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Mathematics and Science.Environmental Science.01

DineeshaPremathilake

University of Central Oklahoma

Does intraguild avoidance occur in mesocarnivores? Temporal activity pattern analysis of mesocarnivores in southcentral Oklahoma

Camera trapping has been increasingly used to monitor different ecological aspects of wildlife, specifically for elusive, large carnivores. Relatively few studies have been conducted on temporal activity overlap between mesocarnivore species using camera-traps, and no such studies have been done in Oklahoma. My study was conducted at Oka’ Yanahli Preserve (OYP), located in Johnston County, southcentral Oklahoma. Camera traps were used to collect photographs of mesocarnivores in the preserve during winter (November 2016 – February 2017) and summer (May – August 2017). Six remotely-triggered infra-red cameras were deployed for 4 weeks. After 4 weeks, cameras were moved to different, random locations. Half of the cameras were systematically baited using canned mackerel. A total of 1531 mesocarnivore pictures from winter and 1455 from summer were taken from 25 camera locations in winter and 18 camera locations in summer. Mesocarnivore species identified from both seasons were coyote, raccoon, bobcat, Virginia opossum, and striped skunk. Temporal activity densities were higher for all species during winter than in summer (Circular Kernel Density Estimates) and all species were mostly nocturnal during winter. Temporal activities overlapped largely (>0.7) between all species in winter, except for skunk. Contradictory, the data show that mesocarnivore species present in this preserve do not necessarily avoid each other, rather they co-exist through resource

PaulOlson

University of Central Oklahoma

Standardized Methods for Monitoring the Water Quality of Primary Inflows (Deep Fork River) Entering Arcadia Lake in Central Oklahoma

The global health of freshwater systems affects environmental quality, biodiversity and human access to sources of clean water. In 1948, the US Federal Water Pollution Act was enacted to address water pollution. Nearly 20 years later, the Water Quality Act (1965, amended 1972) required states to issue water quality standards to ensure acceptable sources of freshwater are maintained. In response, the National Sanitation Foundation designed and created the Water Quality Index to monitor freshwater systems. Using nine standard tests, the Water Quality Index (excellent, good, medium, bad, very bad) measures water quality changes over time. The purpose of this research project is to monitor and assess water quality of inflows entering Arcadia Lake in eastern Edmond, Oklahoma. The primary inflow into Arcadia Lake is attributed to the Deep Fork River which begins in storm sewers of northern Oklahoma City, Oklahoma. Several locations at the inflow / lake boundary are sampled and monitored to assess changes in water quality. Standardized water quality methods (dissolved oxygen, fecal / total coliform counts, pH, biological oxygen demand, temperature, total phosphate, nitrates, turbidity and total solids) are utilized to monitor water quality during the research. The overall goal from the inquiry-based research includes evaluating and optimizing test protocols in assessing the environmental health of aquatic systems.

Mathematics and Science.Environmental Science.03

KatherineHamric

East Central University

The Economic Impact of the Use and Production of Biodiesel Fuel

The basis of this research is to compare the impact on the environment of mass producing corn in quantities high enough to sustain the level of volume necessary to produce biodiesel while also not interfering with the cattle industry. Corn is known to be a costly crop and has significant impacts on the soil due to its high usage of fertilizer which also affects the surrounding bodies of water with regards to runoff. In order to produce corn there are also high amounts of water needed to efficiently grow. These alone are reasons why corn is an inefficient material to be used in the oil and gas industry. I hope to highlight and educate the public on the fact that biodiesel is not as environmentally friendly as the name perceives. I will use a compare and contrast chart to show the effects of mass producing corn versus the effects of using biodiesel. I would like to conclude my presentation by informing others that the alternative of electrically engineered and propelled motors is much more efficient on all terms.

Mathematics and Science.Environmental Science.04

MarkPoe

East Central University

The Human Influence on Soil Profiling and Percolation Test

Oklahoma has a population of almost 4 million people with almost half of those living in rural parts of the state. If a home in a rural area is not connected to a domestic waste water systems a small on-site waste water systems plays a major role in the daily lives of the people living in that home. Performing Soil Profiling or Percolation Test is the first step in the design and installation of a small on-site waste water system. These tests can be influenced by humans and when this happens it can be detrimental to a homeowners pocket book and the environment surrounding were the system is installed. How are Soil Profiles and Percolation Test influenced and what effect does this have on a small on-site waste water system?

KayleeCraig

Cameron University

Aquafarming in West Bengal's Sundarbans

After the fall of the Gupta Empire, most of what is now West Bengal was controlled by Sultans who advocated agriculture as the founding ideology of the Empire. Under Khan Jahan, rice paddies began springing up at deltas and estuaries and became one of the first cultivars of the region. During the dry season however, many rice ponds and lakes began to shrivel and fill with rainwater from frequent thunderstorms. Farmers, knowing their rice crops would not make it to harvest, grew wild-caught shrimp larvae to keep a steady flow of income. Looking back into the history of agriculture and aquaculture, shrimp farms did in fact contribute to sustainable farming practices, but it was on a much smaller scale than we see today. The bloom of shrimp farming during the Sultan rule was due to a natural abundance of wild shrimp living in the coastal mangroves and did not contribute any considerable amount to the economy. As India slowly switched to an industrial style of harvesting, these extensive and sustainable practices will be altered solely for economic benefit; and, shrimping will be heavily politicized with the introduction of the East India Company in 1765. In the mid-1980s, the newly independent India accepted a \$425 million loan (in US dollars) from the World Bank to start commercial shrimp farming along the coastline, to which the Indian government also added subsidies. This began a transcontinental drive towards industrial style farming in Southeast Asian countries.