NOAA Fisheries

General fact sheet
Atlantic *Acropora* corals

What is a coral?

Corals are colonial invertebrates that excrete a calcium carbonate skeleton. There are two main types of corals: hermatypic, which produce reefs and are only found in tropical regions, and ahermatypic, which do not produce reefs and are found worldwide.

Most hermatypic corals host symbiotic (living together) algae, which live inside their tissue. The algae are called zooxanthellae. Zooxanthellae give corals their color and need sunlight for photosynthesis. They provide food to the coral and remove some of the corals waste products. In return the coral provides protection and access to light.

What do corals do?

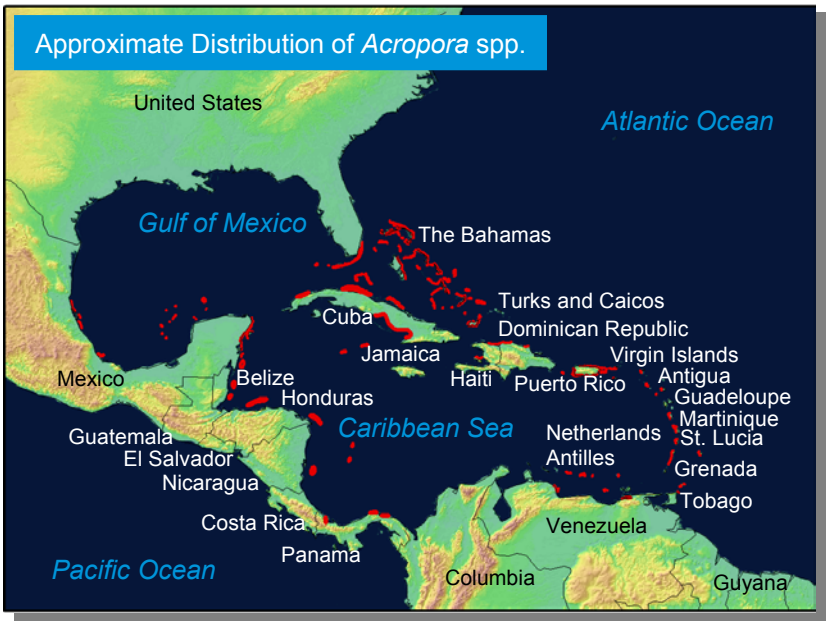
Corals provide habitat for reef fish and invertebrates. They also increase biological diversity. Corals reefs form a barrier along coasts and around islands offering shoreline protection from storms. Coral reefs support fishing, scuba diving, boating, and other recreational activities, as well as subsistence and commercial extraction that generate billions of dollars per year worldwide.

What is *Acropora*?

The *Acropora* genus is the most abundant and species-rich group of corals in the world. Only three species exist in the Atlantic/Caribbean region, Staghorn coral (*Acropora cervicornis)*, Elkhorn coral (*A. palmata)*, and Fused staghorn (*A. prolifera)*, a hybrid of the two. Acroporids are branching corals. These three coral species were the dominant reef building species throughout Florida and Caribbean.

Where are the Atlantic Acroporids found?

Atlantic acroporids are found typically in shallow water on reefs throughout the Bahamas, Florida and the Caribbean. Acroporids live in high-energy zones, with a lot of wave action. Too much wave action (major storms) can cause branching corals to break. However, fragmentation via branch breakage is one method of reproduction for acroporids.



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Fused staghorn (*A. prolifera*)

What salinity do *Acroporids* require?

Although some corals can tolerate extremes, most acroporids require normal marine salinity (33-37‰).

What temperatures do *Acroporids* need to survive?

Acroporids are typically found in water temperatures from 66°F to 86°F. Some degree of stress is experienced at water temperatures greater than 2-3°F cooler or warmer than normal for an extended period.

Do *Acroporids* need sunlight?

Corals depend on the symbiotic zooxanthellae for food. Zooxanthellae need sunlight to photosynthesize. Runoff from land deposits nutrients, which trigger algal blooms, and sediments onto the reef that cloud water. Without sufficient light, the photosynthetic rate is reduced and with it the amount of nutrition produced by the zooxanthellae and the ability of corals to secrete calcium carbonate and build reefs. For branching corals, the optimum range is 60-100 percent of tropical sunlight. Corals grow best in clear water free from excess nutrients, runoff, or algal blooms. Acroporids are particularly sensitive to sediment, as they are among the least effective of the reef-building corals at trapping and removing sediment from their surface. On the other hand, excessive ultraviolet (UV) light may lead to bleaching.

What is coral bleaching and what causes it?

Bleaching is the temporary or permanent loss of zooxanthellae (symbiotic algae) from the coral. Many types of physiological stress can cause coral bleaching (e.g., UV, excessively warm or cold water temperatures, in some cases bacterial infection, etc.). However, the recent mass bleaching events are caused by warm water temperatures and have caused widespread coral mortality on coral reefs throughout the world,

What things negatively affect *Acroporids*?

There are many stresses affecting acroporids, both natural and human-induced. Land based sources of pollution, such as runoff, sewage discharge, dredging and coastal development can increase nutrient levels, sediment loading and turbidity. Runoff can also reduce oxygen levels and possibly introduce pathogens. Excess nutrients allow large fleshy algae (macroalgae) to proliferate and overgrow corals. Pathogens may cause diseases in corals such as white-band disease and white pox/patchy necrosis, which are thought to be two of the most significant causes of mortality to Atlantic acroporids. Climate change, associated with increased water temperature and elevated light levels, may cause bleaching, reduced coral growth rates and deposition rate of their calcium carbonate skeleton. Overfishing and disease have caused a reduction in number of important predatory fishes such as groupers and herbivores (plant eaters) such as parrotfish. Reduction in number to predatory fishes can possibly lead to an increase in organisms that prey on acroporids, such as the short coral snail, fireworm, and damselfish. Furthermore, without a healthy herbivorous fish population, macroalgae growth limits the recovery of stressed corals and the settlement of new baby corals to replace those that have been lost from disease, bleaching, predation and overgrowth.

NOAA Partners in *Acropora* Research, Monitoring, and Conservation

Atlantic and Gulf Rapid Reef Assessment (AGRRA)
Caribbean Coastal Marine Productivity Network (CARICOMP)
Coral Disease and Health Consortium (CDHC)
Florida Marine Research Institute (FMRI)
Louisiana State University (LSU)
National Center for Caribbean Coral Reef Research (NCORE)
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