) and ii) determine wolves distribution in the study area. PVNP is a 382 km^2 area overlapping the central-north-western part of Vrancea Mountains and is covered mostly with dense forests and many remote areas. Is characterized by low settlements density, and high density of forest roads due to development of forestry activities. Wolf occurence records were gathered from transect surveys, camera trapping and opportunistic surveys, performed from 2011 to 2013. Based on probability of detection parameter, estimated by modeling presence-absence data, and wolf density known from official estimates we performed Royle-Nichols analysis to establish the number of wolves in PVPN. We conducted this analysis using Presence software and we used Ramas Red List Professional software for assessing species distribution (Area of occupancy (AOO) and Extent of occurence (EOO)). Results allow a better assessment of wolves distribution and abundance patterns as a necesary and legaly required prerequisite to scientificaly underpin the species and habitats management plans.

THE INFLUENCE OF DIFFERENT TREATMENT TYPES APPLIED TO THE SEWAGE SLUDGE ON THE GROWTH OF THE *TRITICUM AESTIVUM L*. DROPIA CULTIVAR

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The sewage sludge is classified into biodegradable waste category by international legislation. The problem of this waste type is very complex due to its composition and quality. The sewage sludge can be used as an alternative like fertilizer into agriculture, if it respects the legislation (Order 344/2004). In the present study there were investigated biometric aspects in order to evaluate the effect of different sewage sludge treatment on the physiological process of growth of the *Triticum aestivum L*. Dropia cultivar, respectively the pasteurization and the exposure to UVC. The concentrations of the sewage sludge used in this study were 10 %, 25 %, 50 %, 75 %, 100 %. The pasteurization treatment was made on three levels: low, medium and high during one hour. Also, the ultraviolet radiation exposure was made on three different intensities: low, medium and high. Pasteurization of sewage sludge at concentrations above 70% inhibits growth of the *Triticum aestivum L*. Dropia cultivar unlike UVC which stimulates its growth at any dose. The benefits and environmental health risks due to the use of the sewage sludge as agricultural fertilizers were estimated.

ECOLOGICAL INDEX ASSOCIATED TO PHOSPHOGYPSUM STACK LOCATED NEAR BACAU CITY, ROMANIA REPRESENTED BY GEOSTATISTICAL ANALYSIS

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Phosphogypsum dump represents the storage location of the residual product from the technological process of the phosphoric acid which has been produced by Bacau Chemical Plant between years 1978 and 2004. Over time, the use of phosphogypsum in agriculture or as construction component of various finished products (paving, precast drains, asphalt mixtures, etc.) was attempted. Because of its slight radioactivity, its use was banned, being considered a potentially dangerous material. Therefore the area influenced by phosphogypsum dump is considered an environmentally problem. Environmental indicators are the tools commonly used in the assessment of the environment quality of ecosystems. This research was conducted to establish the geographic distribution of the degree of vegetation in the phosphogypsum dump area. Statistical distribution of the ecological indicator values can provide useful information for assessing the environmental impact. Abundant vegetation is spreading on NE side and rarely on the waste dump surface. The most common species of plants are the most resistant and easily adaptable to local environmental conditions (*Calamagrostisepigeios, Setariaviridis, Descurainia Sophia*, etc). This study is a part of a complex study which takes into account correlations between radiological and ecological indices.

FIRST REPORT OF *PHYLLOCNISTIS VITEGENELLA* (LEPIDOPTERA: GRACILLARIIDAE) IN ROMANIA

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Phyllocnistis vitegenella is a potential alien invasive species in Europe. It is a leafminer moth belonging to Gracillariidae family (Lepidoptera). It is a monophagous species, its hostplant being the grapevine (*Vitis vinifera*). Its origin is from North America. In Europe it was first reported from Northern Italy in 1994 in Province of Vicenza (Posenato & al.,1997). In the following years, it spread to other Italian regions. Its presence was also noted in 2004, in Slovenia (EPPO RS 2006/160), and in 2009 in Switzerland (Cara & Jermini, 2011). No economic damage has been reported yet in European vineyards. In Italy it develops four generations per year, beginning on the very young foliage. There are often several mines in a leaf.

Studies carried out in Italy, and in Switzerland showed that several native species of parasitoids are able to limit its populations.

The aim of this paper is to report the presence of *Phyllocnistis vitegenella* in Romania, which was first observed in October, 2013 in Bacau county (Racaciuni, Petresti – Pancesti).

POSTERS PRESENTATIONS

LEAD ACCUMULATION IN THE BODIES OF RANA TADPOLES (ANURA: RANIDAE)

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Lead is a chemical element from the heavy metals category. This metal is useless to biological organisms but it is very useful for humans, for their activities. The wastes resulted from the manufacture of the lead based products, are a huge risk factor for the aquatic ecosystems. The highest quantity of lead is used for the manufacture of batteries, cables isolation, artificial pigments, metal alloys, weapons, oil products and other products. In the atmosphere enter huge quantities of lead because of the burning of: fuels, garbage and coal. Also proceeds from the metals' extraction industry and chemical fertilizers production and use. Because of the water cycle in nature, lead reaches on the soil and in aquatic ecosystems but this is not all. The pollution of the surface waters with liquid wastes, pollution catastrophes and urban activities increased the lead quantity from the freshwater (Milencovic et al., 2005). The lead toxicity is very high. This makes some enzymes to be not active, produces damage of the nervous system, reproduction disease. It also affects organism's survival and development of the nervous system in the young stages (Hoffman et al., 2002). Some of the organisms most affected by lead are those from the aquatic systems. When the aquatic systems are polluted, the organisms that populate them are doomed to death (Coatu et al., 2008). The aim of the study was to determinate the bioaccumulation capacity for lead in aquatic organisms within a highly controlled environment. Our aquatic model organisms were frog juveniles, because they are present in almost all freshwater environments, they need an aquatic environment to grow and survive, they absorb a lot of chemical compounds throw skin, gills and from their food. They also are an important part in the food chain.

ECOLOGICAL INTERPRETATION AND DIAGNOSIS OF THE MAIN SOIL TYPES IN THE VINEYARD ECOSYSTEM "DEALURILE BUJORULUI"

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The soil is for most agricultural plants so their material support, and the most important source of food. As a natural resource, the soil is integral component of environmental factors that are also develops office or place of concentration and distribution of elements involved in the flow of natural circuits, of substances or energy, they enter into the functional and productive ecosystem. Biological potential of soil resources fertility characterize and reflect ecological vocation soil microflora, highlighting the impact of local factors and different environmental pollutants and anthropogenic stress factors or otherwise. Ecological interpretation of a soil is defined by two features of the soil: potential trophic and ecological zoning and local specifics. Organic diagnosis as a means of studying the environmental factors is a synthetic and complex analysis that can make evaluations on the effectiveness of a particular human activity through technology with a definite purpose in circumstances of complex environmental factors. The study was conducted in ecosystem Oancea wine center in "Dealurile Bujorului" vineyard, Galati County. Knowledge and ecological interpretation of quantitative and qualitative soil is achieved by the two basic characteristics of the soil, namely: potential food and specific global and local environmental [Chirita, 1974]. Soil survey was done in accordance with "Romanian System of Soil Taxonomy" (SRTS, 2003) and drafting methodology soil studies (ICPA, 1987). Ecological interpretation of soil was made by the methodology developed by Chirita in 1974. Within specific ecological sheets were analyzed 18 factors and environmental determinants, both quantitatively and qualitatively.

IMPROVE THE ENVIRONMENT BY CREATING GREEN SPACES IN TOWNS

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The theme of the paper is the "National program to improve environmental quality through green spaces in towns" in Buciumeni locality, Galaţi County.The program strategy on the protection and improvement of the environment, determined that the major goal in the field of environmental protection is to improve the quality of life in Romania by providing a clean environment to contribute to raising the living, better health thereof, to the preservation and improvement of unique natural heritage that Romania benefits. The need for the project derives from the need due to insufficient development of green spaces, parks, landscape arrangements with ecological, aesthetic and recreational.

The feasibility study was developed as a result of degradation of green spaces within the Buciumeni locality, following the destruction caused by economic and social development activities, the aim being to improve the environment and quality of life by increasing the green areas in the city, protection and their sustainable management and increase the living standards of the inhabitants. Lack of planning in this area leads to lower quality of living standards of the population and the emergence of serious health problems, elements intended public interest and constitute emergencies. This paper confirms that sustainable spatial development depend on biodiversity and the implementation of strong measures and tougher conservation areas and green areas in unincorporated enter or limiting expansion of residential areas, while prohibiting any construction authorization in green areas (parks / gardens) in the plot. "Projects that address pressing needs and achieved great public interest in support of harmonization of national legislation with the provisions of Article 7 of the European Parliament and Council Decision no. 1600/2002/EC on "Objectives and priority areas for action on environment and health and quality of life." Preserving and creating green areas, well maintained is an important means of protection for humans and the environment.

In coming years, Romania will have to implement landscape policies which the European Convention on the landscape, Florence 2000 provides important matters that fall between awareness of civil society, private organizations and public authorities in relation to the value of the landscape and need of protection but also issues relating to the protection, management and planning was.

INTEGRATE EVALUATION OF SIUTGHIOL LAKE ECOLOGICAL STATUS

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Siutghiol Lake is located in the north of Constanta and it is bordered on its eastern side by Mamaia summer resort and on the western side by increasing municipalities. The coastal area of the Black Sea has known an increasing and rapid development (new residential areas or touristic buildings) in the past years, which results in strong anthropogenic impacts on the lakes. In this context of economic development environmental remediation and ecological restoration is needed, in order to maintain or improve the status of a healthy ecosystem and of its resources and services that the development depends on.

The aim of the study is to emphasize the current ecological status of this ecosystem using an integrate analysis of chemical and ecotoxicological parameters, and biological invertebrate communities. Based on the identified issues we will be able to find the solutions for an adaptive management at hydrographic basin scale. The sampling methodology includes the multiparameter sonde (in situ measurements to show the actual water chemistry) and Microbiotest toxkits using invertebrates and superior plants for ecotoxicological assays, as well as biological sampling.

ASSESSMENT OF THE ORNITHOFAUNA BIODIVERSITY OF TERRESTRIAL, FOREST AND AQUATIC HABITATS FROM "SNAGOV FOREST" AND "SNAGOV LAKE" RESERVATIONS

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Ornithofauna studies were made in all the four seasons in the forest habitats and aquatic habitats from Snagov. Comparisons between data regarding ornithofauna from the past and the actual situation were made for establishing the degradation degree of ornithofauna communities, reduction of species populations and necessary measures for restoring species populations. For ornithofauna study the main methods were used – strips method, squares method, fixed point observation method, using photo cameras, binocular, videocameras. Field data were written in databases on field sheets. Analysing ornithofauna, both in flight and in the nesting areas, we noticed that bird species have larger nesting areas in the lake extremities and on the overflow channel rather than in the center of the lake, where a third of the area is considered scientific reservation. Exactly in this area the anthropogenic pressure is high (constructions, quays), making impossible nesting and even birds feeding.

Birds populations are already reduced, compared with the situation from 1999-2001, probably because of the decreasing of natural production and productivity of the lake, determined by overfishing and poaching, man being the only competitor for the same fish resources with fish eating birds.

Snagov lake is yet a nesting place for a series of rare birds from Natura 2000 Network (*Phalacrocorax pygmaeus*, *Alcedo atthis ispida*, *Podiceps cristatus*, *Podiceps griseigena*, *Aythya niroca*, *Podiceps ruficolis*, *Gallinula chloropus*, *Rallus aquaticus*).

From forest birds, the next nesting species are rare: *Aquila pomarina*, *Cocotraustes cocotraustes*, *Coturnix coturnix*, *Oriolus oriolus*, *Pyrrhula pyrrhula*.

Ornithofauna, both the forest and aquatic is subjected to an anthropogenic aggression, represented by hunting, ski-jet rides that produce big waves and destroy nests from the shores, noise over 150 dB, that lead to nest leaving by the adults. Allowed limit for sound is 70-75 dB, this being produced by music, horns, fireworks, firecrackers and celebrations.

The natural increase of birds or even the number of chicks that reach maturity is generally lower than in other type of ponds and lakes.

A durable management plan is imposed for ornithofauna conservation, but this would be hard to follow without application of some educational measures and penalties by the environment authorities.

NEW RESEARCHES REGARDING ICHTHYOFAUNA AND ANTHROPOGENIC IMPACT ON FISH COMMUNITIES FROM LAKE SNAGOV

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Ichthyofauna study was realized in 2011-2013. Previous researches were made in 1999-2001. Fishing was realized with trawlers, gills, rheophile bags and electrofishing in 6 stations, from the middle of the lake and near the shores. Fishes were also made at the lake's tail and on evacuation channel toward Ialomita river. Quantitative and qualitative analysis of Snagov ichthyofauna was made. Comparing the present situation with the one from 1999-2001 period we observed a drastically reduction of fish populations and even the dissapering of some fish species, especially the ones that were used for industrial purposes (carp – *Cyprinus carpio*, grass carp – *Ctenopharyngodon idella*, silver carp – *Hypophthalmichthys molitrix*). The inventory of potential punctual pollution sources and of those accidental or other anthropogenic influences was made. Even if water quality is better than 1999-2001 period, even if phytoplankton and zooplankton diversity is increased and in the process of restoring, still we can observe a decrease of individuals in all species populations, hence the biological productivity is lower, which indicates a deficiency in nutrients, this explaining the decrease of communities diversity and ichthyofaunistical associations, and also the total disappearance of some fish species and the regress of other species.

Fail to respect the prohinition periods and intensive use of gills led to drastically decrease of breeders number from all fish species, that in this 15 year period from the last researches led to species disappearing through overfishing and poaching. Realisation of wharfs and other type of buildings on the shores of the lake led to shore thicket disappearing and implicitly of reproduction places for many fish species.

COMPARATIVE STUDIES ON HERPETOFAUNA BIODIVERSITY OF WETLANDS AROUND BUCHAREST

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Aquatic and amphibious habitats around Bucharest have been studied relatively little, both in terms of fauna, flora and ecology. In this paper we present the herpetology fauna evolution in the last 20 years, signaling even some species that have not been cited until now.

For inventory of herpetology fauna species we used the following methods: strips method, fixed point observation method, transects method, photography, filming ethological and ecological sequences. Taxonomic and biometric data were noted in standard field sheets.

Over the last 20 years of observations, we observed, in certain areas, a decrease in amphibians and reptiles populations (Snagov, Scroviştea, Crivina, Moara Vlăsiei, Răcari), while in other areas (Comana, Fântânele, Vlad Tepes, Călugăreni, Căldăruşani) we observed an improvement of herpetology taxons in all stages, from larvae to adults.

The majority of aquatic habitats, those of eco-tone and the surrounding forest, especially in the older stands, herpetology fauna is rich and well represented as number of individuals in all categories (larvae - tadpoles, juveniles, adults), while in young stands are found only the adult stages and in small numbers.

MONTHLY DYNAMICS OF TERRESTRIAL TRUE BUGS COMMUNITIES FROM NATURE RESERVE,,SATCHINEZ SWAMPS" (INSECTA: HETEROPTERA)

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Terrestrial true bugs are a relatively large group of insects living in a wide range of habitats and using very diverse ecological niches. The propose of the present study was to investigate the activity of these insects within a one year period in order to reveal the monthly changes of Heteroptera communities and identify the efficiency of the traps in different habitats and periods. The study was conducted in ,,Satchinez swamps" Nature Reserve area, a small wetland located in western Romania. The samples were collected monthly, between April 2012 and March 2013, using pitfall traps. Fifty traps have been distributed equally and installed in five sample points (meadow, swamp, plum orchard, river shore and farmland).

A total number of 643 adult individuals were collected, belonging to 66 species mostly from Lygaeidae family. The traps were very efficient in the plum orchard, collecting 254 adult individuals (33 species). The traps proved to be inefficient in the river shore, collecting only 23 adult individuals belonging to 9 species but some of these species are very rare, two of them (*Alloeorhynchus flavipes* (Fieber, 1836) and *Omphalonotus quadriguttatus* (Kirschbaum, 1856) being mentioned for the first time in the Banat Region.

The activity of the true bugs reached the highest point in July when the traps collected a number of 183 adult individuals, other two small peaks were observed in March and October. Lowest activity was observed in January when no individuals were collected. An interesting result is that although the land was covered by snow in February 2013, the traps collected five individuals. This fact that suggests that some species are capable of feeding on low temperatures, under the snow cover. This is probably possible in zones were the lowest layer of snow melts, creating a space which is a few degrees warmer because the superior snow layer acts as a isolator.

CHEMICALLY MODIFIED CLAYS USED FOR ENVIRONMENTAL QUALITY

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In this study, catalysts were synthesized based on chemically modified clays through pillaring process with Al (III) and Fe (III) using commercial bentonite and acid-treated montomorillonite like KSF montmorillonite and K10 montmorillonite from Aldrich, as raw materials. The raw materials and chemically modified clays were characterized by: BET (Brunauer-Emmet-Teller) method and XRD (X-ray diffraction). Afterwards these catalysts were tested during wet oxidation with peroxides using phenol as target compound. Experimental results show that chemically modified clays with Fe(III) presented a higher catalytic activity in Fenton like processes than Al-Fe clays.

SPECIES OF INSECTS AND FUNGI THAT CAUSE LEAF INJURY IDENTIFIED ON EUROPEAN BEECH (*FAGUS SYLVATICA* L.)

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In Romania still are natural beech forest with high productive potential and resistance to biotic factors action. However climatic factors (severe drought of 1999 - 2004, 2007 – 2008 and 2011 - 2012 especially in central and eastern regions) have released the recent European beech decline in Romania. This phenomenon has generally occurred in old (>100 years), (almost) pure, and high productive stands, situated especially on plain sites with excessive clayey soils or on slopes with shallow or sandy soils. At the same time, in many stands, silvicultural operations (release cutting, cleaning, thinning), were not applied in time, therefore have been installed many different harmful species on beech. At the beech leaves, attacks were reported from the following species:

Insects: *Mikiola fagi* Htg., *Fagocyba cruenta* Herrich-Schaeffer., *Phyllonorycter maestingella* Zll., *Phyllocnistis unipunctella* Steph. şi *Diurnea fagella* Denis et Schiff.

Mites: *Aceria nervisequa faginea* Nal. end *Aceria nervisequa nervisequa* Nal.

Fungi: *Apiognomonia fagi* West.

ENVIROMENTAL ASSEMENT IN NON-ENERGY MINERAL EXTRACTION ALONG RIVER COURSES IN NATURA 2000 SITE – CASE STUDY

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Non – energy mineral extractions is a common activity along river courses in Romania, due to the fact that these rivers transport a great amount of sediments, especialy those from the eastern part of the country, and on the other hand, this is an accesible economical activity. After the Natura 2000 site were established this activity become the subject of enviromental assesment.

WORKSHOP “BIODIVERSITY UNDER ITS VARIOUS ASPECTS IN ROMANIA”

CONSERVATION OF BIODIVERSITY IN IAŞI COUNTY

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Biodiversity represents the variety and variability of living organisms inecological complexes in which they occur. There are: ecological diversityreferring to ecosystems/landscapes, specific diversity referring to species number in a given area; genetic diversity and cultural (human populations).

Biodiversity conservation is a synthetic discipline (taxonomy, ecology, biogeography, environmental geography, genetics and population biology) aiming at natural world protection and management. Ecological economy studies biodiversity's economical value. It is a crisis discipline at the same time, founded as scientific domain because none of the traditional disciplines was not enough comprehensive to decipher and at the same time reduce dangers addressed to biodiversity.

Biodiversity conservation studies species and habitats endangered by human activities but also efficiency of active protection measures, priority having key species, whose extinction (or significance decrease) leads to extinction of many species in the area (extinctions „in cascade"). On the other hand, reintroduction of key species does not compulsory lead to reinstallation of initial conditions.

There is a complex of factors that threaten species and habitats, so studies have a social, economic, politic, and ethic character. Because of the risk that argument of immediate benefits related to economical development to lead to nature and traditional culture destruction, conservationists' actions are not only scientific but also politic and educational, by collaboration with governmental and local decision factors and with local communities.

The territory of the Iasi county hosts 27 natural reserves, covering a total surface of 5343.49 ha,and also 22 NATURA 2000sites (4 SPA and 18 SCI), 33 dendrological parks and 8 forest special areas with the role of consolidation of slopes and atmosphere refreshing in the Iasi municipality; a regime of protection for these areas has been put in place trough the adoption of Decision 8/1994 of the Iasi County Council.

THE INVENTORIES OF COMMUNITY INTEREST FISH SPECIES FROM ROSCI0229 SIRIU, ROSCI 0006 BALTA MICA A BRAILEI AND NATIONAL PARK CALIMANI

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The community interest fish species (CIFS) behind the foundation of Natura 2000 network is composed of 27 fish species and the number of Sites of Community Importance (SCI) that host these species is 81 SCI. Between 2010 -2013 I realized SIIC's inventory in three SCI located in different areas of the country, which highlighted a number of issues regarding the conservation status and current and potential threats to the fish fauna.

ROSCI0229 Siriu, who according to Standard Datasheet has 3 SIIC, was analyzed in 2010. The 2 fishing trips (with a total of 9 fishing stations) has revealed the presence of 9 species of fish and 119 individuals. The community interest fish species identified were *Barbus meridionalis (petenyi)* and *Cottus gobio* which had a good ecological status. The community interest fish species which was not identified in the area of ROSCI0229 is *Gobio uranoscopus frici.*

ROSCI 0006 Balta Mică a Brăilei, who according to Standard Datasheet has 12 SIIC, was analyzed in 2012-2013. In the 9 fishing trips (with a total of 78 fishing stations) has revealed the presence of 34 species of fish and 2034 individuals. The community interest fish species presented in the Standard Datasheet whose presence has been found in the field are 9 fish species: *Alosa pontica*, *Aspius aspius*, *Pelecus cultratus*, *Cobitis taenia*, *Rhodeus sericeus amarus*, *Gymnocephalus schraetzer*, *Misgurnus fossilis*, *Alosa tanaica*, *Zingel zingel*. The community interest fish species presented in the Standard Datasheet whose presence was not found in field are 3 fish species: *Gobio albipinnatus*, *Gobio kessleri*, *Gymnocephalus baloni*. In addition, we identified another 2 SIIC not present in Standard Datasheet: *Zingel streber* and *Eudontomyzon mariae.*

Calimani National Park, has the the inventory period years 2013 and 2014. In 2013, in the 3 fishing trips (with a total of 37 fishing stations) have revealed the presence of four species of fish: *Salmo trutta fario, Cotttus gobio, Cottus poecilopus, Thymallus thymalus and a total of 220 individuals of which Salmo trutta has 71%..*

THE ECOLOGICAL DIVERSITY OF APPLE TREES

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Apples are among the most consumed fruit worldwide. In a temperate climate, apple trees occupy the largest orchard surface and yield the richest fruit production of all fruit trees. Given the importance of this cultivated species, ameliorative works contributed to the existence of more than 11000 apple varieties. The ecological plasticity of this species is rahter high. Even though the Malus genus has a high genetic diversity, grown varieties have a rather restrained genetic basis, due to their common origin. Out of over 11000 varieties grown in collections, only 30-40 of them yield more than 90% of the total crop.

In Romania, the National Directory of Plant Varieties accepted for propagation in 2012 comprises 62 apple cultivars. For the areas studied, tree research stations would recommend, 10-15 years ago, varieties that included a number of 15-20 apple cultivars. These varieties established in the years 1995-2000 are still maintained in propagation nurseries of research stations and of other companies. Considering that, in recent years, a number of new European varieties have been introduced for propagation purposes, the number of varieties introduced in Romania increases every year.

As a result of organizing a national apple tasting event, there emerges a concrete answer to the issues raised by the multitude of apple varieties grown: which are the best varieties that meet customer needs and which are the most favourable growing areas suitable for this variety? Another result is the fact that the regional position of older, currently grown varieties has been established in comparison with newly introduced European varieties. At the same time, the position held by apple varieties can be assessed in terms of organoleptic properties for cultivars considered to be genetically resistant and liable to fulfill a special role in promoting organic agriculture, as a measure of ensuring environmental protection and providing healthy food for the population.