

Earthweek: Diary of a Changing World

By Steve Newman

Week ending Friday, May 14, 2021

Royal Breeding

Western monarch butterflies from the Pacific Northwest to California may not be going extinct as earlier feared, but are instead changing their breeding habitats and adapting to climate change.

A Washington State University expert says last winter's count of the colorful insects revealed a sharp drop, especially across much of Southern California, where the number plunged from about 300,000 three years ago to just 1,914 in 2020.

But entomologist David James says large populations were observed by citizen scientists in metropolitan Los Angeles and the San Francisco Bay Area, where they had seldom been seen wintering before.

Earthquakes

The Philippine capital of Manila and nearby areas were jolted by a tremor that was unusually strong for the region.

• Earth movements were also felt in eastern India's Assam state, Los Angeles and a wide area from the northern Sierra Nevada to the Sacramento Valley.

Methane Warning

The U.N. announced that cutting emissions of methane from farming, fossil fuel operations and landfills is urgently needed to help combat the deepening climate emergency.

While methane doesn't last as long in the atmosphere, it is many times more potent as a greenhouse gas than carbon dioxide.

The U.N. says that global industry could easily and inexpensively slash methane emissions by 30% within a decade, with a 45% cut possible by using other readily available methods.

Some of the biggest sources are the growing mountains of human trash buried in landfills around the world that generate the gas as they decompose.

Plugging leaky oil wells, coal mines and pipelines could also help curb methane emissions.

Forest Recovery

Areas of felled forest around the world, collectively the size of France, have regrown naturally during the past 20 years, potentially soaking up more carbon emissions than the United States creates each year.

But the World Wildlife Fund, which led the survey, says far more areas of forests are being lost each year through deforestation than are recovering.

"The data show the enormous potential of natural habitats to recover when given the chance to do so," said John Lotspeich, executive director of Trillion Trees, the coalition group behind the study.

Chernobyl Smolder

Fission reactions appear to be occurring in an inaccessible chamber of Ukraine's crippled Chernobyl nuclear power plant, which exploded 35 years ago.

Scientists say they don't know if the slow rise in neutron emissions will fizzle out or increase, forcing them to find ways to prevent another catastrophe.

"It's like the embers in a barbecue pit," said nuclear chemist Neil Hyatt of the University of Sheffield. He says the new rates of fission are very low and believes they probably will not lead to an explosion.

But scientists on the scene say they are not sure since there is no direct way to monitor what is happening inside the sealed and intensely radioactive chamber.



There has been a 40% increase in neutron emissions since 2016 from a sealed chamber at Ukraine's Chernobyl nuclear power plant. Photo: File



-111°
Vostok,
Antarctica

'Stratoshrink'

One unexpected consequence of humanity's greenhouse gas emissions is that they have shrunk the stratosphere — a thinning that could eventually affect life on Earth, satellites and GPS.

Writing in the journal *Environmental Research Letters*, scientists say the high and rarified layer of the atmosphere has contracted by about 1,300 feet since the 1980s and is likely to shrink another 3,300 feet by 2080 without sharp cuts in carbon emissions.

Global heating of the troposphere, the atmosphere's lowest layer, has caused it to expand, pushing up the bottom layer of the stratosphere.

And when carbon dioxide emissions mix into the stratosphere, they cause that layer to cool and shrink.

Earliest Cyclone

Tropical Storm Andres became the earliest tropical cyclone to form in the eastern Pacific on record.

It beat Tropical Storm Adrian's formation in 2017 by 12 hours but was weak and short-lived.

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