

Everglades mangroves worth billions in fight against climate change

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Credit: Florida International University

When it comes to storing carbon, scientists have put a price tag on the value of mangroves in Everglades National Park and it's in the billions.

Based on a scientific cost estimate, the stored [carbon](#) is worth between \$2 billion and \$3.4 billion, the researchers found. It is a relatively small price when considering the cost to society if the carbon currently stored in these [mangroves](#) were ever released into the atmosphere, according to the researchers at FIU who co-authored the study.

"Although the Everglades National Park is a protected national treasure, the National Parks Service doesn't have much control over freshwater flowing into the park," said Mahadev Bhat, co-author of the study and professor in the Department of Earth and Environment. "If there isn't enough freshwater flowing through the Everglades, we may eventually lose some of the mangroves. And once you let stored carbon out, that same carbon can lead to increased global warming and cost society a lot more."

In addition to removing excess carbon dioxide from the air, mangroves provide a variety of other benefits, including flood control, storm protection and maintaining water quality. The billion-dollar price tag reflects the cost to preserve the park's mangroves and their ability to hold organic carbon intact by restoring freshwater flow to the areas that need it the most.

The study was published in the journal of *Environmental Science and Policy*. It was funded by the National Science Foundation's Water, Sustainability and Climate program and the Florida Coastal Everglades Long Term Ecological Research program.

"This finding is an excellent example of how research at long-term ecological research sites can inform management and policy decisions and help in making wise choices, in this case, how to mitigate the effects of increasing carbon dioxide in the atmosphere," said David Garrison, Long Term Ecological Research program director in the National Science Foundation's Division of Ocean Sciences.

The mangrove forests of the Everglades National Park are the largest in the continental United States. Although protected, the Everglades is affected by sea level rise, hurricanes, changes in water flow and other environment events. Decreased funding for Everglades restoration is also a problem.

"While our understanding of the Everglades is strengthened by this study, we need to remember that threats to this valued resource come from both saltwater intrusion and sea-level rise," said Tom Torgersen, director of the National Science Foundation's Water Sustainability and Climate program. "Management and policy decisions need to reflect the value of the Everglades, as well as the issues facing Florida."

According to the researchers, preventing the loss of stored carbon in mangroves could become a critical component of the nation's climate change mitigation strategies.

"Having an inventory of the stored organic carbon and its potential economic value is key to designing such strategies that secure funding to warrant their conservation and research work," said Meenakshi Jerath, the lead author of the study and researcher in FIU's Extreme Events Institute. "It could, more importantly, further awaken the public interest and understanding of the mangroves' socioeconomic importance."

The study was done in collaboration with researchers at Louisiana State University and the NASA Jet Propulsion Laboratory.

"This research is a reminder of the valuable services Everglades mangroves provide, and the global benefits that can come from restoring and preserving them," said John Schade, Long Term Ecological Research program director in the National Science Foundation's Division of Environmental Biology.

More information: Meenakshi Jerath et al, The role of economic, policy, and ecological factors in estimating the value of carbon stocks in Everglades mangrove forests, South Florida, USA, *Environmental Science & Policy* (2016). [DOI: 10.1016/j.envsci.2016.09.005](https://doi.org/10.1016/j.envsci.2016.09.005)

Provided by Florida International University

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