

Environment News Futures

Biologist's Ant Research Provides Long-term Look at Effects of Climate Change

December 30, 2016—Bowling Green State University

The world of forest ants may provide a macrocosm of the complex reactions and interactions among species affected by global climate change, according to a research project involving Bowling Green State University biologist Dr. Shannon Pelini. As escalating amounts of carbon dioxide are introduced into the atmosphere, a chain reaction is induced, leading to increasingly warmer temperatures, Pelini said. This is taking place at an alarming rate, making it more important than ever that we understand how climate change will affect our natural world.

Many scientists have attempted to tackle this issue by determining the thermal tolerance of various species, then predicting what will happen to them as our world warms. However, this approach as a way to understand nature has its drawbacks because one species never acts alone. Individuals are constantly interacting with other species and the environment in which they live, so comprehending how global change impacts these interactions is crucial to a holistic understanding.

Traffic Noise Reduces Birds' Response to Alarm Calls

December 28, 2016—Central Ornithology Publication Office

Pollution can take many forms—including noise. Excess noise in the environment from sources such as traffic can have negative effects on animals that rely on sound to communicate and get information about their surroundings. A new study shows that traffic noise makes birds less responsive to alarm calls that would otherwise alert them to dangers such as predators. Megan Gall and Jacob Damsky of New York's Vassar College tested how traffic noise affected the reactions of Black-capped Chickadees and Tufted Titmice to titmouse alarm calls, which warn birds that a predator is nearby. Using speakers set up near feeding platforms baited with bird seed, they recorded the birds' responses to three different recordings -- alarm calls alone, traffic noise alone, and a combination of the two. The traffic noise didn't deter the birds from feeding, but five times as many birds approached speakers when the researchers played alarm calls on their own compared with when traffic sounds were added.

Impact of Climate Change on Microbial Biodiversity

December 21, 2016—University of Helsinki

New research indicates that the impact of climate change on biodiversity depends on how much human beings have already affected the environment.

Climate change affects biodiversity most strongly in the most natural environments, as well as the most nutrient enriched environments—This means that these extremes are most susceptible to future changes in temperatures.

We still know fairly little about the specific impacts of climate change and human activity, such as nutrient enrichment of waterways, on broad geographical scales. Researchers from the Department of Geosciences and Geography at the University of Helsinki, the Finnish Environment Institute, and the Nanjing Institute of Geography and Limnology, Chinese Academy of Sciences have studied hundreds of microcosms in mountainous regions with the aid of natural temperature gradients in the studied areas, while modifying the enrichment level in field tests.

The results are just published in the journal *Nature Communications*.

Species Adapted to Austere Conditions in Danger

Experiments in mountainous regions indicated that differentiating between the effects of temperature variations and aquatic nutrient enrichment can help us understand the possible effects of climate change in different environments. The typically austere, i.e. nutrient-poor, waters in the north, for example, are extremely susceptible to temperature variations, and as the climate warms up, species that have adapted to the cold will decline. The only good news is that biodiversity may improve at first, as the climate warms up, as species that thrive in warmer areas increase, until biodiversity again starts to decline when the temperature continues to rise.

Movement of Rainforest Butterflies Restricted by Oil Palm Plantations

December 19, 2016—University of York

Scientists have found that oil palm plantations, which produce oil for commercial use in cooking, food products, and cosmetics, may act as a barrier to the movement of butterflies across tropical landscapes.

The study, conducted in Borneo, Southeast Asia, highlights the importance of maintaining connected networks of rainforest to support and conserve biodiversity.

To make way for oil palm plantations, large areas of lowland rainforests are cut down, which is thought to have an impact on the movement of rainforest species across these landscapes. Until now, however, there was little known about insect movement behaviour at rainforest-plantation boundaries.

The team, in collaboration with the Universiti Malaysia Sabah, examined the ability of butterflies to cross rainforest boundaries in relation to particular characteristics, such as wing size; the number of food plants their caterpillars can feed on; wherein the world populations can be found; and the presence or absence of food plants within oil palm plantations.

World's Oldest Male Panda Dies: Officials

December 31, 2016— AFP

Beijing: The world's oldest male panda, with more than 130 descendants, a quarter of all the captive-bred pandas on the planet, has died aged 31, officials said.

Giant pandas have a notoriously low reproductive rate, a key contributor along with habitat loss to their status as vulnerable on the International Union for the Conservation of Nature's (IUCN) Red List of threatened species. But Pan Pan, whose name means "hope" in Chinese was a prolific father, siring many cubs over the years that have gone on to have offspring of their own.

Madhya Pradesh (India) Plans to Develop 1100 'Climate-smart' Villages

December 30, 2016

Bhopal: Madhya Pradesh has embarked on an ambitious plan to develop 1100 'climate-smart' villages with an aim to prepare farmers to manage the climate change risks timely and ensure good productivity.

"The government has been planning to develop 1100 villages as climate-smart villages in a period of next six years," state Farmer Welfare & Agriculture Development Department Principal Secretary Dr Rajesh Rajora told PTI. He said, 100 villages in each of the 11 agro-climatic zones of the state would be taken up under the plan, which would incur a cost of about Rs 150 crore every year.

"The work is being taken up under the National Agriculture Development Programme (NADP) and Indian National Mission on Sustainable Agriculture," he said. In these villages, the farmers would be encouraged to go for short duration variety of crops, in addition to using drought-resistance seeds.

"The focus would be on integrated agriculture, which comprises animal husbandry, fisheries, in addition to traditional farming. Agro-forestry would also be adopted in these villages," Rajora said. Agro-forestry conserves and protects the natural resources as it helps water retention and stops soil erosion.

New Prehistoric Bird Species Discovered

December 19, 2016—University of Rochester

A team of geologists at the University of Rochester has discovered a new species of bird in the Canadian Arctic. At approximately 90 million years old, the bird fossils are among the oldest avian records found in the northernmost latitude, and offer further evidence of an intense warming event during the late Cretaceous period.

"The bird would have been a cross between a large seagull and a diving bird like a cormorant, but likely had teeth," says John Tarduno, professor and chair of the Department of Earth and

Environmental Sciences at the University and leader of the expedition. Tarduno and his team, which included both undergraduate and graduate students, named the bird *Tingmiatornis arctica*; “Tingmiat” means “those that fly” in the Inuktitut language spoken in the central and eastern Canadian Arctic (Nunavut territory).

Their findings, published in *Scientific Reports*, add to previous fossil records Tarduno uncovered from the same geological time period and location in previous expeditions. Taken together, these fossils paint a clearer picture of an ecosystem that would have existed in the Canadian Arctic during the Cretaceous period’s Turonian age, which lasted from approximately 93.9 to 89.8 million years ago.

(See also Snapshot)