

Dry Tortugas National Park

National Park Service
U.S. Department of the Interior

Inventory and Monitoring Program
South Florida/Caribbean Network



Marine Benthic Communities, 2016 Coral Reef Monitoring Summary

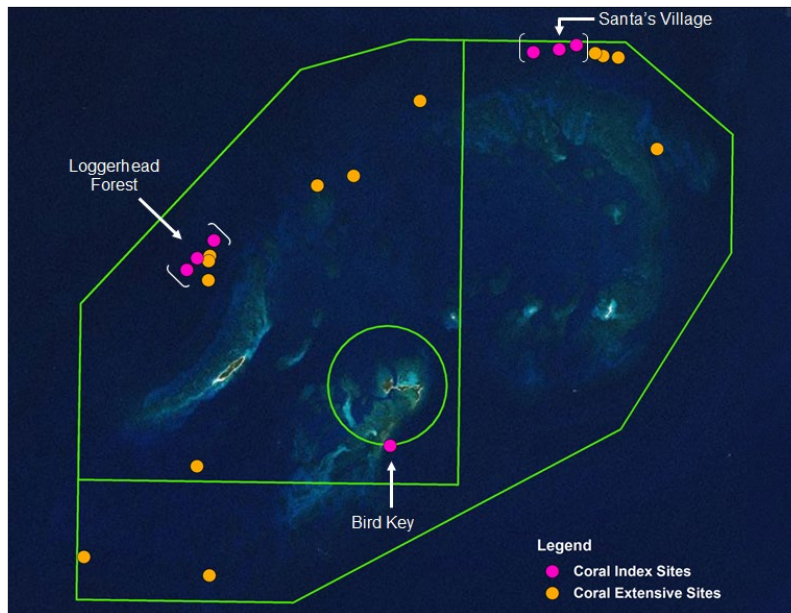
Importance: A Critical Resource for Fisheries, Tourism and Marine Biodiversity

Coral reef communities within Dry Tortugas National Park (DRT0), at the western end of the Florida Keys, consist of stony corals, octocorals (e.g., sea fans), sponges, and algae. Reefs support incredible marine biodiversity including a multitude of fish species, as well as lobsters, sea turtles, and other creatures. Reefs in Dry Tortugas play a vital role for humans by supporting fisheries, fishery nursery areas, tourism, pharmaceutical bio-prospecting, and protection of the islands and Fort Jefferson. Monitoring coral reefs was identified as a national priority in President Clinton's Executive Order 13089, establishing the Coral Reef Initiative. These coral reefs are negatively affected by events such as extreme water temperatures that cause "bleaching," vessel scarring, and major storms, as well as long-term stressors such as coral disease, overfishing, damaging fishing methods, abrasion of the reef by debris or careless snorkelers and divers, ocean acidification, nutrient enrichment, and contaminants.



Bird Key Reef in Dry Tortugas National Park.

Long-term Monitoring: Bird Key Reef, Loggerhead Forest, Santa's Village and additional sites inside and outside the Research Natural Area (RNA)



Three long term index sites are monitored by SFCN: Bird Key (19,352 square meters, or 208,303 square feet [ft²]), Loggerhead Forest (596,637 square meters [6,422,147 ft²]), and Santa's Village (371,763 square meters [4,001,623 ft²]). In addition, 13 four-transect extensive sites have been monitored inside and outside the RNA since 2008.

The South Florida/Caribbean Network (SFCN) began coral reef monitoring at Bird Key Reef in 2004 in Dry Tortugas National Park (DRT0). Bird Key Reef was selected due to management interest and to compare with historical work. It consists of 20 permanent, randomly-selected 10-meter (32.8-foot [ft]) transects which are monitored using underwater video. An additional 13 four-transect extensive sites were randomly selected in 2008 to compare trends inside and outside the newly established no-take Research Natural Area (RNA). In 2012, Loggerhead Forest Reef and Santa's Village Reef were established for additional focused monitoring due to their unusually high coral cover and diversity. Loggerhead Forest reef had three additional sites added to the two previously installed four-transect sites and Santa's Village reef had three sites added. Percent cover of living coral by species, macroalgae, turf algae, crustose coralline algae, octocorals, and sponges are calculated. Data on coral disease, bleaching, water temperature, and long-spined sea urchins are also collected. Data on coral disease, bleaching, water temperature, and long-spined sea urchins are also collected.

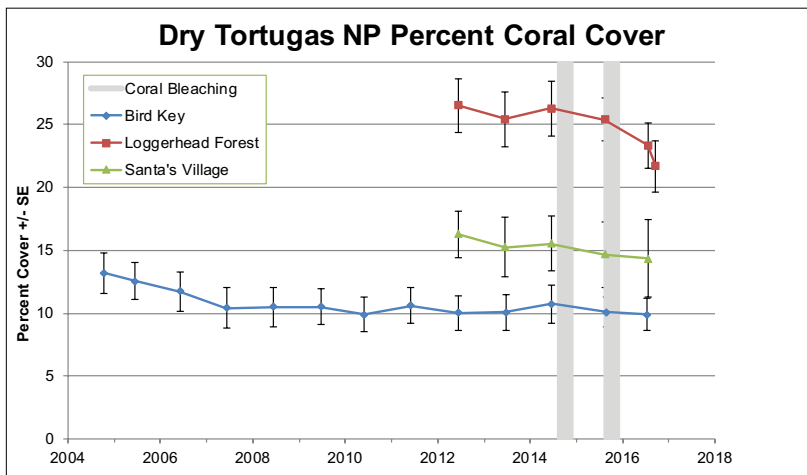


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<https://science.nature.nps.gov/im/units/sfcn/monitor/marine/coral.cfm>

Status and Trends

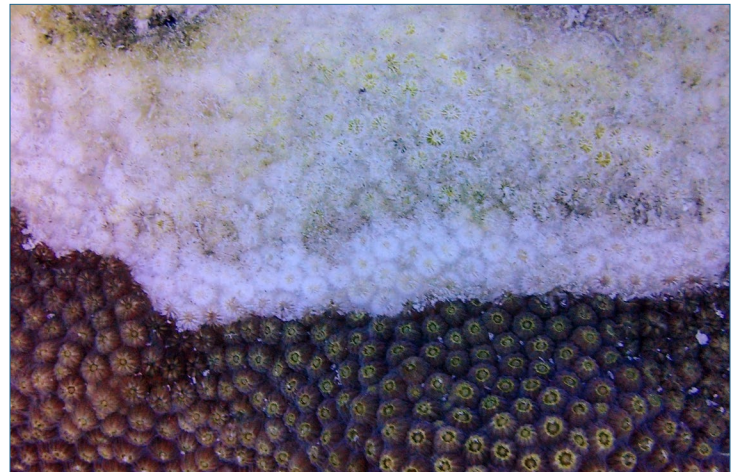
The Florida Keys Reef Tract experienced a coral bleaching event for an unprecedented second year in a row in 2015. Despite cooling water temperatures, the bleaching event persisted through October 2015. South Florida/Caribbean Network staff conducted annual coral reef monitoring during a 10-day mission in July 2016. The prevalence of coral disease at the Loggerhead Forest monitoring sites in July 2016 was 9% with a mean of 12.8 disease lesions and 958 square centimeters (148.4 square inches [in²] of coral tissue killed by disease. A follow-up monitoring trip was conducted to Loggerhead in September, where the disease was observed to still be active. The coral disease prevalence was 6%, with a mean of 4.8 disease lesions and 65 square centimeters (10 in²) of coral tissue killed by disease. Active disease lesions were observed on six different species of coral, however the majority of lesions (93%) involved *Orbicella faveolata* and *O. franksi*; two species listed on the Endangered Species Act's Threatened list. The outbreak in July 2016 was the largest observed in Dry Tortugas National Park since 2008, and the first since the listing of the star coral species under the Endangered Species Act. Since 2012, Loggerhead Forest coral cover has significantly decreased from an average of 26.5% to 21.7% live stony coral cover.



Loggerhead Forest has shown a significant decrease in live stony coral cover since 2012. Bird Key showed an initial significant decrease from 2004–2010 but has stabilized since.



White plague disease was abundant on coral at the Loggerhead Forest and Santa's Village sites in July 2016. A follow-up disease monitoring cruise was conducted in September 2016 where additional coral mortality from white plague was observed, but not at the prevalence observed in June. Photo shows outbreak of white plague disease at Loggerhead Forest.



Closeup of white plague disease. The white area is dying and dead coral. The brown portion is living coral polyps.



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