Declining mangroves shield against global warming

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A young mangrove plantation at the the Thousand Islands National Marine Park by the shore of Pramuka island, north of Jakarta, in 2010. Mangroves, which have declined by up to half over the last 50 years, are an important bulkhead against climate change, a study released on Sunday has shown for the first time.

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Destruction of these tropical coastal woodlands accounts for about 10 percent of carbon dioxide emissions from deforestation, the second largest source of CO2 after fossil fuel combustion, the study found.

Fewer trees not only mean less CO2 absorbed from the air, but also the release of carbon stocks that have been accumulating in shallow-water

sediment over millennia.

Mangroves -- whose twisted, exposed roots grace coastlines in more than 100 countries -- confer many benefits on humans living in their midst.

The brackish tidal waters in which the trees thrive are a natural nursery for dozens of species of fish and shrimp essential to commercial fisheries around the world.

Another major "ecosystem service," in the jargon of environmental science, is protection from hurricanes and storm surges.

Cyclone Nargis, which killed 138,000 people in Myanmar in 2008, would have been less deadly, experts say, if half the country's mangroves had not been ripped up for wood or to make way for shrimp farms.

Daniel Donato of the US Department of Agriculture's Forest Service in Hilo, Hawaii and an international team of researchers examined the carbon content in 25 mangroves scattered across the Indo-Pacific region.

The trees stored atmospheric CO2 just as well as land-based tropical forests, they found. Below the water line, they were even more efficient, hoarding five times more carbon over the same surface area.

"Mangroves are among the most carbon-rich forests in the tropics," Donato and his colleagues said in the study, published in *Nature Geoscience*.

"Our data show that discussion of the key role of tropical wetland forests in climate change could be broadened significantly to include mangroves ."

In a companion commentary, Steven Bouillon from the Katholieke

Universiteit Leuven in Belgium said the carbon inventory uncovered by the study "provides a strong incentive to consider mangrove ecosystems as priority areas for conservation."

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