

## OVERVIEW OF PROTISTS OF SHKODRA LAKE

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### ABSTRACT

Protists biodiversity and biological water quality of Shkodra Lake, based on bioindicator species are presented in this survey. The list of Protists of Shkodra Lake include about 378 genera with 1374 species and intraspecific taxa; 1071 of which belong to Protophyta and 257 to Protozoa. Most of the taxa belong to the Chromalveolata with 657 species and Archeoplastida with 483 ones. The bioindicator species of Cyanobacteria, Diatoms and Protozoa are used to assess the relative purity of Shkodra Lake waters. Regarding to the trophy and saprophy valences of the bioindicator species, Shkodra Lake has a good situation for its life. A big difference is observed in composition of species and abundance among different sampling points of the lake. The largest number of species is found in June and July, on the lake shores, while the smallest one is found in February, in the plankton of open waters. The heterogeneity of Shkodra Lake needs a long-term monitoring, in order to get a wider view of ecologic and trophic conditions of the lake waters. Data about the complexity of Protists habitats and microhabitats and their ecological role, especially in food networks and sustainable development of Shkodra Lake, are also provided.

**Keywords:** Protist, Protophyta, Protozoa, bioindicator, water quality, Shkodra Lake.

## THE EFFECT OF AGROMETEOROLOGICAL ELEMENTS ON CROP YIELDS AND STATISTICAL MODEL OF YIELD FORECASTING

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### ABSTRACT

The study of the effects of meteorological factors on crop production and the development of models for forecasting the yield have been the concern of agro meteorologists worldwide. This research work focuses on wheat production in two zones with diverse climate conditions in Albania. The most important factors that directly affect crop production are changes of climate conditions. Furthermore, wheat as part of this crop production has been attracted particular attention worldwide. In this framework, we decided to study, evaluate and estimate wheat production gain two weeks before harvest, based on the most favorable model for the conditions in Albania. There are a number of models and approaches considered from different researchers in the past and nowadays. All of them have their advantages and disadvantages and moreover different behaviors towards climate conditions of our country. Hence, after a thorough evaluation, we have chosen the best appropriate model and analyzed its results. This model is based on the multiple equations of regression, which consider all the climate elements. In addition, as the model requires, we have chosen the most significant periods for this plant, and evaluated it for the two most diverse climatic changes regions, but with the highest productivity in the country. The regions considered are, respectively, the Korça region, located on the South – East part of Albania, and it is known for its favorable agro-climate characteristics, and the Lushnja region, located on West part of Albania, known as lowland country.

**Keywords:** Forecasting, yield product, meteorological factor, equations of regression, wheat.

## VARIATION OF MICROBIAL POLLUTION (SF AND CF) IN WATER RIVERS OF TIRANA AND SHKODRA

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### ABSTRACT

During 2006-2010 years, ten sampling station in Kiri, Drini, Tirana and Lana rivers are taken in order to estimate the pollution level from SF and CF. All the station are choose in way to have unpolluted samples, that means before pollution and polluted ones in down streams or samples polluted by urban charges. The selection of monitoring stations is based on monitoring scheme of liquid discharges. In that scheme collector is considered the source of pollution to receiving surface waters. The samples are taken at the collector and also in distance 500 to 1000 m from point of discharge after mixing and dilution with receiving waters. *Faecal Coliforms/E.coli* and *Faecal Streptococci/Enterococci* are detected via Multiple-Tube Fermentation Technique or Most Probable Numbers (MPN) technique. The analysis of samples shows a high pollution level in Tirana and Lana rivers during all the year seasons, particularly during the summer and autumn season. Water of Tirana and Lana rivers results most polluted, respectively at level of  $10^4$ - $10^7$  for *faecal coliforms* and  $10^3$ - $10^5$  for *faecal streptococci*. Drini and Kiri are less pollution.

Keywords: Albania, water pollution, rivers, *faecal streptococci*, *faecal coliforms*,.

## RELATIONSHIP BETWEEN AIR POLLUTANTS AND SOME METEOROLOGICAL PARAMETERS IN THREE CITIES OF ALBANIA

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### ABSTRACT

This paper aims to perform a statistical analysis in order to evaluate the level of relationships between air pollutants as ozone and nitrogen dioxide and meteorological parameters as air temperature, solar radiation and relative humidity in three cities of Albania. Air pollutants and meteorological parameters are measured continuously in Tirana city and on expedition basis in Elbasan and Fieri cities during year 2006. Three main episodes during this year are taken in consideration and the analysis is based on hourly values of air pollutants and meteorological parameters. Diurnal variations of air pollutants and meteorological parameters are investigated at three cities during these episodes. According to the results of the statistical analysis there was found a strong positive correlation between ozone and air temperature with correlation coefficient R up to 0.91 and between ozone and solar radiation with coefficient R up to 0.73. Negative correlations are found between ozone and minimum value of relative humidity with coefficient R up to -0.88 and between ozone and nitrogen dioxide with coefficient R up to -0.97. Based on the results of this analysis the relationship between air pollutants and meteorological parameters in three cities of Albania varies from moderate to strong levels.

**Key words:** relationship; air pollutants; meteorological parameters; Tirana; Elbasan; Fier; correlation coefficient

## “IN VITRO” MEDIUM TERM CONSERVATION OF SOME SPONTANEOUS FRUIT TREES

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### ABSTRACT

The objective of our investigation is to evaluate a medium-term “in vitro” conservation protocol of some woody tree species (*Prunus avium* L., *Prunus mahaleb* L., *Zizyphus jujuba* Mill.). Wild relatives of cultivated fruit trees represent a source of genetic variability and can be very important in breeding programs and cultivation. For this reason, it would be of interest to use a method available for “in vitro” medium-term germplasm conservation, which involves strategies to slow plant growth through chemical and environmental manipulation of “in vitro” conditions. Effect of reduced sucrose and MS salts concentrations and combination of low temperature and light regime were examined using “in vitro” grown plant cultures. Maintenance in these conditions reduced microcuttings growth. To test the regeneration of the conserved cultures, they were transferred onto fresh culture medium. The examined species differed significantly in their survival. However they were similar in terms of proliferation ability, when they were transferred onto fresh medium. The effect of low temperature (4°C) combined with reduced light regime is the most effective method of medium term preservation for all the species. *Zizyphus jujuba* species resulted with highest survival rate in both used preservation methods. The optimal time of conservation without subculture on 4°C was 14 months for *Z. jujube* and about 6 months for *P. mahaleb*, and *P. avium*. Whereas reducing sucrose and MS salt (1/2MS) concentrations resulted optimal for 5 months for *Z. jujuba*, 4 months for *P. mahaleb*, and 3 months for *P. avium*.

**Keywords:** “In vitro” conservation, low temperature, reduced light regime, sucrose, survival, regeneration.

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## STATISTICAL STUDY ABOUT THE CHRONIC OBSTRUCTIVE PULMONARY DISEASES OF SHKODER DURING 2000 – 2010

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### ABSTRACT

In this article we consider the cases of Chronic Obstructive Pulmonary Diseases (COPD) in Shkoder, during 2000 – 2010. Also we have considered the hospitalized cases in the Regional Hospital of Shkoder. The morbidity of these diseases is studied according selected age - groups, gender and socio - demographic characteristics (place of residence: rural vs. urban areas). The data are taken from the Statistic Office of Hospital. The method is simple, analytic and descriptive and evidences the incidence of cases. From statistical analyses of the data were concluded that the number of morbidity is going to be high in the last decade and is linked with the changes in environment as the low air quality. The symptoms and diseases associated with air pollution are the same as the non oncogenic conditions commonly associated with cigarette smoking. In addition, respiratory illness in early childhood has been associated with chronic exposure to only modestly elevated levels of traffic-related gases and respirable particles. Recent population based studies comparing cities that have relatively high levels of particulate exposures with less polluted communities suggest excess morbidity and mortality from cardio respiratory conditions in long-term residents of the former communities. This finding, in part, has led to greater emphasis on publicizing pollution alert levels. One can only advise individuals with significant cardiopulmonary impairment to stay indoors during periods when pollution exceeds current standards. The levels of dust in Shkodra presented in this paper in microgram/m<sup>3</sup> which are higher than recommended levels of World Health Organization, WHO. The air quality connected with transport car, combustion of solid wastes and emission in environment air pollutants as: oxides of sulfur, nitrogen oxides, mono and carbon dioxide, hydrocarbons, lead, soot, dust and cancerogenic substances which are the main factors increasing the cases of Chronic Obstructive Pulmonary Disease in Shkoder. COPD is also a disease of increasing public health importance around the world. GOLD estimates suggest that COPD will rise from the sixth to the third most common cause of death worldwide by 2020. Some investigators have reported increased respiratory symptoms in those living in urban compared to rural areas, which may relate to increased pollution in the urban settings. With high rates of COPD reported in nonsmoking women in many developing countries, indoor air pollution, usually associated with cooking, has been suggested as a potential contributor. In most populations, ambient air pollution is a much less important risk factor for COPD than cigarette smoking. Although several specific occupational dusts and fumes are likely risk factors for COPD, the magnitude of these effects appears to be substantially less important than the effect of cigarette smoking.

**Key words:** chronic obstructive pulmonary disease, respiratory infection, morbidity and mortality, air quality

## HYGIENIC-SANITARY EVALUATION OF THE DRINKING WATER PIPELINES IN THE CITY OF VLORA AND THE IMPACT ON COMMUNITY HEALTH

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### ABSTRACT

In the city of Vlora the production capacity of drinking water, is higher than the amount of water which reach's the population. The drink-water pipeline is very old and amortized which led to drink-water losses and contamination of the drink-water causing gastro-intestinal disorders to the population. The methodology applied focused on observation and examination of the drink-water samples. Drink-water samples were taken in 22 different checkpoints in the period January-December 2010. The drink-water capacity of Vlora city is much higher than the capacity supplied to the population. The data collected from the drink-water supply Department shows that from 1 million m<sup>3</sup> drink-water only 560 thousand m<sup>3</sup> goes to the population which means that over 40% of the drink-water supplies leaks away because of the outdated pipelines. From the 6908 drink-water samples taken in different location of the city, 171 of them or 2.5% results with microbiological contamination. During 2010, 6609 cases with gastro-intestinal disease caused by contaminated drink-water were registered in the public hospital. The outdated drink-water pipelines and the massive losses, makes that the drink-water supply capacity is much under the population demand on the other hand the leaks in different parts of the pipeline cause contamination of the drink-water on those area by increasing so the population vulnerability to disease.

**Key words:** drink-water pipeline, contamination, gastro-intestinal disease

**MICRONUCLEI INDUCTION IN *RANIDAE* & *BUFFONIDAE* TADPOLES BY THE PIRETHROID INSECTICIDE LAMBDA-CYHALOTHRIN**Valbona Aliko<sup>1</sup>, Adiola Biba<sup>1</sup>*Department of biology, Faculty of Natural Sciences, Tirana University, Tirana, Albania.**e-mail: valbona.aliko@yahoo.com***ABSTRACT**

Pyrethroid lambda-cyhalothrin genotoxicity was evaluated using the micronucleus test in *Ranidae* & *Buffonidae* tadpoles. The effects of concentration and exposure time on the micronuclei frequency were studied in blood smears obtained from tadpoles exposed to four concentrations (0.02, 0.1, 0.2 and 0.4 µg/L) of the compound for 24, 48, 72 and 96 h and 8, 15, 20 and 30 days. As a positive control, tadpoles were exposed to cyclophosphamide (5 mg/L). The micronucleated cell frequency was expressed per 1,000 cells. *Ranidae* & *Buffonidae* tadpoles exposed to increasing concentrations of lambda-cyhalothrin showed an increase in the micronuclei frequency in peripheral blood. Tadpoles exposed to cyclophosphamide (CP) also showed a significant increase in micronucleated erythrocytes which peaked after 15 days. These results suggest that *Ranidae* & *Buffonidae* tadpoles may provide a useful model for monitoring water pollution.

**Key words:** genotoxicity, micronucleus test, lambda-cyhalothrin, tadpoles.

## ON THE PRESENCE, CONSERVATION STATUS AND DISTRIBUTION OF THE OTTER (*Lutra lutra*) IN THE SEMANI RIVER WATERSHED

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### ABSTRACT

A study on the presence, distribution and conservation status of the otter (*Lutra lutra*) in the Semani river watershed, including Devolli and Osumi rivers and their main tributaries has been conducted during 2009-2011. River sections of upper, middle and lower Devolli, Osumi and Semani, their main tributaries of Devolli, (Perroi i Malesise, Dusharit, Graboves, Verces, Tomorrices, Holtes), Gjanica as well as a number of lakes and water reservoirs included in the watershed of Semani river have been surveyed. Data on the presence and territorial marking intensity have been collected and assessed. Changes in the distribution patterns of the otter by seasons and water level fluctuations in the main rivers have been reported. Otter is present in Devolli and Osumi river, and lower sections of their main tributaries, although in low abundance. It is not present nearby the main urban areas such as Gramsh, Çorovode, Berat and Ura Vajgurore. Surprisingly, otter is present, although in very low abundance, in most of Semani river. Gjanica river has no signs of otter presence, due to long time impacts of oil industry in the river biota. Otter is also present in some water reservoirs included in the Semani river watershed, showing its opportunistic behaviour and adaptation strategies to survive in a very dynamic and challenging environment.

**Key words:** Semani River watershed, otter, conservation status and distribution.

## IMPROVING URBAN ECOSYSTEMS USING INFORMATION AND COMMUNICATION TECHNOLOGIES

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### ABSTRACT

Since the industrial revolution, our world was involved into many important challenges, as the spontaneous industrialization and urbanization processes. It's our obligation to work on environmental challenges caused by these unplanned changes. These processes are able to produce in a very short period a decuple growth of the population in different cities. At the same time these processes may cause the depopulation of other cities. Considering these transformations, recently the world has been interested on smart urban ecosystems, as an important part of the human activity. The community involvement and the urban transportation are the permanent inducements of a sustainable and valuable development in urban ecosystems. We are indispensably obligated to look for new ways and methods for environmental solutions that deeply help the community. This paper is going to be a mixed production of the Physical Geography and the Information and Communication Technologies, Web-based GSI especially. These new methods aid the public participatory on environmental decision making.

**Key words:** physical geography, information, urban ecosystems

## MILLIPEDS' DISTRIBUTION DEPENDING ON THE TYPE OF SOILS

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### ABSTRACT

There are some environmental factors observed to have an impact on millipedes' distribution. Millipedes are very sensitive toward such conditions as temperature, sogginess, sea level height, soil type according to humus level and chemical components, even the soil's structure. In this study we give datas on these pedologic factors on the millipedes' distribution, according to the species and observed individuals' numbers. These datas are collected in 19 stations belonging to 8 area zones. There are known datas for each station, according to the type of soil, the structure, chemical components and humus levels. We have studied the chemical components and their impact on the soil types. The study is concentrated on the different classes of diplopods. We have observed that these creatures are found almost everywhere. We have also noted that there is a related dependence between the soil's type and the creatures' distribution. Overall, the millipedes usually stay away from the sandy and limestone soils.

**Keywords:** environmental factors, millipedes, diplopods, pedologic factors.