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THE METEOROLOGICAL ROLE ON THE SURVIVAL OF BIRDS IN LIMBE BOTANIC GARDEN, SOUTHWEST REGION, CAMEROON

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ABSTRACT

The association of atmosphere and wildlife population is prominent in ecological management strategies. Meteorological changes do not only determine the behavioral activity of wildlife, rather also play a major role in surviving them in their habitats. Many bird species survive climatic conditions, such as extreme temperature situations through migratory movements to other areas with conducive climate. The coastal region of Cameroon is rich in bird population and species, but very little studies have been carried out on their inventory, social organization, and ecological impact on their behavior. Hence, the aim of this study was to assess the impact of meteorological conditions on the behavioral activity of birds in Limbe Botanic Garden. Research data was collected each day from 8:00 am – 5:00 pm, for three months. Both behavioral activity and atmospheric environmental factors were collected simultaneously. In the study meteorological conditions showed a significant association, $X^2 = 23.352$ $df=6$ $P=0.001$, $X^2 = 5.751$ $df=6$ $P<0.05$, and $X^2 = 43.227$ $df=45$ $P<0.05$ on automobile traffic noise, food type, and bird type respectively. More so, meteorological conditions recorded 59% on sunshine, 24% on rainfall, 11% on cloud, and 6% on wind respectively. The most observed birds were African thrush (*Turdus pelios*) 18%, common bulbul (*Pycnonotus barbatus*) 13%, and grey-backed camaroptera (*Camaroptera brevicaudata*) 11%, while the least observed were grey-crowned negrofinch (*Nigrita canicapillus*) 2%, black-and-white mannikin (*Lonchura bicolor*) 2%, and african palm swift (*Cypsiurus parvus*) 2% respectively. Also, bird type showed a positive significance $X^2 = 19.682$ $df=15$ $P<0.05$ on landscape. Furthermore, landscape revealed a positive correlation significance $r = 0.102$ $P<0.05$, and $r = 0.308$ $P=0.023$ on meteorological conditions and food type respectively. The study examined three key birds' activity, feeding 39%, movement 37%, and roosting 24% respectively. However, the rich floral vegetation with many bird species is a key attraction to research and tourism in the garden. Most of the bird species in this garden are sea birds, since the garden is adjacent to the sea. Finally, the study recommends an inventory on the population of birds in the garden in order to enhance their conservation. Understanding the number of bird species, their population and ecology is important to wildlife conservation management plan.

Keywords: Atmosphere, wildlife, birds, Garden, Activity, Inventory, Population.

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ACTIVITY OF THE MICROBIOCENOSE OF THE ROOT ZONE OF CORN PLANTS UNDER THE ACTION OF PLANT PROTECTION AGENTS

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ABSTRACT

The vast majority of modern chemical poisons solve the problem of diseases and pests on agricultural plants. However, their use causes deterioration of the ecological condition of agrocenoses. The biological activity of the soil of the root zone of corn was studied during the pre-sowing treatment of seeds with a complex of microorganisms No.1 + No.2. It was found that the use of a complex of microorganisms No. 1 + No. 2 reduced the number of micromycetes by 1.8–2.5 times. The level of antifungal activity increased 4–7 times compared to the control, and 1.5 times compared to the options where chemical preparations were used. Therefore, bioagents of complex No. 1 and No. 2, being introduced into the root zone of corn plants, initiate changes in the functioning of the microbiocenosis and protect plants during the growing season. We believe that the complex of microorganisms No. 1 and No. 2 is promising for further biotechnological developments.

Key words: carbon dioxide emission, biomass of microorganisms, antifungal activity, phytotoxicity, number of micromycetes, maize, biological products, microorganisms, biofungicide.

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PHYTOCOENOSES UNDER DIFFERENT PHYSICAL-GEOGRAPHIC CONDITIONS: INTERZONAL, INTERHEIGHT BELTS, EXTRAZONAL ONES, ECOTONES AND PARAGENESE (LAKE BAIKAL REGION)

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ABSTRACT

This paper presents information on the vegetation of concrete environments - zonal, interzonal, interheight belts and extrazonal ones as a result of studies done by numerous vegetation researchers for different regions during many years. As this information is separate statistics in the characteristics of the vegetation cover for environmental zones and height belts, it is necessary to take it into account while characterizing the heterogeneity of vegetation structure under different physical-geographic conditions of the vast Baikal Region: this is an important aspect of such studies. Taking into account of opinions of different researchers concerning the characteristics of the structure of different territories favors the understanding of structural peculiarities of the coenoses under concrete physical-geographic conditions at a concrete territory. Stating of typological diversity of phytocoenoses as of proxies of vegetation modern state and formation trends allows to perform in a more concrete way assessments and forecasts of the development of different environments at a regional-topologic level of their spatial and temporal organization.

Key words: phytocoenoses, physical-geographic conditions, interzonal, interheight belts, extrazonal, ecotones, paragenese, Lake Baikal region.

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COLEOPTEROPHAUNA OF THE REC-RAPSH REGION, NORTHERNMOST PART OF ALBANIA: A TAXONOMIC AND ECOLOGICAL ASSESSMENT

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ABSTRACT

The Coleopterofauna of the Rec-Rapsh Region (northernmost part of Albania) were the subject of a taxonomic and ecological assessment in this study. The aim was to investigate the diversity of species within the Coleopterofauna and assess the relationship between these species and the local environment. The results showed a rich and diverse range of species, with several new species being identified. The analysis revealed a strong correlation between the presence of Coleopterofauna species and the specific environmental conditions of the region, including climate, vegetation, and topography. This study highlights the significance of conserving the unique biodiversity of the Rec-Rapsh Region, which is particularly vulnerable due to its location in the northernmost part of Albania. Data are provided for 20 species of endangered Coleopterofauna, which belong to different categories of endangerment according to IUCN. Furthermore, the results of this research have important implications for our understanding of the relationships between insects and their environment and will provide a basis for further studies of the ecology and evolution of these fascinating insects.

Keywords: Rec-Rapsh Region, Coleopterofauna, ecology, environment, biodiversity, Threatened categories.

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SOIL MANAGEMENT IN AGROECOSYSTEMS - IMPACT ON THE CATION-ANION COMPOSITION IN THE AERATION ZONE OF SOILS

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ABSTRACT

The research aimed to analyze the cation-anion composition of the soil solution in dark-grey podzolized soil under the influence of long-term anthropogenic factors. Over the extended application of both mineral and organic fertilizers, changes in the cation-anion composition of the soil were observed, depending on the dosage of mineral fertilizers and their distribution within the soil profile. When the amount of mineral fertilizers was increased from 265 kg NPK per hectare to 397 kg per hectare, a noticeable decrease in soil solution pH was observed, with pH levels dropping to 6.1 and 6.0, as compared to the control variant without any fertilizer application, which exhibited a pH of 6.3. The application of mineral fertilizers and manure additionally enriched the soil with ions of organic and inorganic acids, what became the reason for the redistribution between mobile and immobile forms of calcium and magnesium in the direction of increase of their mobility beyond the soil profile. The greatest accumulation of sulphate was observed at a depth of 160–280 cm due to the migration of their water-soluble forms. The main quantity of chlorine was moved and accumulated in the soil layer of 120–280 cm, and the increase of mineral fertilizers increased the content of chlorine in the aeration zone.

Keywords: cation-anion composition, agroecosystem, fertilization, dark-grey soil, exchange acidity, migration.

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DATA SNOW TRENDS IN THE ILLINOIS STATE

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ABSTRACT

The Chicago area there are in the south-eastern of Lake Michigan in the north of Illinois State with climatic influences from Lake Michigan. The data obtained refer to the stations Chicago, Freeport, Rockford, Kenosha, Aurora, Gary, Joliet, Ottawa, Dixon, Clinton, Dekalb, Kankakee, Pontiac, Peoria, Bloomington. The climate of the Chicago Area is with cold winters and scattered snowfall in the winter months. The study shows some estimates of snowfall trends over a multi-year period. Data refers to reports from the National Oceanic and Atmospheric Administration National Weather Service, Chicago, IL, 333 West University Drive, Romeoville, IL. The analysis of snow precipitation amount data is based on the application of the mathematical method Excel. The results show that precipitation values are different over the years. Trends are given by regression equations. For January 1985-2021: $y = 4.4576x + 1937.5$, $R^2 = 0.0378$. The tendency of the value of snowfall for the months of January is with a constant 4.4576. In the period Seasonal Snowfall Totals for Chicago from 1884 to 2021: $y = 2.3353x + 1890.2$, $R^2 = 0.0868$. The tendency of the value of snowfall for each year period is with a constant 2.3353. The smallest amount of snow precipitation is estimated for the years 1920-1921 with 9.8 inches. The highest amount of snow precipitation is estimated for the years 1978-1979 with 89.7 inch. All result are based on statistical method. Our statewide snowfall records in Illinois start in 1902. There is no long-term trend in snowfall since 1902. However, some decades were snowier than others, such as the 1910s, 1960s, and 1970s. In fact, the 1970s were the snowiest decade on record with an average snowfall of 27.2 inches. Snowfall amounts dropped steeply with less year to year variability for much of the 1980s and into the early 2000s. However, snowfall amounts in the last 6 winters have been more variable with the winter of 2014 being about as snowy as the late 1970s. The snowiest winter on record was 1979 with 44.5 inches. Here are the 5 snowiest winters on record: 1979 with 44.5 inches; 1978 with 44.4 inches; 1912 with 39.5 inches; 2014 with 39.4 inches; 1960 with 38.6 inches; Snowfall is accumulated from July 1 of the first year to June 30 of the second year. The second year is used in the plot and table (for example, 2006 refers to the 2005-2006 season, source: state climatologist Illinois).

Key words: area, data snow, trends, Climatic influence, Illinois.

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IMPLEMENTATION OF EU REGIONAL POLICY AND LEGISLATION IN NORTH MACEDONIA: FOCUS ON THE ENVIRONMENT

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ABSTRACT

European Union is strongly committed to the economic, social, and environmental equalization of regions in the member states and in the EU as a whole. The regional development policy is aimed at mitigating economic and other disproportions in the regions and at more balanced development. A big part of EU budget is directed to regional development through the financial support of the regions in the member states. The financial and other instruments for supporting regional policy are determined in the extensive legislation. The EU regional policy also stimulates cross-border regional cooperation. North Macedonia as a state with candidate status for membership of the EU, implements EU policies and legislation in the sphere of regional and environmental development. In 2021 was adopted a Law on balanced regional development and Strategy on balanced regional development. The country has 81 local self-government units: 80 municipalities, and the city of Skopje, as a local government unit with the special status. Local units have a status of legal person and have their own directly elected institutions. Also exists 8 regional planning regions, which do not have the status of legal persons. These regions have adopted regional action plans, that include the environmental area. Disproportion in regional development has caused a number of problems. National regional policy and legislation determined a goal of at least 1% of GDP to be intended to regional development. A significant part of this policy and legislation pays attention to the improvement the quality of the environment in the regions which will lead to economic development and better quality of life in all parts of the country. However, in the near future, the country has to make more efforts to mitigate all aspects of disproportions in regional development.

Keywords: regional policy, development, environment, legislation, regional differences.