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Elkhorn Coral (*Acropora palmata*)

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Status

ESA Threatened - throughout its range

Taxonomy

Kingdom: Animalia

Phylum: Cnidaria

Class: Anthozoa

Order: Scleractinia

Family: Acroporidae

Genus: *Acropora*

Species: *palmata*

Species Description

Elkhorn coral is a large, branching coral with thick and sturdy antler-like branches.

The dominant mode of reproduction for elkhorn coral is asexual, with new colonies forming when branches break off of a colony and reattach to the substrate. Sexual reproduction occurs via broadcast spawning of gametes into the water column once each year in August or September. Individual colonies are both male and female (simultaneous hermaphrodites) and will typically release millions of "[gametes](#)".

The coral larvae (planula) live in the plankton for several days until finding a suitable area to settle, but very few larvae survive to settle and metamorphose into new colonies. The preponderance of asexual reproduction in this species raises the possibility that genetic diversity may be very low in the remnant populations.

Colonies are fast growing: branches increase in length by 2-4 inches (5-10 cm) per year, with colonies reaching their maximum size in approximately 10-12 years. Over the last 10,000 years, elkhorn coral has been one of the three most important Caribbean corals contributing to reef growth and development and providing essential fish habitat.

Habitat

Elkhorn coral was formerly the dominant species in shallow water (3 ft-16 ft (1-5 m) deep) throughout the Caribbean and on the Florida Reef Tract, forming extensive, densely aggregated thickets (stands) in areas of heavy surf. Coral colonies prefer exposed reef crest and fore reef environments in depths of less than 20 feet (6 m), although isolated corals may occur to 65



Elkhorn Coral
(*Acropora palmata*)

Photo: NOAA's Florida Keys National Marine Sanctuary

Did You Know?

- Elkhorn coral, like many corals, receive most of their energy and oxygen from symbiotic organisms called zooxanthellae.
- Like counting rings in the trunk of a tree, the age of corals can be determined by examining coral growth rings.



Elkhorn Coral Critical Habitat
(click for larger view PDF)

feet (20 m).

NMFS designated critical habitat for elkhorn and staghorn corals in November 2008 in four areas: Florida, Puerto Rico, St. John/St. Thomas, and St. Croix.

Distribution

Elkhorn coral is found on coral reefs in southern Florida, the Bahamas, and throughout the Caribbean. Its northern limit is Biscayne National Park, Florida, and it extends south to Venezuela; it is not found in Bermuda. Once found in continuous stands that extended along the front side of most coral reefs, the characteristic "*Acropora palmata* zone" supported a diverse assemblage of other invertebrates and fish. These zones have been largely transformed into rubble fields with few, isolated living colonies.



Elkhorn Coral Range Map
(click for larger image)

Population Trends

In areas where loss has been quantified, estimates are in the range of 90-95% reduction in abundance since 1980. Additional drastic reductions (e.g., 75-90%) were recently observed in some areas such as the Florida Keys in 1998 due to bleaching and hurricane damage.



Elkhorn Coral with White Band Disease
(*Acropora palmata*)

Photo: Andy Bruckner, NOAA

Threats

Since 1980, populations have collapsed throughout their range from disease outbreaks with losses compounded locally by hurricanes, increased predation, bleaching, elevated temperatures, and other factors.

This species is also particularly susceptible to damage from sedimentation.

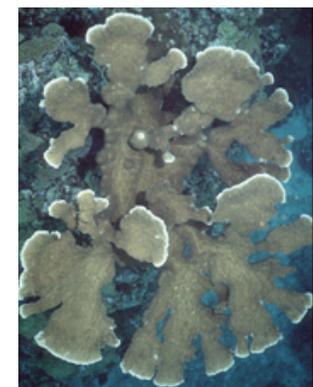
The dominant mode of reproduction for elkhorn coral is asexual fragmentation; this life history trait allows rapid population recovery from physical disturbances such as storms. However, this mode of reproduction makes recovery from disease or bleaching episodes (in which entire colonies or even entire stands are killed) very difficult. The large role of asexual reproduction for this species increases the likelihood that genetic diversity in the remnant populations may be very low. Scientists are becoming increasingly concerned for this species based on its demographic parameters; specifically, how species recruitment and genetic diversity affect recovery potential.

Conservation Efforts

Florida Keys National Marine Sanctuary (FKNMS), the largest coral reef management entity in the region, has developed a management plan for the Sanctuary's corals that includes protective activities, such as zoning, channel markings, and restoration efforts.

Restoration activities have included efforts to re-attach *Acropora* fragments generated by ship groundings and hurricane events; these efforts have had mixed success. Similar efforts to re-attach coral fragments have also been made in Puerto Rico and the U.S. Virgin Islands.

Other restoration efforts have included attempts to culture and settle coral larvae with very limited success. New techniques for restoring *Acropora* are currently being pursued. Such new techniques involve enhancing sexual recruitment, reestablishing ecological roles within reef systems (e.g. herbivorous urchins), and other methods for controlling predators and disease.



Elkhorn Coral
(*Acropora palmata*)

Photo: Andy Bruckner, NOAA

In 1998, the United States Coral Reef Task Force was established by Presidential Executive Order 13089 to coordinate and strengthen efforts for protecting coral reef ecosystems. The Task Force is co-chaired by the Departments of Commerce and Interior, and includes leaders of 12 federal agencies, seven U.S. states and territories, and three freely associated states. In 2002, the Task Force adopted a resolution calling for the development of [Local Action Strategies](#), which are locally-driven plans for collaborative and cooperative action among federal, state, territory, and non-governmental partners to reduce key threats on valuable coral reef resources. Three Local Action Strategies have been developed within the range of elkhorn coral for Florida, Puerto Rico, and the U.S. Virgin Islands. These strategies are underway and will be implemented over a three-year period (FY2005-2007).



Elkhorn Coral
(*Acropora palmata*)
Photo: Jordan T. Wilkerson

Regulatory Overview

On March 4, 2004, the [Center for Biological Diversity](#) petitioned NOAA's National Marine Fisheries Service (NMFS) to list elkhorn (*Acropora palmata*), staghorn (*A. cervicornis*), and fused-staghorn (*A. prolifera*) coral under the Endangered Species Act (ESA). On June 23, 2004, NMFS found that [listing these species may be warranted](#) [pdf] and initiated a formal review of their biological status. NMFS convened the Atlantic *Acropora* Biological Review Team (BRT) to summarize the best available scientific and commercial data available for these species in the status review report.

The BRT completed the [status review](#) [pdf] [4.9 MB] on March 3, 2005. On March 18, 2005, NMFS determined that [elkhorn and staghorn corals warrant listing](#) [pdf] as "threatened" species under the ESA. However, NMFS also concluded that listing fused-staghorn coral is not warranted, as it is a hybrid and does not constitute a species as defined under the ESA. On May 9, 2005, NMFS [proposed adding elkhorn and staghorn coral to the Endangered Species list](#) [pdf].

NMFS finalized the ESA listing of elkhorn and staghorn coral on May 4, 2006 ([71 FR 26852](#) [pdf]). More information can be found in the [press release](#) [pdf] of the final listing.

NMFS designated critical habitat for elkhorn and staghorn corals in November 2008.

Key Documents

(All documents are in PDF format.)

Title	Federal Register	Date
Critical Habitat Designation	73 FR 72210	11/26/2008
Final 4(d) Rule	73 FR 64264	10/29/2008
Proposed Critical Habitat Designation	73 FR 6895	02/06/2008
Proposed 4(d) Rule	72 FR 71102	12/14/2007
ESA Listing Rule	71 FR 26852	05/09/2006
Proposed Listing Rule	70 FR 24359	05/09/2005
Status Review	n/a	03/03/2005
Proceedings of the Caribbean <i>Acropora</i> Workshop*	n/a	04/2002

More Information

- [Acropora Fact Sheet](#) [pdf]
- [NMFS Office of Habitat Conservation Ecosystem Assessment Division](#)
 - [Coral Diseases](#)

- [Coral Reef Conservation](#)
- [Coral Restoration](#)
- [NMFS Southeast Regional Office *Acropora* Information](#)
- [NOAA Coral Health and Monitoring Program](#)
- [NOAA Coral Reef Information System](#)
- [NOAA's National Marine Sanctuaries](#)
 - [Florida Keys Sanctuary Elkhorn Coral Species Card with video](#)
- [U.S. Coral Reef Task Force \(USCRTF\)](#)

* Bruckner, A.W., 2002. Proceedings of the Caribbean *Acropora* Workshop: Potential Application of the U.S. Endangered Species Act as a Conservation Strategy. NOAA Technical Memorandum NMFS-OPR-24, Silver Spring, MD 199 pp.



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