

CORAL DISEASE



About Coral Disease

Coral disease is often visible as a change in tissue color or skeletal structure and may be accompanied by tissue loss, indicating death of the coral.

The origin of coral diseases, which can be viral or bacterial, is difficult to determine and not clearly understood. Viruses, bacteria, other microorganisms or even changes in environmental conditions can contribute to coral disease. A certain amount of infectious microbes that cause coral diseases are naturally occurring and always present in an ecosystem; however, an event or combination of events that disrupts the natural levels can encourage coral disease.

Research has shown that increases in water temperature, nutrient (sewage) input, storm water runoff and turbidity or sedimentation are contributing factors to coral disease. Additionally, coral bleaching severely

weakens corals and makes them more susceptible to disease. Coral bleaching is a stress response that leaves corals in a compromised state and makes it more difficult for them to return to full health.

White Plague or White Band Disease

White plague is a bacterial infection that is often confused with coral bleaching. Recent studies suggest that there are many variations of the disease. In all cases, corals exhibit loss of tissue, leaving the bare, white skeleton exposed. Type I White Plague, also commonly known as white band disease, occurs more frequently on branching corals, starting at the base of the branches and moving towards the tips at a rate of a few millimeters per day. Type II White Plague moves similarly to Type I but typically in the opposite direction, and is more common in boulder or massive coral species.



White plague. Photo credit: Brian Walker



White plague. Photo credit: Hunter Nolen

Black Band Disease

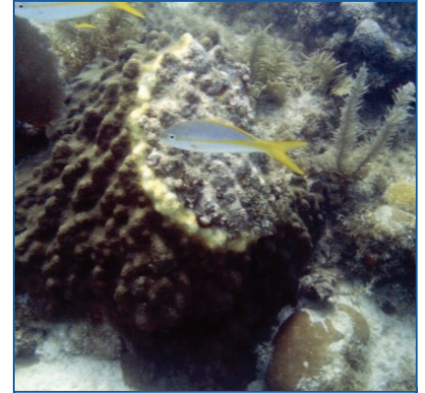
Black band disease is characterized by a dark band separating living tissue from the recently exposed carbonate skeleton, and is initially caused by an invasion of coral tissue by the cyanobacterium, *Phormidium coralyticum*. These infections rapidly become colonized by bacteria, fungi and protozoans that live deep within the visible black band and produce anoxic conditions within the coral tissue that causes the coral cells to die. This band of pathogens spreads across the surface of a coral at a rate of a few millimeters per day, digesting the coral as it progresses. Bare coral skeleton is left behind allowing for the colonization of algae.



Black band disease. Photo credit: Kim Porter

Yellow Band Disease

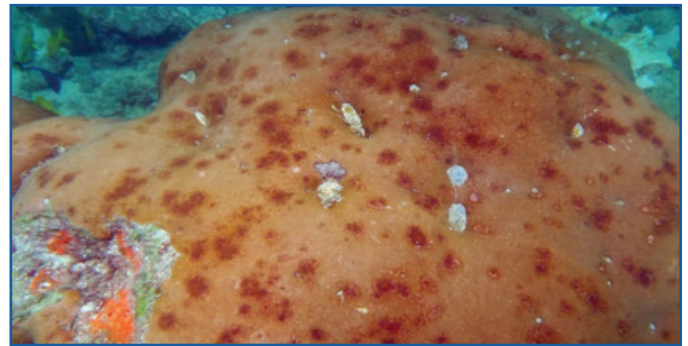
Yellow band disease has been shown to cause slower rates of tissue loss compared to the other diseases, however, increased nutrient levels almost double the rate of loss. Yellow band disease is characterized by large, yellow rings or patches of bleached, yellow tissue. *Orbicella annularis* (lobed star coral) and *Orbicella faveolata* (mountainous star coral) are the two primary reef-building species affected by Yellow band disease.



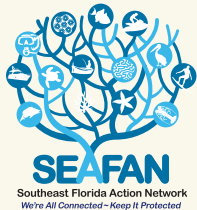
Yellow band disease. Photo credit: Craig Quirolo/Reef Relief/Marine Photobank

Dark Spot Disease

Dark spot disease first appears as small, discolored spots that radiate outward as the affected area dies. These spots are typically dark purple, gray or brown in color and irregular in shape. The infected areas become depressed below the height of the surrounding tissue. Dark spot disease is most commonly observed on massive corals.



Dark spot disease. Photo credit: Brian Walker



Report observed coral disease or coral bleaching to Southeast Florida Action Network (SEAFAN) [online](#) or call 866-770-7335.

Reports of 'No Bleaching' are just as important as bleaching reports.

SEAFAN is a reporting and response system designed to improve the protection and management of Southeast Florida's coral reefs by enhancing marine debris clean-up efforts, increasing response to vessel groundings and anchor damage and providing early detection of potentially harmful biological disturbances.

CORAL BLEACHING



About Coral Bleaching

Coral bleaching is a stress reaction of the coral animals that happens when they expel their symbiotic algae, zooxanthellae, which is their main food and energy source. Bleached corals are living but are less likely to reproduce and are more susceptible to disease, predation and mortality. If stressful conditions subside soon enough, the corals can survive the bleaching event; however, if stresses are severe or persist, bleaching can lead to coral death.

NOAA indicates that bleaching events have steadily increased in frequency and severity during the last few decades. Coral bleaching can be caused by other stressors including but not limited to pollution, increased sedimentation and salinity, low oxygen, disease and predation. Not all corals are affected by bleaching in the same way. Reef communities are composed of a different mix of corals, and some reefs are affected more than others.

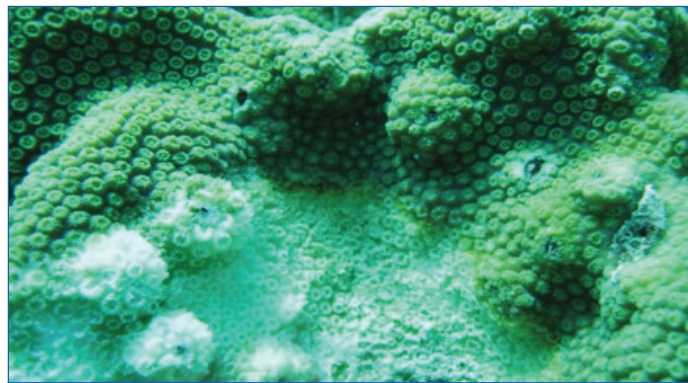
How to Recognize Coral Bleaching

Corals that are stressed may first pale and then bleach completely. Different species of corals with assorted colors of zooxanthellae may show lighter variations in their color during the paling phase. Fully bleached corals will appear snow white. It is possible to see the transparent coral polyp, resembling a tiny anemone, on bleached but still living coral (Figure 4).

If the coral colony is recently dead, there will be no transparent coral polyp tissue, just the bare white calcium carbonate skeleton.



Completely bleached coral. Photo: DEP Coral Reef Conservation Program.



Bleached but still living coral. Photo: DEP Coral Reef Conservation Program

Causes of Coral Bleaching

Large-scale coral bleaching events are driven by extreme sea temperatures and are intensified by sunlight stress associated with calm, clear conditions. The warmest water temperatures usually occur between August and October. Corals become stressed when sea surface temperature is 1 degree C greater than the highest monthly average. Coral bleaching risk increases if the temperature stays elevated for an extended time.

While records show that coral bleaching events have been occurring for many years throughout Southeast Florida,

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