



Marine Benthic Communities, 2016 Coral Reef Monitoring Summary

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

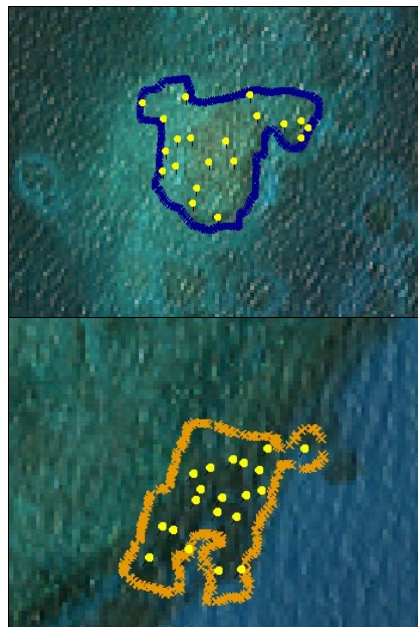
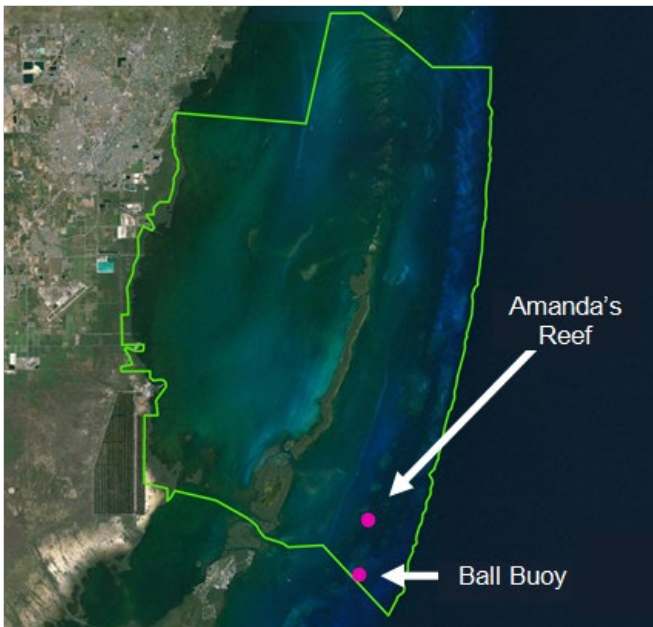
Coral reef communities within Biscayne National Park (BISC) are the northernmost reefs in the Florida Keys, consisting of stony corals, octocorals (e.g., sea fans), sponges, and algae. Reefs support incredible marine biodiversity including a multitude of fish species, as well as lobsters, sea turtles, and other creatures. Reefs play a vital role for humans by supporting fisheries, fishery nursery areas, tourism, sand creation for beaches, pharmaceutical bio-prospecting, and shoreline protection. 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, nutrient enrichment, contaminants, ocean acidification, and abrasion of reef by debris or careless snorkelers and divers.



Amanda's Reef in Biscayne National Park.

Long-term Monitoring: Two Sites Monitored Annually Since 2004

The South Florida / Caribbean Network (SFCN) has annually monitored two coral reef sites at Biscayne National Park (BISC) since 2004. Ball Buoy Reef and Amanda's Reef were selected due to management interest and to compare with historical work. Each site consists of 20 permanent, randomly-selected 10-meter (32.8-foot [ft]) transects which are monitored using underwater video. 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.



Amanda's Reef (left) is a 20,458-square meter (5.1 acre) shallow patch reef site with an average depth of less than 3 meters (9.8 ft). Common coral species are mustard hill coral (*Porites astreoides*), finger coral (*Porites porites*), and massive starlet coral (*Siderastrea siderea*).

Ball Buoy (left) is 14,136 square meters (3.5 acre) in area, and is a south-eastern patch reef site up to 12 meters (39.3 ft) deep. Common coral species are star coral (*Orbicella* spp.), federally-threatened elkhorn coral (*Acropora palmata*), mustard hill coral (*Porites astreoides*), and fire coral (*Millepora alcornis*).

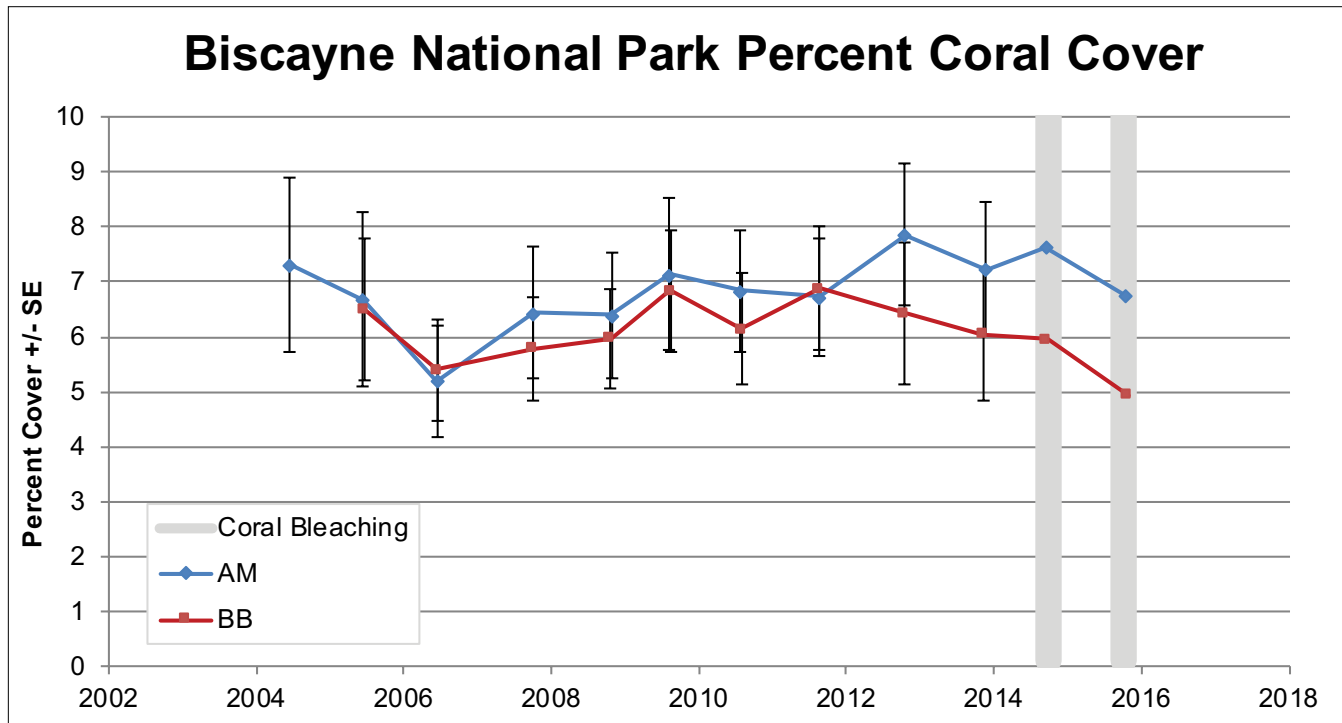


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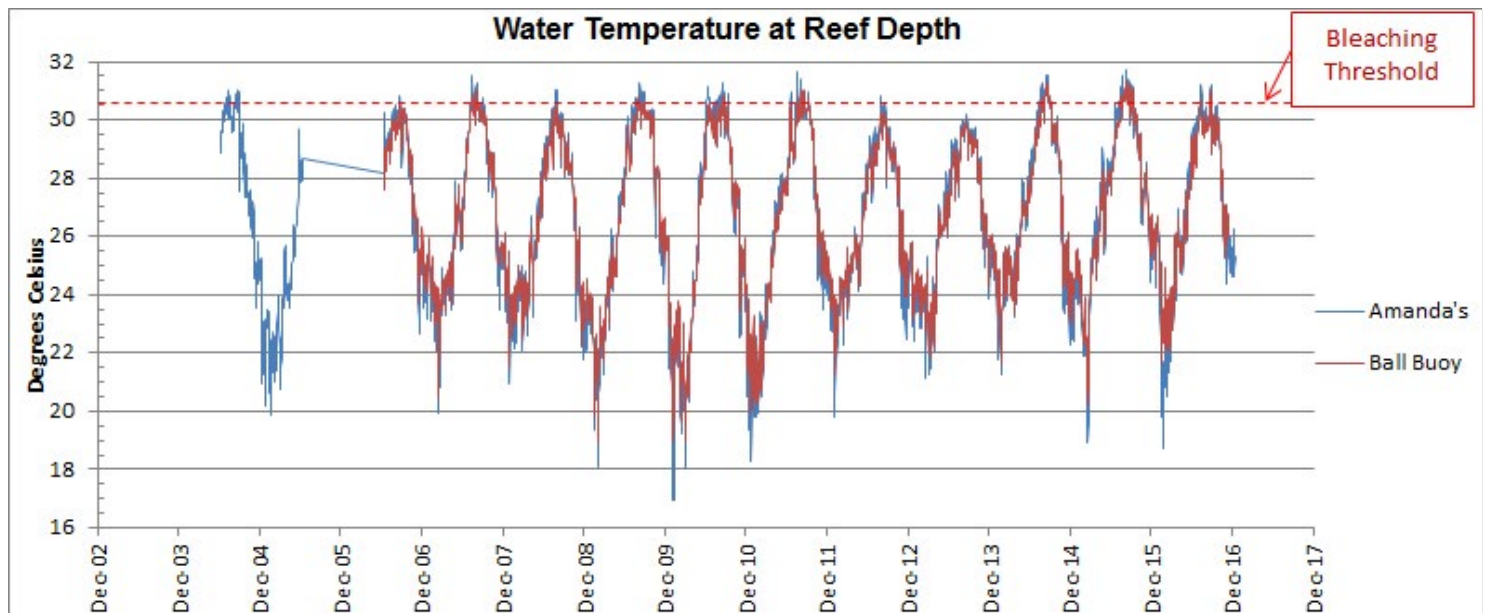
<http://science.nature.nps.gov/im/units/sfcn/monitor/marine/coral.cfm>

Status and Trends: Coral Bleaching Event and High Water Temperatures

In 2016, the South Florida/Caribbean Network staff conducted annual coral reef community monitoring of index sites at Ball Buoy Reef and Amanda's Reef. A widespread disease outbreak continued to affect the Florida Reef Tract in 2016, including reefs in Biscayne NP, following two successive years of substantial coral bleaching. Analysis of the 2016 video data collected in October is incomplete at this time, however 2014 and 2015 data are presented. Water temperature through 2016 is presented below:



Trends in live stony coral cover at Ball Buoy (BB) and Amanda's Reef (AM) in Biscayne National Park.



Biscayne National Park water temperature summary graph showing data from the two coral monitoring sites since 2004. A bleaching stress threshold of 30.5 °C is shown.



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