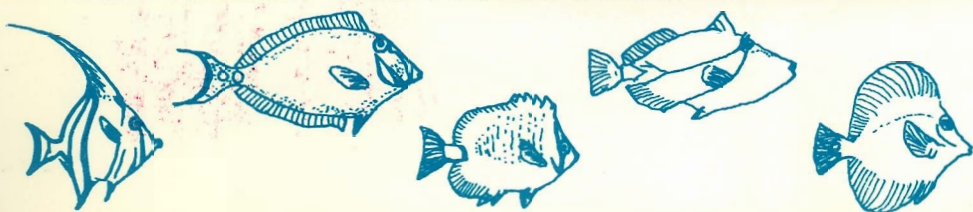
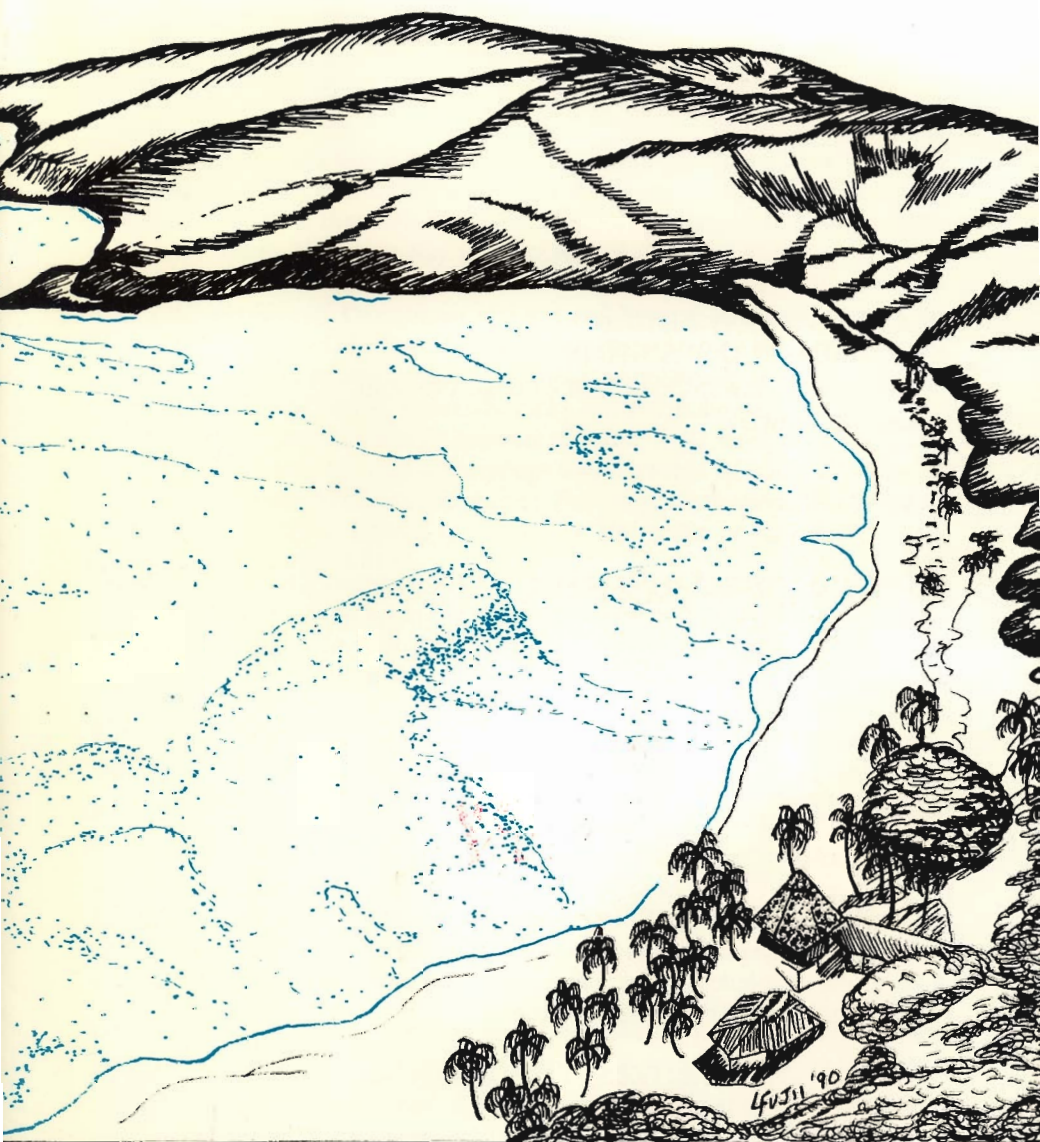


AB-90-02

Hanauma Bay



June 1990

Sea Grant Advisory Brochure
UNIHI-SEAGRANT-AB-90-02
University of Hawaii Sea Grant College Program
Honolulu, Hawaii

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The National Sea Grant College Program is a network of institutions working together to promote the wise use, development, and conservation of the nation's coastal, marine, and Great Lakes resources. Provisions of the National Sea Grant College and Program Act of 1966 called for the creation of Sea Grant Colleges, and in October 1972, the University of Hawaii was designated one of the first five Sea Grant Colleges in the nation. Locally, Sea Grant is a unique partnership of university, government, and industry focusing on marine research, education, and advisory/extension service.

An Introduction to Hanauma Bay

Malamalama a anae

To enlighten, inform, and preserve

INTRODUCTION

Thousands of years ago, a series of volcanic eruptions formed four craters on Oahu's southeastern shore. The sea eroded the southeastern rim of the craters creating the mouth of Hanauma Bay. With its colorful marine life and spectacular underwater views, Hanauma Bay is today one of the most popular beaches in Hawaii.

In 1967 the Hawaii Department of Land and Natural Resources created the Hanauma Bay Marine Life Conservation District to protect the bay's environment and marine life. State law prohibits harming or collecting fish, invertebrates (including corals and shells), seaweeds, rocks, or sand in the bay.

This brochure provides simple answers to some of the most asked questions about the bay. There are also descriptions and drawings of some of the more commonly encountered marine life species. For more information, please consult any major bookstore in Hawaii or contact the University of Hawaii Sea Grant Extension Service at 956-8191.

This brochure should also serve as a reminder that the future of the bay depends on each of us. By doing things like feeding only digestible food to fish and picking up litter, we can preserve this special place for many generations to come.

THE NAME

Hanauma (ha-now-ma) is a combination of the words *hana* and *uma*. The names of many bays and valleys begin with *hono* or *hana*; *uma* has several meanings. Here are three possible interpretations for Hanauma:

Curved Bay — *Uma* means curve, referring to the natural crescent shape of the bay.

Handwrestling Bay — *Uma* refers to the sport of *uma*, which is much like today's arm wrestling. Locking right hands and kneeling with their elbows on the ground, players would try to force each other to the ground. Hanauma Bay was a noted place for ruling families of Oahu to play *uma*, dance hula, and fish.

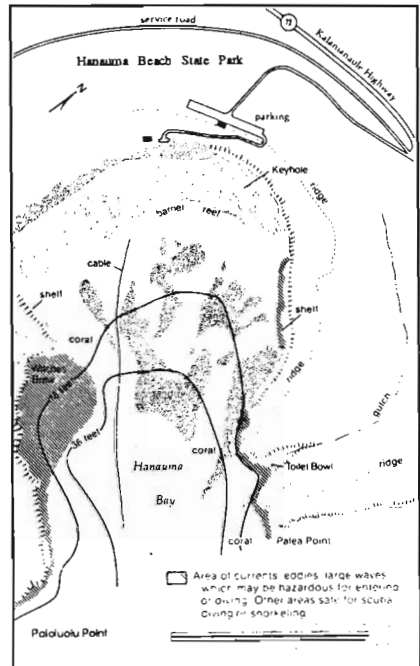
Canoe-stern Bay — *Uma* refers to the stern, or rear, of a canoe. Canoe navigators sailing from Molokai to Oahu would ride a strong current from the northern tip of Molokai to the mouth of Hanauma Bay (a 25 mile trip) with only a few paddle strokes.

GEOLOGY

About 25,000 years ago, hot magma rose through fissures, or cracks, along the southeastern coast of Oahu. The magma mixed with seawater causing explosive eruptions along the Koko Head fissure zone, which extends from Koko Head Crater to Rabbit Island. Hanauma Bay, a compound crater, was formed by at least four eruptions blasting through an exposed coral reef. Today, white coral fragments are found scattered among compacted deposits of ash or "tuff" in the park. The map shows the craters, two vents, and the shoreline, which was extended seaward about 2 miles by the eruptions.

Ledges, ranging from 3 feet to more than 20 feet wide, line the crater's walls from the cove called Witches' Brew on the left of the map and beyond Palea Point on the right. The continuously pounding waves erode the craters' walls and widen the ledges daily. The name Witches' Brew graphically describes the cove's dangerous, turbulent, swirling water conditions during high surf. Following the ledge past Palea Point is a small inlet called Toilet Bowl where ocean swells simulate the flushing and filling of a toilet bowl. Witches' Brew and Toilet

Bowl claim the majority of drownings and serious accidents at Hanauma Bay each year. Consequently while wave action against these ledges may alternate between spectacular displays and relatively calm and unthreatening water, **caution is advised at all times.** Please observe the Hawaiian adage "**NEVER TURN YOUR BACK ON THE SEA**" by always keeping an eye on incoming waves.



From *Atlas of Hawaii* ©University of Hawaii Press. Used with permission.

THE ENVIRONMENT

Reef Flat

A well-formed fringing reef outlines the inner shoreline of Hanauma Bay. The protected reef flat and calm snorkeling area slope from the sand beach to deeper waters. The reef flat, riddled with crevices and holes, consists of limestone formed from old coral and algae. This shallow area is only 1 to 4 feet deep. Five large sand pockets, or "key holes," scattered across the reef are up to 10 feet deep. Marine life most commonly seen in this area includes colorful *kikakapu*, (butterflyfish), *uhu* (parrotfish), *hinalea* (wrasse), and *manini* and *palani* (surgeonfish). They are easy to approach and photograph with an underwater camera.

Reef Crest

At low tide, the reef crest marks the seaward boundary of the reef flat and is exposed about 250 feet offshore. A humanmade breakwater of basalt boulders was built on the reef's margin to further reduce beach erosion and improve swimming conditions by breaking up the waves crossing the flat. During calm seas, *palani* or *pualu* (surgeonfish), *'ama 'ama* (mullet), and *nenu* (rudderfish) can be seen from the boulders. During high surf, powerful currents can carry swimmers directly into the waves pounding on the boulders. Swimmers and snorkelers should not venture beyond the breakwater without speaking with a lifeguard first.

Outer Bay

The water ranges from 10 feet deep at the reef margin to nearly 100 feet deep at the mouth of the bay. From above, sand patches and channels appear bright turquoise, contrasting with the darker areas of finger and lobe coral reefs. Juvenile *hinalea* (wrasses) and 'alo'ilo'i (damsel fish) are commonly seen playing among the coral. Although the best underwater viewing sites are at least one-quarter mile from the beach, only very strong snorkelers and divers should venture out beyond the reef. Quickly changing water conditions and strong currents can easily overpower an inexperienced sightseer.

Plant Life

Two distinct plant communities are found in the beach park.

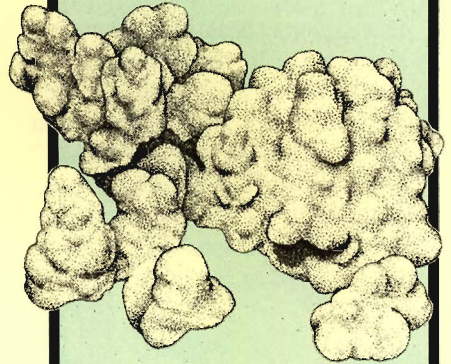
Kiawe trees and the delicate, native, orange-flowered 'ilima abound high above the ocean spray on the surrounding cliffs and ridges. The hot, dry climate — typical of leeward regions on all Hawaiian islands — and shallow soils discourage the growth of most plants. Native *naupaka* shrubs, morning glory vines, and finger grasses grow closer to the shore and beach, withstanding the harsh coastal environment and salt spray.

Marine Life

Coral (*ko'a*): Some of the many different species of coral, which are related to sea anenomes and jellyfish, are responsible for the spectacular reefs that exist in Hawaii. Help to preserve the coral by not standing on or removing any of them from the bay.

Lobe coral:

The most abundant coral, the lobe coral grows on rocks and is normally yellowish-green. This species can tolerate wave action and strong currents and may be viewed from the tidepool areas to 100 foot depths.



Cauliflower coral:

Cauliflower coral resembles small flattened branches that contain the coral organism (polyps). The unique shape helps the coral colony withstand the surging force of the waves. This is one of the first coral species to colonize newly formed lava flows, serving as the backbone of coral reef development.



Sea urchin:

Relatives of the seastars, sea urchins can easily be seen in crevices within the reef and rocks because of their spines. Different species have different types of spines.

Long-spined urchin (*wana*):

This urchin is beautiful, but among its sharp spines lie smaller, poisonous spines. *Wana* are usually black or deep purple with 6 to 8 inch spines. Avoid contact with this urchin. *Wana* "pokes," or wounds, are best treated by soaking the infected area in hot water or vinegar to deactivate the poison. When in doubt, seek a lifeguard or physician.

Rock-boring urchins (*ina*):

Ina are named for their ability to create small crevices within old coral sediments by gradually wearing away the rocks with their "mouth parts." *Ina* can be identified by short, thick spines, usually black, gray, or tan in color. They are nonpoisonous and are generally smaller than *wana*. Both can be viewed in less-crowded areas of the bay, normally along the rocky ledges.



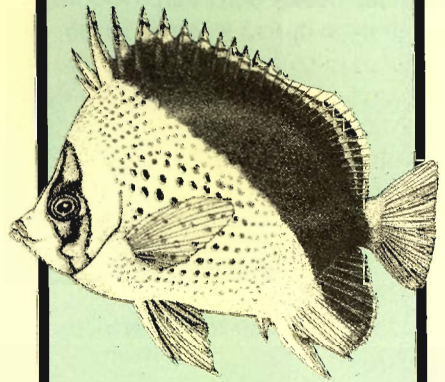
Sea cucumbers (*lohi*):

These animals are closely related to seastars and sea urchins. Sea cucumbers receive their name from their appearance and sluggish movement. Found in all areas of the bay, sea cucumbers prefer quiet, flat areas along the reef. Some species of sea cucumbers are edible.



Butterflyfish:

Butterflyfish are among the most common and colorful of Hawaiian reef fish. Their name stems from their bright coloration (yellow, brown, or black) and markings (stripes and spots). Most butterflyfish live alone or in small groups. These fish are called “nibblers” because they pluck tiny animals and plants from the reefs. Butterflyfish can be seen in both the inshore and outer reef areas. Some scientists believe that the “eye spot” or tail markings confuse predators into attacking the tail region instead of the head.



Raccoon butterflyfish
(*kikakapu*):

Growing to 6 inches in length, this fish is recognized by its black and white mask covering the head region.



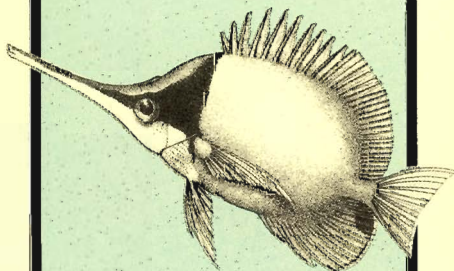
Milletseed butterflyfish
(*lau-wiliwili*):

This small species is recognized by its bright yellow body and vertical rows of small black dots. Large specimens will reach up to 5 inches in length.

Long-nose butterflyfish
(*lau-wili-wili-nuku-nuku-oi-oi*):

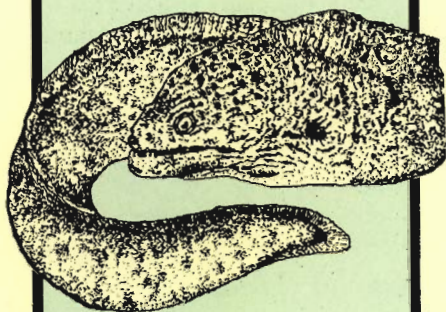
This fish is easily identified by its long snout and bright yellow coloration. The snout is used to probe into deep coral crevices for food. This fish also has the distinction of being the first Hawaiian fish to be scientifically described and has one of the longest Hawaiian fish names, roughly translated to "Leaf of the wiliwili tree with a long nose."

Illustrated here is a species similar in appearance to the species found in the bay.



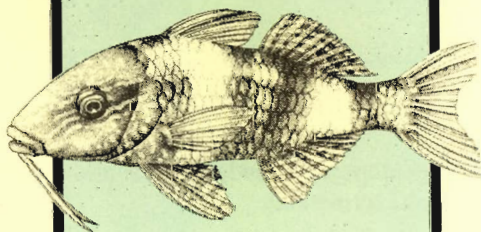
Eels (*puhi*):

Eels are easily recognized by their elongated body shape and fierce appearance. Moray eels are predators and feed on fish, normally at night, seeking the protection of the reef by day. Despite their fierce appearance, most eels are not aggressive or poisonous, however, they can inflict painful wounds with their sharp teeth. As with all marine creatures, eels should be treated with respect and left alone. Never place your hand into reef holes or crevices. Eels are commonly seen in crevices and rock holes or swimming among coral on the outer portions of the reef.



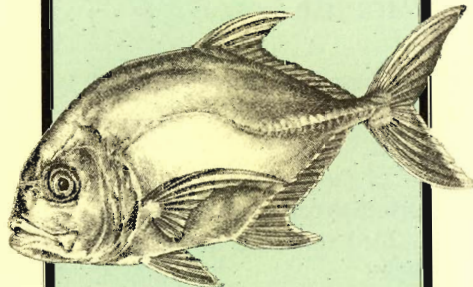
Goatfish (*moano*):

Goatfish are easily identified by the “whiskers” under their mouth, which remind some people of a goat’s whiskers. The whiskers help locate food under sand or loose gravel. Goatfish can be seen swimming and feeding in large schools, normally in the sandy patches of the bay. *Moano* were used by ancient Hawaiians in ceremonial dishes.



Jacks (*ulua*):

Ulua are streamlined, fast-moving reef predators that usually travel in groups. The young are called *papio* and can easily be seen in shallower waters. Both the *papio* and *ulua* are commonly encountered in the bay where they have become accustomed to handouts from visitors.



Parrotfish and wrasses:

Both fish species are common among the reefs, especially at Hanauma Bay, where feeding has encouraged the parrotfish to aggressively seek handouts from humans.

Wrasses (*hinalea*):

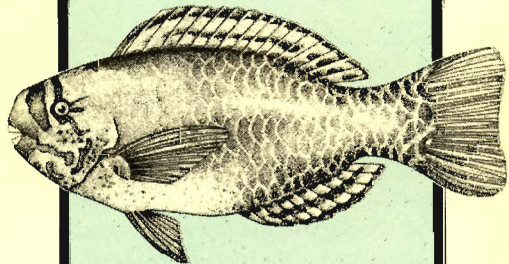
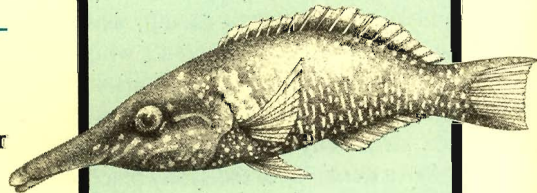
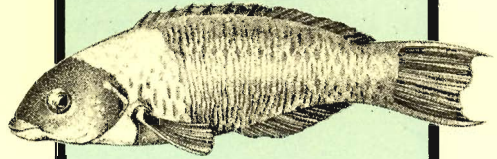
These fish are smaller than parrotfish in body shape and size, and have a saddle-colored band behind their eyes. The saddleback wrasse is commonly found throughout the entire bay park.

Bird wrasse (*hinalea i'iwi*):

Commonly found among cauliflower coral formations.

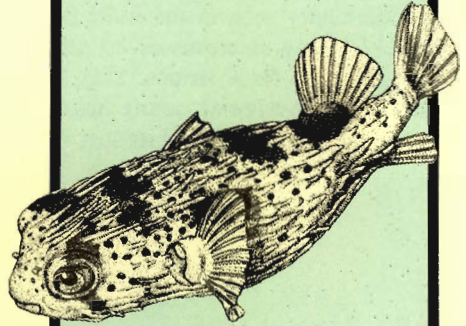
Parrotfish (*uhu*):

These fish are noted for their large eyes, bright coloration, and parrot-like "beak," which they use to scrape algae off of the rocks. Scientists note that parrotfish help create sand by grinding up hard coral and rocks in search of algae.



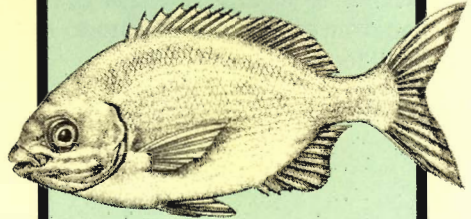
Pufferfish (*o'opu okala*):

Pufferfish, or balloonfish, are easily recognized by their short, heavy, round bodies. Some species are covered with spines. The most famous characteristic of pufferfish is their ability to inflate themselves by ingesting either air or water making them impossible for most predators to swallow. Some members of this family also have highly poisonous flesh. Puffers are normally seen in the open waters of the bay.



Rudderfish (*nenue*):

Rudderfish have oval-shaped bodies with silvery-gray coloration. These fish feed on aquatic plants and have a small mouth relative to their body size. The tail of these fish is distinctly shaped like a rudder. According to Hawaiian legend, the yellow colored *nenue*, were the *amakua*, or protectors, of other *nenue*. This fish can be seen in schools, normally inshore and around feeding areas.



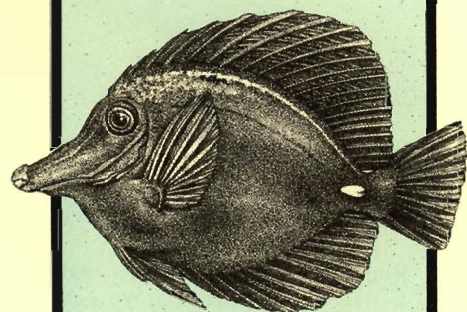
Hawaiian sergeant (*mamo*):

Commonly seen in the inner portions of the bay, *mamo* are silvery green in color with black stripes. This fish tends to be territorial, acting aggressively toward members of its species.



Surgeonfish:

Surgeonfish get their name from the sharp spine located at the base of their tail. The spine can inflict wounds on predators that try to attack the fish from behind. Surgeonfish are algal grazers and swim in schools over the rocks and coral formations of the bay.



Convict tang (*manini*):

This is the most common species *manini* of surgeonfish. Its body color is gray-green with black stripes, or bars, on its sides.



Yellow tangs (*lau'i-pala*):

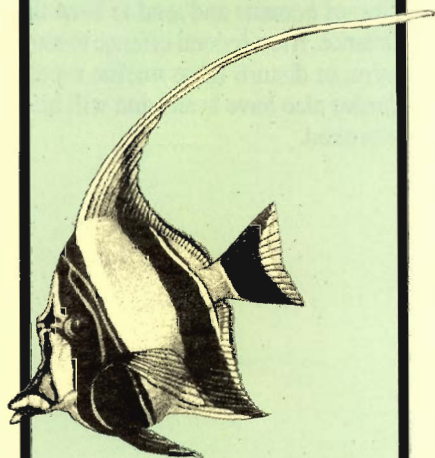
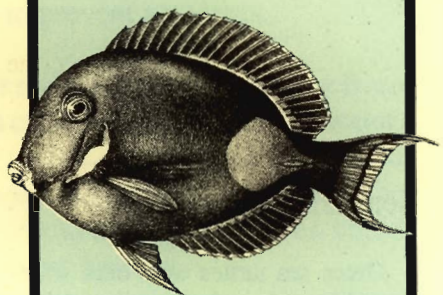
This fish is one of the most visible fish in the bay. It is solid yellow with a white tail spine (see surgeonfish illustration).

Achilles tang (*paku iku'i*):

This fish is easily recognized by its brilliant orange patch on the base of its tail. The orange marking draws attention to the white blade that the fish will use to defend itself.

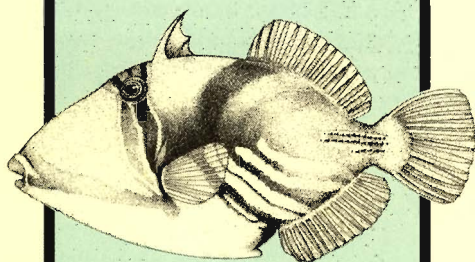
Moorish idols (*kihikihi*):

The unique body shape, white, yellow and black stripes of this fish are unmistakable. It is easily one of the most spectacular fish seen in the bay. The fish is normally seen in pairs or groups of four. The long dorsal fin may act to discourage predators by making the fish appear larger than they really are.



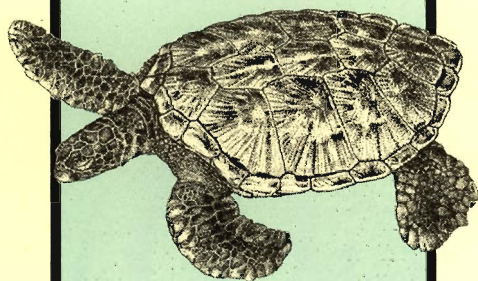
Triggerfish (*humu-humu*):

Triggerfish have a sharp dorsal spine located behind their head and are characterized by their rectangular body shape. The dorsal fin can lie flat or upright, acting much like a trigger, hence the name. The *Humu-humu-nuku-nuku-a-pua'a*, meaning snout like a pig is currently Hawaii's designated state fish. Triggerfish can be seen throughout the bay region but are normally solitary with the majority of them being found outside the reef area.



Sea turtles (*honu*):

Green sea turtles were once widespread throughout the Hawaiian islands. Today, they are recognized as a threatened species with a local population of fewer than 1,500. Sea turtles are frequently seen in the deeper waters of Hanauma Bay. They are wary, however, of humans and tend to keep their distance. It is a federal offense to touch, harm, or disturb these marine reptiles. Turtles also have beaks and will bite if provoked.



A FEW SAFETY TIPS

1. Talk to a lifeguard about water conditions. The lifeguard can tell you where any hazardous currents or waves exist. Beware of a strong rip current located in the channel where the submarine telephone cable runs, the current could carry you out into deepwater. Look for diver safety signs on the beach for additional water safety information.
2. Know how to use your snorkeling or scuba equipment. Always swim with a buddy; it is safer and also more fun to share the bay's beauty with a friend.
3. Watch your children at all times to prevent accidents.
4. If you do not feel confident about swimming, enjoy the bay from the beach or just wade. Many fish can be seen in knee-deep water.
5. Be **very careful** if you walk on the slippery ledges around the bay's edges. "Rogue waves," or large unanticipated waves, could wash you into the bay, causing severe injuries.
6. While wading or swimming through areas with coral, avoid scraping or cutting yourself. Coral cuts take a long time to heal.
7. If you see anyone requiring medical or rescue services, contact a lifeguard immediately.

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