

Hurricane Hugo Damages Natural Resources At Virgin Islands National Park...

...and Congaree Swamp National Monument

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Hurricane Hugo hit the U.S. Virgin Islands on Sept. 17-18, 1989 with sustained winds of about 140 mph and reported gusts of up to 200 mph. This paper summarizes the observations made by the Park's Research Biologist (C. Rogers), a University of Wisconsin graduate student (G. Ray), the Chief of Interpretation (C. Weikert), Division of Fish and Wildlife staff (J. Beets, A. Friedlander), a University of the Virgin Islands marine scientist (L. Muehlstein), and a Northeastern University marine biologist (P. Edmunds).

Coral Reefs

The coral reef off Yawzi Point, Lameshur Bay, on the south side of St. John has been the focus of long-term studies on fish populations and coral communities. On Oct. 2, C. Rogers and C. Weikert Scuba-dived on the reef to take photographs and make observations. They noted extensive damage to the study area to its maximum depth of about 40'. While some large pillar corals (*Dendrogyra cylindrus*) remain intact, many were lying on their sides and/or had lost several of their branches ("pillars"). Some of these branches are 3' long and 8-10" in diameter. Head corals over 3' across had been overturned. Piles of coral rubble had collected in sand channels in the reef. Sea fans and other gorgonians had been ripped off their bases and were lying flat on the substrate. Some coral colonies had white patches which appeared to be from abrasion by sediments.

If five 20 m long transects established by park researchers last January can be relocated, they can be analyzed to provide a comparison of the coral communities before and after the storm. Some of the shallow patch reefs in Greater Lameshur Bay have been demolished. In shallow areas fringing the shoreline, the abundant encrusting fire corals have lost all their branches. One study site on a reef in 9 m of water, east of Yawzi Point, was essentially reduced to flat pavement.

C. Rogers snorkeled at Haulover Bay on the northeast side of St. John and found extensive damage. Large elkhorn colonies, some previously dead, were fractured. Huge piles of coral rubble lie in depressions in the bottom. Colonies over 3' across were flipped over, causing smothering of live coral tissue.

The northern and northwestern bays of St. John are the most heavily visited. C. Rogers and C. Weikert snorkeled in Hawksnest and Leinster Bays and found little damage from the hurricane. Some corals fringing Waterlemon Cay in Leinster Bay were smashed when boats cut loose from their anchors and went up on the island. A plume of silt-laden water extended throughout Hawksnest Bay and out towards Johnson's Reef the day after the hurricane. Runoff was noted elsewhere as well. However, while visibility was poor for several days after the storm, accumulations of sediment particles were not seen on living corals at any of the sites checked to date.

Seagrass Beds

Seagrass beds in Lameshur Bays have large "blow out" areas where storm seas scoured out the seagrass

plants. Some areas of about 30m x 20m were excavated to a depth of 40-50 cm. Seagrass root systems were cast up in large mounds on the beaches of Little Lameshur, Greater Lameshur, and Salt Pond Bay. Dead reef fish and sponges were found in the seagrass debris.

Fish Populations

On Sept. 29, J. Beets and A. Friedlander did fish censuses in Lameshur Bay and noted an apparent decrease in species and abundance of fish. Further analysis and censusing is required to determine the effect of the storm on the fish populations. Some dead fish washed up on the beaches as noted above.

Mangroves

Mangrove communities in general sustained heavy damage. Black mangrove trees in salt ponds and swamps near Leinster Bay, Francis Bay, Coral Bay and Reef Bay were uprooted by the hurricane winds. Red mangrove trees fringing the shores of Coral Bay suffered damage only in a few places where boats had been swept on to the shore.

The Forests

A more thorough assessment of the damage sustained by the island's forests will be made in the future after the scientists who have been conducting long-term studies here have a chance to examine their study plots. Many old, large trees on the island were destroyed. The day after the hurricane, some hillsides showed alternating green and brown areas, the green

indicating trees which had suffered less damage, the brown the bare twigs and branches of trees stripped of their leaves. Some windward facing slopes exhibited swaths of complete destruction, suggesting that tornadoes had been generated by the hurricane. Within a week of the storm, two exotic species began leafing out.

Bottomland (basin) moist forests, perhaps more vulnerable because their canopies are taller than surrounding vegetation, were hard hit on the south and north sides of the island. The gallery forests (along guts) suffered less damage. An estimated 30-40 percent of the trees in dry (deciduous) forests on the south side sustained damage, with major branches broken off. Less damage occurred on the leeward north side. Numerous emergent trees in the dry woodland forest were blown down, and many lost leaves and branches. However, most trees broken off show early signs of enhanced lateral growth. In the semi-arid areas (cactus/scrub) relatively limited effects of the storm were noted. Some cacti were broken off or toppled over. Leaves, branches and even some trees were observed by scuba divers in water down to 40'.

The hurricane hit when many species of trees were at the peak of their fruiting. This loss of fruit from numerous woody species represents an abrupt reduction in food supply for island wildlife, particularly for birds and bats. This prolonged interruption in available food could further reduce animal populations subjected to this severe storm.