

Environment News Futures

Plants Evolved Complexity in Two Bursts – With a 250-Million-Year Hiatus

September 16, 2021—Stanford University

A new method for quantifying plant evolution reveals that after the onset of early seed plants, complexity halted for 250 million years until the diversification of flowering plants about 100 million years ago.

A Stanford-led study reveals that rather than evolving gradually over hundreds of millions of years, land plants underwent major diversification in two dramatic bursts, 250 million years apart. The first occurred early in plant history, giving rise to the development of seeds, and the second took place during the diversification of flowering plants. (*See Snapshot 1*)

The Warming Climate is Causing Animals to ‘Shapeshift’

September 7, 2021—Cell Press

Climate change is not only a human problem; animals have to adapt to it as well. Some “warm-blooded” animals are shapeshifting and getting larger beaks, legs, and ears to better regulate their body temperatures as the planet gets hotter. Bird researcher Sara Ryding of Deakin University in Australia describes these changes in a review published September 7th in the journal *Trends in Ecology and Evolution*. (*See Snapshot 2*)

‘Once-in-a Generation’ Tardigrade Fossil Discovery Reveals New Species in 16-Million-Year-Old Amber

October 5, 2021—New Jersey Institute of Technology

They’ve famously survived the vacuum of space, and even returned to life after being frozen for decades in Antarctic moss. But as hard as it is to kill the bizarre microscopic animal, the tardigrade, it’s harder to find one fossilized. In fact, only two have ever been discovered and formally named—until now.

In the *Proceedings of the Royal Society B*, lead researchers at New Jersey Institute of Technology and Harvard University have described just the third fossil tardigrade on record—a new genus and species *Paradoryphoribius chronocaribbeus* gen. et sp. nov. (*Pdo. chronocaribbeus*), which is fully preserved in 16-million-year-old Dominican amber from the Miocene.

Measured at just over half a millimeter, the specimen has been identified as a relative of the modern living tardigrade superfamily, Isohypsibioidea, and represents the first tardigrade fossil recovered from the Cenozoic, the current geological era beginning 66 million years ago.

Researchers say the pristine specimen is the best-imaged fossil tardigrade to date—capturing micron-level details of the eight-legged invertebrate’s mouthparts and needle-like claws 20-30 times finer than a human hair. The new fossil is deposited at the American Museum of Natural History Division of Invertebrate of Zoology.

“The discovery of a fossil tardigrade is truly a once-in-a-generation event,” said Phil Barden, senior author of the study and assistant professor of biology at New Jersey Institute of Technology. “What is so remarkable is that tardigrades are a ubiquitous ancient lineage that has seen it all on Earth, from the fall of the dinosaurs to the rise of terrestrial colonization of plants. Yet, they are like a ghost lineage for paleontologists with almost no fossil record. Finding any tardigrade fossil remains is an exciting moment where we can empirically see their progression through Earth history.”

Concentrate Farming to Leave Room for Species and Carbon, Better Than ‘Eco-friendly’ Agriculture

October 5, 2021—University of Cambridge

Farming should be as high-yield as possible so it can be limited to relatively small areas, allowing much more land to be left as natural habitats while still meeting future food targets, according to a major new analysis of over a decade of research.

Most species fare better under this “land sparing” approach than if farming tries to share land with nature—as wildlife-friendly agriculture still damages most biodiversity and requires far more land to produce the same amount of food.

Plastic Waste May Soon be Turned Back to Natural Resource by Recycling: Study

ANI | , Washington

Cornell University researchers conducted new research recently with the aim to ease the process of chemical recycling, which is an emerging industry that could turn waste products back into natural resources by physically breaking plastic down into the smaller molecules it was produced from originally.

The Home of Chipko Movement, Now Epicentre of Disasters and Relocation Challenges

by Seema Sharma on October 5, 2021

- *Raini village is known for its legacy of the Chipko Movement. The area, close to the China border, is also of strategic importance. But it is now under stress from natural disasters.*
- *With frequent disasters, residents have to relocate for their safety. But challenges like limitation of resources in host villages and poor temporary shelters, stand in the way.*
- *With possibility of increasing disasters in the Himalayan state, there is an urgent need for a long term rehabilitation plan for the impacted families.*

China Says It Won't Build New Coal Plants Abroad. What Does That Mean?

Beijing is the undisputed king of coal, but the announcement at the United Nations General Assembly this week was cautiously welcomed by climate experts.

Xi Jinping, China's top leader, said on Tuesday that his country would stop building coal-burning power plants overseas, a major shift by the world's second-biggest economy to move away from its support of the fossil fuel.

China "will not build new coal-fired power projects abroad," he told the United Nations General Assembly on Tuesday.

The news comes amid a broad international effort to reduce coal use and to keep global temperatures from rising at their current pace, which scientists have warned could be disastrous.

The announcement by China, which is by far the biggest domestic producer of coal and the largest financier of coal-fired power plants around the world, was cautiously welcomed by experts.