

# Guide to Coral Reefs from Gulf of Mexico



## What are corals?

A coral colony is built by groups of tiny animals called polyps. These polyps produce a skeleton called corallite. The polyps grow and produce more of themselves to increase the overall size of the coral colony. This is a slow process, and many coral species only grow  $\frac{1}{4}$  to  $\frac{3}{4}$  inches per year.

Many corals get their color from algae that lives in their tissues. These algae provide corals with energy during the day through photosynthesis so, water clarity plays a vital role in coral growth. At night, corals extend their tentacles and use their stinging cells to catch food from the water column.

Coral colonies can grow in many shapes depending on the amount of light and wave action on the reef. For example, corals in deeper waters tend to grow in a wide, flat shape to capture more light. Reefs closer to the surface tend to have more branching corals that can withstand wave action without breaking.

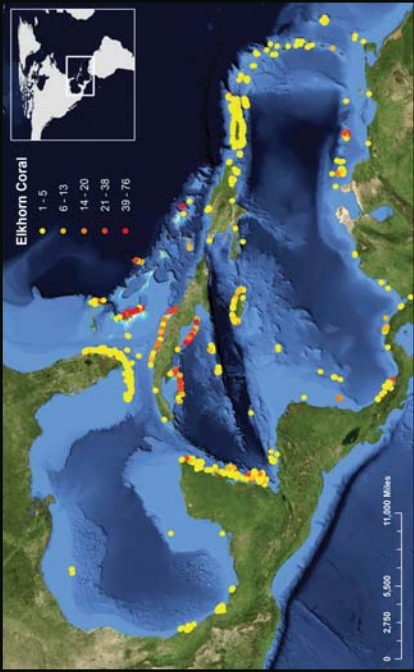
## Endangered Species Act

Special protections have been given to seven hard coral species in the Gulf of Mexico. Elkhorn coral, staghorn coral, pillar coral, boulder star coral, mountainous star coral, lobed star coral, and cactus coral are listed as threatened under the Endangered Species Act. This means that they are likely to become in danger of extinction in the near future. The listing as threatened on the Endangered Species Act promotes the development of strategies to protect these listed species and ecosystems and is an important tool for the conservation of corals.

This guide can be used to identify the seven species of threatened corals (**orange band on the page**), 15 other species of hard corals (**blue band on the page**), and 1 species of fire coral commonly found in shallow waters of the Gulf of Mexico. There are many more types of corals in the Gulf and you can follow the web sites in the back of this guide for more information.

# Elkhorn Coral





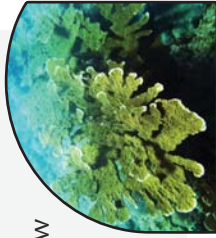
**Locations:** Elkhorn corals (*Acropora palmata*) can be found throughout, the Bahamas, Florida, and the Caribbean. Lives in high-energy zones, with a lot of wave action.

**Depth:** 1 - 55 feet, most common between 1 - 35 feet.

**Color:** Golden tan or pale brown with white tips.

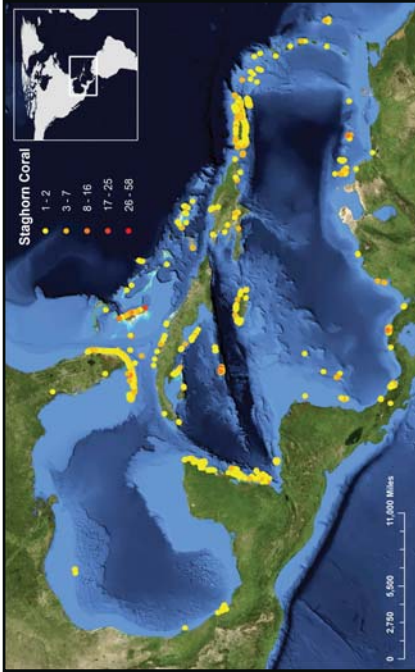
**Shape:** Colonies have branches that resemble moose horns and stem out of a central trunk. The surface is covered by protruding tubular cups called corallites, built by the individual coral polyps.

**Size:** Individual colonies can grow to at least 6 feet in height and 12 feet in diameter, with a branch diameter around 2 - 10 inches.



# Staghorn Coral





**Locations:** Staghorn corals (*Acropora cervicornis*) can be found throughout the Bahamas, Florida, and the Caribbean. They can grow on a variety of reef habitats, such as patch reef, spur and grooves, and other types of hard bottom.

**Depth:** 15 - 60 feet.

**Color:** Brown to yellow-brown in color, with white tips.

**Shape:** Colonies have antler-like branches that stem out of a central trunk. The surface is covered by protruding tubular cups with individual polyps.

**Size:** Under optimum conditions these corals can grow 5 - 6 inches in branch length per year. Colonies can grow to be 4 feet tall and 6 feet wide.



# Pillar Coral





**Locations:** Pillar corals (*Dendrogyra cylindrus*) can be found throughout the Bahamas and the Caribbean, but its numbers have been declining in Florida. The colonies can grow on flat or sloping hard or sandy bottoms.

**Depth:** 4 - 65 feet.

**Color:** Light tan to golden brown.

**Shape:** Colonies build tall columns or large finger-like structures that grow upward from the base. It is one of the few hard-coral species whose polyps extend out for feeding during the day. The extended polyps give the colony a fuzzy, hair-like appearance.

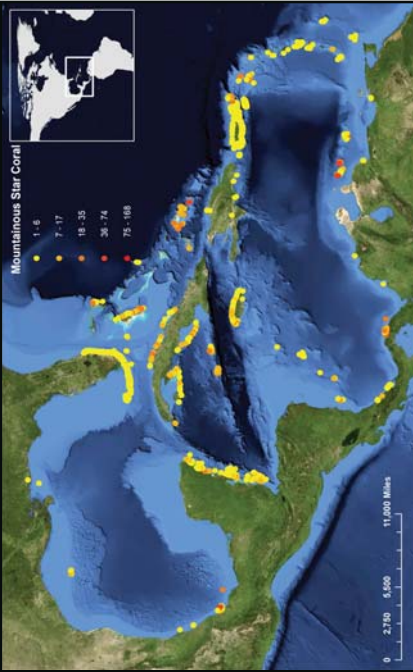
**Size:** The cylindrical columns of the colonies can reach up to 10 feet in height.





# Mountainous Star Coral





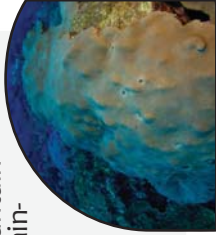
**Locations:** Mountainous star corals (*Orbicella faveolata*) can be found throughout the Gulf of Mexico, Flower Garden Banks, Florida, the Bahamas and the Caribbean. They can be found in most reef environments.

**Depth:** 6 - 130 feet.

**Color:** Color can vary in shades of yellow-green, pale-brown, and grey.

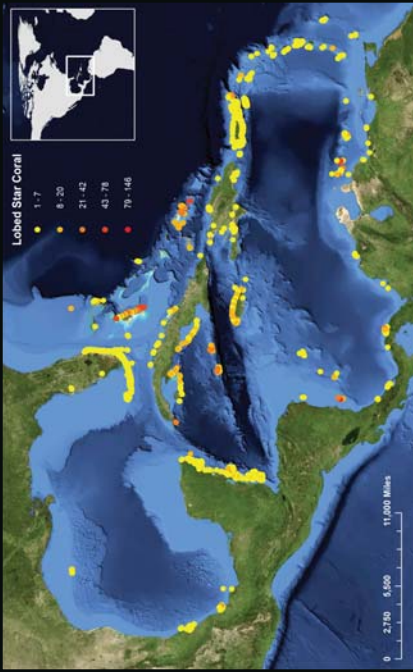
**Shape:** Colonies can form massive structures that look like a skirt on the reef. Colonies have cone-like bumps on the surface that are usually arranged in vertical rows like mountain chains, hence the name “mountainous star coral”. Colonies in reefs deeper than 80 feet often have a flatter shape.

**Size:** Colonies can grow up to 10 feet tall.



# Lobed Star Coral





**Locations:** Lobed star corals (*Orbicella annularis*) can be found throughout the Gulf of Mexico, Flower Garden Banks, Florida, the Bahamas and the Caribbean. They can be found in most reef and environments, and are often a dominant component of Caribbean mesophotic reefs (typically deeper than 100 feet).

**Depth:** 3 - 270 feet, most common between 3 - 33 feet.

**Color:** Color can vary in shades of yellow-green, light-brown, and grey.

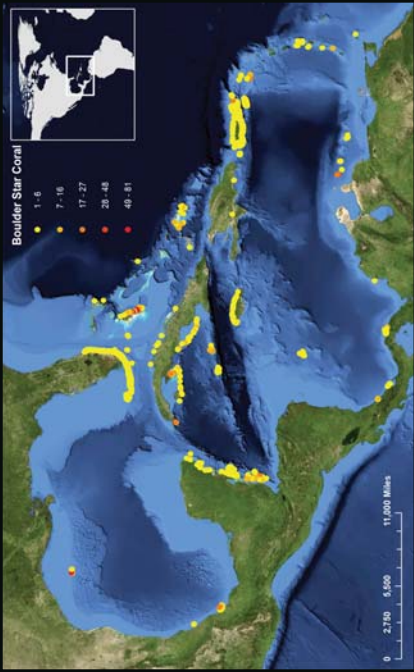
**Shape:** Colonies form a cluster of columns or heads, with dome-like tops. The shape can vary based on the light conditions on the reef. For example, colonies in deeper water make flatter formations.



**Size:** Colonies can grow to be up to 10 feet tall.

# Boulder Star Coral





**Locations:** Boulder star corals (*Orbicella franksi*) can be found throughout the Gulf of Mexico, Flower Garden Banks, Florida, the Bahamas and the Caribbean. They can be found in most reef environments, and are often a dominant component of Caribbean mesophotic reefs (typically deeper than 100 feet).

**Depth:** 15 - 160 feet.

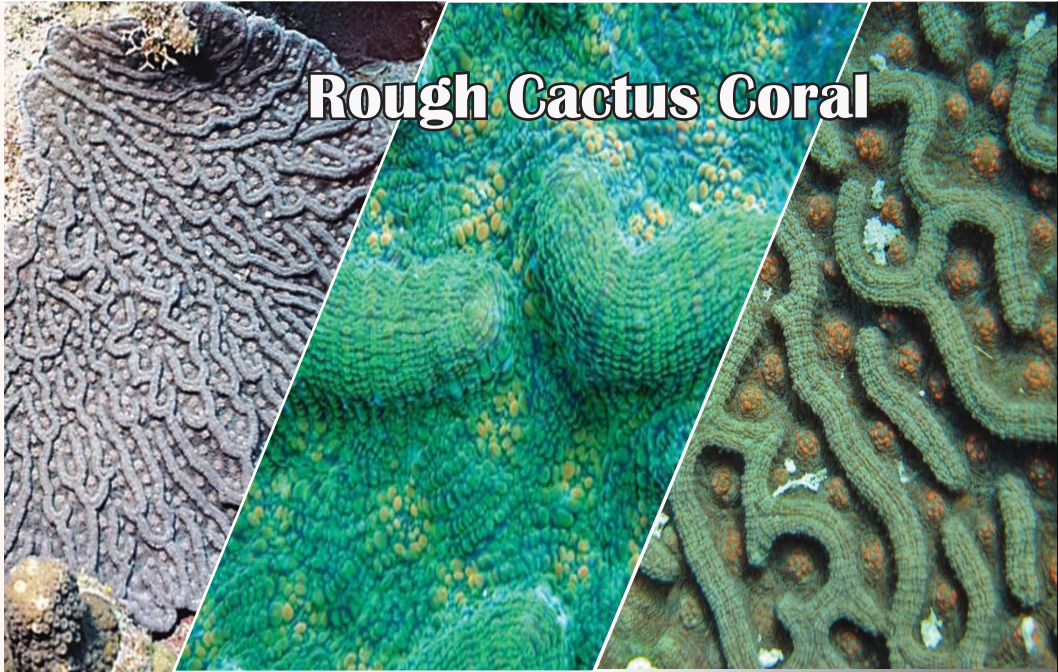
**Color:** Orange-brown, greenish-brown or grayish-brown, often have pale or white bumps.

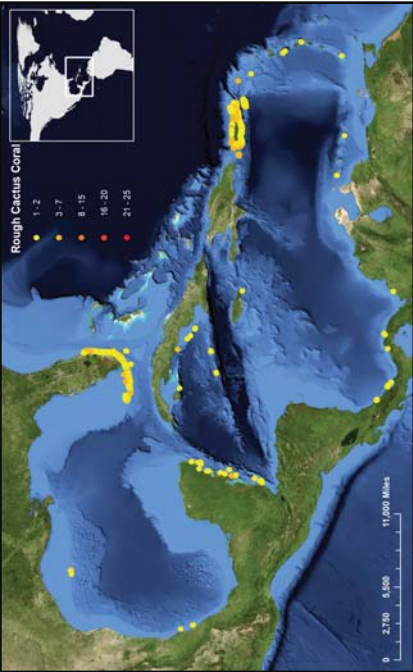
**Shape:** Colonies grow in a mound shape, with a rough surface scattered with irregular bumps. In deeper waters, colonies can grow in the shape of flattened plates that stack on top of each other.

**Size:** Reported to be the slowest growing of the three species of *Orbicella* corals. Colony diameter can extend up to 17 feet with a height of up to 6 feet.



# Rough Cactus Coral





**Locations:** Rough cactus corals (*Mycetophyllia ferox*) occur in Florida, the Bahamas, and throughout the Caribbean, but it has not been reported in the Flower Garden Banks (Gulf of Mexico) or in Bermuda. They are more common in caves or under ledges.

**Depth:** 15 - 270 feet.

**Color:** They are typically shades of grey or brown, but may also be reddish or green.

**Shape:** Colonies grow as thick, encrusting plates with valleys and ridges. The ridges are usually lighter in color, and the coral polyps can extend their tentacles during the day. Colonies generally grow encrusting formations or create overhangs on the edges.

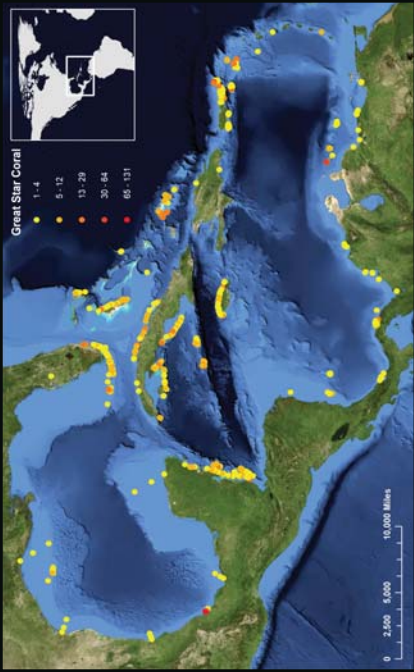
**Size:** Colonies will grow to 1 to 2 feet in diameter.





# Great Star Coral





**Locations:** Great star corals (*Montastraea cavernosa*) are abundant throughout the Gulf of Mexico, Florida, the Bahamas, the Caribbean, and other reefs of the western Atlantic. They can be found in most reef environments.

**Depth:** 6 - 300 feet but predominate at depths between 40 - 100 feet.

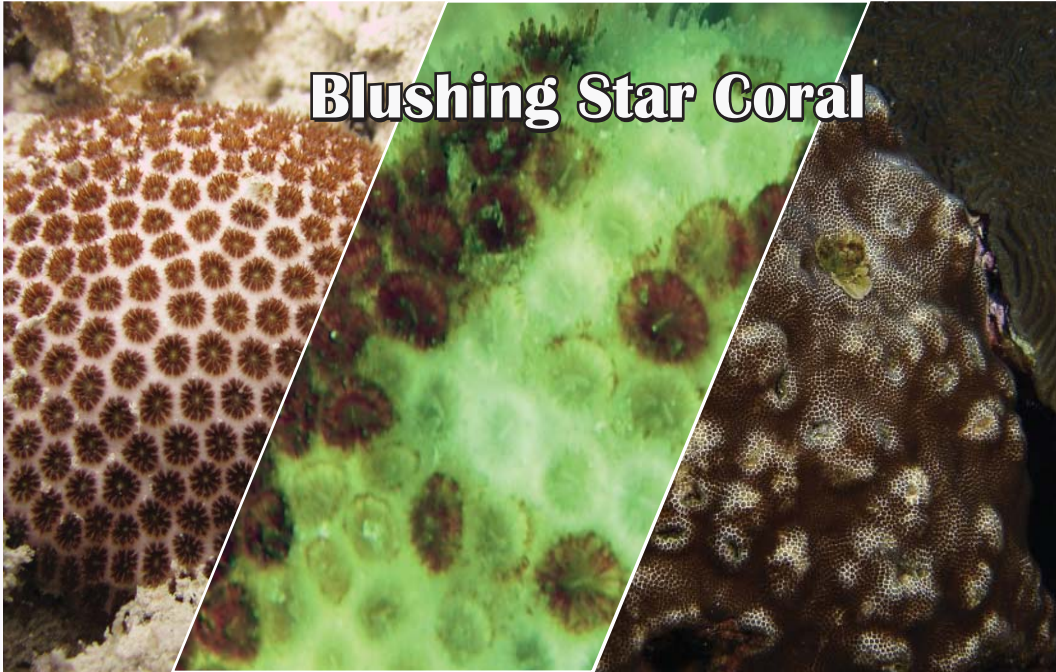
**Color:** Often green, brown, or reddish orange.

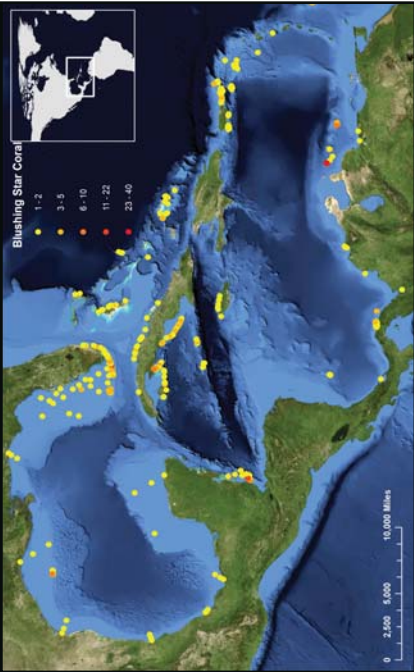
**Shape:** Colonies grow in mounds or domes, although it can grow in plate-form in deeper waters. Some variations expand their polyps during both day and night.

**Size:** Colonies can grow up to 8 feet tall. Individual polyps of this species are larger in size (diameter from  $\frac{1}{4}$  to  $\frac{1}{2}$  inch), making them easily identifiable due to being comparatively larger in size than other corals.



# Blushing Star Coral



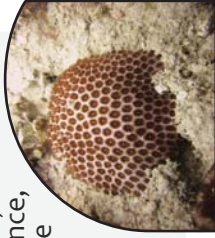


**Locations:** Blushing star corals (*Stephanocoenia intersepta*) are widely distributed in most reef environments throughout the Gulf of Mexico, the Caribbean, and the Bahamas.

**Depth:** 10 - 130 feet.

**Color:** Cream, tan, grey, or brown.

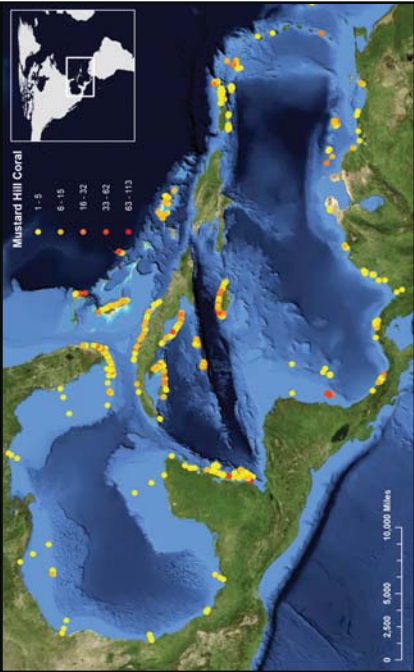
**Shape:** Blushing star coral colonies form mounds. The base color of the colony is light with circular polyps that have a dark rim. The space between the polyps may be relatively wide, and the tentacles can extend during daylight. The name blushing star coral, comes from the fact that upon disturbance, the polyps retract and expose the paler tissue, which makes it appear that the coral is blushing.



**Size:** Colonies can grow to 2 ½ feet tall.

# Mustard Hill Coral





**Locations:** Mustard hill corals (*Porites asterooides*) are found in the Gulf of Mexico, Flower Garden Banks, Florida, the Bahamas, the Caribbean, and parts of South America and western Africa.

**Depth:** 3 - 160 feet.

**Color:** Usually yellow, green, and grey to light brown.

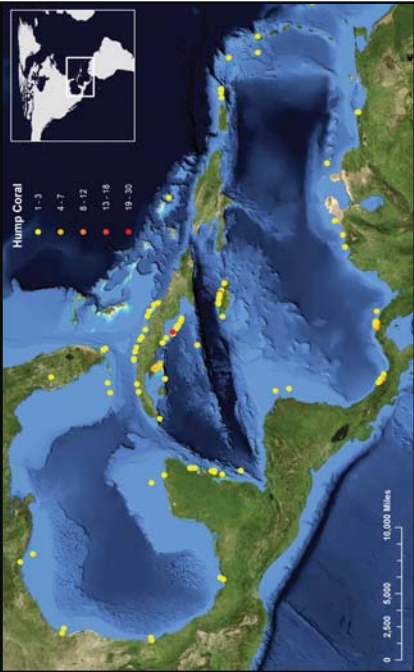
**Shape:** Colonies grow on top of existing structure and encrust the surface. They are smaller in shallow reefs, but can form massive mounds in deeper waters. The surface is lumpy and the corallites are close together giving the colony a porous appearance.

**Size:** Colonies can grow to 2 feet tall.



# Branched Finger Coral





**Locations:** Branched finger corals (*Porites porites furcata*) are found in the Gulf of Mexico, Flower Garden Banks, Florida, the Bahamas, and the Caribbean. They can be found in most reef environments, predominantly in shallower waters.

**Depth:** 3 - 160 feet.

**Color:** Beige, brown, grey, can have purple overtones.

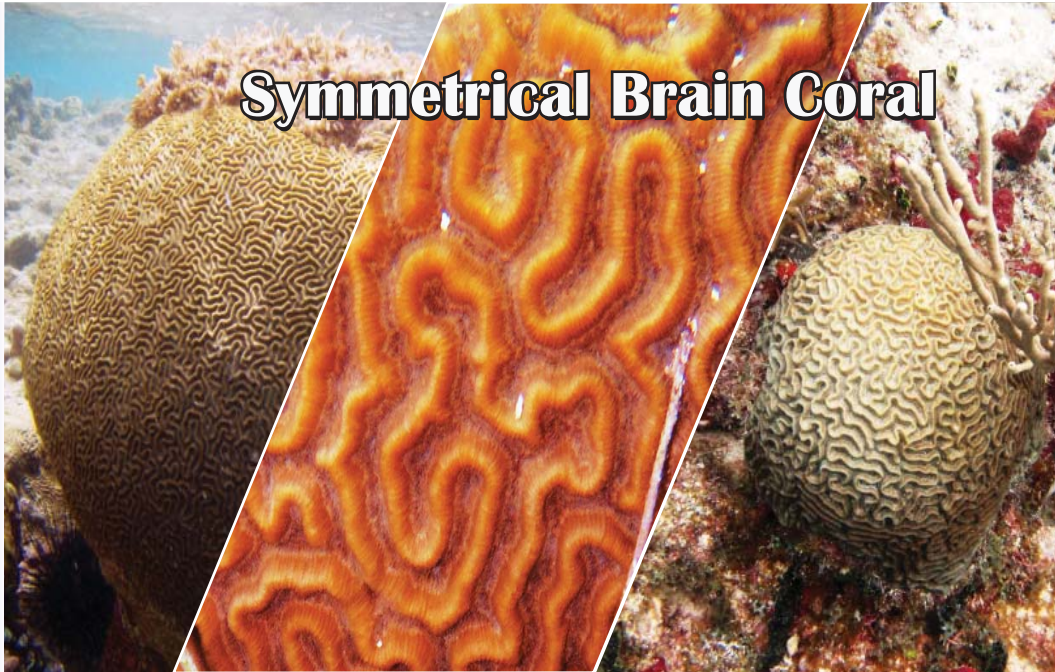
**Shape:** Colonies form finger-like branches with rounded tips and can form large beds. Polyps are usually extended during the day, which gives them a fuzzy appearance.

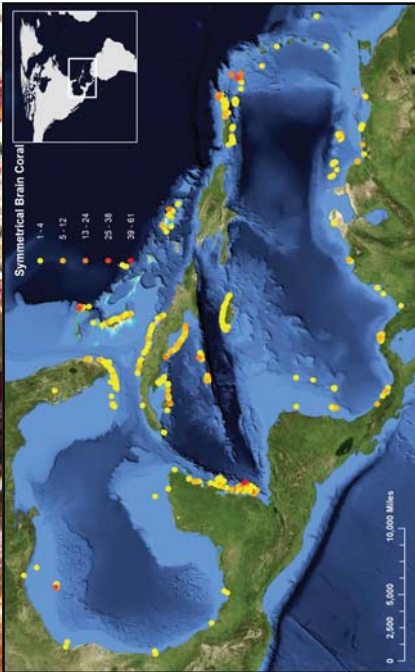
**Size:** Colonies are around 1 - 4 feet, and its branches can grow to be  $\frac{1}{4}$  to  $\frac{3}{4}$  inch in diameter.





# Symmetrical Brain Coral





**Locations:** Symmetrical brain coral (*Pseudodiploria strigosa*) colonies are abundant in the Gulf of Mexico, Flower Garden Banks, Florida, the Bahamas and Caribbean. They can be found in most reef environments.

**Depth:** 3 - 130 feet.

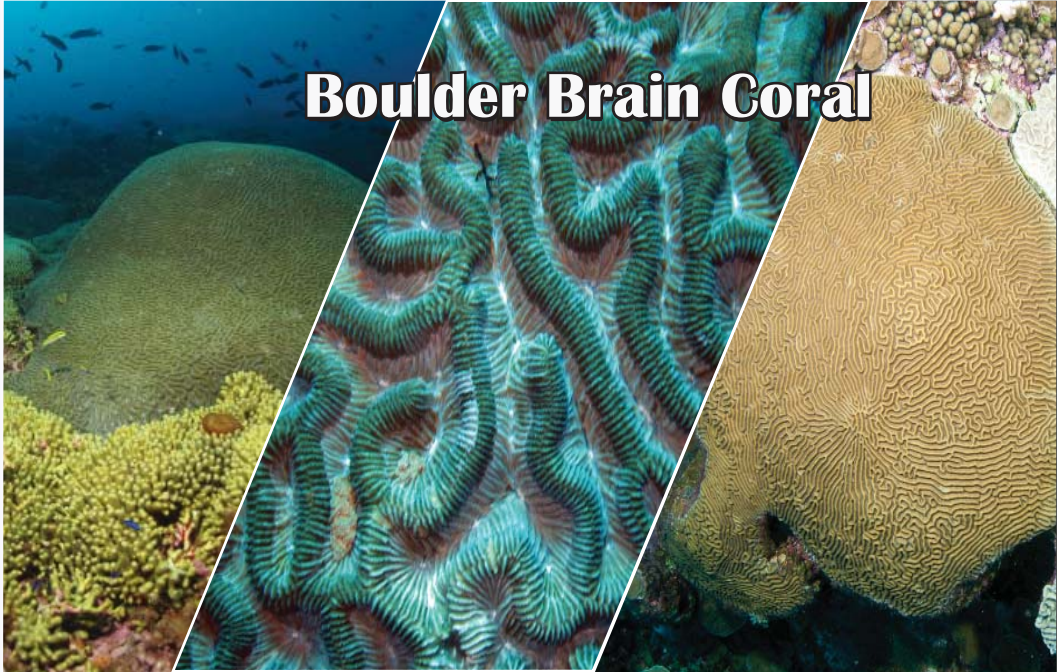
**Color:** Green to brown, yellow-brown, or grey. The valleys are usually lighter in color than the ridges.

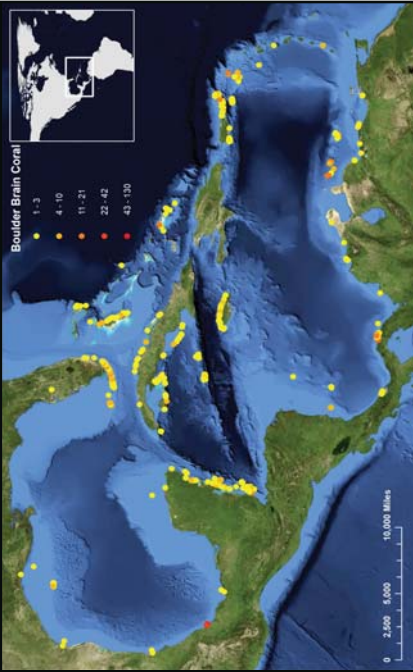
**Shape:** This type of brain coral has long and narrow meandering valleys (narrower valleys than Boulder Brain Coral). Colonies usually grow in smooth, round mounds, although some can be encrusting.

**Size:** Colonies can grow up to 6 feet in height.



# Boulder Brain Coral





**Locations:** Boulder brain corals (*Colpophyllia nanans*) colonies are found throughout the Caribbean, the Bahamas, Florida and the Gulf of Mexico, including the Flower Garden Banks. They inhabit most reef environments.

**Depth:** 2 - 175 feet.

**Color:** Typically, the valleys are green, tan or white, with darker tan-brown ridges.

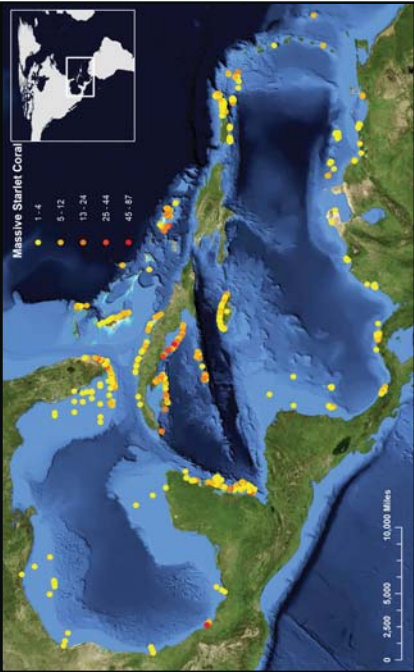
**Shape:** This is a massive brain-like coral that forms rounded domes, although some colonies can encrust or form rounded plates. Their polyps form ridges and valleys on the surface, which give its brain-like appearance. The valleys are wider (up to  $\frac{3}{4}$  inch wide) compared to other brain corals (such as the Symmetrical). The tops of the ridges have a very thin line that divides the ridges as it slants into the valley.



**Size:** Colonies can grow up to 7 feet height.

# Massive Starlet Coral





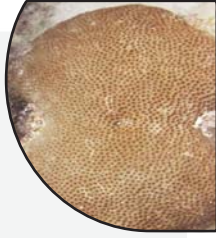
**Locations:** Massive starlet corals (*Siderastrea siderea*) are found throughout the Caribbean, the Bahamas, Bermuda, Florida and the Gulf of Mexico, including the Flower Garden Banks. In shallow waters, colonies prefer areas protected from wave action.

**Depth:** 2 - 220 feet.

**Color:** Uniform rusty-brown, light grey, or golden-brown.

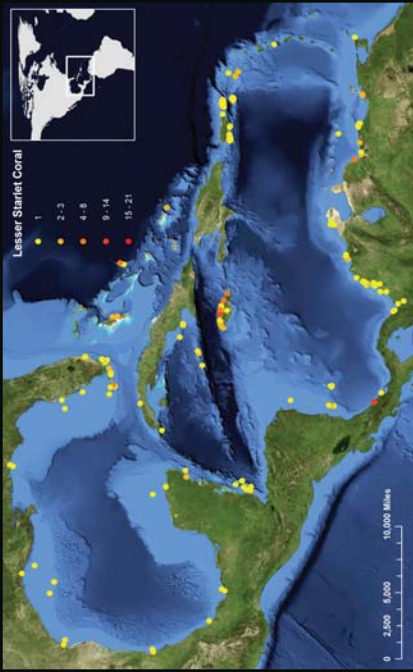
**Shape:** Colonies form round boulders, although young colonies begin encrusting. Corallites are sunk in and darker than the surface of the colony.

**Size:** Can grow up to 6 feet in height.



# Lesser Starlet Coral





**Locations:** Lesser starlet coral (*Siderastrea radians*) colonies are found throughout the Caribbean, the Bahamas, Bermuda, Florida and the Gulf of Mexico, including the Flower Garden Banks. Lesser starlet corals prefer shallow reefs, and can tolerate living in environments with surge, silty conditions, and temperature fluctuations.

**Depth:** 1 – 90 feet, although rarely below 30 feet. deep.

**Color:** Whitish to light gray or light tan.

**Shape:** This species is different than Massive Starlet coral because they do not form large colonies and usually grow as encrusting plates. The individual polyps are darker than the rest of the colony and have a star-like appearance.

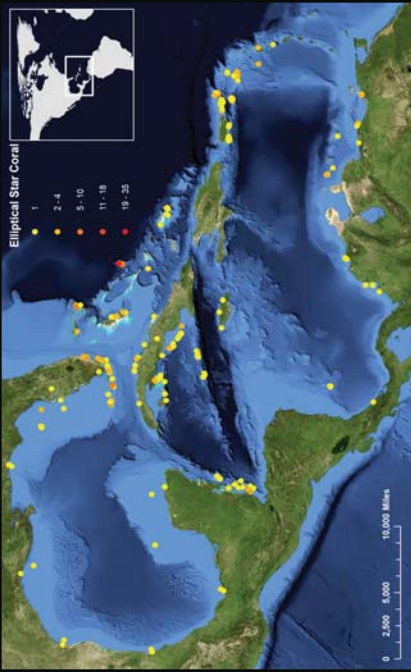
**Size:** Colonies are relatively small with a maximum width up to 12 inches.





# Elliptical Star Coral





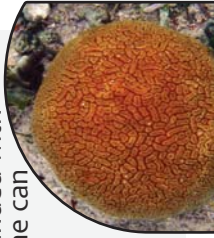
**Locations:** Elliptical star corals (*Dichocoenia stokesii*), or pineapple coral, are found throughout the Caribbean, the Bahamas, Bermuda, Florida, and the Gulf of Mexico. Colonies inhabit the front, back, and base of the reef, but are rarely found on the crest. They also inhabit outer reef channels and lagoons.

**Depth:** 12 - 230 feet, but typically found in shallower depths of 16 - 65 feet.

**Color:** Color variations are cream, yellow and brown.

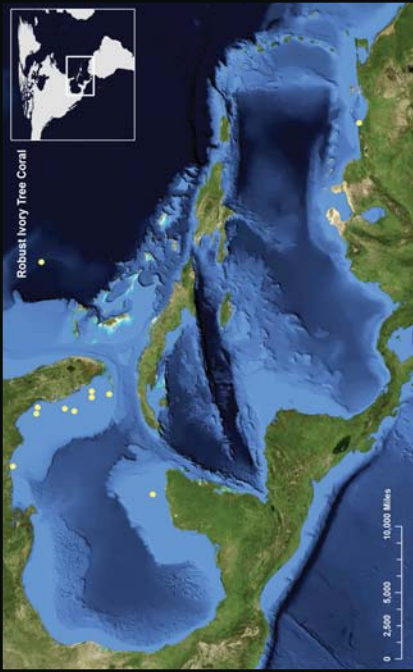
**Shape:** Colony are small and rounded with elliptical corallites, although some can form flattened plates. In deeper water the plates tend to have rounded corallites.

**Size:** Colonies can grow to be 1.5 feet in height and diameter.



# Robust Ivory Tree Coral





**Locations:** Robust ivory tree corals (*Oculina robusta*) are abundant in West Florida, but absent in East Florida, the Bahamas and the Caribbean. Colonies inhabit shallow areas with a high sedimentation, such as turtle grass beds (*Thalassia testudinum*). They are rarely found on clear-water reefs.

**Depth:** 20 - 85 feet.

**Color:** Mustard yellow to yellowish brown.

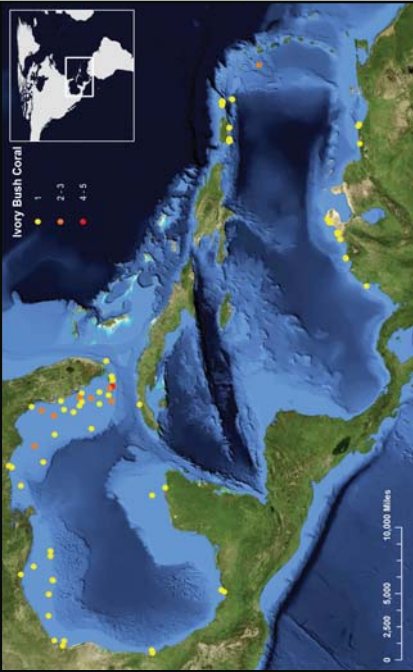
**Shape:** Colonies form tree-like structures, with a thick base and narrower branches. Corallites protrude from the colony.

**Size:** Colonies can grow up to 30 inches. Branches can have a diameter of up to 3 inches.



# Ivory Bush Coral





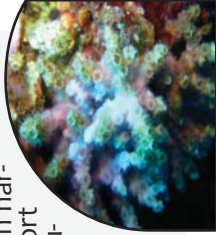
**Locations:** Ivory tree coral (*Oculina varicosa*), or ivory bush coral, is commonly found in the Caribbean, Bermuda, the Bahamas, Florida, and the Gulf of Mexico, including the Flower Garden Banks. Although this coral can be found in the Caribbean, distribution is sparse with limited populations in the West Indies. It is common in turbid waters and can tolerate large shifts in salinity and temperature.

**Depth:** 3 - 75 feet.

**Color:** Yellow-brown. It can survive without zooxanthellae and, in this case, would appear white or pale.

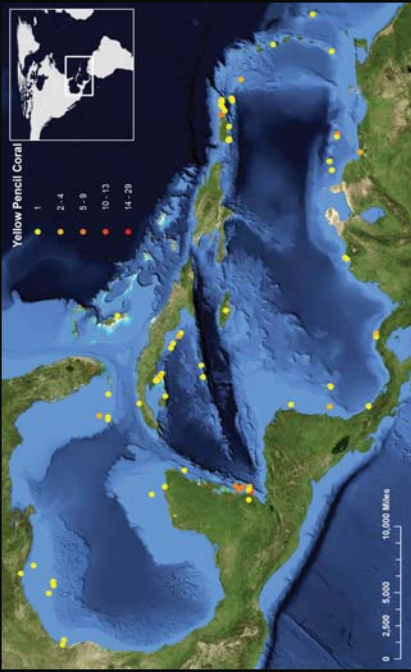
**Shape:** Colonies are tree-like with narrow branches that tend to be short and bent. Polyp tentacles are usually extended during the day.

**Size:** Colonies can grow to 12 inches, and its branches can reach  $\frac{1}{2}$  inch in diameter.



# Yellow Pencil Coral





**Locations:** Yellow pencil corals (*Madracis mirabilis* a.k.a. *Madracis auretenra*) are distributed throughout the Caribbean, Florida, the Gulf of Mexico, the Bahamas, and Bermuda. Colonies are more common in deeper reefs, than shallow reefs.

**Depth:** 3 - 190 feet.

**Color:** Pale yellow.

**Shape:** Colonies have many densely-packed pencil-sized fingers (branches) with blunt tips. Pale polyps are usually extended during daytime and nighttime.

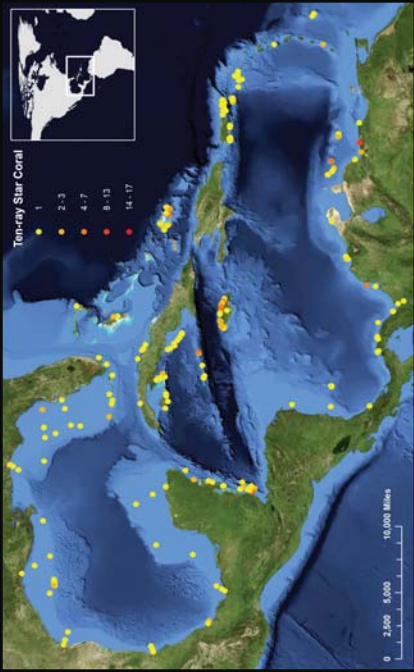
**Size:** Colonies can grow to 4 feet, with a branch diameter of  $\frac{1}{4}$  to  $\frac{3}{8}$  inches.





# Ten-Ray Star Coral





**Locations:** Ten-ray star coral (*Madracis decatis*) colonies are found throughout the Caribbean, south Florida, the Bahamas, Bermuda, and the Gulf of Mexico, including the Flower Garden Banks. Colonies tend to grow on overhangs and vertical surfaces.

**Depth:** 5 - 130 feet.

**Color:** Green, greenish-brown, yellow-brown, violet-brown, tan, or grey.

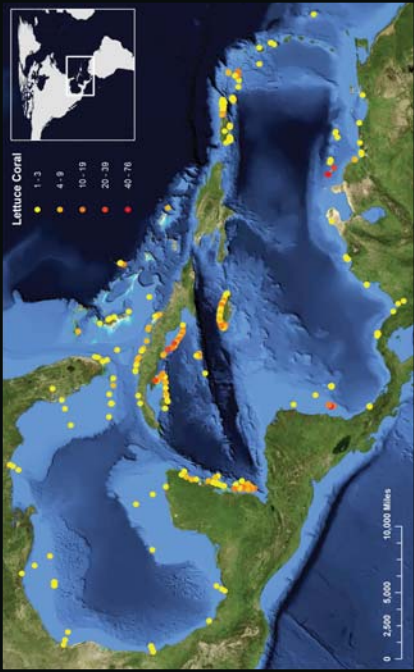
**Shape:** Colonies can grow as encrusting coral or with short lobes or knobs, Corallites are raised from the colony skeleton.

**Size:** Colonies can grow to 6 inches with lobes that are 1 inch in diameter.



# Lettuce Coral





**Locations:** Lettuce coral (*Agaricia agaricites*) colonies are distributed throughout the Caribbean, Florida, the Bahamas, the Gulf of Mexico, including the Flower Garden Banks, and parts of South America. They inhabit most reef environments.

**Depth:** 3 - 240 feet.

**Color:** Tan, yellow-brown, grayish brown, purple, or blueish.

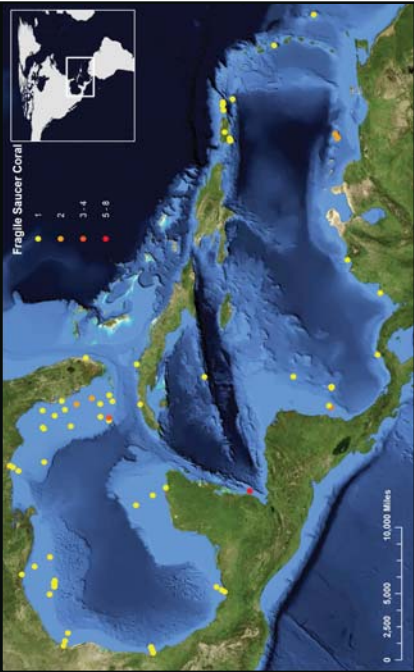
**Shape:** Colonies can grow in several forms including encrusting sheets, thick lettuce-like leaves, and flattened plates that can be horizontal or upright. Colonies usually begin growth as an encrusting plate, and leaves and vertical projections become clear from an early age.

**Size:** Colonies can reach 3 feet.



# Fragile Saucer Coral





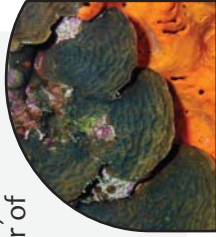
**Locations:** Fragile saucer corals (*Agaricia fragilis*) are found in the Caribbean, the Gulf of Mexico, including the Flower Garden Banks, Florida, the Bahamas, and parts of South America. They are more common in deeper waters, under ledges, and along walls.

**Depth:** 20 - 180 feet.

**Color:** Purplish brown, chocolate brown, yellow-brown, or greenish tan.

**Shape:** Colonies are small, thin, and saucer-like. The polyp corallites are small and arranged in circles that share the same center, and radiate outwards from the center of the colony.

**Size:** Colonies can grow to 4 - 6 inches in diameter.



# Branching Fire Coral





**Locations:** Branching fire corals (*Millepora alcicornis*) are found in the Caribbean, the Gulf of Mexico, Bermuda, and along the coast from Florida down to Brazil. This is the most common species of fire coral in the Gulf of Mexico.

**Depth:** 3 - 130 feet.

**Color:** Tan to mustard yellow.

**Shape:** Branching fire corals are slender and have tree like branching segments with cylindrical features. The surface is smooth and covered with minute pores within which the polyps live. When the tiny polyps protrude, they appear as short, fine hairs. It can encrust on hard-bottom and on octocorals.

**Size:** Can grow to 18 inches tall.

**Caution:** Skin contact with this organism will produce intense stings, with some redness and rash.





## Record Your Coral Observations

	Species	Date & Location	Observations
A. Blushing Star Coral			
B. Boulder Brain Coral			
C. Boulder Star Coral*			
D. Branched Finger Coral			
E. Branching Fire Coral			
F. Elkhorn Coral*			
G. Elliptical Star Coral			
H. Fragile Saucer Coral			
I. Great Star Coral			
J. Ivory Tree Coral			
K. Lesser Starlet Coral			
L. Lettuce Coral			
M. Lobed Star Coral*			
N. Massive Starlet Coral			
O. Mountainous Star Coral*			
P. Mustard Hill Coral			
Q. Pillar Coral*			
R. Robust Ivory Tree Coral			
S. Rough Cactus Coral*			
T. Staghorn Coral*			
U. Symmetrical Brain coral			
V. Ten-ray Star Coral			
W. Yellow Pencil Coral			

## Why are corals important?

- Corals are an important source of food and habitat to many marine organisms.
- Coral reefs form a natural barrier that protects the coastline from storm surge.
- Coral reefs play an important cultural and economical role by supporting jobs and businesses affiliated to fishing practices, tourism, and recreation.

## What are the threats to corals?

Coral reefs are slow growing organisms, and their function and well-being is threatened by a variety of stressors. Their stressors include poor water quality as a result of increased nutrients and sediments; lack of available hard bottom for corals to settle and grow; diseases; extreme temperature changes (hot or cold); and frequent physical damage from storms, human activities (such as fishing and anchoring).

## How can you help?

- When you dive or snorkel, don't touch or stand on coral reefs. Coral reefs are alive. Standing on them could break them, stirred-up sediment can smother corals
- Don't give corals as presents. It takes corals decades or longer to create reef structures, so leave them on the reef.
- Use appropriate sunwear, and choose sunscreens with chemicals that don't harm marine life

- Become an informed consumer and learn how your daily choices such as water use, recycling, seafood, vacation spots, fertilizer use, and driving times can positively (or negatively) impact the health of coral reefs.

- Be a marine crusader, in addition to picking up your own trash, volunteer in local beach or reef cleanups. If you don't live near the coast, get involved in protecting your watershed.

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