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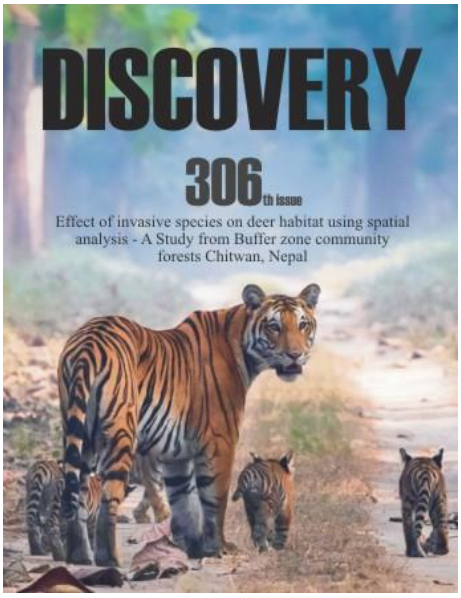
DISCOVERY

About the Cover



Limited researches have been conducted regarding this issue to show the effects of invasive species on deer habitat. This research was objectively conducted to assess the impact of invasive species in grass species foraged by deer using spatial technique between 2010 to 2020. Five buffer zone community forests namely Belsahar, Baatuli Pokhari, Dakshankali, Navajyoti, Bandevi were directly observed and an inventory of grass foraged by deer and invasive species was carried out. Total 269 nested quadrants were established to collect data, they were analyzed using Importance Value Index. The Land Use Land Cover change was detected between 2010 and 2020 in three classes i.e. Water bodies, grassland, forest land. Around 13.70% area was covered by *Mikania micrantha*, 31.72% was covered by *Lantana camara*, 3.05% was covered by *Ageratine adenophora*, 0.28% was covered by *Ageratum conyzoides*, 5.94% was covered by *Ageratum houstonianum*, 3.80% was covered by *Oxalis latifolia*, 1.65% was covered by Parthenium *hysterophorus*. The highest importance value index was of *Lantana camara* (74.78) while the lowest IVI was of *Cynodon dactylon*(Dudo) with 5.17. A totaten thematic maps were produced to show change in grassland. The grassland was decreased between 2010 and 2020 in the overall study area. The grassland was about 498.62 ha (65.18%) in 2010 which was about 305.24 ha (39.85%) in 2020. This was about 193.88 ha (-25.33%) less in 2020 than in 2010. The total area assessed during the study was 778.6ha and most of the water area was invaded by *Mikania* and grassland by *Lantana*. The study will be useful for the scientific community and policymaker to manage the invasive species in the buffer zone. (Ref: Dhakal A, Mandal RA, Yadav Y. Effect of invasive species on deer habitat using spatial analysis - A Study from Buffer zone community forests Chitwan, Nepal. *Discovery*, 2021, 57(306), 495-508).

SOCIAL SCIENCE

Impact of privatization of public utilities on residential property value at Ibeju-Lekki axis of Lagos state

ADEDIGBA Mujidat Iyabo, ADEGOKE Oluseyi Joshua

This study examined the impact of privatization of public utilities on residential property value at Ibeju-Lekki axis of Lagos state, with a view to providing information that could guide investment decision. Primary data utilized for the study were sourced through the use of questionnaire administered on household heads and estate surveyors and valuers at Ibeju-Lekki Axis. Multistage sampling technique was employed in selecting household heads. The study area was stratified into three residential densities (High, Middle and Low) as highlighted by Ibeju-Lekki Local Government administration. Systematic random sampling selection without replacement was employed to select one of every four identified residential areas in each density, gives 14, 15 and 9 residential areas from high, medium and low densities respectively. Data collected were analyzed using frequency distribution and multiple regressions. Result showed that that privatization of public utilities accounted for 48.8%, 69.5% and 41.5% of variation in rental value in the high, medium and low density areas respectively at R^2 of 0.488, 0.695 and 0.415. The study concluded that privatization of public utilities influences rental value with variation across the densities on the Ibeju–Lekki Axis.

Discovery, 2021, 57(306), 454-464

SCIENCE

Changes in selected soil physico-chemical properties as affect by application of spent mushroom substrate (SMS) and yield of upland rice in Owerri, Southeast, Nigeria

Ekpe II, Oti NN, Ihem EE, Mgbeahuru CI, Uju EU, Nwankwo VC, Iheka WC , Okoli NA

Spent Mushroom Substrate (SMS) is a type of organic amendment found to be a good nutrient source for crop production mainly because of its rich nutrient status, high cation exchange capacity and slow mineralization rate which retains its rich nutrient as an organic amendment. This research work was carried out at the Centre for Agricultural Research and Extension, Federal University of Technology, Owerri (FUTO). It investigated the effect of spent mushroom substrate (SMS) on soil properties and performance of upland rice in Owerri, Southeast Nigeria. The experiment was evaluated using five treatments at rates of SMS 0 t/ha, NPK 300 kg/ha, SMS 5 t/ha, SMS 10 t/ha and SMS 15 t/ha and were incorporated into the soil two weeks before planting; the treatments were laid out in a Randomized Complete Block Design (RCBD) with three replications. The field layout measured 13 m by 6.5 m; each plot measuring 2 m by 1.5 m with a 0.5 m alley between plots. The SMS treatment was sourced from mushroom farms located at Aba in Aba North Local Government Area, Abia State and at Irete in Owerri West Local Government Area, Imo State while NPK was sourced from the Imo State Agricultural Development Project (ADP). The test crop used was FARO 56/NERICA 2 upland rice variety sourced from the Imo ADP; rice plants were sown at spacing of 30 cm ×30 cm. Soil samples were collected at depth of 0 – 20 cm using soil core sampler attached to soil auger; the soil samples were analysed for selected physico-chemical properties. Yield parameters measured included: filled grain, unfilled grain, total grain yield, percentage unfilled grain and percentage filled grain. Statistical analysis was carried out using Analysis of Variance (ANOVA) and significant means were separated using the Fisher's Least Significance Difference (F-LSD) at p=0.05. Results obtained revealed that soil of the study area was predominantly sandy. Moisture content (9.33 %) was highest in SMS 15 t/ha and varies significantly from moisture content values of control plot (7.40) and NPK treated plots (7.49). Bulk Density was lowest in NPK treated plots (1.40 g/cm^3); but it was significantly equal to SMS 15 t/ha (1.41 g/cm^3). Basically, SMS treated plots recorded significant increase in soil physico-chemical properties with increase in application rate when compared with control and NPK treated plots, except in bulk density and exchangeable acidity where it significantly reduced with increased rate of application of SMS. Lower values of soil physico-chemical properties obtained at harvest could be attributed to nutrient uptake by plants during vegetative growth. The application of SMS positively affected the yield of the test crop when compared with the control and NPK plots. All rates of SMS applied during the experiment significantly improved soil physico-chemical properties and the yield of upland rice. Spent Mushroom Substrate (SMS) 10 t/ha was seen as the best application rate suitable for the yield of upland rice because it gave the highest grain yield; hence, it is recommended to farmers in the study area for yield improvement of upland rice production without adversely affecting human health.

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Monthly and seasonal variation on particulate matter (PM2.5) and meteorological parameters over Beijing

Bikram Bhusal, Manoj Oli, Binod Adhikari, Prakash Neupane

The primary purpose of this study was to investigate the extent to which factors play an important role in air pollution and perceive the concept of meteorological parameters such as temperature, pressure, relative humidity, etc. This study demonstrates the monthly variation of meteorological parameters with the different conditions of weather over the year. Monthly variations of particulate matter (PM2.5) scatters were observed higher in September month and the lesser scatters were found in June. PM2.5 with blue color particles has the maximum scattering wavelength as compared with green and red color particles. The observed facts indicate that the correlations between PM2.5 scattering and temperature have very weak positive correlations. PM2.5 scattering and air pressure have very weak negative correlations with green and blue colors of particles and very weak positive correlations with red color particles. This data interpreted that the scatter of particulate matter (PM2.5) scatter is determined by the

temperature and relative humidity. Correlation between PM2.5 scatter and relative humidity has strong positive correlations with different colors scatter particles and the positive with the blue color scatter particles. Although this is statistically significant strong positive correlation was found with the particulate matter (PM2.5) and relative humidity in all the months over the year. The average PM2.5 scatter in the winter season is higher than the spring and summer seasons. Cold and dry weather getting more scatters of particulate matter (PM2.5) as compared with the hot and clean weather. There are strong positive correlations between mass concentrations and the particulate matter (PM2.5) scatter which is statically significant. Cold and dry weather getting more and more pollution than other weather.

Discovery, 2021, 57(306), 479-494

Effect of invasive species on deer habitat using spatial analysis - A Study from Buffer zone community forests Chitwan, Nepal

Anusha Dhakal, Ram Asheshwar Mandal, Yogendra Yadav

Limited researches have been conducted regarding this issue to show the effects of invasive species on deer habitat. This research was objectively conducted to assess the impact of invasive species in grass species foraged by deer using spatial technique between 2010 to 2020. Five buffer zone community forests namely Belsahar, Baatuli Pokhari, Dakshankali, Navajyoti, Bandevi were directly observed and an inventory of grass foraged by deer and invasive species was carried out. Total 269 nested quadrants were established to collect data, they were analyzed using Importance Value Index. The Land Use Land Cover change was detected between 2010 and 2020 in three classes i.e. Water bodies, grassland, forest land. Around 13.70% area was covered by *Mikania micrantha*, 31.72% was covered by *Lantana camara*, 3.05% was covered by *Ageratine adenophora*, 0.28% was covered by *Ageratum conyzoides*, 5.94% was covered by *Ageratum houstonianum*, 3.80% was covered by *Oxalis latifolia*, 1.65% was covered by Parthenium *hysterophorus*. The highest importance value index was of *Lantana camara* (74.78) while the lowest IVI was of *Cynodon dactylon*(Dudo) with 5.17. A totaten thematic maps were produced to show change in grassland. The grassland was decreased between 2010 and 2020 in the overall study area. The grassland was about 498.62 ha (65.18%) in 2010 which was about 305.24 ha (39.85%) in 2020. This was about 193.88 ha (-25.33%) less in 2020 than in 2010. The total area assessed during the study was 778.6ha and most of the water area was invaded by *Mikania* and grassland by *Lantana*. The study will be useful for the scientific community and policymaker to manage the invasive species in the buffer zone.

Discovery, 2021, 57(306), 495-508

Diurnal temperature changes and physiological experience of students under indoor condition in a Nigerian University

Eludoyin Oyenike Mary, Olude Ayomide Mary

This study characterized the daytime thermal condition (in terms of the ambient air temperature change) of a University campus in southwest Nigeria, and examined the perception of students in the halls of residence on thermal condition and their strategies for coping with extreme thermal cases. Data used included air temperature, relative humidity as well as body temperature and weight of randomly selected subjects from halls of residence. Data also included the perception of selected students on thermal comfort or discomfort. Diurnal thermal range varied between 32.4°C and 35°C in the morning and between 26.5°C and 30.9°C in the evening. Thirty-five (35%) percent of the subjects (young male and female students, aged 18 – 45 years) associated thermal discomfort with restlessness and profuse sweating but 13% did not feel any significant thermal stress within the study period. Also, effects of thermal stress varied diurnally; whereas 65% of the subjects experienced heat rashes and headache in the evening and afternoon, respectively, about 10% experienced profuse sweat and chest constriction in the morning. Lastly, perception of thermal stress varied with room temperature, subjects' body weight, period of the day and ventilation. The study concluded that thermal discomfort in the area is influenced by indoor and outdoor atmospheric conditions as well as subjects' physical and physiological characteristics.

Discovery, 2021, 57(306), 509-518

SOCIAL SCIENCE

Gender differential in mobile phone use and travel behavior

Ajani Oludele Albert, Fakunle Sunday Olutayo

The main thrust of this research work was to unveil the effect of globalisation on gender equality as one of the sustainable development goals by examining gender differences in mobile phone use. The specific goal of this research work was to adopt sociological approach to assess the influence of mobile phone use on frequency of trips made on selected social activities among men and women in Ile-Ife, Southwestern Nigeria. The study was carried out in the 11 political wards of urban centre of Ile-Ife. The quantitative primary data was sourced from 330 active adults who were purposively selected as the sample size. The ages of these adults range from 35 years to 50 years. In addition, the qualitative primary data was sourced 22 adults (11 males and females respectively) who were purposively selected for in-depth interviews. Contents analysis and descriptive statistics were used to analyze the qualitative data and the quantitative data respectively. This study found gender equality in mobile phone use as more women (55 per cent) used mobile phone for business/work than men (45 per cent); also by use of mobile phone use, more women (41 per cent) had an increase in religion trips than men (40 per cent); more women (40 per cent) had an increase in trips made on visitation to friends/relatives than men (36 per cent), mobile phone use had also generated an increase in trips made on educational purposes for more women (44 per cent) than men (33 per cent). However, this study further found that mobile phone differently influenced the frequency of trips which both gender made on the selected social activities in the study location. Finally, this study

concluded that mobile phone use has advanced integrating women into globalisation and thereby promoted gender equality to a certain extent.

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