

USGS FUNDS NEW RESEARCH ON ELKHORN AND STAGHORN CORAL IN THREE NATIONAL PARKS

A study of elkhorn coral on a reef in Haulover Bay, formerly one of the best-developed elkhorn reefs in the USVI, revealed surprising changes in the condition of the colonies over 6 months

USGS is funding a new research project on elkhorn (*Acropora palmata*) and staghorn (*Acropora cervicornis*) corals in three national parks: Virgin Islands National Park, Buck Island Reef National Monument, and Biscayne National Park. No corals are currently listed as endangered or threatened, but elkhorn and staghorn corals, two of the primary reef-building species, are now being considered for the Endangered Species List because of their extensive decline in these parks and throughout the western Atlantic and Caribbean from white band disease and storms in the last 15-25 years.

Biologists with USGS, the National Park Service, the University of the Virgin Islands, and many volunteers have been doing pilot studies on elkhorn coral around St. John, US Virgin Islands (USVI). These studies involve mapping of elkhorn colonies with GPS units, photographing of colonies, recording of colony condition (signs of predation, disease, injuries) and sampling of diseased tissue for possible isolation of pathogens.

A study of elkhorn coral on a reef in Haulover Bay, formerly one of the best-developed elkhorn reefs in the USVI, revealed a surprising variability in the condition of the colonies over the 6 month monitoring period (January 29-July 31, 2003). Only about half of the 67 elkhorn colonies that were monitored

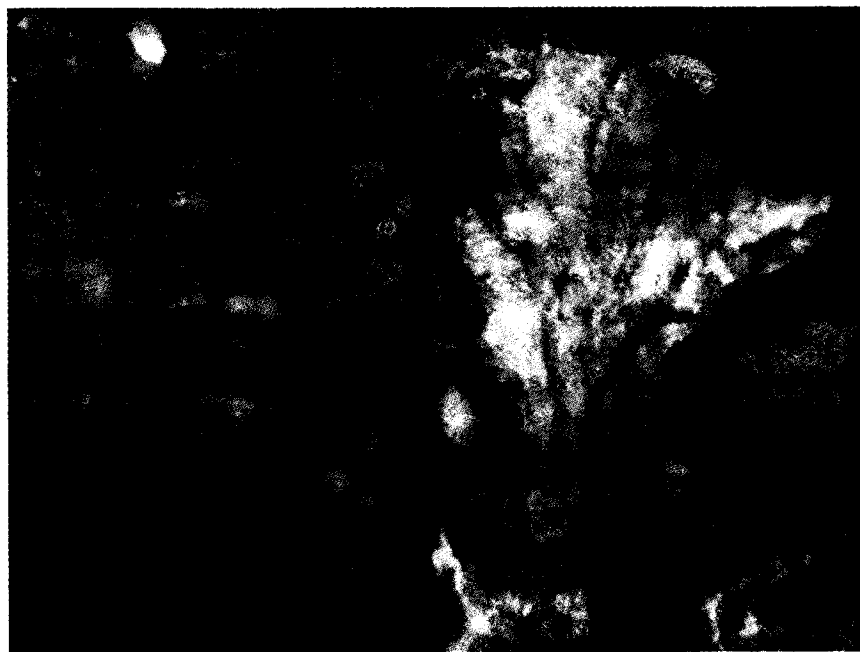


Figure 1. Elkhorn coral in Haulover Bay, showing mortality from white band disease, white pox, and snail predation.

exhibited no conspicuous change. About 13% of the colonies had new growth, primarily at branch tips. Fifteen colonies lost live tissue to disease and predation, including three small corals that died. No large colonies died. Physical damage (broken branches) was noted for 6% of the corals. White pox disease appeared to be the leading cause of tissue mortality, affecting about 10% of the corals. However, in some cases, lesions from white pox healed completely. Coral-eating snails did not cause extensive mortality over the 6 month study period. One of the corals (Figure 1) appeared to lose tissue to snails, white pox, and white band disease. This was the only coral that appeared to have white band disease. Our frequent surveys at Haulover Bay showed how rapidly corals can grow, lose tissue, and develop and regenerate lesions within only 6 months. If coral colonies are only

examined once a year, as in many monitoring programs, generalizations about the cause of death can be misleading.

Other preliminary research has been done in Hawksnest Bay, St. John, including the sampling of diseased patches on one coral that has white pox disease (Figure 2). A series of photographs over one year show progressive healing of large lesions caused by white pox and appearance of new lesions at other sites on the colony. Although a recent study in Florida linked human sewage with extensive mortality of elkhorn coral from white pox disease on Florida reefs, no sewage is evident at Haulover or Hawksnest Bays.

None of the reefs surveyed recently in the USVI has higher elkhorn coral cover now than 15-25 years ago. Although elkhorn colonies appear to be increasing in number and size on many reefs, colonies are usually isolated from each other, and

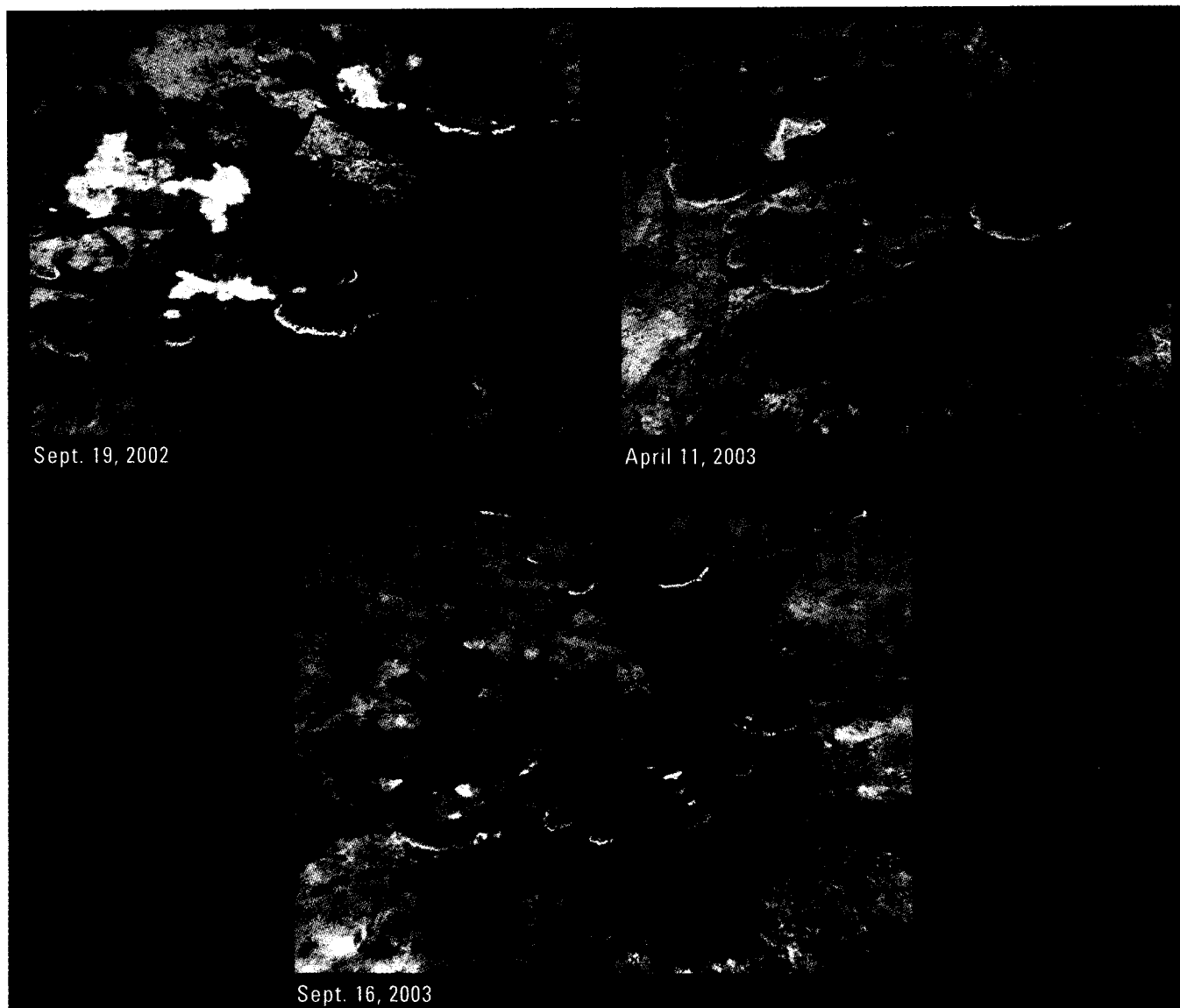


Figure 2. Elkhorn coral with white pox, Hawksnest Bay.

few sites have high densities of elkhorn colonies. Sexual recruitment has been successful at some sites. Many colonies are in very shallow water making them especially vulnerable to storms and land-based development. Some colonies are in areas used frequently by snorkelers, and some are on reefs that are often hit by boats. Future hurricanes could severely limit the survival and growth of elkhorn colonies. The last major hurricane was Marilyn in 1995. At that time, elkhorn was much less abundant than today. Funding from USGS (NRPP) over the next three years will support the expansion of this project in the USVI and similar research in Biscayne National Park.

ACKNOWLEDGEMENTS

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