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Researchers Predict Impact of Sea Level Rise on Sea Turtle Nesting Habitat

"A study on the Caribbean island of Bonaire in the Netherlands Antilles suggests that up to 32% of total current beach area could be lost with sea-level rise of just 0.5 meters (18 inches), a finding that has significant implications for the survival of sea turtles, not just on Bonaire but throughout their nesting range.

Six species of sea turtles nest on the mainland and island beaches of the Caribbean: the hawksbill, leatherback, loggerhead, Kemp's ridley, olive ridley, and green. Populations of all these species are declining throughout the region because of overexploitation, disease, incidental capture, and destruction of critical nesting habitat. These threats may now be compounded by the prospect of rising sea levels resulting from climate change, which would encroach on and reduce the turtles' nesting beaches.

In a paper in the journal *Conservation Biology*, Marianne R. Fish of the University of East Anglia in England and colleagues examined the nesting distribution of sea turtles on Bonaire, and determined the possible extent of beach habitat under threat as a result of various scenarios of sea level rise. They surveyed turtle nesting beaches to establish the average distribution of nesting sites relative to the shoreline, and then calculated likely inundation levels based on projected sea level rises of 0.2 m, 0.5 m, and 0.9 m., the best- worst- and intermediate-case scenarios predicted by the Intergovernmental Panel on Climate Change (IPCC).

Fish and colleagues found that, under those three scenarios, sea turtle nesting area was reduced by 11%, 59%, and 79% respectively. Nesting habitats on longer, narrower beaches were at greater risk, as were those where development precluded nesting females from retreating further up the beach.

The authors conclude: "The potential effects of sea-level rise on nesting beaches can not be considered in isolation from existing human threats to turtles and their habitat … Human encroaching on nesting habitat has been suggested as the primary cause of decreasing turtle activity in many areas, and loss of beach area to sea-level rise will likely exacerbate this problem."

Source: Fish, M.R., *et al.* 2005. Predicting the impact of sea-level rise on Caribbean sea turtle nesting habitat. *Conservation Biology* **19**(2): 482-491.

Contact: Isabelle M. Côté, School of Biological Sciences, University of East Anglia, United Kingdom. E-mail: i.cote@uea.ac.uk

Bonaire is a relatively flat island, with its highest point, Brandaris Hill (located in the Washington Slagbaai National Park), peaking at a mere 780 feet (240 meters).

Bonaire is a small island, covering roughly 111 square miles, with a width that ranges from 3 to 7 miles and a length of approximately 24 miles. Bonaire is located approximately 50 miles off of the coast of Venezuela. (See map above) Bonaire is the B of the ABC islands with her sister islands of the Dutch Caribbean - Aruba and Curacao.
latitude/longitude (GPS): 12°10' N 68°17' W