

# Costa Rica, Nicaragua assess toll taken by Otto

San José, Costa Rica

**W**hen Hurricane Otto made landfall last month on the eastern coast of Central America, the Category 2 storm struck Panama, Costa Rica and Nicaragua with winds reaching 105 miles per hour. The first hurricane on record to strike Costa Rica, Otto claimed 23 lives, mostly in Costa Rica, and took a toll on some of the region's most ecologically sensitive areas.

As December drew to a close the full extent of the damage had not been confirmed, but Costa Rica and Nicaragua both had reported environmental damage. In Costa Rica, Tenorio Volcano National Park and Rincón de la Vieja National Park were closed due to severe landslides and downed trees. But most such damage occurred outside of protected areas, where flooding and winds damaged large swaths of privately and publicly owned forestland.

Though fewer people were affected by the hurricane in Nicaragua, the country's southeast, which is home to its most important protected areas, took a beating. Initial land and aerial surveys of each of the four protected areas in Nicaragua's southeast—the San Juan Islands Wildlife Refuge, the Solentiname Islands, the Guatuzo Wetlands and the Indio Maíz Biological Reserve—all have shown large swaths of forest felled by the winds and rain.

Conservationists say the resulting loss of woodland habitat could take a heavy toll on wildlife, particularly monkey populations. The San Juan River, meanwhile, suffered severe sedimentation, and the discovery of large quantities of dead fish has prompted the government to investigate possible pollution of the river.

While Nicaragua's entire southeast was affected by the hurricane, the Indio Maíz Biological Reserve bore the brunt of the storm. One of the region's most important troves of biodiversity, Indio Maíz contains significant populations of the Baird's Tapir (*Tapirus bairdii*), white-lipped peccary (*Tayassu pecari*) and jaguar (*Panthera onca*). While the reserve's forests paid a heavy price, environmental and indigenous groups are more immediately concerned about the potential human toll.

Following the last two hurricanes to strike the Indio Maíz—Hurricane Joan in 1988 and Hurricane Felix in 2007—the Nicaraguan government allowed logging companies to enter the reserve to remove felled trees. The move was seen as a way to prevent forest fires and extend an olive branch to logging companies.

But environmental groups charge that companies authorized to do salvage logging also cut down undamaged trees within the reserve and failed to carry out reforestation. And roads that were opened up to enable the salvage logging in Indio Maíz have fueled more

serious destruction, enabling the entry of illegal loggers as well as the settlers now beginning to populate the protected area.

“The permanent conversion of forest to cattle pastures associated with such colonization of Nicaragua's reserves poses a much larger long-term threat to Central American biodiversity and climate stabilization than damage of forests at the hands of fires or hurricanes,” wrote Chris Jordan, the Nicaragua program director of Global Wildlife Conservation, an Austin, Texas-based nonprofit, in a recent editorial for National Geographic.

In the same editorial, Jordan argued that when trees are blown down they would not present a fire risk if the forest were managed properly. He pointed out that removing the fallen trees could disrupt a natural regrowth process that could return the forest to its previous strength.



The hardest-hit Nicaraguan protected area was Indio Maíz Biological Reserve, which once again is a focus of debate over salvage logging.

Environmentalists aren't the only ones calling for caution when it comes to salvage logging. Concerned that permits for that activity will be issued in the wake of Hurricane Otto, authorities from the Rama and Kriol Afro-Caribbean communities and indigenous groups issued a video plea to the Nicaraguan government to keep logging companies out of the reserve. Portions of Indio Maíz fall into the groups' territory. The leaders—Aldrick Becford, Norvin Salomon and Allen Clair Duncan—said only indigenous and Afro-Caribbean groups should be allowed to harvest the fallen trees in order to replace houses that were destroyed by the hurricane. They point to Nicaraguan laws granting autonomy to the Rama and Kriol over their territory.

“We do not approve the entrance of logging companies or naturalists that want to extract wood in the land shared between the Rama and Kriol Territory and the Indio Maíz Biological Reserve,” Clair Duncan said in the video. “Not even if they have forest permits from the state.”

—Lindsay Fendt

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