The Criteria Air Pollutants Levels During Calm Atmospheric Conditions: A Case Study

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ABSTRACT

Air pollutants may cause changes in atmospheric composition and chemistry, which results in global warming, ozone depletion, dry and wet deposition, and unwanted effects to human, animal, plant and material. Emissions from mobile sources have been one of the major sources of air pollution in some big cities. Stationary emission sources generally have an important contribution to the air pollution. Over the past several decades, the development of inefficient heavy industry and power stations, fuelled by poor-quality lignite has created major pollution episodes.Criteria air pollutants including CO (carbon monoxide), NO*x* (NO +NO_2) (nitrogen oxides), O_3(ozone), SO_2 (sulphur dioxide) and PM (particulate matter) are generally accepted as the quality parameters of ambient air. The high pollution levels is monitored in urban situated mountainous areas during calm conditions (stable thermal inversion and wind velocity <1m/sn).This study were researched interaction of the pollutants during winter days with calm conditions. For this purpose, CO, PM, SO_2, NOx and O_3 concentration were monitored by mobile station when lower temperature value (< -7^{o}C) and lower wind velocity (< 1m/sn) for twenty four days during 1995-1997. The relationship among the pollutants was statistically analyzed using the RATS (Regression Analysis Time Series) programme. The pollutants concentration were estimated dependent on guessed pollutant's previous day concentration and other pollutant concentration. Determination coefficient of proposed statistical models varied from 0.49 to 0.86. The model was good for SO_2, but for CO was weak. According to the equation for SO_2, the level of SO_2 increased with increasing NOx and TSP levels, but SO_2 decreased with increasing O_3 levels. It was found that the previous day concentration for SO_2 was not effective parameter.

Key Words: air pollution, calm atmospheric conditions, previous day concentration, regression analysis

Factors Affecting the Sustainability of Medicinal and Aromatic Plants in Köprülü Kanyon National Park, Turkey

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ABSTRACT

Koprulu Kanyon is one of the largest national parks with a high diversity of medicinal and aromatic plants (MAPs) in Turkey. Local communities gather MAPs to provide for their subsistence needs (e.g. food and primary medicine) as well as to generate cash income to lift their lives out of poverty. However, the lack of a comprehensive management mechanism for controlling the wild-collection of these species threatens their long-term sustainability. However, the sustainable wild collection of these species is necessary to meet the needs of present and future generation – the essence of sustainable development. In view of this desired goal, the purpose of this study is to evaluate the factors and also interrelationship among those factors that directly and/or indirectly affect the sustainability of MAPs in Köprülü Kanyon National Park. The conceptual framework for sustainable use of natural resources developed by the World Conservation Union Sustainable Use Specialist Group was adapted to the study to assess the factors affecting the sustainability of MAPs in the national park. The results of this analysis revealed that population, institutional (formal and informal), and economic factors and interrelations among them directly and/or indirectly influence the sustainability of MAPs in the national park. Assessment of the factors showed that a powerful management plan and permanent monitoring mechanism are needed to achieve the long-term conservation and sustainability of MAPs. Finally, possible conservation options and instruments are examined for promoting and ensuring the long-term sustainability of MAPs in the national park.

Key Words: Medicinal and aromatic plants, sustainable use, conservation, Köprülü Kanyon National Park

FLORISTIC AND CHOROLOGICAL RECORDS FOR MONOCOTS OF THE LAKE SHKODRA

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ABSTRACT

Flora of the freshwater wetlands ecosystem of Lake Shkodra is very rich. About 236 aquatic and wetland plant species and subspecies, of them 112 Monocots were reported.
New floristic and chorological records regarding to the monocots of Lake Shkodra and Delta Buna basins during our field trip were observed. Altogether, 5 plant species and 2 subspecies of Monocots are reported and discussed, of which 3 species and 2 subspecies: *Carex michelii* Host 1797, *Juncus sphaerocarpus* Nees 1968, *Najas flexilis* (Willd.) Rostk. & W.L.E. Schmidt 1824, *Carex viridula* subsp. *oedocarpa* (Andersson) B.Schmid 1983 and *Romulea linaresii* Parl. subsp. *graeca* Béguinot 1907 are new for the flora of Albania, while 2 species: *Schoenoplectus litoralis* (Schrad.) Palla and *Elodea canadensis* Michx for first time from Delta Buna were reported.
Romulea linaresii subsp. *graeca* is an endemic of the Aegean Islands to West Turkey, while *Najas flexilis* is rare in the European portion of its range and is strictly protected by Appendix I of the Berne Convention.
The variability of the certain taxonomic characters, life forms, preferred habitat and actual knowledge for the most of them are presented. Also, the distribution of all species was mapped on 10 x 10 sq. km and shown in a UTM grid system.
Key words: Monocots, plant species, subspecies, endemic, wetland, Lake Shkodra, Albania.

TOWARD A LANDSCAPE ECOLOGY OF CITIES - BEYOND BULDINGS, TREES AND URBAN PARKS IN PRISHTINA KOSOVO

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ABSTRACT

Urban green space is defined as all publicly owned and publicly accessible open space with a high degree of cover by vegetation such as:parks, woodlands, nature areas and other green space. These spaces have different functions in cities, at several levels such as the environmental, ecological, social, economic, cultural and aesthetic, promoting the image and character of an urban area.The area of Prishtina (572 km^2, about 600.000 inhabitant) represents one of the largest Kosovo metropolitan areas. The average amount of green spaces per capita is approximately 2.5 m^2.In this study we use a socio-ecological model as framework when studying influences on the use of respondents nearest urban green space in the Prishtina city of Kosovo. Data were obtained from a survey for 1000 randomly selected adult residents within the central part of the Prishtina city. We tested the relative importance of different factors (area size, distance to the area,use of different ages) on the frequency of use of the nearest urban green space.According the respondents distance to green space is the most important factor related to its use(< 300-350m), while the favorite biggest green sapce was about (1-2 ha). Other important motivations to visit green space are:to reduce stress, relax (53.8%); to exercise, keep in shape (59.5%); for visit together with friends and family (55.4%).The results show that is visited open green space 1-3 times a week by (37.5%) of the respondents, 4-5 times a week (12.5), while (8.3%) visit open green space evry day, only (2.5 %) never visit green space.

Key words:green space size, urban trees, environment, Prishtina, respondents.

MOSSES FROM LURA REGION (ALBANIA)

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ABSTRACT

The bryophyte flora of Albania is not sufficiently known. Preliminary data about moss flora from Lura National Park area (Dibra district) are given for the first time in this paper. During a field trip in August 2007 were collected *ca*. 150 samples in three different sites, in Fushe Lura and at the area of Lura lakes. Altogether 62 moss species were recorded, 48 species recorded for the first time for Dibra region. Moreover, nine species were new for Albania: *Brachytheciastrum olympicum*, *Brachythecium geheebii*, *Dicranum brevifolium*, *Dicranum tauricum*, *Hedwigia ciliata* var. *leucophaea*, *Heterocladium dimorphum*, *Plagiothecium curvifolium*, *Racomitrium elongatum* and *Schistidium papillosum*. Three taxa have conservation value according to the Red Data Book of European Bryophytes (ECCB 1995): *Brachythecium geheebii* (R, *rare*), also endemic for Europe, *Pseudoleskea saviana* (RT, *regionally threatened*) and *Schistidium papillosum* (K, *insufficiently known*). The occurrence of several red listed species and the new species recorded for Albania indicate about the biodiversity importance of Lura NP. However, this study was a preliminary investigation of moss flora; further exploration will certainly increase the number of species.

Keywords: Mosses, Biodiversity, Lura region, Albania

AIR QUALITY IN THE RECREATION AREAS OF THE CHIŞINĂU CITY BY BIOINDICATION

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ABSTRACT

Green areas are an important component of urban ecosystem which also associates a range of benefic functions for people, especially socio-cultural, aesthetic and recreational. The ratio of green areas per one Chisinau city inhabitant is about 30 m^2 (World Health Organization recommends about 50 m^2). Taking into consideration the insufficiency of green areas but also the citizens' intensive attendance of these, particularly at the end of the week and during summer, their study and environmental state monitoring is rather actuality. One of the current methods applied to investigate the state of environmental components is bioindication, which can provide accurate and comprehensive information concerning the environmental quality of investigated components. The study conducted in 2003-2007, in 18 recreation areas of Chisinau, showed that the air in most of the areas (represented by green areas) is polluted with SO_2 (0,2 to 0,3 mg/m^3 air), which was additionally confirmed by the values of the Index of Atmospheric Purity (IAP). Lower air pollution by SO_2 has been recorded in green areas located in the Northern part of the city, whereas heavily polluted air was recorded in various green areas located in South of city.

Keywords: urban ecosystems, recreational areas, lichen indication, green areas, SO_2 pollution.

Influence of the UV Radiation on Rhodamine WT Fluorescence in Water Samples

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ABSTRACT

The fluorescence ability of Rhodamine WT enables its using as artificial tracer in the water system studies. The problem is dealt with in relation to applying Rhodamine WT (RhWT) to trace and determine water movements within the karstic system and underground waters. Rhodamine WT has been used as an artificial tracer for the first times in our country on Mali me Gropa system study (2002). UV radiation may induce photochemical decomposition of the dye which can cause large measurement errors on measurements of Rhodamine WT fluorescence intensity. This paper presents the obtained results in our lab studying the influence of UV radiation on Rhodamine WT fluorescence in water samples in different conditions so-called: 'in the light' and 'in the shadow'. We have studied this influence putting water samples containing Rhodamine WT in colorless glass bottle and brown glass bottle in each situation mentioned above. The concentration and synchronous scan methods were used for the measurement of Rhodamine WT fluorescence by the means of a Perkin Elmer LS 55 Luminescence Spectrometer. The photodecomposition results help us to determine if the dye can be used or not in a water system study with tracing experiment. According to these results we can decide the conditions of the transport and storing of the water samples, too.

Key words: Spectral Determination, Rhodamine WT, Fluorescence Intensity (I_F), Synchronous scan, artificial tracer.

PALEOPALYNOLOGICAL STUDY OF LEGUMINOSAE AND ROSACEAE FAMILIES IN ELBASAN REGION

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ABSTRACT

The study is performed in Elbasan city. This city is situated in the middle of Albania. It is one of the biggest cities of Albania. A lot of biological studies have been realized in this region during two last decades' periods. This study provides some paleopalynological data about the dispersion of Leguminosae and Rosaceae families during Quaternary period in the area where is situated Elbasan. The aim of this paper is to present the correlation between the depth and dispersion of Leguminosae and Rosaceae families on different periods of time. For this purpose we took some samples from various layers of soil, starting from the surface to four meters depth.Palynological data for these families were provided for the first time in the Albania's palynological literature.According to the analyses of these samples we found out several interesting data that showed clearly the correlation between the depth and number of spores and pollens for these two families.

Key words: Paleopalynological, Quaternary period, spore, pollen, leguminosae, rosaceae.

AMPLIFIED FRAGMENT LENGTH POLYMORPHISMS (AFLPS) GROUP POPULATIONS OF *SALVIA OFFICINALIS* OF ALBANIA IN ACCORDANCE TO THEIR GEOGRAPHICAL LOCATIONS

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ABSTRACT

The gene pool under study contains 80 genotypes of *Salvia officinalis* L., belonging to eight geographically quite distant areas (Tomorr, Berat; Tepelenë; Përmet; Ulzë; Shëngjin; Valbonë; Qafë Thanë, Pogradec; Llogara, Vlorë) of Albania. The Amplified Fragment Length Polymorphisms were the category of molecular markers used to evaluate the intra-populational and inter-populational diversity. A total of 63 molecular markers were received from which 20 were polymorphic.The distribution of the molecular markers among the genotypes was used to construct binary matrices, which were elaborated via the soft NTSYS to construct dendrogrammas of similarity among genotypes of the same population, among the eight populations, among populations of close geographical locations, and finally among the eighty genotypes all together. They clarified the fact that genotypes of the same populations shared from 30% to 60% and to 80% similarity; that the populations of the near geographical locations grouped together giving this way a strong indication on the important role of the environmental conditions into the genoma of this species; and that the 80 genotypes compared to each other shared at least 70% similarity. Once more the AFLP-s proved to be a very useful tool for the effective evaluation of the genetic diversity in population level at plant species. They grouped the populations of *Salvia officinalis* according to their geographical affinity indicating that the intraspecific variability at this species is closely linked to the environmental conditions.

Key words: genotype, population, diversity, environmental conditions

BIODIVERSITY OF A PROTECTED LACUSTRINE COMPLEX WITHIN THE LOWER HYDROGRAPHICAL BASIN OF THE JIU

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ABSTRACT

The lacustrine complex Valea Preajba, located within the plain in the hydrographical basin of the Jiu river, is included in the category of wet areas. The main ecological feature that defines the protected area consists in the fact that on an area not exceeding 30 hectares, there is grouped a great variety of ecosystems: unevenness of the ground in the shape of small hills, pastures and meadows, agricultural lands and a complex hydrographical structure: springs, streams, rivers, marshes, small reservoirs. All these are populated with a variety of plant and animal species which confers to the area an ecological character special for Oltenia Plain and even for Romania.
In the lacustrine ecosystems, there have been identified 36 paludous and aquatic macrophytes species, dominated by *Phragmites communis, Typha angustifolia, Scirpus lacustris, Heleocharis palustris, Lemna minor, Nimphaea alba, Potamogeton natans, Mentha aquatica, Myriophyllum spicatum, Ceratophyllum submersum*; 78 species of periphytic and planktonic algae; 13 large groups of benthonic invertebrates dominated by the larvae of Chironomidae, Coleopterae, Ephemeropterae, Heteropterae, Gastropodae; 10 species of fish *Cyprinus carpio, Carassius auratus gibelio, Rutilus rutilus, Abramis brama, Pseudorasbora parva, Perca fluviatilis, Sander lucioperca, Lepomis gibbosus, Alburnus alburnus*. The area is populated by 3 species of amphibians, 5 species of reptiles, 20 species of birds and 7 species of mammals.

Keywords: lacustrine complex, the Jiu River, biodiversity, Romania.

EXTRACTION OF HYPERICUM PERFORATUM ME HEXAN, DCM, AND LIQUID CO2

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ABSTRACT

Medicinal and aromatic plants are very important for the economy of Albania. Thousands of tons of medicinal and aromatic plants are exported every year from Albania. Hypericum Perforatum is a very important medicinal plant with very well known effect on the mood of people and as an antidepressant. Extracts of this plant have been used for centuries for internal use and for external use. In literature there are examples of chemical analysis of Hypericum Perforatum using different extraction methods. In this study we are more interested in comparing its volatile components using subcritical CO2 extraction and other traditional extraction methods. The plant used was a locally collected plant which before extraction was dried to a constant weight and grinded as a fine powder. The chemical composition of subcritical CO_2 extraction was compared towards the chemical composition of extracts obtained by Soxhlet extraction using as solvent hexane and dichloromethane. The CO2 extraction was done in pressurized autoclave at 65bar and 32^0C. The crude extract of subcritical CO2 were than diluted in an appropriate solvent and its content was studied with TLC and GC. The crude extracts of solvent extraction were treated at the same way, but after evaporating the excess of solvent. The identification of the volatile components was done by Mass Spectroscopy.

Keywords: Hypericum Perforatum, GC-MS, subcritical extraction