

Why Wetlands are Essential for Life on Earth

The wetlands of the Kashmir Valley are rapidly shrinking due to the massive siltation and encroachment.

BILAL BASHIR BHAT

Wetland soils also function as carbon sinks and can store carbon produced by upland agriculture and other land uses. As carbon, in the form of organic material (such as eroded soil, leaves, and tree debris), is washed into low lying wetland areas, it is deposited into wetlands where it becomes part of the wetland sediment through decomposition or burial. Wetlands are estimated to store more than one-third of the world's terrestrial carbon. Their destruction often results in major releases of greenhouse gases to the atmosphere.

Wetlands were once widely considered as unproductive wastelands full of disease and danger. But now wetlands are considered the planet's most productive ecosystems, supporting immense biodiversity, beneficial for people in number of ways. These benefits, also called ecosystem services include water purification and waste treatment, flood control and storm protection, carbon storage and sequestration. They are essential for our survival and has huge economic value.

Habitats that are rich in plant life are also important stores of carbon. But wetlands are particularly efficient at locking it away. When the plants die, rather than decomposing, the carbon buries in the mud layers of wetlands rather than releasing their carbon content into the atmosphere. Many of us are aware about the functions of wetlands, but much less are aware about the fact that wetlands play a key role in climate change mitigation through carbon sequestration. The role of wetlands in capturing and storing carbon is often underestimated. Wetlands are some of the largest carbon reservoirs on earth.

All types of wetlands are 'Sleeping Giants' of carbon sequestering systems (carbon sinks), that means that wetlands have the ability to store excess carbon (via photosynthesis) from the atmosphere, one of the primary components of greenhouse gases and a driver of climate change. Wetlands play a major role in climate change adaptation, through capturing and storing carbon to reduce atmospheric greenhouse gases, and providing resilience to hazards such as flooding, storm surge and coastal inundation.

Wetland soils also function as carbon sinks and can store carbon produced by upland agriculture and other land uses. As carbon, in the form of organic material (such as eroded soil, leaves, and tree debris), is washed into low lying wetland areas, it is deposited into wetlands where it becomes part of the wetland sediment through decomposition or burial. Wetlands are estimated to store more than one-third of the world's terrestrial carbon. Their destruction often results in major releases of greenhouse gases to the atmosphere.

If wetlands are drained, burned or cleared, they release carbon into the atmosphere. Carbon emissions from drained and burned peatlands equate to about 10% of global annual fossil fuel emissions. Drainage and degradation of wetlands can release significant amounts of this stored carbon back into the atmosphere in the form of meth-



If wetlands are drained, burned or cleared, they release carbon into the atmosphere. Carbon emissions from drained and burned peatlands equate to about 10% of global annual fossil fuel emissions

ane and reduce the ability of wetlands to sequester additional carbon.

Despite the immense value of wetlands, we are losing these productive and carbon sequestration sinks at an alarming rate. Up to 87% of global wetlands have been lost since 1700, with the largest proportion during the 20th and early 21st centuries. Agricultural, urban and industrial development, introduction of invasive species, pollution, over exploitation, siltation & eutrophication all contribute to the degradation of the productive and carbon sinks all over the world.

The preservation of these wetlands is critical for mitigating global warming and climate change. Through conservation and restoration of these Wetland systems could be an important com-

ponent of reducing Carbon emissions. If the Wetlands are not protected, they could release huge amounts of greenhouse gases into the atmosphere, which are the main cause of global warming and climate change....

On this wetland day (2020), we call scientists, NGOs, policy makers and volunteers to increase the awareness on the importance of these productive systems & their wise use. Protecting wetlands is vital for the rich biodiversity and preservation of these rich carbon sequestration sinks and for the survival of life on earth.

Author is associated with the Climate Change Centre J&K and can be reached at: bhatbilal32@gmail.com

Climate Crisis Could Cause a Third of Plant and Animal Species to Disappear Within 50 Years

JESSICA CORBETT

The human-caused climate crisis could cause the extinction of 30% of the world's plant and animal species by 2070, even accounting for species' abilities to disperse and shift their niches to tolerate hotter temperatures, according to a study published this week in the journal Proceedings of the National Academy of Sciences.

University of Arizona researchers Cristian Román-Palacios and John J. Wiens analyzed data on 538 plant and animal species and 581 sites worldwide, focusing on species surveyed at the same locations over time, at least a decade apart. They found that 44% of the species had local extinctions at one or more sites.

"The study identified maximum annual temperatures—the hottest daily highs in summer—as the key variable that best explains whether a population will go extinct," said a statement from the university. "Surprisingly, the researchers found that average yearly temperatures showed smaller changes at sites with local extinction, even though average temperatures are widely used as a proxy for overall climate change."

As Wiens explained, "This means that using changes in mean annual temperatures to predict extinction from climate change might be positively misleading."

Lead author Román-Palacios laid out their key findings in a series of tweets Thursday:

My latest is finally out in @PNASNews! We examined how populations of 538 species have responded contemporaneous climate change. We asked whether previous responses are enough for species to avoid climate-related extinction by 2070https://t.co/lrkEU0Ody (1/n)

— Cristian Román-Palacios (@cromanpa) February 13, 2020

"By analyzing the change in 19 climatic variables at each site, we could determine which variables drive local extinctions and how much change a population can tolerate without going extinct," Román-Palacios said in the statement. "We also estimated how quickly populations can move to try and escape rising temperatures. When we put all of these pieces of information together for each species, we can come up with detailed estimates of global extinc-



The researchers found that species were able to tolerate hotter conditions at their original locations to a point, but the local extinction rates increased as maximum temperatures did. About half of the species they studied experienced extinctions if the maximum temperature rose over 0.5°C; that figure jumped to 95% of species when maximum temperature rose by over 2.9°C.

tion rates for hundreds of plant and animal species."

(3/n) Based on species' past responses to contemporaneous climate change and projected temperatures by 2070, we estimate:

*57-70% of species would not be able to disperse quickly enough to avoid climate-related extinction

*<30% of species may avoid extinction by shifting niches pic.twitter.com/euFHfxBmLG

— Cristian Román-Palacios (@cromanpa) February 14, 2020

The university statement noted that "previous studies have focused on dispersal—or migration to cooler habitats—as a means for species to 'escape' from warming climates. However, the authors of the current study found that most species will not be

able to disperse quickly enough to avoid extinction, based on their past rates of movement."

The researchers found that species were able to tolerate hotter conditions at their original locations to a point, but the local extinction rates increased as maximum temperatures did. About half of the species they studied experienced extinctions if the maximum temperature rose over 0.5°C; that figure jumped to 95% of species when maximum temperature rose by over 2.9°C.

"Given dispersal alone, many of these species (57–70%) may face extinction. However, niche shifts can potentially reduce this to only 30% or less," according to the study. Considering both dispersal and niche shifts, the researchers projected that 16–30% of the 538 studied species could disappear within the next 50 years.

While the researchers' new projections are similar for plant and animal species, they found that extinctions could be up to four times more common in the tropics compared with more temperate regions. Román-Palacios said that "this is a big problem, because the majority of plant and animal species occur in the tropics."

(5/5) There's a ton of work behind this paper, some frustration, but also lots of excitement! Thanks to everyone who has contributed to this paper by providing advice or support (etc)!#CienciaCriolla #LatinxInStem #BlacksInStem

— Cristian Román-Palacios (@cromanpa) February 14, 2020

"In a way, it's a 'choose your own adventure,'" said Wiens. "If we stick to the Paris agreement to combat climate change, we may lose fewer than two out of every 10 plant and animal species on Earth by 2070. But if humans cause larger temperature increases, we could lose more than a third or even half of all animal and plant species, based on our results."

Some scientists and climate advocacy groups have long criticized the landmark 2015 Paris accord as too weak to adequately address the planetary emergency—and, as Common Dreams reported in December 2019, the latest global negotiations about implementing the agreement were denounced as an "utter failure." At the time, nearly 100 civil society groups called out polluting industries and wealthy countries for "throwing gasoline on the fire of the climate crisis."

Ahead of the COP 25, U.S. President Donald Trump delivered on his promise to ditch the Paris agreement by beginning the one-year withdrawal process in November 2019. Climate experts and activists condemned the move as "irresponsible and short-sighted" but also looked ahead to the November 2020 election and emphasized that the next president could recommit the United States to the accord and fight for even more ambitious action on a global scale.

The new study comes as young people take to the streets worldwide to demand bolder climate policies, experts warn that the climate crisis is an "existential danger," and scientists contribute to the growing body of research showing how global heating is expected to affect species and the environment. One of those studies, published last week, found that the rate at which bumblebees are declining due to extreme heat is "consistent with a mass extinction."

Common Dreams