

MAUI + 1990s  
GH BALAZS

1

# Sea turtle, caught in line, saved by diver

Rescuer dives 15 feet to bring  
the endangered animal to a vet

By LORI TIGHE

Star-Bulletin

A green sea turtle with fishing line hanging out of its mouth and tumors on both eyes was rescued by divers off the North Shore yesterday.

The turtle, a threatened species, was the 17th rescued in seven months, according to Ken Nichols, an owner of North Shore Diving Headquarters.

"It was a typical situation," he said, "very sad."

Nichols had to free dive 15 feet to reach the turtle and carry it to the surface just before noon. He kept the front flippers of the 100-pound turtle above the water to immobilize it, then put it in his diving boat.

Filiesha LeRand, a National Marine Fisheries Service turtle rescuer who works for the University of Hawaii's Marine Options Program, transported the juvenile turtle to a Kailua holding pen for a veterinarian to treat it today.

"I couldn't open his mouth, but I don't think he swallowed the hook," LeRand said. "He had a fishing hook embedded in his shoulder. I think he swallowed the line."

But the fishing line is more dangerous than the hook, Nichols said. The animals often can pass the hook, but the line can severely damage a turtle's intestines.

The troubled turtles Nichols has rescued in the past year became wrapped in fishing lines or nets. And many suffer from a herpes-like tumor on their eyes and mouth.

Several turtles had fins tied up in fishing lines. The fins were rotting on their bodies and required amputation.

"It's a big problem and it just seems to be getting worse," Nichols said.

"The bottom line is, we need to set areas aside for conservation," he said. "Until then, it's not going to be taken care of. It's really quite sad."

## COVER PHOTO

# Turtle artist

*Will a chocolate turtle help save the hawksbill? A Kihei artist is doing his best to get the conservationist message out. "Turtles need all the help they can get."*

Helen Gillette

Kihei artist Dale Zarrella believes you can use art to educate the public and help save the world of nature.

That's what he told an audience at the Maui Ocean Center recently while screening a film on the endangered hawksbill turtle that nests along Kealia's beaches.

Zarrella spends quite a bit of his artistic energies on the world of endangered turtles, both green sea turtles and hawksbill, and you'll find them featured in a lot of his paintings

and sculptures. He says he has created thousands of sculptures and prints promoting care of the world of nature.

Then there are the by-products of his art, including a turtle-decorated mug that has been taken home by about 100,000 customers. There is also an illustrated children's book "The Baby Turtles," with another book in the works, and other items. He says he feels a real urgency because "there may be only two or three dozen nesting hawksbill females still living on Hawaiian beaches."

"A mother can lay 450 eggs a season, in three separate sessions, and of every 10,000 eggs laid, maybe 1,000 make it to grow up," he said.

Every now and then, a motorist will run over one of the Maui mothers as she heads out from the beach to lay her eggs



Dale Zarrella wants people to understand that they can help the endangered turtles survive.



The artist is seen here airlifting his raw material off of Haleakala.

and winds up on the highway. For this reason, the U.S. Fish and Wildlife Service has put up a sand fence that hopefully will help build a sand retaining wall to keep turtles off the road.

Also, a band of volunteers dedicated to protecting turtles and their nests walks the beaches in the early morning and other crucial times of the day.

Zarrella, who got into art as a child in Connecticut, came to Maui in 1985 and set up his home and studio in Kihei.

His sculptures are wood (nearly all from old, downed Maui trees), and of bronze. Walk into his large yard and

you will wander through an intermingling of stacks of old timber and large sculptures, both completed and in progress. You will find a variety of island goddesses, an assortment of turtles, and large, rather startling figures of Merlin, the wizard advisor to King Arthur. To the artist, the mystical magician symbolizes the infinite possibilities of life.

Right now, you will find one of his turtle pieces, a five-foot nesting hawksbill, with tears coursing down her cheeks as she lays eggs (which actually happens), in the Maui Ocean Center courtyard. He has a

see TURTLE p. 12

# The Honolulu Advertiser HAWAII

SECTION B

DIVERSITY • POLYNESIAN VOYAGING

FRIDAY • APRIL 2, 1999

## Hawaiian renaissance mascot carries message with Makali'i

By Yasmin Anwar  
ADVERTISER STAFF WRITER

A cute green sea turtle with an awfully long name is strapped to the bow of the Makali'i voyager canoe.

Known as Kahui-huikokoamakali'ikauiluna, the eight-inch wooden turtle is the beloved mascot of pupils in early grades at the Punana Leo O Kawaiaha'o Hawaiian language immersion school in Honolulu.

They gave her a grand sendoff when the canoe set sail last November on a pilgrimage to the remote Micronesian island of Satawal in honor of master navigator Mau Piailug. Now, Punana Leo students can't wait to be reunited with their sea turtle. The Makali'i is expected to return to Hawaii in June.

"They're really attached to her," said Wailani Robins, director of Punana Leo O

Kawaiaha'o, which is part of a statewide network of 11 Hawaiian language immersion schools. Aside from tracking the voyage, Punana Leo students have been learning the history of voyager canoes and how to navigate by the stars.

Meanwhile, their ocean-faring sea turtle — more commonly known as kahuihui — has become a symbol of the school's struggle to keep the Hawaiian language alive.

"It's an endangered species just like the Hawaiian language," Robins said.

When the Makali'i returns to Oahu, they will hold a welcome home ceremony for the kahuihui, and receive a journal from the crew written in Hawaiian that documents each step of the journey.

One journal entry that

might be hard for them to stomach is the crew's stop at a Micronesian island where the inhabitants ate sea turtle. But that part probably won't be censored because the children should learn that different people practice different customs, and eating sea turtle is among them, Robins said.

Eventually, the Makali'i journal will be incorporated into the curriculum at Punana Leo — where most students speak fluent Hawaiian — and could possibly be used in other schools across the state, Robins said. It will also be displayed at the Ocean Festival on July 24.

Traditionally, Hawaiian history has been passed down in oral narrative or song, but the Makali'i journal is to be part of written history.

# Boats endangering Maui turtle habitat

## 'Speed kills' at site off Lahaina

By Edwin Tanji  
ADVERTISER MAUI COUNTY BUREAU

LAHAINA, Maui — The potential for conflicts between sea turtles and boats may be increasing in the area off Mala Wharf where a large population of one of the state's endangered species is making a home in the remains of a sunken barge.

There have been at least two cases in which green sea turtles were found cut open by a collision with a boat or the skeg of a vessel, state aquatics biologist Skippy Hau said.

Hau supported a warning issued by underwater photographer Randy Miller about the increasing potential for more such incidents.

There is a boat launching ramp as well as a mooring area at Mala, which means

dozens of boats pass every day near the area Miller calls "a turtle condominium."

"If you get a fast boat coming through while the turtle is on the surface, the turtle may not be able to get out of the way in time," Miller said.

Hau said he has recovered the carcass of a turtle that had been lacerated by a propeller blade, although he couldn't be sure if the boat strike killed the turtle or if the turtle had died and its body was then struck.

He also recovered a turtle with its shell slashed open, probably from being hit by the skeg of a sailboat or some similar fast-moving vessel, he said.

"Speed kills when it comes to sea turtles," said George Balazs, chief of the marine turtle research program for the National Marine Fisheries Service in Honolulu.

See TURTLES, A32

# Turtles: Risk grows from boats off Mala Wharf

FROM PAGE A27

"They have to breathe air. They have to come to the surface. Sometimes they even stay at the surface for extended periods, floating and resting in calm water," Balazs said.

"While at the surface, the risk of their being struck by a boat is a real and potentially fatal danger, both from a boat bow impact, but more significantly by a prop slash," he said.

Miller raised the issue after spending years as a diver and kayaker photographing marine life.

He said he gets the impression that sea turtles are "not really aware of what's going on around them on the surface." That may mean they wouldn't be aware of a boat or a sailboarder slashing through the water at them, he said.

There are known populations of green sea turtles in areas around the island, including off Makena and outside Kahului Harbor. In some areas, tour boats make a point of stopping to allow passengers to snorkel where they are likely to encounter the animals.

Although green sea turtles are protected as endangered species, no law can protect them from an accident. Miller and Balazs said it's up to boaters to exercise care.

"In areas that turtles habitually use, wisdom would say, go slow and be alert," Balazs said.

The Honolulu Advertiser  
**HAWAII**

PAGE A27 •

SUNDAY • FEBRUARY 7, 1999

## Researchers thrilled to spot tagged turtle

By Edwin Tanji  
ADVERTISER MAUI COUNTY BUREAU

**LAHAINA, Maui** — Most visitors around Maui are not much cause for excitement compared with a female green sea turtle, spotted by a diver off Lahaina last month.

The excitement came from spotting a resin-coated transmitter on the turtle that had been installed two months earlier at French Frigate Shoals.

It's a major find for

turtle researcher George Balazs of the National Marine Fisheries Service, who hopes to learn more about the turtle's travels in the next few weeks.

Transmitters glued to the reptiles' backs tell researchers approximately where the turtles are in the ocean, Balazs said. But they don't show the condition of the turtle or the transmitter, designed to send a tracking signal

See **TURTLE, A26**

# Turtle: Discovery gives clues to mystery

FROM PAGE A21

to overhead satellites for seven to eight months.

The female turtle, sighted Nov. 28 by diver Randy Miller, had been fitted with the transmitter Sept. 3 at a nesting site on East Island, 600 miles northwest of Maui. She left that area Sept. 21 and arrived in the waters around Maui Oct. 22.

The turtle weighed about 300 pounds and was estimated to be 25 years old and possibly in its first nesting, Balazs said.

Miller said he had seen the turtle in an area where he frequently dives off Mala Wharf.

"There's an old wreck out there, and it's kind of like a turtle condo," he said.

Because it was the first time he had seen a turtle with a transmitter, he called for information. State aquatics biologist Skippy Hau referred him to Balazs.

Previous research by Balazs had indicated that green sea turtles that nest in the Northwest Hawaiian Islands swim a roundabout route to the south before reaching the main Hawaiian Islands.

The female sighted by Miller traveled about 700 miles of open ocean before arriving off the western tip of Lanai, skirting the south of Lanai and heading into the waters off Lahaina.

All sea turtles travel long distances between the areas where they feed and nest, but no one knows why, Balazs said.

"The question of why they travel so far is debated worldwide with no conclusive evidence of a reason," he said.

The researcher has been tracking green sea turtles since 1992, trying to determine what affects their travels and survival in the ocean. He said he's had 14 green sea turtles fitted with transmitters since 1992, including four this past fall in a test of new equipment, and none has been seen in the water before.

Such a tracking system is expensive. A single transmitter costs about \$3,500, which doesn't include payment for satellite tracking time. Miller's discovery should allow Balazs to examine the turtle and its transmitter in a future dive. One of his experi-

## Turtle alert

Hawaii divers and boaters who see turtles with transmitters or tags on their shells should call George Balazs of the National Marine Fisheries Service at 983-5733.

"The question of why they travel so far is debated worldwide with no conclusive evidence of a reason."

— GEORGE BALAZS

TURTLE RESEARCHER,  
NATIONAL MARINE FISHERIES SERVICE

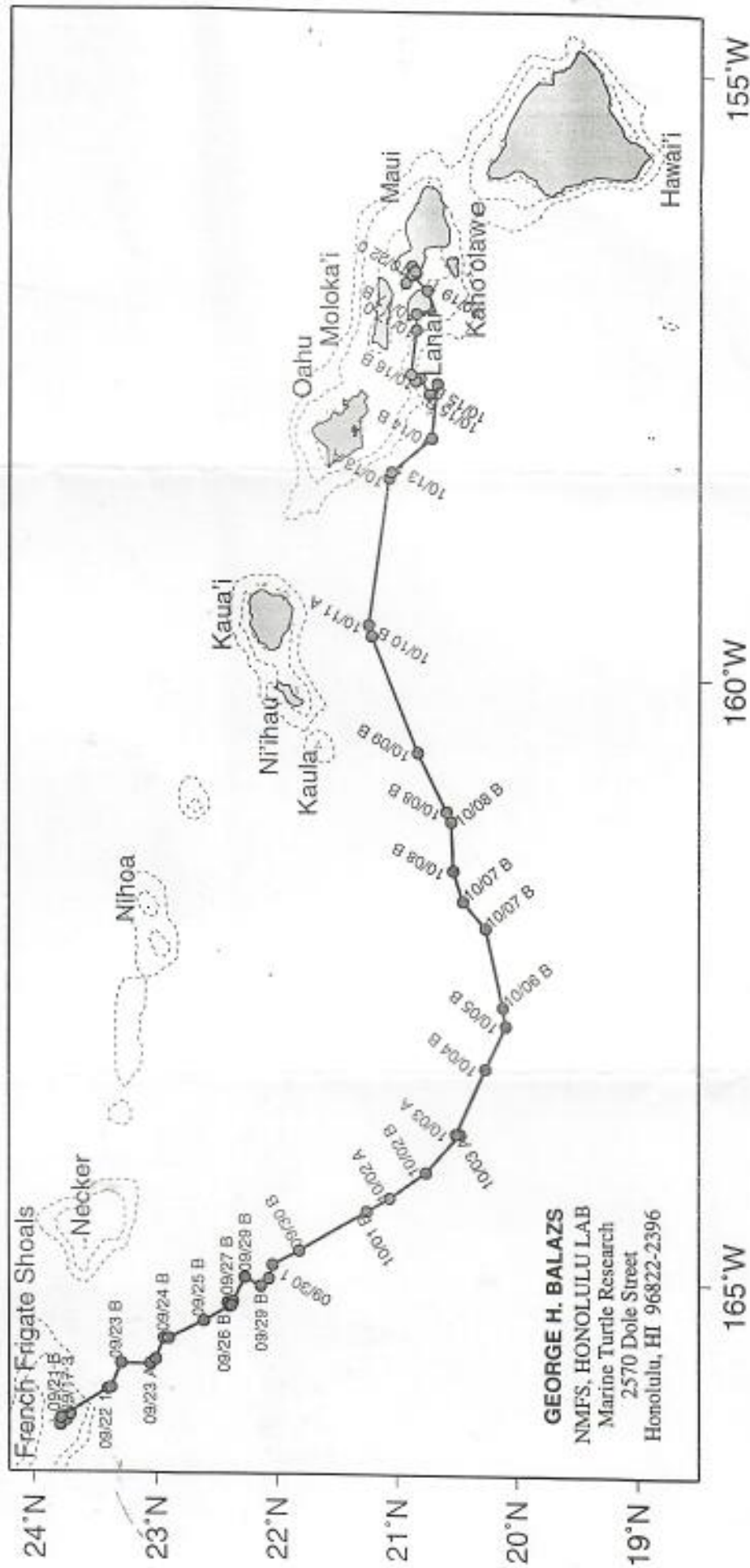
ments, he said, involves determining how much damage the transmitters can incur and continue to operate. Transmitters suffer significant damage when the turtles scrape against rocks and coral.

It will take years of tracking to establish the causes behind a turtle's travels, Balazs said. Hawaiian green sea turtles, for example, feed around the main islands but nest in the northwest islands, including French Frigate Shoals.

One theory is that their life cycle was established over thousands of years as a result of prevailing currents and ocean conditions. Turtles hatched around the main Hawaiian islands would be pulled by currents to areas where they could not survive, while hatchlings from the northwest islands may have drifted to beaches on the main islands where they could feed and find shelter until they matured and returned to their original nesting area.

"Those turtles who were hatched in other areas didn't make it," he said.

# 1998 Post-nesting migration of green turtle 4800 (GeoBar ST14) from French Frigate Shoals to the Main Hawaiian Islands



MOTOTOOL 4800; CCL 97.8 cm

GMT map created by Denise Ellis 11/02/98



# SOUTH MAUI WEEKLY

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rescuers seen in successful attempt to remove hook embedded in turtles' mouth.

# MOC aids in turtle rescue

by Carrie Robertson

An injured green sea turtle was captured and released by Department of Land and Natural Resources aquatic biologist Skippy Hau on July 22. He and five other men helped remove a large ulua fishing hook that was embedded in the side of the turtle's mouth before releasing it back into the wild.

The rescue operation was done aboard the swimming platform of the Prince Kuhio, a large snorkeling boat that departs from Maalaea Harbor. The Maui Prince Hotel activities desk had notified Hau at the DLNR about seeing two turtles injured by fish hooks in the reef area near the hotel, where the Prince Kuhio normally stops for snorkeling.

The other men helping in the rescue were Prince Kuhio crew members and two staff members from the Maui Ocean Center (MOC) aquarium. The Prince Kuhio allowed Hau and his assistants to attempt the rescue aboard the boat during a normal snorkeling cruise. The team consisted of three scuba divers and two snorkelers.

Getting the turtle aboard wasn't easy according to Chris Quarre, MOC operations manager. "Todd [Winn] was holding her in a bear hug and she was slapping him pretty hard with her flippers. They're strong!" Quarre said. Winn is a crew member on the Prince Kuhio and also an MOC marine naturalist. "Once we turned her upside down on the swim step she started to calm down," Quarre said. "We were just trying to be as gentle as possible."

Captain Mike Peavy of the Prince Kuhio cut the hook with bolt cutters and removed it and they released the turtle back into the water.

The entire rescue, from the time they located the animal to the time it was back in the water took less than 30 minutes, Hau estimates.

The DLNR may try to rescue the other turtle if it can be located again. It is a bigger animal, "likely over 150 pounds," Hau said. "We've

received several reports of turtles with hooks. In most instances we will not be attempting to catch [them]," Hau said, continuing. "Like the situation with green turtles with tumors, we do not want people to try to catch animals. We must assess each case individually."

Fishing line and fish hooks sometimes injure turtles but the main cause of death is from fibropapillomas or tumors, Hau said.

The tumors he refers to are symptoms of a disease which causes tumors to grow on the animal's soft tissues, often interfering with their normal behavior. The animals continue to survive with tumors while in very emaciated condition, he said. Scientists are still researching both the cause of and cure for the virus, according to Hau.

"Other threats [to turtles] may include wind-surfers who need to pay attention to turtles with tumors that may be buoyant, slow swimming, and floating on or near the surface," Hau said.

He would also like to remind people not to feed turtles. "By changing their main diet of algae or limu, they are more likely to bite baited hooks meant for fish," he explained.

The green sea turtle at one time was hunted by humans for its meat but now its primary predator is the tiger shark, according to MOC's Quarre. Since the green sea turtle is a threatened species and protected by state and federal laws, it is against the law to touch or harass one. "Please give them lots of space," Hau said.

Harassment or catching a turtle is a violation and should be reported to the Division of Conservation and Resources Enforcement at (808) 984-8110.

To report stranded turtles call DLNR Aquatic Resources at (808) 243-5294, 8 a.m. to 4 p.m. After hours reports and violations can be reported through the operator by dialing "0" and asking for "Enterprise 5469" to contact the O'ahu DOCARE Office.

A15 THA 8-2-69P

# Menehune have true claim to these islands

With all this Hawaiian crying about how the Americans stole their land, I can't help but think of the Menehune.

A lot of people think of Menehune as leprechauns or mythical fairy figures, but all research points to an earlier migration to these Islands than even the Marquesans.

Exactly where the Menehune originated from is unclear, but many scholars believe they are of Melanesian origin. Their culture was less developed politically and technologically than the later-arriving Marquesan in-

vaders, and they could not compete in battle. They were relegated to running for their lives.

Did the Menehune have a chance to circle the Islands with petitions or appeals to the Marquesan elite in the Marquesas?

Five hundred years later, another culture arrived with a more developed political and economic system than either the Marquesans or Menehune. These were the new Tahitian invaders, and what the Marquesans had done to the Menehune was now being done to them.

By Captain Cook's arrival, the Marquesans were completely decimated by the warring Tahitian invaders, and only a few Menehune remained. An 18th-century census by King Kaumuali listed 65 Menehune living in Waimiha Valley.

Popular tradition has the last of the Menehune departing from Kauai after being pushed out by the ever-increasing numbers and strength of the Hawaiian/Tahitian. I would be interested to see the type of justice they received.

Before we start to again wall

about our loss of a nation, we should listen for the wall of the Menehune in the forests and valleys where they were forced to hide. Who knows, maybe one or two are still up there and will have the true claim to the islands we now call Hawaii.

Perhaps what we should all do, as Dr. Kekuni Blaisdell so often implores the Westerners to do, is leave. The Marquesans and Tahitians in their war canoees and the Americans in their battleships. Then, maybe, the Menehune will have justice.

Lopaka Thomas

Norton Chan, a biologist at the Waikiki Aquarium, shows a green sea turtle on loan from Sea Life Park. Some Native Hawaiians want to resume cultural uses of the turtles.

Cory Lum /  
The Honolulu  
Advertiser



# Hawaiians want turtles back on cultural menus

**By Bunky Bakutis**

Advertiser Leeward Oahu Bureau

**WAIANA**E — For 20 years, native islanders reluctantly lived with federal protection for the green sea turtle. But now, as numbers of the *honu* improve throughout the Pacific, islanders want to resume harvesting the turtle, restoring

its multi-faceted role in local culture.

"Over the past five years, I've seen turtles everywhere around Oahu," said Native Hawaiian fisherman William Aila. "It's time to take a look for establishing a protocol for bringing turtles back into our culture."

"I can remember my uncles catching turtles

and my aunts preparing them. But that has been lost over several generations."

Currently there is no comprehensive count of turtle populations. But tagging programs and nesting studies indicate dramatic rises in green sea turtle populations of

**See Turtles, Page A2**

# Turtles: Recovery of species sparks

FROM PAGE A2

tural importance of turtles and possible legal exemptions to the law," Schug said.

Rights committee chief Isaac Harp of Maui said the 17-member panel will keep up pressure for a possible exemption, especially in the light of limited take allowed for long-line fishing vessels.

"I've talked to a lot of kupuna (Hawaiian elders) who want turtle returned as a food source before they pass away," Harp said. "And why are long-line fishermen allowed to kill so many, and we can't take any?"

One of the five exemptions to the ban is "incidental" turtles caught by long-line fleets. Boats operating northwest of the main Hawaiian Islands are allowed an annual take of 18 green turtles out of 129 total caught, according to Schug. When turtles are pulled up dead on hooks, fishermen must throw them back.

The Navy also receives a limited exemption at a bomb-target island in the Northern Marianas.

## Children 'brainwashed'

Waianae fisherman and Native rights committee member William Aila said traditional Hawaiian culture is losing an understanding of what the turtle represents.

"There are generations who have lost the knowledge of how to catch, clean and prepare turtle," Aila said. "And I resent the singular 'warm and fuzzy' representation of turtles being made in some educational efforts. Our children are being brainwashed. Turtle primarily was a respected and required part of our menu."

Turtle numbers now demand analysis of how to control the population, Aila said. But Gene Nitta of the National Marine Fisheries Service disagrees.

"By no means have turtle populations recovered enough to be taken off the threatened species list," he said. A limited-take program would only heighten enforcement and



The Honolulu Advertiser Sunday, June 7, 1996 A3

## debate over protection

Advertiser library photo

Maui motorists are warned they may encounter green sea turtles on this coastal highway. The once-threatened species has recovered significantly since being protected by federal law in 1978.

poaching problems, which, in turn, would slow turtle recovery, Nitta said.

Declining to speculate on what size population might allow a limited take, Nitta referred to the federal recovery plan. Among a number of requirements, the plan states that area turtle stocks must average 5,000 females estimated to nest annually over six years before it qualifies to come off the protected list.

Another problem cited by federal officials is a virus, fibropapilloma, which causes life-threatening tumors to grow on turtles. The disease was

reported to affect 42 percent of turtles captured, examined and released in Kaneohe Bay between 1991 and 1995.

Molokai's Puleloa said that he first discovered a turtle with the disease in 1986. Many juvenile turtles have been found since then with tumors.

"We're looking for it now. Some (turtles with tumors) get worse and some get better. We can't make heads or tails of it," he said. "It's not contagious. We think it's something latent in the turtles that is allowed to surface as tumors because of changes in the environment," Puleloa said.

Balazs said the disease counteracts some of the recent good news.

"Possibly, it could cause a large decline," he said. "It is necessary to manage turtles in a conservative manner, as everything (such as turtle reproductive age) is so protracted."

But there's another reason why turtles have flourished again here, Balazs said.

"There's over 1,000 miles of coastline here with huge fields of benthic algae (which turtles consume). I see the carrying capacity of these fields for turtles as many times greater."

# Turtles: Tradition limited fishermen to harvest for family



## Hawaiian green sea turtle

*Chelonia mydas*  
Hawaiian name: Honu

A migratory reptile that becomes sexually mature at an average of 25 years old. Although individual breeding does not occur every year, a female may produce 100 eggs up to six times per season. A record weight was recorded in Kaunakakai at 410 pounds. Mature turtles are herbivores feeding on algae and sea grasses.

Michael Berger/The Honolulu Advertiser

ing sites.

Green turtles have had a prominent position in Hawaiian culture since islanders first migrated here. Turtle was not only a rich source of protein, but also was used for medicine, functional tools and adornment.

According to Bishop Museum officials, use of decorative turtle shell was reserved only for *ali'i*. Polished shell was used to ring the staff of *kahili* (markers of *ali'i* presence), and Kamehameha I drank medicine from a round, two-quart turtle shell container, said Dr. Roger Rose, head of the museum collection department.

Bracelets — and more functional items such as fish hooks — were made from turtle shell. Tough upper carapace was used as a scraping tool in making cordage from plant fiber, Rose said.

From the late 1800s up until the 1970s, decorative hair combs, pendants, earrings, fishing lures and even buttons

were commonly used by all Hawaiians.

Hawaiians consider turtles a demigod, because it linked the land and sea. Honu is one of numerous animals that Hawaiians traditionally honor as *'aumakua* (a family guardian). That status does not bar others from hunting the turtle. But tradition holds hunters to taking only what an individual may need to feed his *ohana*, and in that way protect the resource.

Turtle meat was prepared in numerous ways: steaks were cut from flipper connecting muscle and either grilled or dried; also meat was chopped for stews or soups. The green fat, for which the turtle got its name, was boiled and the remaining oil used as a healing salve for burns or wounds.

## Marianas seek new policy

Recently, the U.S. commonwealth of the Northern Marianas has taken the lead in efforts to restore a limited cultural take of turtles.

Under the auspices of an educational exemption, one of five such categories in the Endangered Species Act, a report was completed in December detailing cultural use of turtles by two indigenous groups, the Chamorros and Saipan Carolinians.

The National Marine Fisheries Service and U.S. Fish and Wildlife Service has scheduled a workshop early this fall on their exemption request. Many Hawaiians are watching developments closely.

Limited turtle take also has become an increasingly hot topic among other Pacific islanders under U.S. jurisdiction, said Don Schug, a staff member for the Native and Indigenous Rights committee of the Western Pacific Regional Fishery Management Council.

"The council will want to do studies in Hawaii and American Samoa to look at the cul-

See Turtles, Page A3

all ages since they were placed on the federal threatened species list in 1978.

The Endangered Species Act of 1973 bans killing certain wildlife listed either as "endangered" (those on the verge of extinction) or "threatened."

According to state aquatic biologist Bill Puleloa of Molokai, "the green sea turtle is not in imminent danger of extinction." A Molokai tagging program that began in 1981 has placed plastic identification tags on the flippers of 2,000 turtles of all sizes "with no end in sight," Puleloa said.

Tagging not only allows marine biologists to establish rough estimates of stock, but also tracks migratory patterns and growth rates of turtles.

A 25-year survey of nesting female turtles at French Frigate Shoals (about 20 acres of sand beaches northwest of Hawaii's main islands) has shown an increase from 50 to 500. Northern shoal turtles migrate to the main Hawaiian islands and are said to make up the majority of Hawaii's breeding stock. However, there are no total nesting counts at main Hawaiian islands.

George Balazs, who heads the Marine Turtle Research Program for the National Marine Fishery Service at its Honolulu laboratory, said the increase in nesting females is "extremely promising. This is the first time we've seen numbers like this since 1969. There are very few places in the world where stocks have regenerated like this."

Although increases may be highest among juvenile turtles, Balazs said adult numbers also have gone up, which "is a clear indication that survival is good." Green sea turtles are estimated to begin reproducing when they reach between 25 and 30 years of age.

## Off menus in 1974

In 1974, state officials took the first action to curb over-harvesting by banning commercial sales. However, family consumption was permitted. The action effectively took turtle off menus at restaurants such as the former Tiki Top in Kaneohe or Old Sally's in Pokai Bay.

In 1978, federal officials put green sea turtles on the "threatened" list following the documented depletion of stock from Florida to Polynesia. The ban removed the prized, lean meat from Hawaii family dinner tables or luau.

One of the main causes cited for protection was that beach-front development had adversely affected turtle nest-

## **HUNTING**

### **No cultural right to green sea turtles**

Regarding the June 7 article on the push to legalize hunting of green sea turtles, a threatened species:

The "Hawaiian culture" argument is almost ludicrous. Just because it was popular in the past to kill the turtles for their meat and body parts does not mean it is OK today. Cultures evolve; methods of gathering food change. Like it or not, in today's Hawaii, there is no need to kill turtles to feed oneself or one's family.

Some Pacific cultures used to practice cannibalism. Should we now legalize murder so that these cultures can return to cannibalism?

As the sidebar story regarding the killing of a turtle illustrates, these harmless animals are easy to corner, easy to drown, easy to kill. Is this really the type of activity we want to pass along to future generations?

I, for one, am more proud to be human when I see a turtle in the water and know that we have a law to protect it so that it can always be out there.

**Clay W. Valverde**



Date: Sun, 7 Jun 1998 17:11:54 -1000 (HST)  
From: "George H. Balazs" <gbalazs@honlab.nmfs.hawaii.edu>  
To: Mike Laurs <mike.laurs@noaa.gov>, Bud Antonelis <bud.antonelis@noaa.gov>, Charles Karnella <charles.karnella@noaa.gov>  
Cc: Barbara Schroeder <barbara.schroeder@noaa.gov>  
Subject: Honolulu Advertiser 6/7/98 article on sea turtles

Front page entitled "Hawaiians want turtles back on cultural menus"  
by Bunky Bakutis

I'm writing to advise you of numerous significant errors contained in this article. The issue is a sensitive one for both the agency and the public. Views are highly polarized. I recommend that all of us carefully cross-coordinate to present the capable professional stance that exists. Brief corrections to the errors are listed below. I recommend you share this information with others. I will do the same with various colleagues and research partnerships. I will also likely convey it to the reporter. Accurate information is essential.

- "As numbers (of green turtles) improve throughout the Pacific Islands.."

Fact- The only place in the Pacific islands where increases are being seen is in the Hawaiian population. Available evidence indicates the opposite for all other Pacific islands. See SPREP.

- "Currently there is no comprehensive count of turtle populations.."

Fact- Probably the best of anywhere in the world takes place right here, for 25 years now, at French Frigate Shoals. See Wetherall and Balazs.

- "Dramatic rises in green sea turtle populations.."

Fact- False. Reporter assumes that what we are seeing as an encouraging trend in Hawaii is happening elsewhere in the Pacific.

- 2000 tagged on Molokai (since 1981) "with no end in sight."

FACT- No end of what in sight? We recover on each sampling trip anywhere from 10-35% of the turtles previously tagged. The numbers are not open-ended, as the statement implies. However, there are indeed a lot of turtles in the Molokai pastures, based on our cooperative 17 years of work with DAR/DLNR.

- "Northern shoal turtles migrate to the main Hawaiian islands.." (from French Frigate Shoals)

FACT- Reporter has it backwards, or at least incomplete, thereby confusing the reader. The turtles hatch at FFS, become pelagic, recruit to coastal main island pastures, feed and grow there, migrate when sexually mature to FFS, stay the summer, then migrate back to the main island pastures. The reproductive migration pattern is repeated every two or more years.

- "There are no total nesting counts at the main Hawaiian islands.."

FACT- Yes there are. Total number of nesting green turtles in the main Hawaiian islands is not more than 10, and most likely closer to 5. Total number of hawksbills is about 30.

- "First time we've seen numbers like this since 1969.." (quote

attributed to me, inaccurately, regarding numbers of nesters at FFS)

FACT- Reporter must have confused my telling him (three months ago when interviewed) about nesting turtles being taken (illegally) from the beaches at FFS in numbers during the late 1950's and early 60's (flown out of Tern Island to Honolulu markets)

- "One of the main causes cited (for ESA listing) was beach-front development.."

FACT- Not correct. Reporter confused apparent causes for decline in Florida and elsewhere as being one of the "main" reasons for decline in Hawaii.

- Hawaiian cultural significance of Bishop Museum's sea turtle artifacts, implied to be from green turtles.

FACT- Nearly all the examples set forth in the article relate to the Hawaiian hawksbill and not the green turtle. I have researched this extensively and in fact worked with Roger Rose at Bishop Museum to ID the items as to turtle species. This is not to downplay the importance of green turtles to Hawaiian and other Pacific island cultures. They were very important. But the examples set forth in the article are incorrect.

- "NMFS/USFWS workshop early this Fall on exemption request..."

REQUEST- Is anyone aware of such a workshop? I am not.

- "It's not contagious.." (fibropapilloma disease)

FACT- Yes it is, proven to be transmissible at a moderate level under controlled lab condition where tumor extracts were injected into disease-free turtles. Means and levels of transmission in the wild are unknown, but it's clear that a level of contagiousness exists.

- Caption of photo on page 3 saying "Maui motorists are warned they may encounter green sea turtles on this coastal highway...."

FACT- No green turtles nest on this coastline (Kealia) or anywhere else on Maui . Only hawksbills, 1-3 at best per summer.

ISSUE- Professionally and philosophically, I am not opposed to examining openly the issue of a limited green turtle take for cultural Hawaiian purposes in Hawaii. In fact, 24 years ago I formally went on record as saying that such cultural use was a valid reason to protect and recover green turtles for the benefit of future generations. My views have not changed.

However, the prime issue now, as I see it, is the fibropapilloma disease. No one in good conscience could or should recommend taking diseased turtles for human consumption (consumption being one of several valid cultural uses). Consequently, if limited use is somehow allowed, the only turtles taken by hunting would be outwardly healthy ones. The tumored and sick would remain in the wild, thereby potentially exacerbating the disease.

As I indicated, the issues are sensitive. And complex. George

# Buffalo Keaulana tells of turtle hunt

**MAKAHA** — Trade winds first brought a strong "limu (seaweed) smell" of turtle from outside Kaena Point.

Buffalo Keaulana, then 35, looked north from his Boston Whaler, following his sense of smell. The algae-covered back of a 300-pound turtle bobbed on the ocean surface some 100 yards away. These days in the mid-1960s was when turtle could be sought openly, and Keaulana was one of several Leeward fishermen who caught them to share with other residents.

As he approached, the turtle dived and Keaulana quickly donned his diving mask to check under what reef crack the turtle would hide. Mentally marking its position, he put on fins and a scuba tank before heading down some 80 feet.

When the turtle was cornered in a dark reef cave, Keaulana blocked the entrance. As it attempted to elude him, he grabbed both sides of its shell when it tried to escape, holding tight to each edge. Spinning wildly, the turtle took off so fast, Keaulana had to press his face mask against its back lest water pressure tear it off.

"I had to hold on until he got tired," said Keaulana. "Then, I placed my knee near the back of his shell, pushed down and steered him to the surface. Once we got to the surface, I held the turtle down under so it couldn't catch its breath. No breath and the turtle gets weaker."

His fishing partner, the late Homer Barrett, brought the boat around while Keaulana held the turtle upside-down on the ocean's surface. "Once you let the turtle turn right side up, you're in for another ride," he said.

The two men hoisted the turtle onto the boat and returned to Makaha Beach, where Keaulana lived with his family.

On the beach, he killed and cleaned the turtle.

"One upper flipper shoulder weighed about 75 pounds. That's a lot of turtle steaks. This is how I'd feed my family and friends. The meat is delicious, a delicacy," Keaulana said. "And my freezer was always full."

Keaulana is now 64 years old, and hopes to some day teach his grandchildren how to harvest turtle.

— Bunky Bakutis

# Cur

Life on the



# Turtle Tracks

*In nearly three decades,  
the endangered green sea  
turtle has gone  
from menu item  
to tourist attraction*

By **Anne Rillero**, For The Maui News

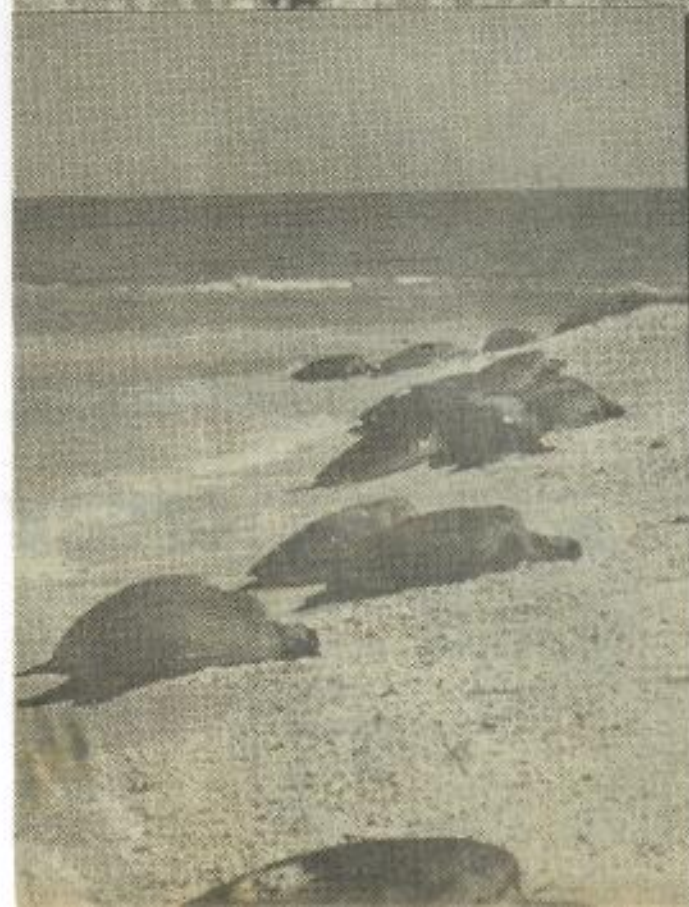
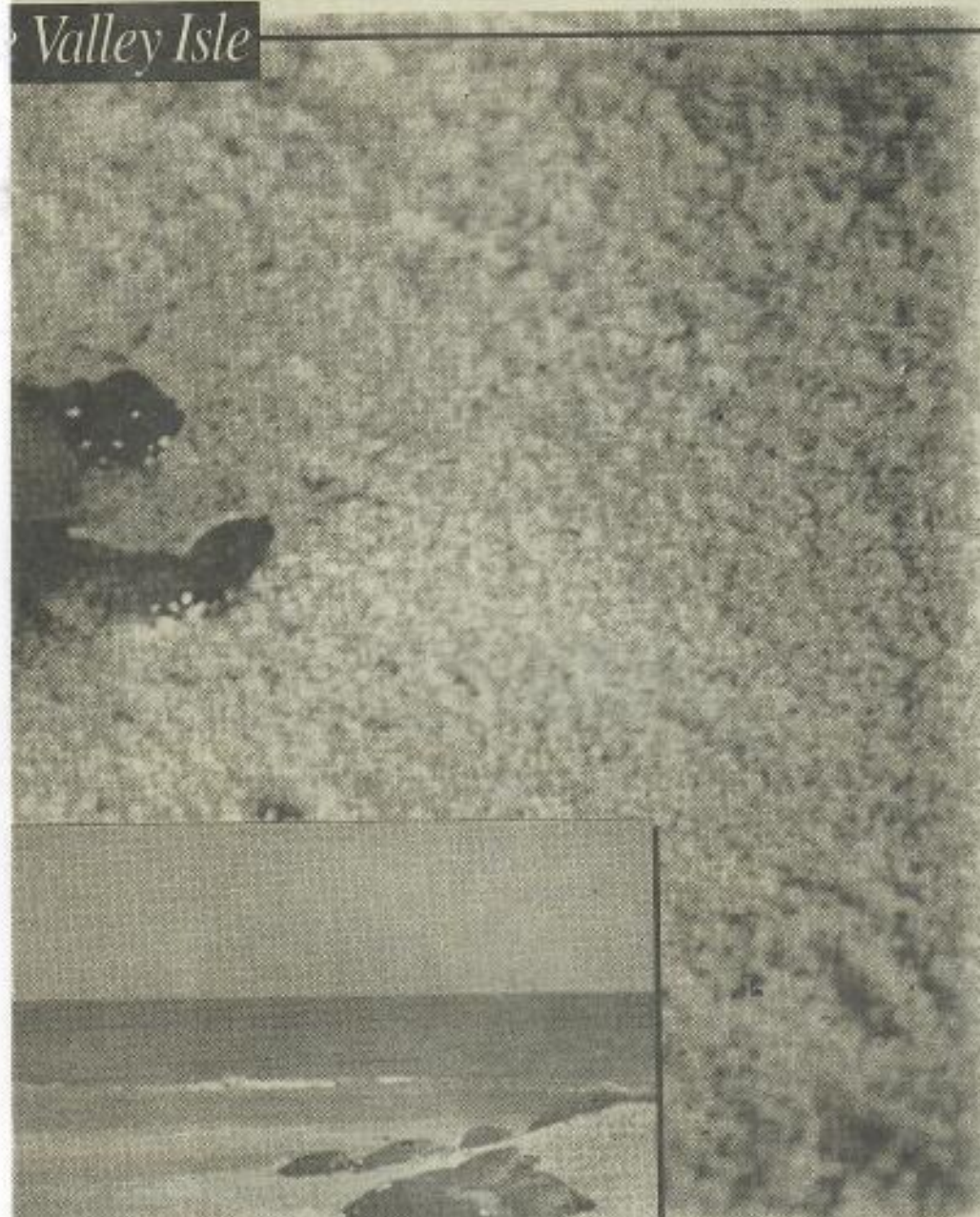
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He boarded a DC-3 "Gooney Bird" aircraft of World War II vintage and left his home in Honolulu. His destination was 500 miles away, a cluster of tiny islands known as French Frigate Shoals. Located halfway between Midway Island and the Big Island, they are today part of the Hawaiian Islands National Wildlife Refuge.

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# rents

Valley Isle



**Female turtles** come up on shore to do some sunning at the French Frigate Shoals. Nearly all of Hawaii's turtles are born there and will continue to be born there because adults return to their natal beach to nest.



George Balazs photo

**Turtle expert  
George Balazs**

in Lahaina Harbor," Balazs said. "We saw boats arriving that were loaded with stacks of live green sea turtles, which were carted up to the tourist restaurants. I thought, 'Can there really be so many of these beautiful animals that they could be harvesting so many for turtle steak?'"

He knew from historical accounts that from mid-May through August the French Frigate Shoals were a nesting area for the green sea turtles found around Maui and the other Hawaiian Islands. But, according to Balazs, there was much more to be learned.

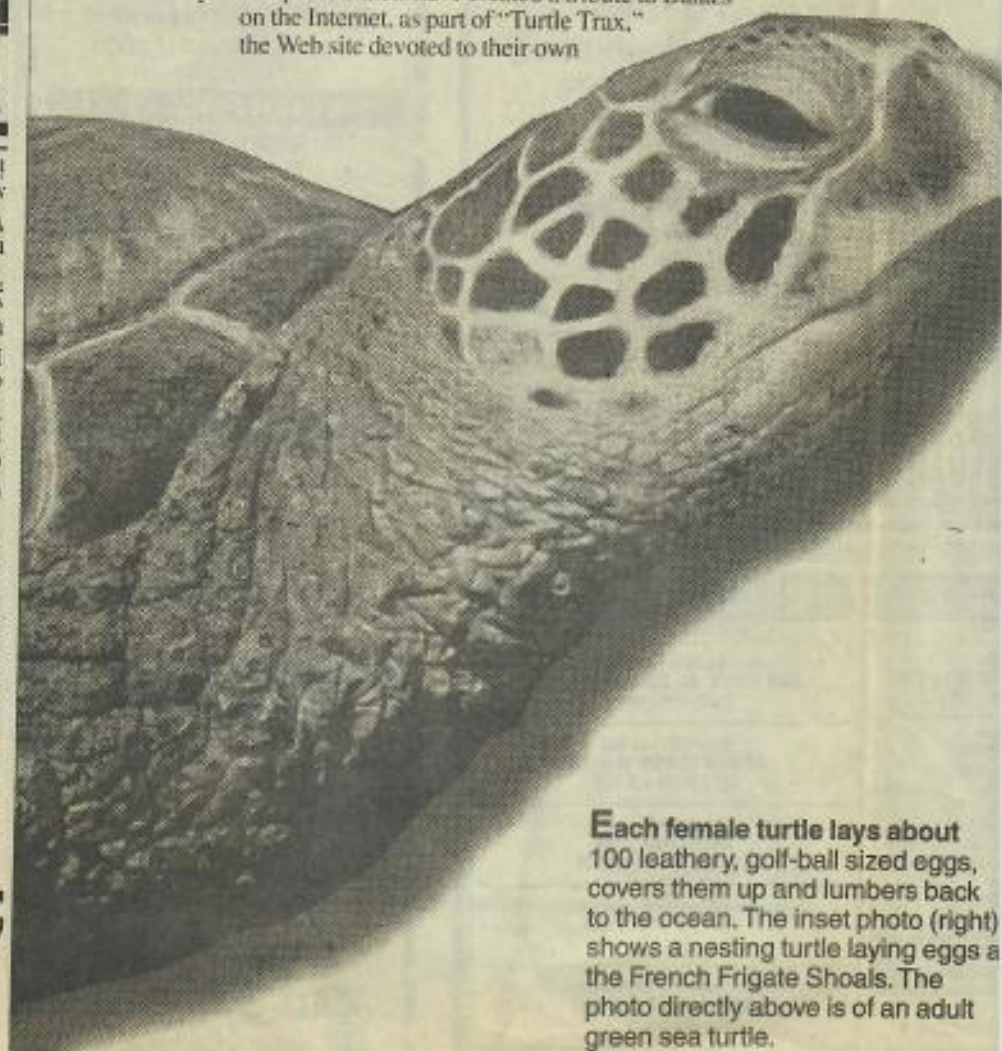
"Not much was known then about such things as how many green turtles nested in Hawaii, what nesting cycles they displayed, the turtles' dispersal throughout Hawaii, the growth rates of youngsters, and the time to maturity," said Balazs, who today is the leader of the Marine Turtle Research Program at the

National Marine Fisheries Service laboratory in Honolulu. "What was clearly known at that time in Honolulu and on Maui was that a good market and high price existed in the restaurant trade for green turtle meat."

According to Balazs, the turtles had no legal protection at that time (it was five years before green sea turtles were protected under the U.S. Endangered Species Act), and anyone with a net, spear, gun or grappling hook could easily catch turtles.

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**Each female turtle lays about 100 leathery, golf-ball sized eggs, covers them up and lumbers back to the ocean. The inset photo (right) shows a nesting turtle laying eggs at the French Frigate Shoals. The photo directly above is of an adult green sea turtle.**



**When the eggs hatch, the young turtles make the trek down the beach into the ocean (photo above). It takes about 25 years for a turtle to reach adulthood.**

Tim Clark photo

findings about sea turtles.

"Whenever anyone says 'turtles' in Hawaii, you think of George Balazs," said Eric Brown, senior researcher with Pacific Whale Foundation's Coral Reef Research Project. "He is at the pinnacle of turtle knowledge here."

However, Balazs' study did not begin with a blaze of glory. On his first night at French Frigate Shoals, he stayed on Tern Island, a 26-acre atoll barely large enough to accommodate a 3,000-foot gravel runway. When evening arrived, Balazs searched for turtles — with disappointing results.

"No signs of nesting turtles observed," he wrote in his field notebook for June 1, 1973.

Two days later, he packed his gear into a 16-foot boat and traveled to East Island, six miles away. As he anchored close to shore, a 10- to 12-foot tiger shark bumped the propeller on the boat's outboard motor. "I wondered, how am I ever going to take a bath?" Balazs laughed.

As the sun dipped toward the horizon, he began searching for nesting turtles on the 12-acre island. The screeching of tens of thousands of sooty terns that literally covered the island was deafening. But again, no turtles.

Fortunately, as darkness blanketed the island, Balazs encountered his first nesting female. She dragged her 250-pound body onto land, using front flippers better suited for swimming than walking.

Laboring hard, she pulled herself high above the tide line, the terns screaming and pecking at her as she crawled over their eggs.

Sand flew as she began to excavate a nest, creating first a cavity in the shape of her body. Paying no notice to Balazs, she intently used her rear flippers to carve a bottle-shaped hole in the sand.

Straddling the hole, she laid about a hundred leathery golf-ball sized eggs, which she covered with great care before pulling herself back to the sea.

During that first season, Balazs counted just 67 nesting females. He tagged each one with a small metal tag, to avoid counting them more than once, then recorded each turtle's measurements.

So he could study the turtles at night, he slept by day, his small tent oven-like under the intense midday sun. At night, he groped around in pitch blackness, not switching on his flashlight because it would attract piles of tiny hatchlings against his tent wall. (Hatchlings are born with an innate attraction to light, which helps them locate the ocean at night.) Although happy to be around the turtles, he missed his family and was dismayed by the extreme loneliness and isolation. In his field journal, he described his



Tim Clark photo

# Turtle tracks: Despite disease problem, expert encouraged by the data

Continued from Page C1

setting as "paradise and prison all in one."

From those humble beginnings grew an impressive study of Hawaii's green sea turtles. Every year for a quarter-century, Balazs and his team of researchers have systematically counted nesting turtles on East Island, creating an index that gives Balazs and other biologists a sense of the turtles' population levels.

"That first year, we found 67 nesting turtles," said Balazs. About 100 turtles were counted in 1978, the year in which the U.S. Endangered Species Act made it illegal to hunt, kill or harass sea turtles. In the years that followed, the numbers of nesting turtles began to increase. Balazs' team counted about 150 in 1981, then nearly 300 in 1989. The numbers went up to 384 in 1993. Last year was the best year on record, with 504 nesting females counted.

"What I'm seeing now, compared with what I saw in 1973 on those first nights on East Island, is very gratifying, very satisfying," reflects Balazs. He points out that although the signs are encouraging, the numbers are well below historical levels.

"Vessels that came to French Frigate Shoals in the 1800s reported that there were hundreds of turtles basking on the islands, resting side by side," he said.

when they have grown to about 8 to 10 inches long that they appear near shore, where they settle in at "feeding pastures" to feast on their adult diet of seaweed, sea grass and limu.

Last week, Balazs was at Palaau, on the south shore of Molokai, working on a cooperative tagging and monitoring project with Hawaii's Department of Land and Natural Resources and Department of Aquatic Resources. The project, established in 1981, has tagged and measured a total of 1,458 turtles. Each year, the project team has been able to recapture 10 to 35 percent of the previously tagged turtles. By measuring turtles each time they're recaptured, Balazs has been able to learn the rate at which turtles grow (seven-eighths of an inch per year in carapace, or shell, length).

This long-term study has also documented the outbreak and build-up of a tumor-forming disease known as fibropapilloma. Sadly, 50 percent to 60 percent of the turtles at Palaau have exhibited these deadly tumors in recent years. The tumors can cover the soft tissue of the turtles, blinding the animals and leaving them unable to feed. The disease is not found along the Kona coast but is prevalent among turtles in areas of Maui and Molokai. For example, during 1989 and 1990, tumors were present in 77 percent and 85 percent, respectively, of the turtles stranded on the island of Maui, mainly in the Kahului Bay area.



In addition to counting nesting turtles, Balazs has sought to learn about the migratory paths of the turtles. He has tagged 2,000 nesting turtles, first with metal tags, and most recently with the internal tags used by veterinarians to identify cats and dogs, which last longer in the marine environment. His team has also tagged 3,900 other turtles, mostly juveniles and subadults in their feeding areas. He was also the first person to successfully use satellite tagging to track the migratory paths of mature sea turtles departing their nesting beaches.

"We now know that 90 percent of all the turtles found in Hawaii are born at French Frigate Shoals," Balazs said. The adults return to their natal beach, the beach on which they were born, to nest. According to Balazs, it takes about 25 years for a turtle to reach adulthood. Adult females migrate to breed once every two or more years, while the adult males often migrate on an annual basis. The turtles mate offshore, then the females come ashore to nest.

Balazs is also working to understand sea turtles throughout their life cycle. This is difficult because once the hatchlings enter the sea, they drift in the ocean currents, feeding on fish eggs and invertebrates. It is only

A vigorous research effort is under way to determine the cause and cure for the disease. Researchers have found that the disease is caused by a retrovirus and herpes virus, Balazs said.

In spite of the disease, Balazs is encouraged by the positive signs for the Hawaiian green sea turtle population. "The increasing numbers of nesting turtles at French Frigate Shoals are an example of what can happen when the state, federal government and community work together to protect a species," he said.

He notes that sea turtles have moved from being a menu item to a popular tourist attraction. Numerous snorkel cruise brochures on Maui promise visits to "Turtle Town" (a reef near the Maui Prince).

When docked at Kahului Harbor, American Hawaii Cruises takes its passengers on a turtle walk, to view the 30 or more green sea turtles that bask each evening in the warm water discharged from the Maui Electric Co. power plant.

At the same time, the field work continues at French Frigate Shoals. "East Island has a sameness, year after year," Balazs said. "When I'm there, it could be 1973 again."

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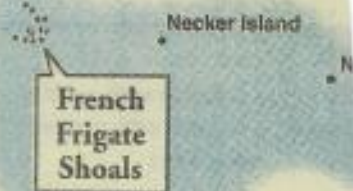
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Hopsey  
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HOSTILE FEEL-  
INTELLIGENCE  
NORTH AMERICA  
SHARONITE

DAD!  
WHY'D YOU DO THAT?!  
I THOUGHT YOU WERE OUT  
HARPOONING  
A WHALE!

I DECIDED  
THIS WAS A  
BETTER WAY TO  
PRESERVE OUR  
TRIBAL  
CULTURE.



9/7/98 by The Honolulu Advertiser

## Shore lights appear to affect breeding of hawksbill turtles

By Edwin Tanji

Advertiser Maui County Bureau

**KIHEI, Maui** — The nighttime lights spreading along the shorelines of all of the Islands may be hampering the breeding efforts of the endangered hawksbill turtles, said researcher Suzanne Canja.

Canja, senior naturalist with the Hawaii Wildlife Fund, has been helping monitor movements of hawksbill turtles around Maui and the Big Island for the past three years.

On Maui, Canja is involved in a project developed by National Marine Fisheries scientist

George Balazs to place radio-tracking devices on hawksbill turtles to follow their movements.

"Our interest is in protecting the habitat, but also in finding out where the animals go offshore," she said.

The tracking devices are attached to female turtles when they come ashore to lay their eggs. "It's the only time we have access to them," she said.

Last summer, when a turtle approached a section of Kealia Beach on Maui's south shore, it appeared to be disturbed by a bright light from a construc-

tion site at Maalaea, Canja said.

The turtle did not come ashore, she said.

"I think the lighting issue is a major concern on all of the islands," she said.

Beaches where nesting has occurred have all been isolated stretches where there are no lights shining into the water, she said.

Canja said lights also can affect hatchlings when they first dig out of nests in the sand. She has observed hatchlings and found "they tend to go where the strongest light is." She said it is generally

accepted that lights are a problem for turtles, noting that in areas of Florida where sea turtles are known to nest, there are laws to keep lights off during the nesting season.

Part of the problem is that little is known about hawksbill turtles found around Hawaii, she said. The tracking program, which so far has involved just three females, found the turtles moving between Maui and the Big Island.

But she knows little else about their habits. Tracking during 24-hour cycles has found periods when the turtles

appear to be active and others when the turtles do not surface for 60 to 90 minutes, she said.

She said it's likely they are resting when they remain underwater for long periods, but it's not clear what they are doing when they surface frequently.

Canja said there are estimates of 25 to 30 nesting females around Hawaii, "but we don't have any idea how many males there are."

"We want to identify their habitat so we can assess whether there are threats to that habitat," she said.

## Man who killed five turtles gets six months' probation

U.S. Magistrate Barry Kurren has sentenced a Big Island man to six months' probation and 200 hours of community service for slaughtering five endangered Hawaiian green sea turtles.

Nolan Klmo Perez admitted to a state conservation official that he had netted the turtles. But Perez said it wasn't intentional.

Assistant U.S. Attorney Craig Nakamura said yesterday Perez had intended to net the turtles and knew what he was doing when he butchered them, indicating he had caught turtles before. Nakamura asked for a 30-day jail sentence.

Perez's attorney, Pamela Byrne, said her client was netting for fish to be served at a meeting of native Hawaiian healers. Perez said he knows he should have checked the nets more carefully.

But Perez did not know he should have dumped the turtles back in the sea, and instead butchered them because he had been taught not to waste by his family, Byrne said.

Kurren said the law did not require proof that the killing of an endangered species was intentional and that he wasn't convinced beyond a reasonable doubt that Perez had not intended to kill the turtles. But he felt probation was appropriate.

## Two seen tending marijuana on Big Island plead guilty

Two Big Island men yesterday pleaded guilty to conspiring to grow marijuana.

State and federal officials observed

Robert Nicolaisen, 43, and Russel Turcotte, 43, watering a marijuana patch in the Manuka Natural Area Reserve last November.

They changed their pleas to guilty in an agreement in U.S. District Court.

## One arrested in drug sales near school pleads guilty

Tapuitea Tauanuu, 27, pleaded guilty yesterday in federal court to three counts of violating the federal "Safe Streets Act" by selling crack cocaine near Mayor Wright Housing and Princess Victoria Kalulani Elementary School last May.

The statute prohibits the distribution of illegal drugs within 1,000 feet of public schools, parks or housing projects.

At least nine people were arrested by undercover officers.

## Bank robber agrees to pay 4 banks more than \$5,000

In a plea agreement, Jed Mamoe, 29, pleaded guilty yesterday to robbing two banks, but will pay restitution to four banks.

He pleaded guilty in U.S. District Court to robbing the Mapunapuna branch of the Bank of Hawaii on May 20, and the Makiki branch of the First Hawaiian Bank on May 27.

He was also accused of robbing the Aina Haina branch of First Hawaiian and the Alea branch of American Savings Bank.

Assistant U.S. Attorney Loretta Matsunaga said Mamoe will pay restitution of more than \$5,000 to all four banks.

Reported by Star-Bulletin staff

The Maui News

# Currents

*Life on the Valley Isle*

# Turtle Tracks



*In nearly three decades,  
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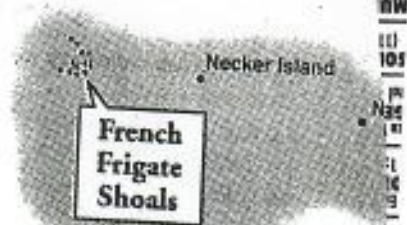
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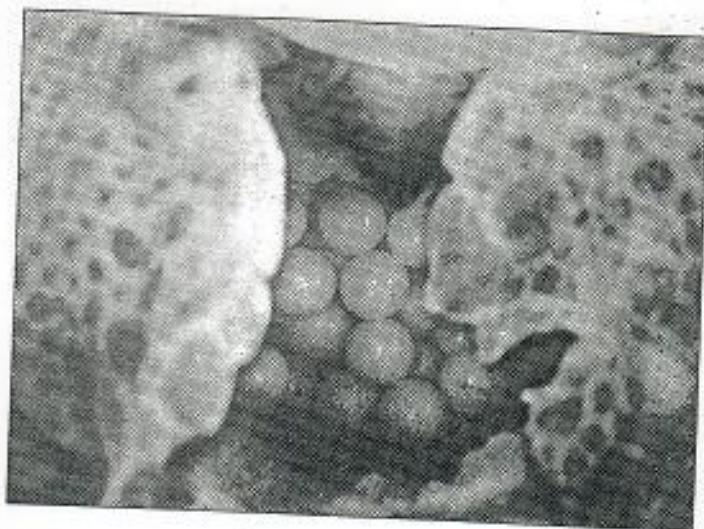
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Tim Clark photo

See TURTLE TRACKS, on Page C10

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Continued from Page C1  
setting as "paradise and prison all in one."

From those humble beginnings grew an impressive study of Hawaii's green sea turtles. Every year for a quarter-century, Balazs and his team of researchers have systematically counted nesting turtles on East Island, creating an index that gives Balazs and other biologists a sense of the turtles' population levels.

"That first year, we found 67 nesting turtles," said Balazs. About 100 turtles were counted in 1978, the year in which the U.S. Endangered Species Act made it illegal to hunt, kill or harass sea turtles. In the years that followed, the numbers of nesting turtles began to increase. Balazs' team counted about 150 in 1981, then nearly 300 in 1989. The numbers went up to 384 in 1993. Last year was the best year on record, with 504 nesting females counted.

"What I'm seeing now, compared with what I saw in 1973 on those first nights on East Island, is very gratifying, very satisfying," reflects Balazs. He points out that although the signs are encouraging, the numbers are well below historical levels.

"Vessels that came to French Frigate Shoals in the 1800s reported that there were hundreds of turtles basking on the islands, resting side by side," he said.

In addition to counting nesting turtles, Balazs has sought to learn about the migratory paths of the turtles. He has tagged 2,000 nesting turtles, first with metal tags, and most recently with the internal tags used by veterinarians to identify cats and dogs, which last longer in the marine environment. His team has also tagged 3,900 other turtles, mostly juveniles and subadults in their feeding areas. He was also the first person to successfully use satellite tagging to track the migratory paths of mature sea turtles departing their nesting beaches.

"We now know that 90 percent of all the turtles found in Hawaii are born at French Frigate Shoals," Balazs said. The adults return to their natal beach, the beach on which they were born, to nest. According to Balazs, it takes about 25 years for a turtle to reach adulthood. Adult females migrate to breed once every two or more years, while the adult males often migrate on an annual basis. The turtles mate offshore, then the females come ashore to nest.

Balazs is also working to understand sea turtles throughout their life cycle. This is difficult because once the hatchlings enter the sea, they drift in the ocean currents, feeding on fish

when they have grown to about 8 to 10 inches long that they appear near shore, where they settle in at "feeding pastures" to feast on their adult diet of seaweed, sea grass and limu.

Last week, Balazs was at Palaau, on the south shore of Molokai, working on a cooperative tagging and monitoring project with Hawaii's Department of Land and Natural Resources and Department of Aquatic Resources. The project, established in 1981, has tagged and measured a total of 1,458 turtles. Each year, the project team has been able to recapture 10 to 35 percent of the previously tagged turtles. By measuring turtles each time they're recaptured, Balazs has been able to learn the rate at which turtles grow (seven-eighths of an inch per year in carapace, or shell, length).

This long-term study has also documented the outbreak and build-up of a tumor-forming disease known as fibropapilloma. Sadly, 50 percent to 60 percent of the turtles at Palaau have exhibited these deadly tumors in recent years. The tumors can cover the soft tissue of the turtles, blinding the animals and leaving them unable to feed. The disease is not found along the Kona coast but is prevalent among turtles in areas of Maui and Molokai. For example, during 1989 and 1990, tumors were present in 77 percent and 85 percent, respectively, of the turtles stranded on the island of Maui, mainly in the Kahului Bay area.

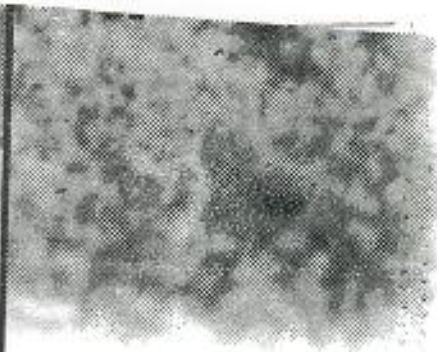
A vigorous research effort is under way to determine the cause and cure for the disease. Researchers have found that the disease is caused by a retrovirus and herpes virus, Balazs said.

In spite of the disease, Balazs is encouraged by the positive signs for the Hawaiian green sea turtle population. "The increasing numbers of nesting turtles at French Frigate Shoals are an example of what can happen when the state, federal government and community work together to protect a species," he said.

He notes that sea turtles have moved from being a menu item to a popular tourist attraction. Numerous snorkel cruise brochures on Maui promise visits to "Turtle Town" (a reef near the Maui Prince).

When docked at Kahului Harbor, American Hawaii Cruises takes its passengers on a turtle walk, to view the 30 or more green sea turtles that bask each evening in the warm water discharged from the Maui Electric Co. power plant.

At the same time, the field work continues at French Frigate Shoals. "East Island has a sameness, year after year," Balazs said. "When I'm there, it could be 1973 again."



**Female turtles** come up on shore to do some sunning at the French Frigate Shoals. Nearly all of Hawaii's turtles are born there and will continue to be born there because adults return to their natal beach to nest.

**When the eggs** hatch, the young turtles make the trek down the beach into the ocean (photo above). It takes about 25 years for a turtle to reach adulthood.

Tim Clark photos

# Letters

Maui News  
7-26-98

## Thanks for recognizing Balazs

Congratulations and a warm mahalo to Anne Willero and The Maui News for the Currents article "Turtle Tracks" (July 19) featuring the work of Hawaii's turtle expert George Balazs.

Anne accurately summarized Balazs' career as a researcher/scientist and marine conservationist. More gratifying, though, she captured his spirit and conveyed the love and appreciation he has for his subjects, Hawaii's honu.

We are Canadian tourists who stay on Maui during July and August every year just to dive with your green sea turtles. While Maui welcomes the return of the humpbacks each December, I am sure you need no reminder you have year-round tourist attractions in your shelled green wonders.

Every summer we witness human-honu "interactions." Squeals of delight from kids snorkeling when they've sighted their first turtle, the thrashing of flippers as they try to keep the honu in sight. And then "Hey MOM! I saw a HUGE turtle!" (A juvenile Hawaiian green sea turtle is indeed "huge" when the only other kind you've seen is the dime-store variety.)

Your sea turtles are Hawaii's special ambassadors and people simply delight seeing them in your ocean.

That the honu are increasing in numbers is the direct result of the aloha and protection Hawaii has afforded them over the years. As leader of Marine Turtle Research, George Balazs orchestrated that recovery.

In January we devoted a section of our Web page, Turtle Trax, to the enormous contributions Balazs has made to Hawaii's honu. Back then it was just two Canadians celebrating the 25th anniversary of the French Frigate Shoals sea turtle tagging program that he initiated.

It's highly gratifying to see that with this Currents article, Balazs has been finally acknowledged (and thanked) right here in Hawaii.

**Ursula Keuper-Bennett  
Peter Bennett  
Lahaina**

# Pollution fear for turtles

By **BRIAN WILLIAMS**  
environment reporter

**SCIENTISTS** are growing increasingly concerned about a disfiguring disease that has struck turtles living in Moreton Bay.

They fear that wart-like fibropapilloma growths as large as a fist might be linked to pollution.

Pollution is the one common factor that American and State Environment Department scientists have found in a series of surveys being conducted in the bay with Sea World staff.

The US scientists have already found the same disease in Hawaii. In both cases it has occurred only in animals whose home ranges are near built-up urban or agricultural areas.

Environment Department researcher Col Limpus said some of the growths covered eyes, mouths and noses or occurred in the armpits, making it difficult for the turtle to swim.

Dr Limpus said the bay had "some thousands of green and loggerhead turtles" but many carried the growths.

A previous survey found that 8 percent of turtles living in the northern and more open end of the bay were infected while in the south part of the bay which suffered from less tidal flushing, the infection rate was 70 percent.

Dr Limpus said the growths appeared to make the turtles more susceptible to other diseases and often led to their deaths.

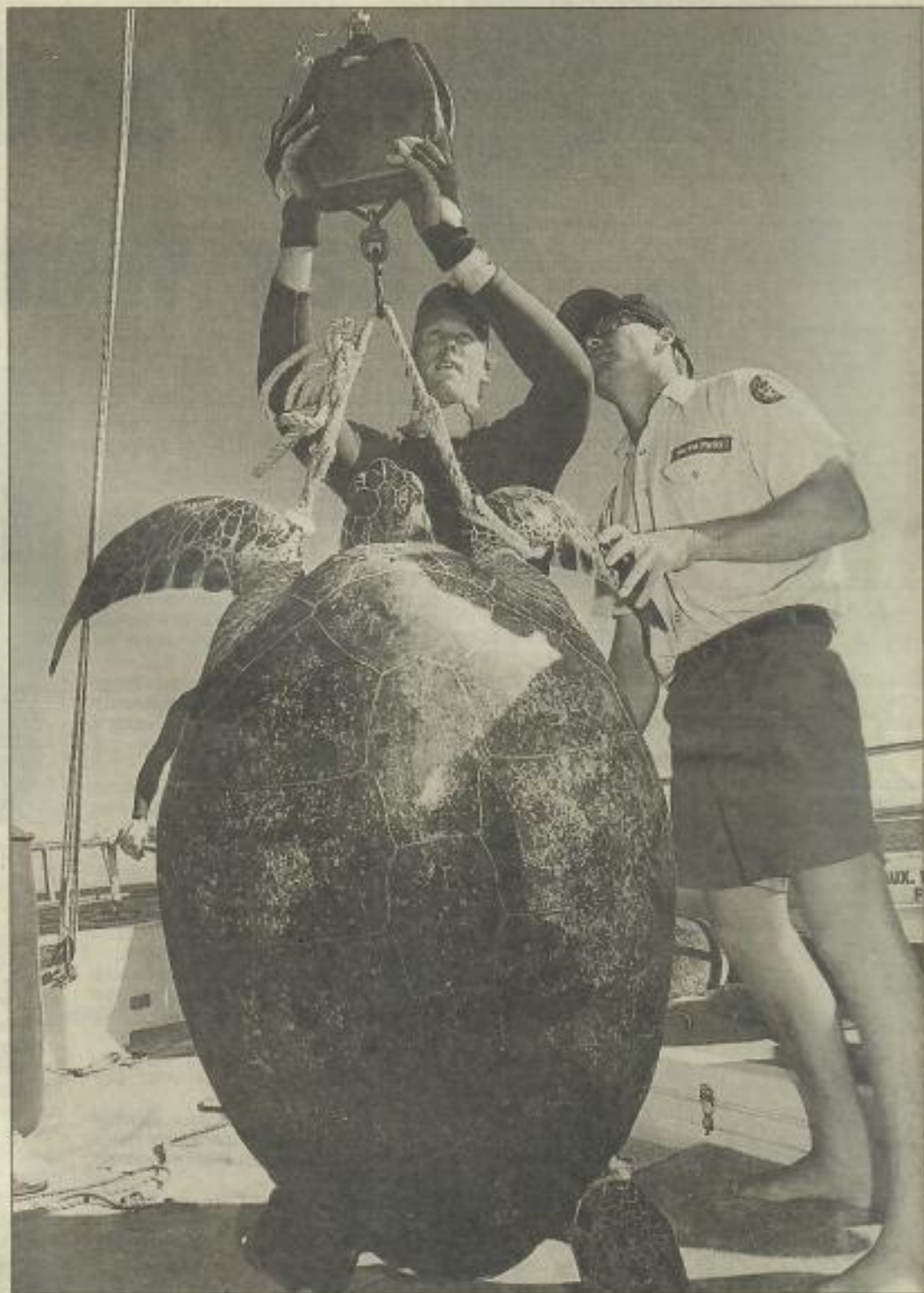
To facilitate research work, scientists conduct a so-called "turtle rodeo".

Scientists dive into the water and grab a turtle by the shell. The turtle is dragged into a dingy where blood samples, measurements and examinations are performed.

Australia hosts six of the world's seven species of marine turtles, but despite growing efforts over the past 20 years, turtle numbers continue an alarming decline.

In the Bundaberg region — the major mainland nesting area for loggerhead turtles — nestings last summer were down 47 percent from the year before to just 119.

At Wreck Rock, the number of nesting females has fallen from 1000 a year in the 1970s to just 100 last summer.



**RESEARCHERS** weigh a turtle in Moreton Bay . . . they fear growths on turtles may impede movement and leave them prone to other diseases. Picture: **PAUL WAGER**

Turtles are killed in trawl nets, by being trapped in crab pot lines, ingesting discarded fishing line, being hit by speed boats and disease.

The Primary Industries Department two weeks ago made it compulsory for

trawler operators in known turtle habitats to fit turtle excluder devices.

National Parks Association spokeswoman Rae Lindgren said the move to fit TEDs was welcome but would be limited in its benefits because the de-

vices were required only in specified areas.

At risk with the loggerheads is a burgeoning ecotourism industry at Bundaberg which sees about 30,000 tourists visit to watch hatchlings struggle to the sea.

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## Revolutionary

# Brothers jailed over 'family feud' attacks

MARK OBERHARDT

DISTRICT Court judge Fred McGuire would not tolerate family feud violence when he jailed two Taiwan-born brothers yesterday for attacking two other Taiwan-born brothers.

The court was told Mao Hsu and his brother Morgan Hsu and his brother Hsiu-Ming Hsu attacked brothers Alvin and Stanley Chen with a gun, knife and glass at a karaoke bar in Sunnybank on Brisbane's southside.

"We (the community) don't want this type of gang warfare between feuding families and the sooner you understand that the better," Judge Fred McGuire said.

Judge McGuire accepted there had been a feud between the Hsu family and the Chen family in the lead-up to the attack.

But he said it had been a gangster-style raid in which the attack was merciless and vicious.

Mao Hsu, 27, and Morgan Hsu, 21, of Robinson, pleaded guilty to two counts of assault occasioning bodily harm on December 30 last year.

Prosecutor Lisa McConnell said the Chen brothers had been at the karaoke bar when the Hsus arrived with a group of people at 1.30am. Morgan Hsu used a beer bottle to attack Alvin Chen, 19, while Mao Hsu used a gun butt to bash Stanley Chen, 16.

The Chens also were hit with glass and punched by others in the Hsu group, Ms McConnell said.

Angelo Vasta, QC, for the Hsus, said his clients had not offended before and there was a long history to the dispute between the Hsu and Chen families.

He said Morgan Hsu, who arrived in Australia in 1994 and was a citizen, had been friends with the Chens and their older brother through a contact in Taiwan.

However, there had been a falling-out when Morgan Hsu helped another friend who had allegedly been bashed by friends of the Chens.

Mr Vasta said six shots were fired into the Hsus'

house and the matter was reported to police but no charges laid. He said Morgan Hsu had in 1996 been bashed by seven people and left with a broken jaw.

"He (Morgan Hsu) did not report the bashing to police because he could not identify his attackers and he felt police would not have acted after nothing was done about the shots being fired into his house," Mr Vasta said.

He said the Chen brothers' parents had offered the Hsus' parents 20,000 Taiwanese dollars as a type of peace offering but the money was refused.

Judge McGuire sentenced the Hsus to two years' jail with a recommendation for parole after eight months.



ONE SHOT

'AINA: OCEAN CONSERVATION

# Gill-net ban at Kiholo Bay may halt overfishing, biologist says

By Hugh Clark

Advertiser Big Island Bureau

**KIHOLO, Hawaii** — A ban on the use of gill nets is intended primarily to protect turtles that feed and rest at remote Kiholo Bay on the Big Island.

But a Hilo-based researcher said it may also prevent overfishing of the bay, where an abundant number of native species, including *akule*, are found.

Rules designating Kiholo a "special fisheries management area" allow state Land and Natural Resource Department off-

cers to arrest people who use the nets, which trap and drown turtles.

The chief purpose of the rules is to protect the endangered green sea turtle, which spawns at Kiholo but migrates to the northwest Hawaiian Islands to breed at about age 25.

The Big Island is considered one of the major habitats for the native turtles. This includes Punalu'u Bay in Ka'u, where the hawksbill turtle breeds and has been studied for years.

Robert Nishimoto, who holds a doctorate in outdoor biology, said the rule was widely favored by fishermen who go to

Kiholo to catch popular species of fish.

The state action will help not only the green sea turtle, but also the hawksbill turtle, which also uses the bay, situated midway between Kawaihae and Kailua-Kona.

Kiholo once was considered as a state park site, but it remains undeveloped with limited access. Fishermen reach it from the ocean or by walking many miles along an ancient Hawaiian trail that is parallel to the coastline.

The state's director of land and natural resources, Michael Wilson, said public support of

the rules is essential.

"It's one thing to create a management area and hope that people abide by the rules," he said. "It's another thing to have an entire community in support of our efforts and willing to make sure one of Hawaii's most beautiful species is protected."

A Land Department spokeswoman in Honolulu said the rules have no effect on pole or line fishermen or throw-net users.

The action is among several aimed at improving the chances of Hawaiian turtle survival. A few miles north, the Mauna Lani Resort has annually cele-

brated July 4 with an "independence day" program by releasing turtles hatched in captivity.

The rules are less demanding than those for a marine conservation zone, such as the one at Kealahou Bay in South Kona, which restrict far more activities and where violations can lead to harsher penalties.

Much of the work at Kiholo has been enhanced by ongoing studies by science students at Hawaii Preparatory Academy in Waimea.

They have studied the resting and feeding habits of the green sea turtle for several years.

## Sea-turtle incident sends Kaua'i man, 34, to prison

By David Waite

ADVERTISER STAFF WRITER

A Kaua'i man who admitted capturing two green sea turtles last November was sentenced yesterday by federal Magistrate Judge Barry Kurren to six months in prison.

Daniel Isobe, 34, a fisherman, said he was catching black crab when he came across the turtles and took them home.

"I just like apologize for the whole mess I caused," Isobe told Kurren. "It wasn't intended."

But Craig Nakamura, the

assistant United States attorney who prosecuted the case, told Kurren there were commercial aspects to the case.

Nakamura said after the sentencing hearing that Isobe made statements to investigators that he was attempting "to fill an order" for the two turtles, which weighed 200 and 250 pounds.

Isobe was caught with the turtles, a male and a female, in the bed of his pick-up truck after a Kaua'i police officer pulled him over for speeding, Nakamura said.



# New book provides trivia on Hawaii's terrific turtles



## OCEAN WATCH

*Susan Scott*

In the past, when a question popped up about Hawaii's sea turtles, I had two options. One was to look it up in my biology books, and the other was to ask Hawaii's turtle specialist, George Balazs.

Although both systems provide good information, they have their problems. My textbooks cover the whole world's turtles and go into such detail that the search for a simple answer can become an afternoon chore.

And although George is always happy to help, I feel guilty pestering him with every little question. Local wildlife artist and author Patrick Ching had the same problem and decided to do something about it.

He teamed up with Balazs as science advisor, and the University of Hawaii Press as publisher, and wrote a book called, "Sea Turtles of Hawaii." We turtle lovers now have a 55-page turtle book that's accurate, easy to read, and best of all, local.

turtles swim in Hawaiian waters?

4. Which is the smallest species of sea turtle in the world?

5. Where do loggerhead turtles nest?

6. What is a pyrosoma?

To learn the answers, you'll have to buy the book. Just kidding. The answers follow.

1. Researchers estimate that only one in 1,000 hatchlings reach sexual maturity (0.1 percent). That's why each green female turtle lays so many eggs — 100 at a time, up to six times per season.

2. Although it's not confirmed, researchers highly suspect a herpes virus is causing the debilitating tumors seen on our turtles. No one knows how it is transmitted, but they do know it infects only turtles.

3. Five turtles swim here: green, hawksbill, loggerhead, olive ridley, and leatherback turtles. That leaves two that don't come to Hawaii: Kemp's ridley (Gulf of Mexico and Atlantic Ocean) and the flatback turtle (Australia).

People who know Patrick know his style is relaxed and his art superb, and both qualities shine bright in this book. Kids can learn about Hawaii's turtles just from looking at the excellent pictures. In the text, adults can find the answers to common (and some uncommon) turtle questions.

Because so many Hawaii residents have a warm spot in their hearts for our gentle reptiles, I get a lot of questions about turtles. Here are a few I could not easily answer before I had this book:

1. What percentage of turtle hatchlings makes it to adulthood?
2. What's causing those terrible tumors on our turtles?
3. How many species of sea

4. At about 2 feet long and up to 100 pounds, the olive ridley is the world's smallest sea turtle. This is also the world's most abundant sea turtle.

5. Most loggerheads nest in Florida and on Masirah Island, off Oman. Smaller nesting sites are found in Japan, Australia and Greece. Hawaii has none.

6. This is my own question. Patrick explains that a pyrosoma is a luminescent floating invertebrate. I haven't heard this term, however, and can't think of one example of a luminescent floating invertebrate.

Sounds like a future Ocean Watch column.

If, like me, you didn't know the answers to these questions, which came from second and third graders by the way, buy this book. Hawaii educators, parents and marine enthusiasts should all have it so we can teach our kids, and anyone else interested, the facts about these remarkable, native animals.

*Susan Scott*  
can be reached at:  
[www.susanscott.net](http://www.susanscott.net)

# Hawaii Sees Increase in Stranded Turtles

The green sea turtle (honu) is found in the protected shallow, coastal waters of Hawaii. Since its listing as a threatened species in 1978 under the Endangered Species Act (ESA), the population has increased both in the nesting areas in the Northwestern Hawaiian Islands and the foraging areas around the main Hawaiian islands. There has also been an increase in the number of stranded turtles, i.e., individuals washed up on shore dead or alive but in need of medical attention. Several reasons for the strandings have been identified, including fibropapilloma (FP) and interactions with recreational fishing gear.

FP is an often fatal, tumor-forming disease that can lead to disruptions in breathing, feeding, seeing or swimming. Between 39 and 69 percent of the stranded turtles in Hawaii have been found to carry the disease. The only spot in Hawaii where no known cases of FP have occurred is the western coastline of the Big Island. Tumors are the most prevalent in turtles living off the coastline of Maui. However, most of the stranded turtles are reported on Oahu, where the majority of the human population resides.

"Tumors exacerbate the entanglement in netting or fishing line," says George Balazs, head of the Marine Turtle Research Program at the National Marine Fisheries Service (NMFS) Honolulu Laboratory. "Warty protruding growths offer more for line and net to snag and entangle on."



Live sea turtle severely injured by fishing line at Kapoho, Hawaii. This turtle was rescued and treated by NMFS biologists and University of Hawaii at Hilo student assistants. Simple precautions by shoreline fishermen can reduce entanglement and suffering. (G. Balazs photo)

"Entanglement and flipper death from monofilament fishing line, and even ingestion of line, all from active shoreline fishing are issues of increasing concern in the Hawaiian islands," Balazs notes. "Simply stated, there are more coastal recreational fishermen and more turtle interactions."

Last year, 51 turtles were found stranded with evidence of coastal gear, including lines, hooks and netting. That is nearly double the amount found stranded with evidence of coastal gear six years earlier, i.e., 27 turtles in 1994.

A serious aspect of green sea turtle interactions with

## Coastal fishing gear interactions monitored by the Honolulu Laboratory Marine Turtle Research Program

Year	Total Number of Strandings	Number (Percent) of Turtles with Evidence of Fishing Gear*
1994	213	27 (13%)
1995	195	29 (15%)
1996	252	35 (14%)
1997	239	46 (19%)
1998	284	37 (13%)
1999	293	46 (16%)
2000	274	51 (18%)
Total	1,750	271 (15%)

\*Evidence of line, hook or net interaction does not mean the gear killed the turtle.

coastal fishing gear is entanglement in monofilament line. Lines wrapped around a turtle's flipper restrict movement and often sever the limb or require amputation by veterinarians.

"Sea turtles with a single front flipper get along pretty well," Balazs says. "But certainly they get along better with two front flippers." Males with only a single front flipper are unable to mate, he notes.

Both the State of Hawaii and federal agencies are responsible for monitoring and taking action to protect these species within the nearshore areas. The NMFS Office of Law Enforcement notes that it is against the law for people to "take" green sea turtles. The term "take" is broadly interpreted in the ESA, meaning to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or to attempt to engage in any such conduct." Therefore, not only fishermen with nets and poles should take note but also divers and snorkelers.

Although green sea turtles are generally vegetarian and feed primarily on seaweed (limu), they can be attracted to materials used for bait, such as squid or shrimp. To reduce the impacts of coastal fisheries on turtles, scientists have recommended the following:

- ◆ Do not cast in an area where turtles can be seen repeatedly surfacing to breathe, as this signals they are feeding.
- ◆ If a turtle is caught, cut the fish line as close as possible to the hook (within an inch or two) and remove any other pieces of line that may entangle the turtle.
- ◆ Do not attempt to remove a hook from a turtle unless it is lightly embedded and can be taken out with no added injury.
- ◆ Turtles that are entangled with deeply cutting line or embedded with a hook piercing deep into their body need to be treated by a veterinarian. Keep the turtle in the shade and call the NMFS Marine Turtle Research Program at 983-5730 or, on weekends and holidays, call the State of Hawaii conservation hotline at 587-0077.

For suspected law enforcement violations, call NMFS Law Enforcement at (808) 541-2727 or (800) 853-1964.

Honolulu ★ Star-Bulletin

# TODAY

MONDAY, DECEMBER 29, 2002 / 529-4174 / FEATURES@STARBUCKETIN.COM

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Thirty years ago these turtles were rare and on the verge of extinction, fleeing at the sight of man. Now they wade along the shoreline, swim up to people such as Aviana Gutierrez, and nudge them, begging to be fed limu. These animals are unaware of Federal regulations limiting human interaction with them.

# 20 vision

A PICTURE IS WORTH a thousand words, the saying goes, and editors and page designers take that quite literally. With space in daily newspapers at a premium, photographers generally have one shot at capturing up a news event. But what about the quiet or funny moments behind the scenes, the outtakes? The pictures that, for whatever reason, got left on a computer hard drive the way movie extras get cut from a film? Or the photos that were not rendered with the proper gravitas?

At year's end, the photographers strike back. Here are the photos that are their favorites or the ones they simply wanted you to see in 2002.

## HPA STUDENTS VOLUNTEER FOR SEA TURTLE RESCUE TEAM

School Also Sets Up Turtle Hotline

**5** HPA students have formed a volunteer sea turtle rescue team for West and North Hawaii in partnership with the Marine Turtle Research Program, Honolulu Laboratory of the National Marine Fisheries Service (NMFS). Under the supervision of Marc Rice, director of the Cooperative Sea Turtle Research Project and HPA marine science instructor, the team will respond to reports from the general public of stranded sea turtles along the Big Island's west and north shores—from Honokohau Harbor to Pololu Valley.

“... residents should not be alarmed. If a basking turtle is observed it is best to leave the animal alone.”



are legally protected under the U.S. Endangered Species Act and wildlife laws of the State of Hawaii.

Once a report is received, Rice directs the student volunteers throughout the process. The students—Garry Burns, Jessica Sanders, Laura Morgan, Jill Quaintance, and Katie Harrington—contact NMFS experts for advice on what should be done for the turtle. The animal might be sent to Oahu for veterinary evaluation and any required treatment. If a turtle is deceased, the rescue team will pick up the animal, freeze it, and ship it to Oahu for necropsy.

The team already has responded to calls in Puako. Rice said students air-shipped an injured turtle to Oahu for treat-





The HPA Sea Turtle Rescue Team, from left, includes Marc Rice, marine science instructor and director of the Cooperative Sea Turtle Research Project, Jill Quaintance, Jessica Sanders, Garry Burns, Laura Morgan, and Katie Harrington.

## Quaintance has seen her share of head scales

Jill Quaintance has seen her share of head scales — make that turtle head scales — as part of her research project on green sea turtles in Hawaii. But the Hawaii Preparatory Academy sophomore takes it all in stride. She recently returned from the 21st Annual Symposium of Sea Turtle Biology and Conservation in Philadelphia, where she was the only high school student to present a paper.

The five-day conference, held this year at the Adams Mark Hotel, attracts about 1,000 of the world's top

turtle shell, natural scars or marks; and head-scale patterns.

"It was difficult to identify all the turtles," she says. "We take pictures of the head scales, which are like fingerprints. I basically had to memorize all the turtles' patterns. We're still trying to come up with a better way to sort through all the pictures so we can find the turtles faster."

She entered the information on 24 turtles using several databases and checked that, on average, the turtles bask 7-8 hours. She also found that head

had footage of other turtles knocking the camera around."

One of the most interesting moments for Quaintance was meeting Ursula Keuper-Bennett and Peter Bennett, who pioneered turtle head-scale identification.

"I'd heard of them because of their works with turtles on Maui," explains Quaintance. "I met them very briefly, and it turned out Mrs. Keuper-Bennett had been watching our video on-line at the same time I was and she identified all the turtles

and Balazs. "They found that by looking at a turtle's eyes, you might be able to determine if that turtle will develop a tumor, if it had a tumor, or if its tumors are regressing. It was really interesting."

Quaintance took her project to the Hawaii State Science & Engineering Fair on Oahu last week after winning third place overall at the Hawaii District Science Fair in Hilo in March. She's now looking forward to next year's conference.

# Students form a volunteer team to rescue sea turtles

Five students at Hawaii Preparatory Academy have formed a volunteer sea turtle rescue team for West and North Hawaii in partnership with the Marine Turtle Research Program, Honolulu Laboratory of the National Marine Fisheries Service.

Under the supervision of Marc Rice, director of the Cooperative Sea Turtle Research Project and HPA marine science instructor, the team will respond to reports from the general public of stranded sea turtles along the Big Island's west and north shores — from Honokohau Harbor to Pololu Valley.

The HPA team is one of four in the state of Hawaii — and the only team of high school students — working and training with George Balazs, leader of Hawaiian Marine Turtle Research for NMFS.

HPA is providing program funding and NMFS is providing all tools for the program, including stretchers

The team will respond to reports from the general public of stranded sea turtles along the Big Island's west and north shores — from Honokohau Harbor to Pololu Valley.

and animal carriers, as well as shipping and veterinary services.

According to Rice, the school set up a turtle hotline (881-4200) in January which is open from sunrise to sunset. After-hour emergency calls will be taken at 987-6903.

Callers should provide their name and phone number, location, and a brief description of the turtle's location and condition.

A member of the rescue team will return the call within an hour, said Rice.



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# Quaintance has seen her share of head scales

Jill Quaintance has seen her share of head scales — make that turtle head scales — as part of her research project on green sea turtles in Hawaii. But the Hawaii Preparatory Academy sophomore takes it all in stride. She recently returned from the 21st Annual Symposium of Sea Turtle Biology and Conservation in Philadelphia, where she was the only high school student to present a paper.

The five-day conference, held this year at the Adams Mark Hotel, attracts about 1,000 of the world's top researchers and conservationists and features more than 450 oral and poster paper presentations.

Quaintance presented "Monitoring Turtle Basking Behavior with Remote Cameras." The project involved observing green sea turtles at the Big Island's Turtle Beach using remote cameras for 27 days last June. The cameras "stream" video back to the school, allowing students — and others throughout the world — to monitor the turtle population and study the turtles' basking behavior.

The project also examined how long the turtles basked and their average basking time. Quaintance authored her paper under the direction of Marc Rice, director of the Cooperative Sea Turtle Research Project, and George Balazs, leader of Hawaiian Marine Turtle Research for the National Marine Fisheries Service (NMFS), Honolulu Laboratory. The paper will appear in the proceedings of the symposium.

Quaintance's participation at the conference was made possible through a unique partnership with the NMFS, which includes symposium travel assistance for deserving students. Since 1987, students in HPA's marine science program have worked with NMFS on a turtle research and monitoring project in West Hawaii. The work has grown over the years in scope, magnitude, and importance to overall species conservation. The newest addition to the program is a volunteer sea turtle rescue team.

The symposium project consumed Quaintance's "spare" time for about eight months. After observing the turtles on video from the remote cameras, she recorded what time each turtle came out from the water and when it went back in. She identified the turtles using a variety of methods including carapace numbers, which are lightly etched on the

turtle shell; natural scars or marks; and head-scale patterns.

"It was difficult to identify all the turtles," she says. "We take pictures of the head scales, which are like fingerprints. I basically had to memorize all the turtles' patterns. We're still trying to come up with a better way to sort through all the pictures so we can find the turtles faster."

She entered the information on 24 turtles using several databases and concluded that, on average, the turtles bask 2.2 hours. She also found that head-scale identification can be used at Turtle Bay and confirmed that the remote cameras are a good option for observing turtles in a non-intrusive manner.

Quaintance was impressed with her symposium experience. "There are so many people doing so many different things with other turtles," she explains. "It was really interesting to see what other people are doing."

One interesting presentation was the "Crittter Cam," where a researcher suction-cupped a video camera to a leatherback turtle. "This guy had 30 hours of tape and he watched every second of it!" Quaintance says. "He

had footage of other turtles knocking the camera around."

One of the most interesting moments for Quaintance was meeting Ursula Keuper-Bennett and Peter Bennett, who pioneered turtle head-scale identification.

"I'd heard of them because of their works with turtles on Maui," explains Quaintance. "I met them very briefly, and it turned out Mrs. Keuper-Bennett had been watching our video on-line at the same time I was and she identified all the turtles I did."

Quaintance also gave high marks to Peter Bennett's oral presentation on tumor regression, which was done in collaboration with Keuper-Bennett

and Balazs.

"They found that by looking at a turtle's eyes, you might be able to determine if that turtle will develop a tumor, if it had a tumor, or if its tumors are regressing. It was really interesting."

Quaintance took her project to the Hawaii State Science & Engineering Fair on Oahu last week after winning third place overall at the Hawaii District Science Fair in Hilo in March. She's now looking forward to next year's symposium.

"We'd like to get another school on the mainland involved and do a video thing back and forth," she explains. "We'd like to teach other students to do what we're doing."

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Date: Mon, 1 Jun 1998 20:12:34 -1000 (HST)  
From: "George H. Balazs" <gbalazs@honlab.nmfs.hawaii.edu>  
To: gbalazs@honlab.nmfs.hawaii.edu  
Subject: French Frigate Shoals- 25 Years

Date: Mon, 1 Jun 1998 14:11:27 -1000 (HST)  
From: George H. Balazs <gbalazs@honlab.nmfs.hawaii.edu>  
To: Sea Turtle Biology and Conservation <CTURTLE@lists.ufl.edu>  
Subject: French Frigate Shoals- 25 Years

Due to some good luck, perseverance and a year or two of dreaming about it, 25 years ago today I touched sand for the first time at French Frigate Shoals. A DC-3 "Gooney Bird" aircraft, of World War II vintage, put us down on the 3000' Tern Island gravel runway. Ironically the landing was made through a mass of swirling sooty terns (see National Geographic, May 1978).

I had traveled to these remote islets 500 miles up the Hawaiian chain from Honolulu to start a systematic tagging and monitoring study of the green turtles nesting there. One that would, I had hoped, last for "three years" with seed-money kindly granted by the New York Zoological Society under Dr. Wayne King.

Not much was known then about such things as how many green turtles nested in Hawaii, what nesting cycles they displayed, the turtles' dispersal throughout Hawaii (or maybe elsewhere in the Pacific), growth rates of the youngsters, and time to maturity. However, what was clearly known at that time, in Honolulu and on Maui and other inhabited islands of Hawaii, was that a good market and high price existed in the restaurant trade for green turtle meat. And that the turtles had no legal protection and could be caught pretty easily in certain places using modern scuba gear and relatively cheap synthetic tangle nets.

I would have scarcely remembered this date of June 1st, or given it any notice, had it not been for Ursula Keuper-Bennett's sharp eye for historical moments, and deep appreciation for the Hawaiian honu that husband Peter and her dive with each summer off of Maui. And talk about frequently on Cturtle. Thank you Ursula and Peter, for your involvement and for your affectionate website segment on French Frigate Shoals (<http://www.turtles.org/ffsland0.htm>). During the 25 years of our tagging and monitoring program (the 26th season this year), much has been learned almost entirely through the collaboration, partnerships, and friendships built with other researchers and lay persons. Peter and Ursula exemplify in the finest fashion a portion of those many individuals.

For these past 25 years the tagging of turtles to achieve individual or cohort recognition has been the "gold-standard" foundation of our work. About 2000 nesting greens have been tagged and nearly 3900 others, mainly immatures, in numerous Hawaiian coastal foraging habitats. However, technological advances in tags, and our current financial ability to purchase them, have allowed us to now exclusively use PIT tags. The chances appear to be greater for these tags to be retained by our turtles when another 25 years pass by.

Based on our annual number of nesters, and in-water sampling of immatures, and anecdotal reports by recreational divers, green turtles in Hawaii show very encouraging signs of population recovery since being protected in 1978 under the US Endangered Species Act. Yes, we have this nagging tumor problem that is severe in individuals at many locations. The work on this disease is essential and continues by an array of respected pathologists, virologists and epidemiologists. Far better today, however, to look at

the bright side. The numbers are up throughout Hawaii. And the road to population recovery is indeed possible, given some patience, the passage of time, and hard work by many individuals respecting one another's diversity of opinions, talents and efforts.

Aloha, George Balazs