



TROPIC NEWS

DEPARTMENT OF PLANNING AND NATURAL
RESOURCES

DIVISION OF FISH AND WILDLIFE

June 1996

Volume 8 Number 9

Sediment Sources Affecting Marine Resources on St. John

The Virgin Islands National Park encompasses more than half of the 19 square mile island of St. John. Over 80% of the island is made up of very steep slopes. The island supports predominantly dry evergreen and moist forest vegetation. Soils are generally very shallow (<50 cm or 20 in) and exceptionally stony.

Long term sediment loss, under natural conditions, is about 20 and no more than 40, metric tons per square kilometer per year. This is quite low in comparison to rates reported for many tropical environments.

The low rate of erosion on St. John is probably due to predominantly dry soil conditions (a result of generally brief showers and high evapotranspiration rates), associated low rates of bedrock weathering, and extensive stony soil surfaces that protect the soil against rainsplash and runoff erosion.

In contrast, human activities have greatly accelerated erosion and sedimentation rates. In the 18th and 19th centuries, plantation agriculture was a significant source. The rapidly-growing network of unpaved roads is by far the greatest source today. It is estimated that more than 62 mi. of roads exist on St. John and less than half of these are paved. These roads, many of which are crudely bulldozed access routes to homes, are commonly established at grades of 10-20%. The deeply eroded road surfaces, obvious instability of sidecast material, and large quantities of accumulated sediment in guts and ponds attest to the severity of road erosion. In general, unpaved roads require frequent regrading to remain passable to vehicles, and this regularly replenishes the supply of readily erodible sediment.

Taking these and other factors into account, it is estimated that unpaved roads are increasing the island wide amount of sediment delivered to the marine environment. These findings have crucial ramifications for resource protection for the entire V.I. Solutions to the problem involve paving of all existing dirt roads and controlled construction and widening of additional roads.

Article by Donald M. Anderson and Lee H. MacDonald, Univ. of Colorado.

Mother's Day Tournament

The Committee for the Betterment of Carenage, Inc. hosted the 1996 Mother's Day Bottom Fishing Tournament on Sunday, May 5, 1996. Time allotted for this event was from 6:00am-12:00n, within territorial waters only. In spite of rough seas and rain, a total of 13 boats with 31 anglers participated.

Rules and regulations for this event were varied. One rule stipulated that fish caught by male anglers were not considered for prizes. No mutilated or frozen fish were accepted. To insure this rule, a device called a "torrymeter" was used to verify the freshness of fish caught.

The Gustave Quétel Fishing Center in French Town was setup as the weigh station. Division of Fish and Wildlife staff served as weigh-masters for the event. A wide variety of species were caught.

In all, a great time was enjoyed by all who attended. The Annual Father's Day Tournament held on June 9, 1996, will be reported in the next issue.

Rotary Adopts Cas Cay

In 1987, Cas Cay was dedicated to the people of the Virgin Islands by David Vialet to be enjoyed as a bird sanctuary. Cas Cay, a 17.5 acre island, sits on the south east end of St. Thomas. The Division of Fish and Wildlife and Dept. of Education often uses the site for field trips to demonstrate different habitats and their relationship to one another.

The Rotary East is giving Cas Cay a face lift. Planned projects involve trimming trees along trails and building benches in the landing area for school groups and summer camps. New signs describing the various habitats found around the island are being built and will be placed in the landing area. Rotary East expects the project to last a few weekends, and volunteers are being asked to help in the cleanup efforts.

Quote

"Whether man is disposed to yield to nature or to oppose her, he cannot do without a correct understanding of her language."

- Jean Rostand

HOW WINDS POWER AND SHAPE THE SURF

To the artist and poet, waves are beauty packaged in moving water. To the hardened sailor, they are things to respect and fear. And to the surfer, waves are the stuff of awe, legend, and experiences approaching rapture. But in fact, waves are just energy moving through the water.

A wave is born when some natural phenomenon imparts energy to water. That energy source can be something dramatic, such as an underwater earthquake, volcano, or landslide, and the resulting waves can tower 100 feet above the sea. Earthquakes and volcanoes are rare, and landslides are only slightly more common; together they produce fewer than one percent of all waves. Instead, it is the wind blowing on the surface of the water that sets most waves in motion, though the wind, too, can generate so-called killer waves.

Such was the case with the great Halloween storm of 1991, which produced the largest wave ever documented at 150 feet tall, surpassing the old record of 112 feet set in 1933. An enormous low-pressure system parked off the Nova Scotia coast whipped up what ocean engineer William Dally called "a once in 10,000 years storm." The storm's gale force winds generated waves, which were still cresting at over 15 feet when they hit Florida's beaches.

How were such enormous waves born? Their genesis began with the wind blowing across the Atlantic. Friction between wind and water ruffled the ocean surface, producing small ripples or capillary waves that move in the direction of the wind.

.....
Trees were saved by printing on recycled paper

These ripples then were able to catch some of the wind as it blew by and rise higher above the sea surface. As wind blew harder and harder the waves grew taller and taller.

During the typical ocean storm, strong winds might force water to pile up in waves that crest at 70 feet or more. Certainly, these are big waves, although they would begin decaying as soon as they moved away from the storm. But this was no typical storm.

This was a monster storm with the three traits that make for record-breaking waves: It had fairly strong winds that blew for a long time over a great distance, or fetch.

On Halloween 1991, winds blowing just under 70 knots whipped the sea into what is called a fully developed stage. Large, slanted waves moved southward from the storm. But this storm had an enormous fetch so the winds continued to push against the waves, piling them even higher.

Even this storm had its edge, however, and once the waves crossed that edge they coalesced into swells. These are the rounded form of waves that can travel thousands of miles over the course of two weeks or more. Swells are tame compared to the waves of a fully developed sea, but they carry just as much energy as their violent progenitors.

The swells (ground seas) that we in the V. I. experience every winter are born during storms in the North Atlantic, 1000's of miles away.

Condensed from SeaFrontiers Vol. 39, No. 1, Jan./Feb. 1993.
Article written by Joseph Alper



This newsletter was funded by the US Fish and Wildlife Service, Sport Fish and Wildlife Restoration Acts, the Caribbean Fishery Management Council and the Government of the VI.

GOVERNMENT OF THE VIRGIN ISLANDS
OF THE UNITED STATES

Department of Planning and Natural Resources
Division of Fish and Wildlife
6291 Estate Nazareth 101
St. Thomas, USVI 00802-1104
(809)775-6762 (ST.T.), (809)772-1955 (ST.X.)

BULK RATE
U.S. POSTAGE PAID
CHARLOTTE AMALIE, V.
PERMIT NO. 35

Address Correction Requested