



# Help Protect the Reefs

## Let the fish find their own food

Feeding peas or other human food to fish can upset the delicate balance of the reef ecosystem. Many reef fish normally consume algae that grows on the reef. Fish fed by humans may consume less algae, resulting in overgrowth that can smother corals and destroy the reef ecosystem.

## Choose reef-safe sunscreen

Chemicals in some sunscreens can trigger viral infections that affect zooxanthellae, microscopic plant organisms that live within corals and provide food energy for the corals. Use "reef-safe" sunscreen and be sure to apply at least 30 minutes before entering the water.

## Protect the polyps

Standing or walking on the reef – or kicking it with a swim fin – can kill the delicate soft-bodied coral polyps. Without living polyps, the reef will not be able to live and grow. When you snorkel, use a flotation device and keep your fins and feet upward away from the reef to protect the polyps.

If you witness any reef conservation violations, call Hawai'i's Division of Conservation and Resources Enforcement at **1-808-984-8110**.

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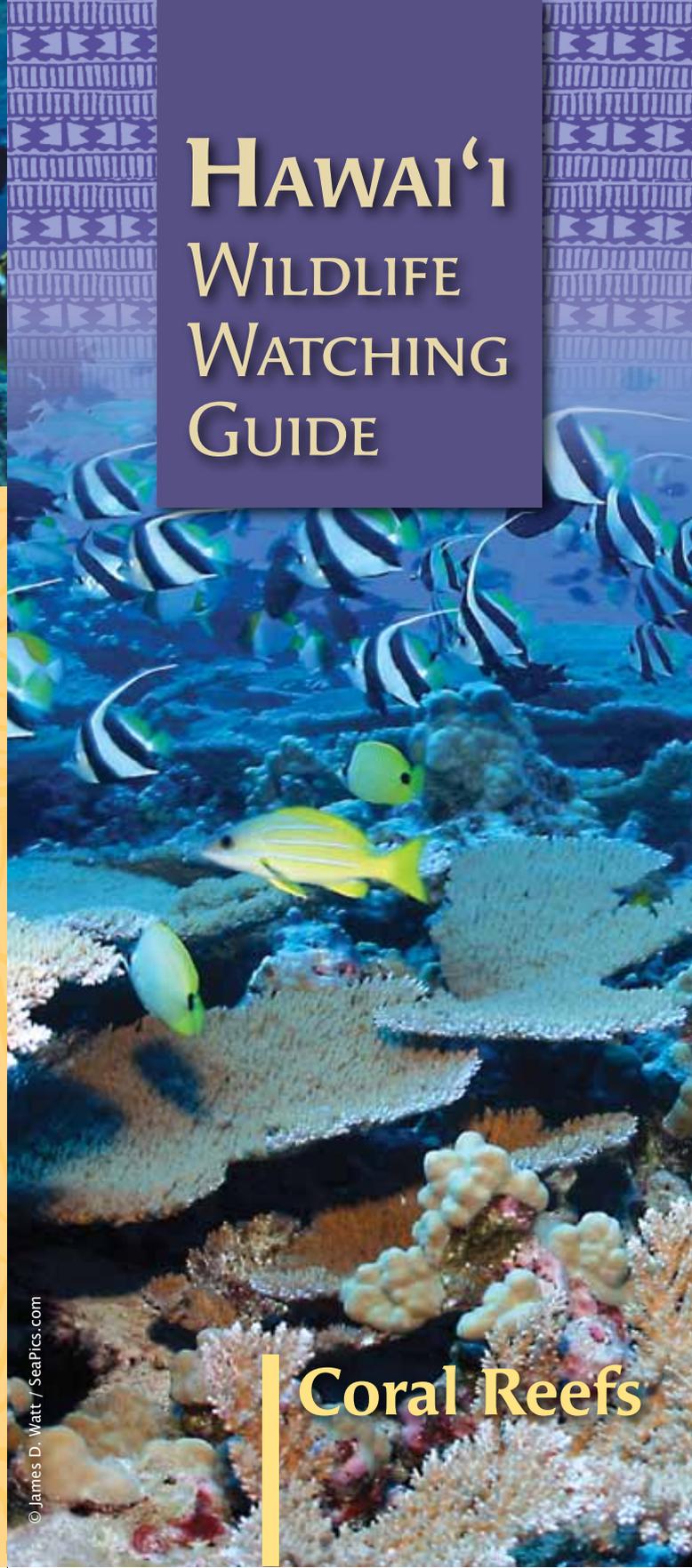
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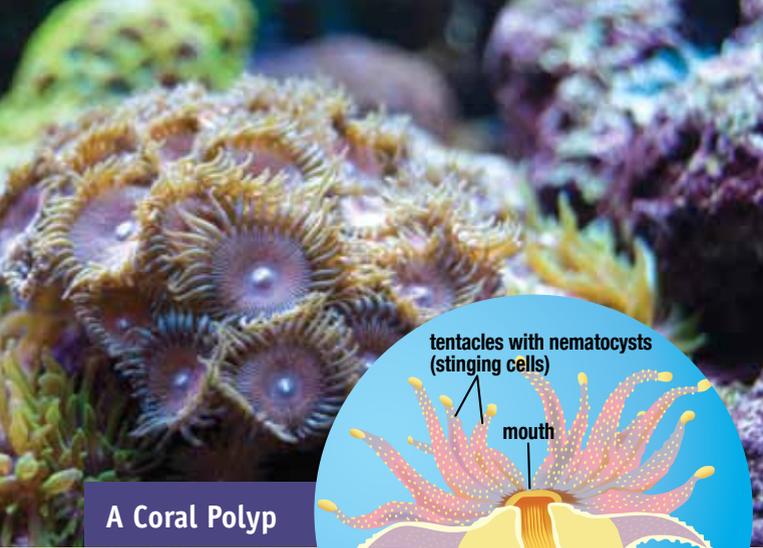


# HAWAI'I WILDLIFE WATCHING GUIDE

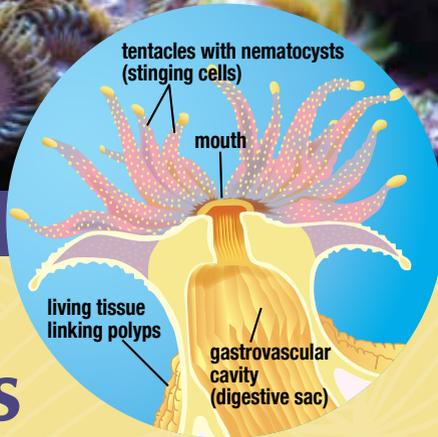


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## Coral Reefs



A Coral Polyp



Finger coral  
*Porites compressa*

# Corals of Hawai'i

Coral reefs develop only in shallow, tropical ocean areas, where the sea is warmer than 60°F.

Coral reefs may look like rocks, but they are actually made up of tiny living organisms called coral polyps. Coral polyps are soft-bodied animals related to sea anemones. Each coral polyp secretes a hard “cup” made of calcium carbonate or limestone around itself.

Most coral reefs are made of hundreds of thousands of polyps living in a colony. Only the outer surface of the colony has living polyps on it.

Coral reefs grow by many ways, including polyps dividing to form new polyps. Hard corals are relatively slow growing; in most cases, they grow less than one inch per year. As the reef grows, it simultaneously erodes due to wave action, boring organisms and sand scour. Some Hawaiian reefs may have taken thousands of years to form.

Without coral reefs, Hawai'i would be a very different place. Much of the white sand of our islands' beaches is generated by the reef ecosystem.

## A Fascinating Diversity

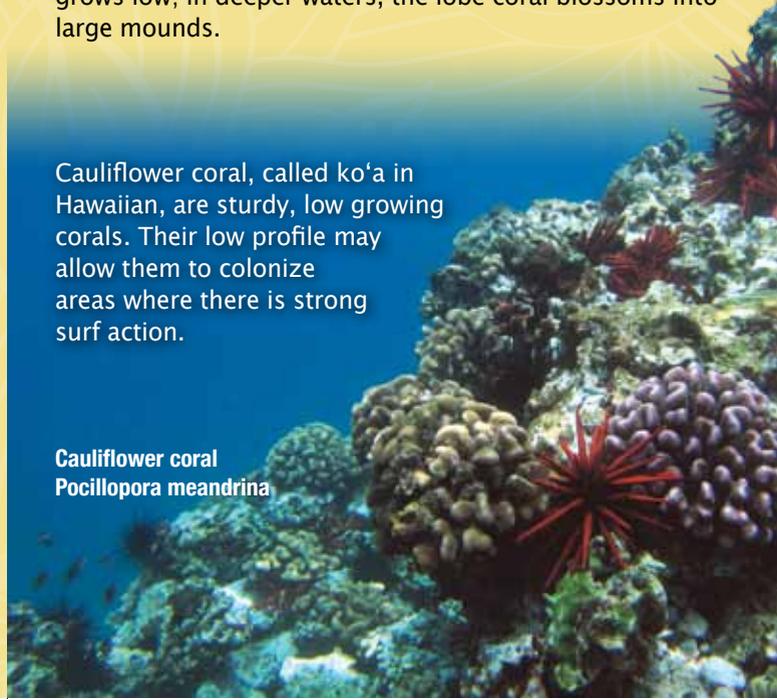
Hawaiian reefs are dominated by a few primary coral species.

Finger coral, called pōhaku puna in Hawaiian, grows in deeper waters. It grows quickly and forms dense thickets. Finger coral is endemic to Hawai'i.

Lobe coral, also called pōhaku puna, is found in both shallow and deeper water. In shallow areas, lobe coral grows low; in deeper waters, the lobe coral blossoms into large mounds.

Cauliflower coral, called ko'a in Hawaiian, are sturdy, low growing corals. Their low profile may allow them to colonize areas where there is strong surf action.

Cauliflower coral  
*Pocillopora meandrina*





# Coral Reefs of Hawai'i

Hawai'i is home to one of the largest coral reef ecosystems in the United States. While you're here, take the time to peer in on the bustling, fascinating worlds of our island reefs. You'll see why coral reefs are called "rainforests of the sea." These diverse ecosystems are teeming with life, some of which developed over the past 500 million years.

## Uniquely Hawaiian

Hawai'i is the most isolated island chain on the planet, separated by more than 2,000 miles from any continent or other major island group. Our islands are also far from the world's major ocean currents.

The relatively few species that arrived here (carried by wind, waves or other forces) evolved in isolation over millions of years, adapting to meet the specific survival challenges posed by the marine environment of Hawai'i. This resulted in the development of many unique species found nowhere else on earth but here. These species are said to be endemic (unique) to Hawai'i.

Endemic Species of Hawai'i:

- 24% of fish species
- 20% of reef-building corals
- 21% of marine snails
- 25% of sponges



# Meet Hawai'i's Coral Reef Residents

Within the Hawaiian reef community, you'll find a variety of animals that each have their own strategies and tools for survival.

## "The Excavator"

### Parrotfish [Uhu]

The parrotfish has teeth that are fused together to create beak-like plates, perfect for scraping algae from coral! Its ability to digest the algae and excrete the small pieces of coral it cannot digest results in the creation of sand.



Hawaiian fishermen believed that the behavior of uhu indicated how a man's wife was behaving at home; for instance, two uhu touching snouts meant that the wife was kissing another man!



## "The Cleaning Crew"

### Hawaiian Cleaner Wrasse

This small fish darts into the gills of larger fish to feed on dead scales and parasites. It also performs this "cleaning service" on the shells of sea turtles. A cleaner wrasse spends most of its time around a specific location on the reef. Larger fish and turtles seek out its services at these "cleaning stations." The Hawaiian Cleaner Wrasse is endemic to Hawai'i.



## "The Shy Shark"

### Whitetip Reef Shark [Manō Lālākea]

Recognized by the white tips of its tail and dorsal fins, this shy shark is often seen by divers and patient snorkelers. Whitetip reef sharks do not feed during the day; they often lie motionless on the bottom, in caves or under ledges.



Whitetip reef sharks are one of the species connected to some Hawaiian families as 'aumakua – earthly manifestations of deified ancestors. Whitetips were caught and eaten by some Hawaiians, but never by members of families that considered a specific whitetip their 'aumakua.



**"Armed and Ready"**

## **Picasso Triggerfish** [Humuhumunukunukuāpua'a]

When threatened, this colorful fish raises and locks its dorsal spine in a defensive posture, as quickly as pulling the trigger of a firearm.



This triggerfish is the unofficial Hawaiian state fish. Its long Hawaiian name translates to "with the nose of a pig." It emits a pig-like grunt, and was considered by Hawaiians to be an acceptable substitute for pig in certain ceremonies and protocols.



**"The Vacuum Mouth"**

## **Trumpetfish** [Nūnū or Nenu]

This long, skinny fish is an ambush predator that can change color to disguise itself. It often blends in with a school of smaller fish and, when the moment is right, opens its huge, vacuum cleaner-like mouth to suck in its prey.



**"Crevice Dweller"**

## **Snowflake Eel** [Puhi]

Look for a black and white splotchy body to identify this usually docile eel. Eels are fish which are adapted to live within cracks and crevices. Hawaiians prized many puhi as food.

They are not aggressive, but their poor vision may cause them to mistake your fingers for prey. It's best to keep fingers away from holes in the reef where eels may be found.



**"Whiskered Hunter"**

## **White/Yellowfin Goatfish** [Weke'ā or Weke 'ula]

Goatfish swim over the sandy bottom with their barbells extended to look for tasty morsels in the sand. It is these fleshy "whisker-like" projections under their chins that give this fish its common name. Groups are often found resting under reef ledges during the day.



This fish's Hawaiian name means "to open." Goat fish were valuable in sorcery. They could be offered with prayers to open or release something.



Photo by Chris Stankis  
[www.flickr.com/photos/bluwavechris](http://www.flickr.com/photos/bluwavechris)

**“Confuse with Contrast”**

## Longnose Butterfly Fish [Lauwiliwilinukunuku' oi'oi]

Often found in mated pairs, butterfly fish are easily distinguished by their dish-shaped bodies, bold coloration and contrasting bands of color. The “false-eye spots” near their tails serve to confuse predators.



The latter part of this fish's Hawaiian name means “protruding or sharp beak,” and refers to the fish's mouth, which is adapted for feeding on invertebrates within the reef.



## Red Pencil Urchin [Hā'uke'uke 'ula'ula or Pūnohu]

The Red Pencil Urchin is one of many species of urchins found in Hawai'i. Its bright red, club-like spines sometimes break off and turn white. These dead spines were once used as chalk to write on slate blackboards. It's best to leave these spines, as well as shells and coral fragments, on the reef, where they contribute vital raw materials to the reef ecosystem.



Coris (adult)

**“Rainbow”**

## Yellowtail Coris [Hīnālea 'akilolo]

This fish's slender body and rainbow colors signal its membership in the wrasse family. The Yellowtail Coris' coloration varies dramatically between sexes and at different developmental stages. Orange and white juveniles are often confused with clown fish, which are not found in Hawai'i.



Hawaiians made a popular condiment called i'a ho'omelumelu by mixing the slightly decomposed flesh of this fish with spices and kukui nuts.

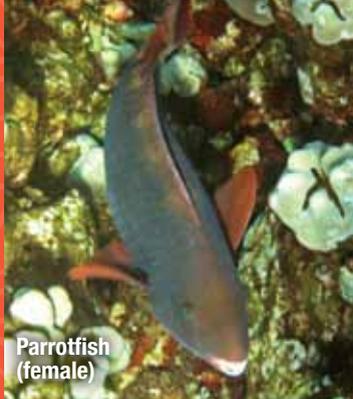


Coris (juvenile)

## Youth and Adult, Male and Female

The appearance of many species of reef fish changes dramatically between the juvenile and adult stages. Males and females of the same species may also have significantly different appearances.

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Parrotfish (female)



Parrotfish (male)

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