

Laniakea Word Search

RLANIAKE AEMLH
EI HARAKLM NUS
PMCLLA LE A LW P
PUAUNOHT LOAE
ILEKKIN AAKLN
LPBASKE RIMLIK
FLNIIRI GILSPV
MAWI HAWIHLTKE
IANAMHI MIFIDK
WETUCSUNQUPL
SUBADULTOETRI
KQIPE TLOPRIKP
NUULKRIRTKLE
LILMI LIOKLIUR
TCETR PHKJYRX
ISKNTITLKMMIKI

FLIPPER
MIGRATE
LANIAKEA
SCUTE
SQUIRT
HONU

BEACH
MALAMA
HIWAHIWA
NALUKAI
LIMU
SUN



35840

3.96 NA ZAIJIN ANN- 1 5496

<No. 6A>



Oxford



HAWAIIAN GREEN SEA TURTLE

KAWAILOA BEACH NOV. 1995



KAWAILOA BEACH JUNE 1995

KAWAIIA BEACH NOV 1995

HAWAIIAN GREEN SEA TURTLE



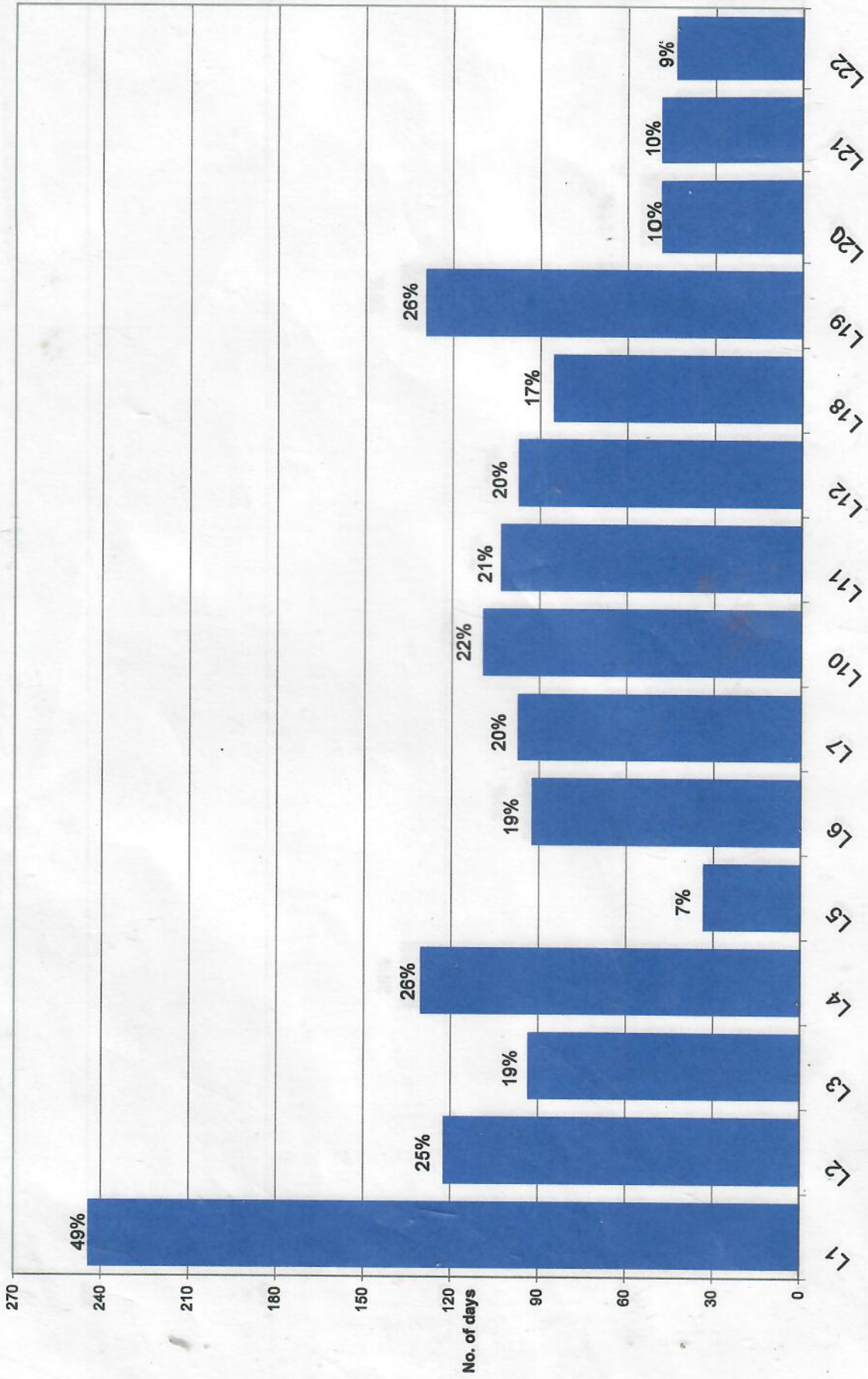


Dear Joanne,

My daughter, Amy A. Patrick,
would love to have known your work
with the turtles. I can think of
no better cause than to help protect
these wonderful creatures. Thanks
for your work in protecting them.
mahalo and with aloha,

Amy D. Patrick

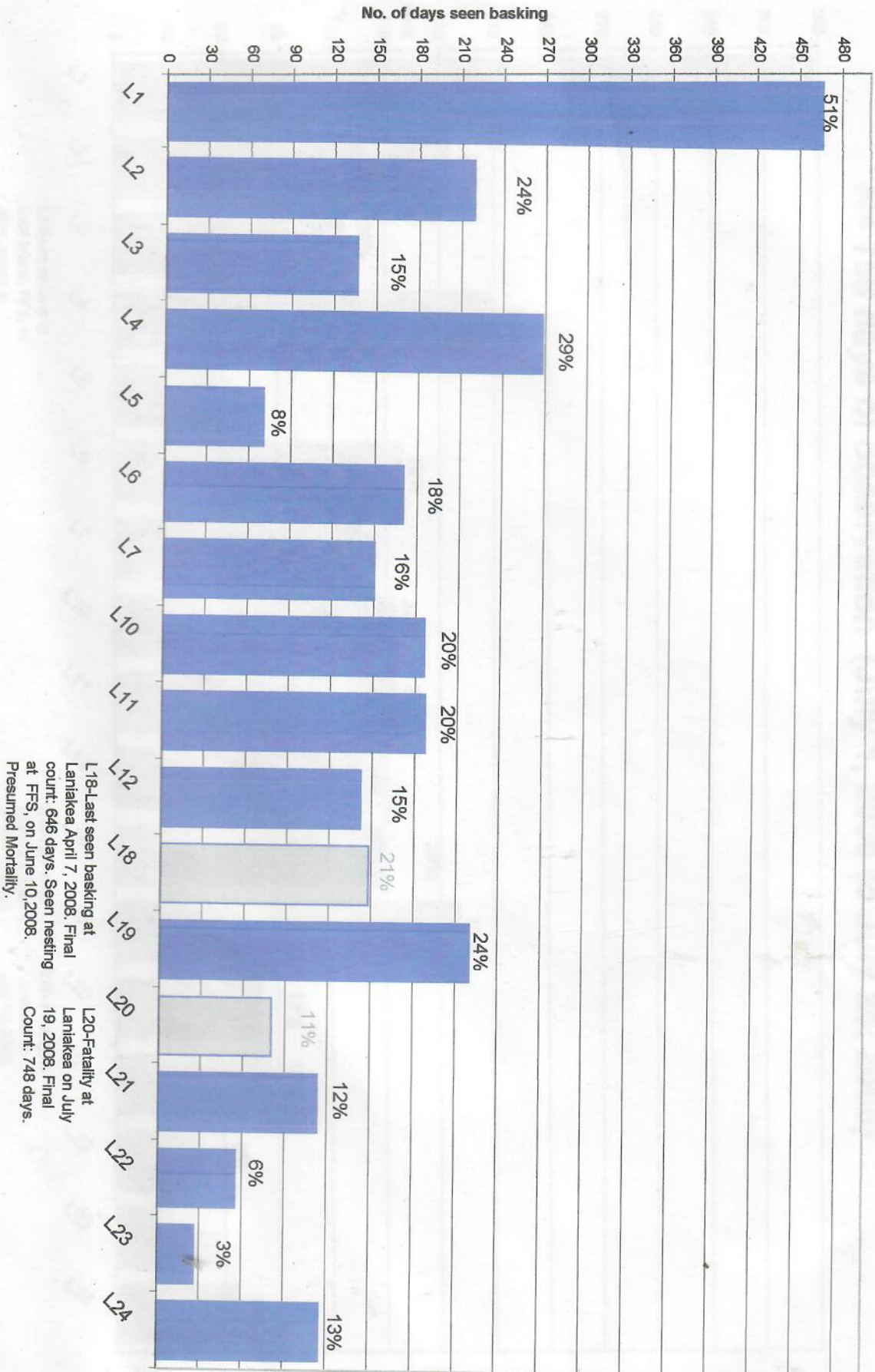
Numbers of days individual turtles were observed basking N= 495 days of observation (July 1, 2006 to November 7, 2007)



Marine Turtle Research Program
Pacific Islands Fisheries Science Center
NOAA National Marine Fisheries Service
2570 Dole Street
Honolulu, Hawaii 96822-2396

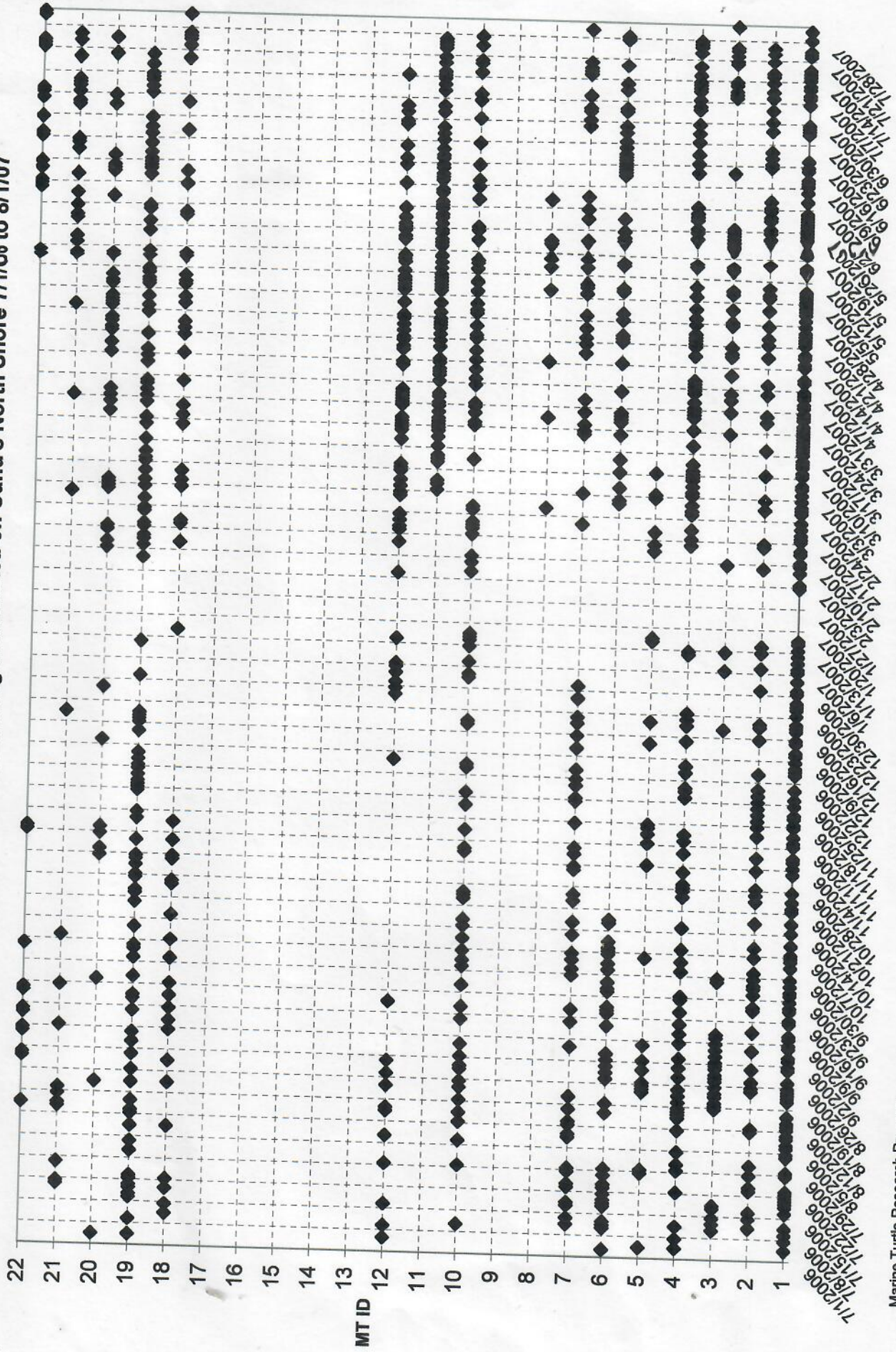
Laniakea.basking.data.begin.July2006
12/21/07 CBH

Numbers of days individual turtles were observed basking N = 919 days of observation (July 1, 2006 to January 04, 2009)



Marine Turtle Research Program
 Pacific Islands Fisheries Science Center
 NOAA National Marine Fisheries Service
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Mottotooled Green Turtles Observed Basking at Laniakea on Oahu's North Shore 7/1/06 to 8/1/07



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final map

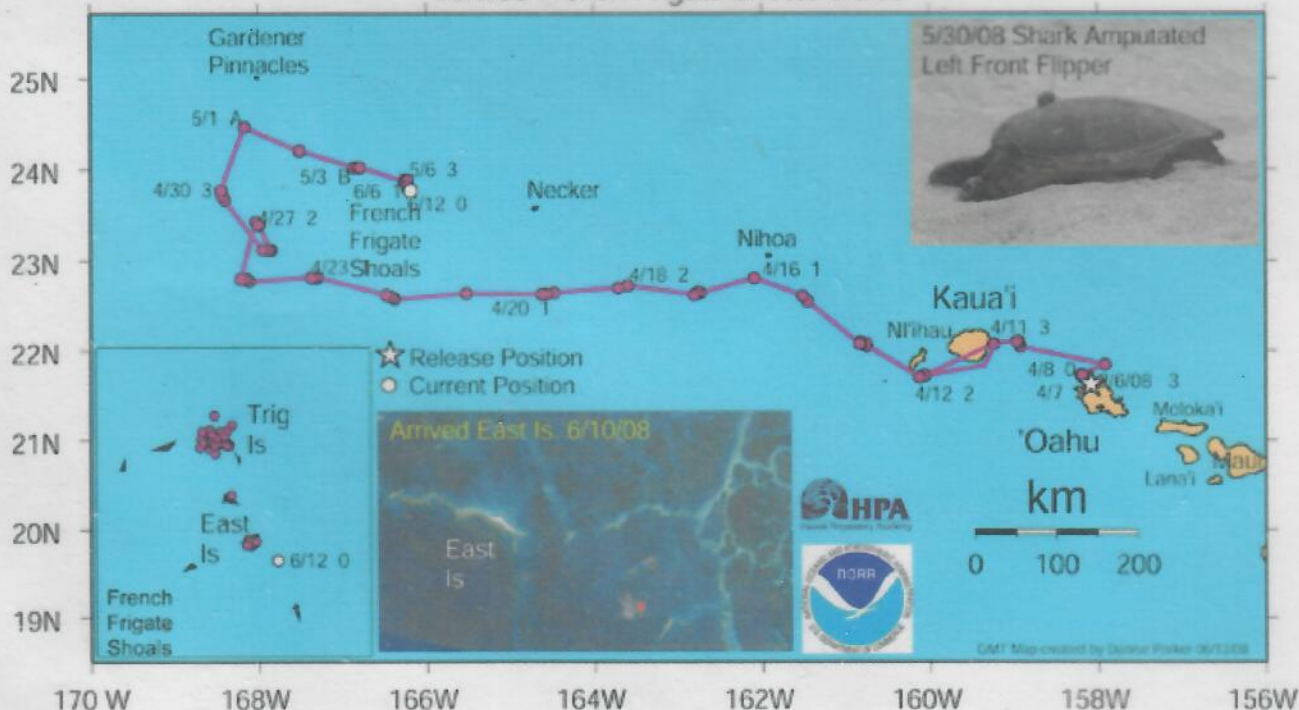
Subj: **6/13/08 mapping update for L18 Laniakea, Oahu adult female basker, Argos ID 23044 at FFS**
 Date: 6/13/2008 9:23:20 AM Hawaiian Standard Time
 From: gbalazs@honlab.nmfs.hawaii.edu
 To: jet92459@yahoo.com, Honudude06@aol.com, laniakea1@aol.com, indyjimk@hawaii.rr.com,
dmz@hawaii.rr.com, cakojima@hawaii.rr.com, jennifer.metz@noaa.gov
 Sent from the Internet (Details)

FYI attached. L18 successfully laid eggs on East Island the night before last.

George H. Balazs, Leader
 Marine Turtle Research Program
 NOAA, National Marine Fisheries Service
 Pacific Islands Fisheries Science Center
 2570 Dole Street
 Honolulu, Hawaii 96822-2396 USA
 Tel: (808) 983-5733
 Fax: (808) 983-2902
gbalazs@honlab.nmfs.hawaii.edu

arrived FFS
 5/6/08
 5/20/08 amp.
 6/10 EAST IS.
 6/11 Egg laying
 6/14 last sat. beep.

Update as of 6/13/08:
 2008 satellite-tracked movements of female green turtle
 Pukalani-Yuka (L18), Argos ID 23044
 ST-24 Duty Cycle: 6 hrs on, 24 hrs off SCL: 87.5 cm Date deployed: 2/6/08
 Days Transmitting since deployment: 121 days
 Days in transit between Laniakea and Trig Is., FFS: 29 days
 Arrived French Frigate Shoals 5/6/08







Star Bulletin .COM



Vol. 13, Issue 20 - Sunday, January 20, 2008

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Reader Poll

New UH football coach Greg McMackin will be paid \$1.1 million a year. Is this ... ?

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Honolulu Lite

Charles Memminger

Why don't turtles cross the road?

North Shore resident Gordon Tilley writes: Charles, a new addition to our North Shore traffic crawl is a newly discovered turtle crossing. Where Lani's (Laniakea) was always a bottleneck during surf season, it's now a perpetual stoplight because of turtles. Now called Turtle Beach, (its) turtles are seeking revenge for our previous years of turtle steak and soup consumption and what better way to punish the local population than traffic jams."

I got excited when I read this note because I thought Gordon was saying that turtles were actually waddling across Kamehameha Highway. That would have given me the chance to ask the exceedingly obvious question, Why did the turtle cross the road?

But it turns out that the turtles are simply hauling out on the beach near the highway at Laniakea, the first major surfing spot you see going north from Haleiwa. Cars and buses have always slowed down there because you get a great view of the waves and surfers without leaving your vehicle.

But now the traffic jam at Lani's is even worse, and for that, I discovered, you can blame "Brutus."

When writing about anything turtle, I consult "Honolulu Lite's" official turtle expert, George Balazs, a turtle biologist working in Hawaii since 1972, currently with the National Marine Fisheries Service.

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Balazs is so familiar with the turtles at Laniakea that he knows the exact turtle that first shuffled onto the sand to sun there: Brutus, a green sea turtle named by a lady who has lived at that beach for 30 years.

It was 1999 when the turtles first started basking at Lani's, George said. And it's weird because until that time, they stayed away from humans. Since almost being wiped out by both ocean predators (i.e., sharks) and land predators (i.e., us), green sea turtles have been a protected species, and their numbers have grown.

"We can't prove it," Balazs said, "but they may be recognizing people as no longer their mortal enemies."

There are about 15 turtles that regularly hang out at Lani's, while another 10 or so sun near Haleiwa Beach Park. On the Kona Coast, it's not unusual to see up to 100 turtles basking on the beaches, something until recently they only dared do in the extreme Northwest Hawaiian Islands.

Nowadays, most people see green sea turtles as "adorable" rather than "tasty," which is why everyone slows down to look at them in their cars. (The people are in cars, not the turtles.)

The fact that the turtles have chosen such a busy beach — humanwise — to sun "flies in the face of deductive reasoning," Balazs said. The turtles are protected by state and federal law from being "taken or harassed," but so far nobody on the beach seems interested in doing either to them. A kid playing around accidentally tripped over one of the turtles once, but he wasn't arrested, imprisoned or anything.

The situation at Lani's "turns out to be a very positive experience for the turtles and the people on the beach," Balazs said. "The traffic? Well, that's a different story."

Buy Charles Memminger's hilarious new book, "Hey, Waiter, There's An Umbrella In My Drink!" at island book stores or online at any book retailer. E-mail him at cmemminger@starbulletin.com

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Columns | Jan. 20

Corky's Hawaii
Corky Trinidad

Kokua Line
June Watanabe

Island Images
S-B Photographer

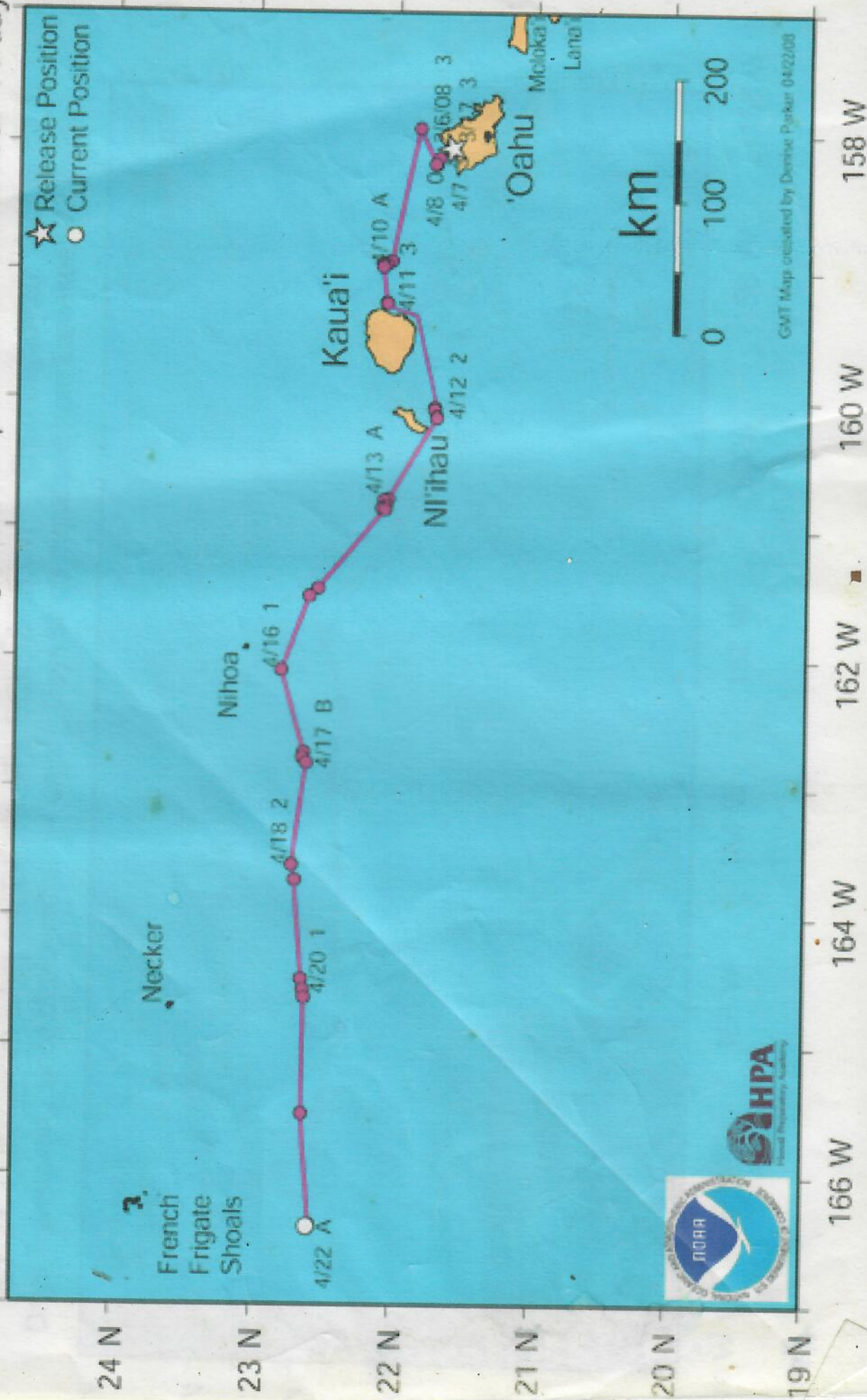
Update as of 4/22/08:

2008 satellite-tracked movements of female green turtle

Pukalani-Yuka (L18), Argos ID 23044

ST 24 Duty Cycle: 6 hrs on, 24 hrs off SCL: 87.5 cm Date deployed: 2/6/08

Days Transmitting since deployment: 76 days Days since departure from Laniakea: 14 days



Subj: Satellite tracking map for Anahulu River Turtle "RT" 10/28/08

Date: 11/3/2008 11:13:15 AM Hawaiian Standard Time

From: gbalazs@honiab.nmfs.hawaii.edu

To: Hondude06@aol.com, laniakea1@aol.com

Sent from the Internet (Details)

Too early to really tell what's going on, except that the turtle isn't going very far from the Haleiwa area. Aloha, George

2008 satellite-tracked movements of Anahulu green turtle "RT", Argos ID 23081
ST-24 Duty Cycle: 6/24 SCL: 59.4 cm
Date deployed: 10/10/08 Days Transmitting: 18 days



158.00W

2130N

Monday, November 03, 2008 America Online: Laniakea1

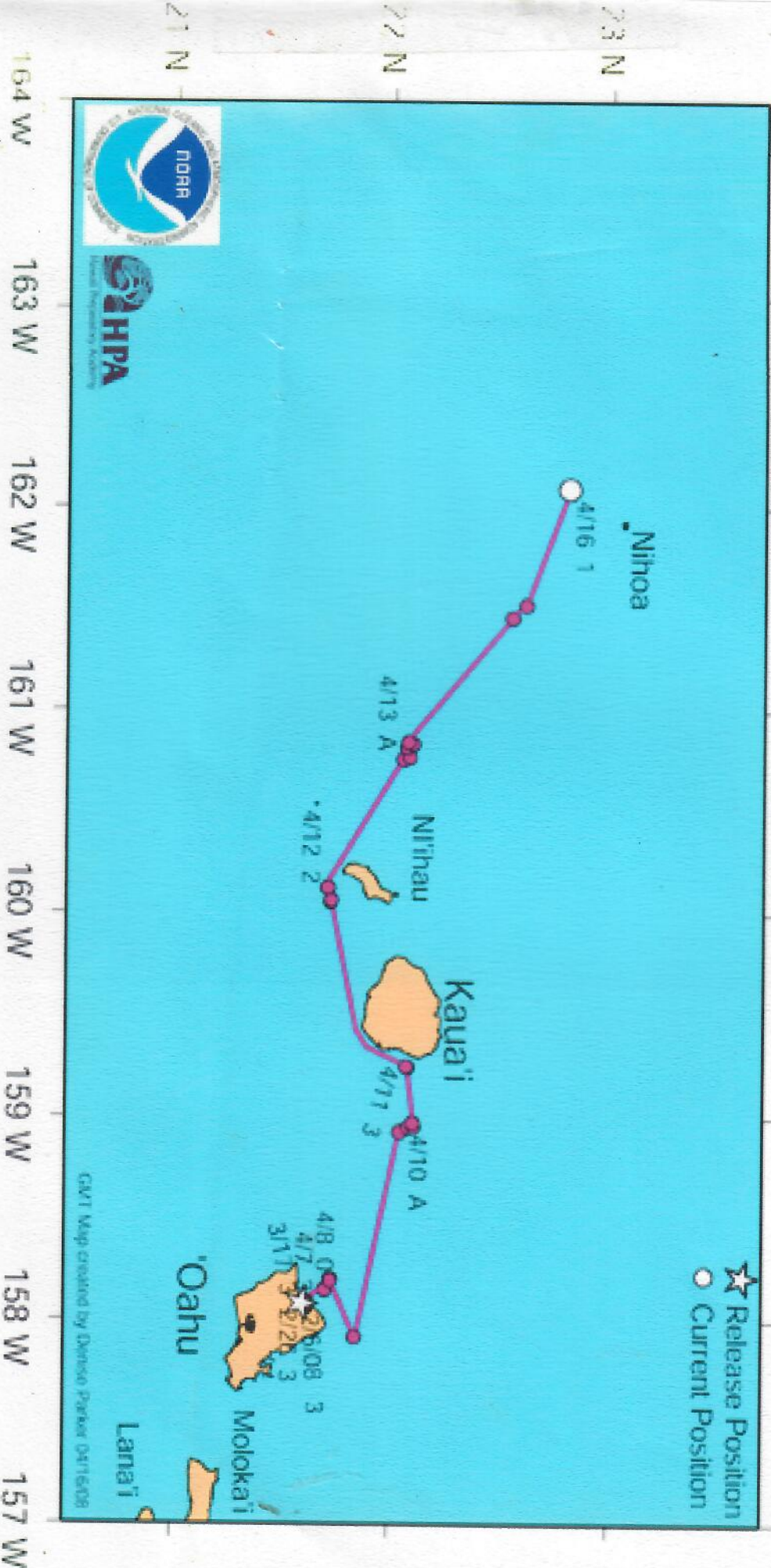
Update as of 4/16/08:

2008 satellite tracked movements of female green turtle

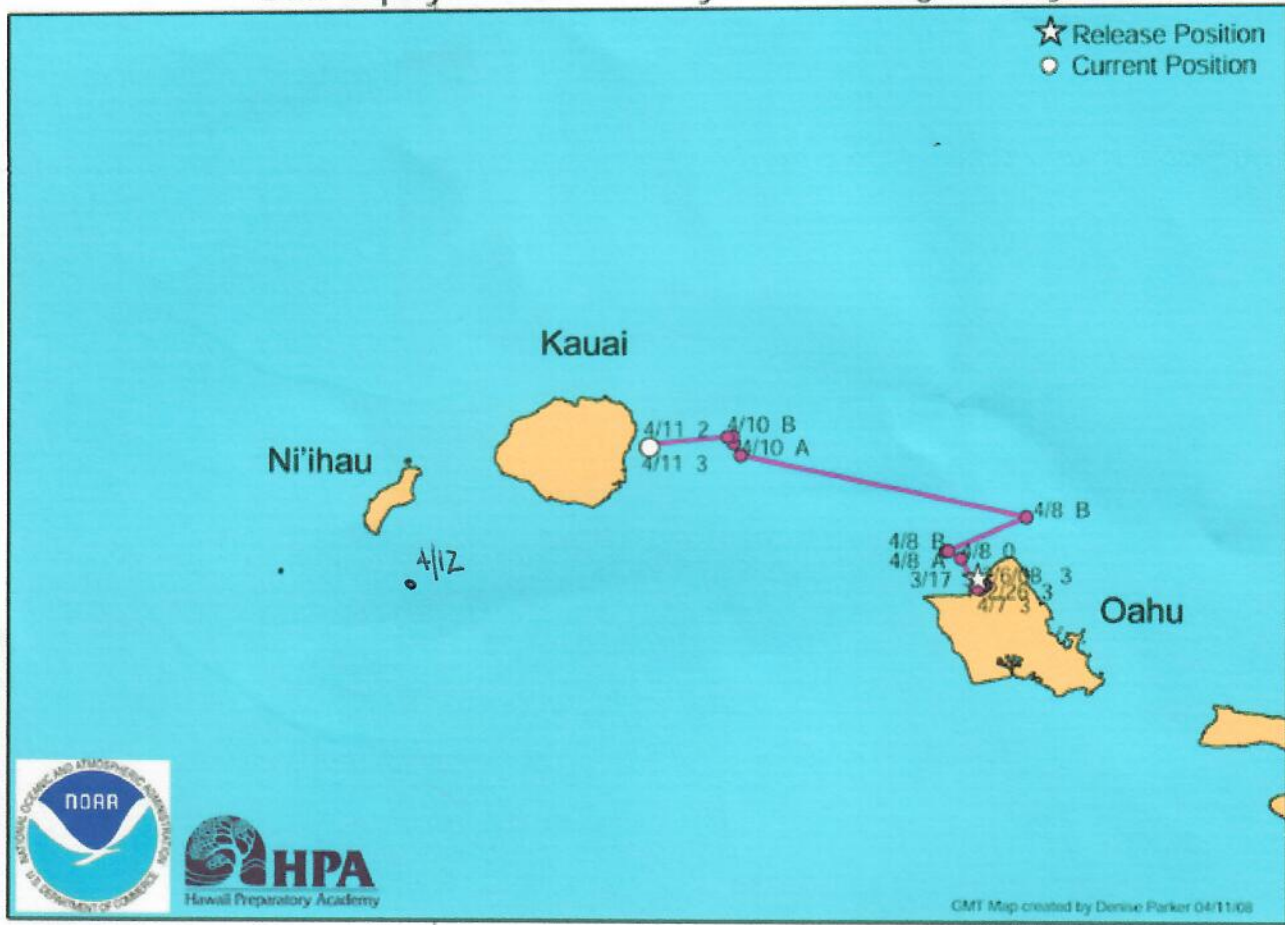
Pukalani Yuka (L18), Argos ID 23044

ST 24 Duty Cycle: 6 hours on, 24 hours off SCL: 87.5 cm

Date deployed: 2/6/08 Days Transmitting: 70 days



Update as of 4/11/08:
2008 satellite-tracked movements of female green turtle
Pukalani-Yuka (L18), Argos ID 23044
ST 24 Duty Cycle: 6 hours on, 24 hours off SCL: 87.5 cm
Date deployed: 2/6/08 Days Transmitting: 65 days



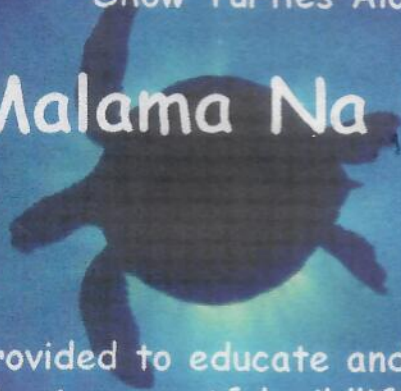
160°W

Volunteers Needed

Seeking congenial people who would enjoy talking to beachgoers and watching over turtles at Laniakea, on the North Shore.

NOAA campaign
"Show Turtles Aloha"

Malama Na Honu



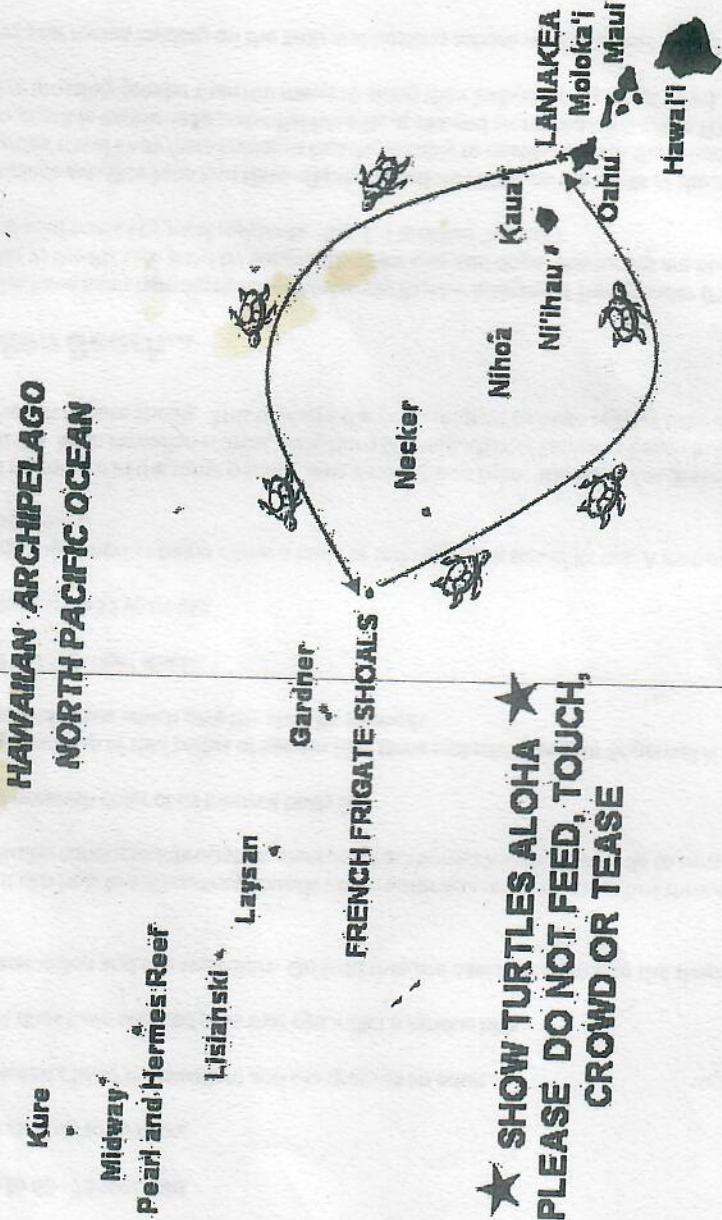
Training provided to educate and inform the public about respectful wildlife viewing.



Volunteers Needed

www.turtles.org/laniakea

Turtles that sleep on the beach and feed in the shallow waters at Laniakea migrate 500 miles to French Frigate Shoals to mate and lay eggs.



**★ SHOW TURTLES ALOHA ★
PLEASE DO NOT FEED, TOUCH,
CROWD OR TEASE**



The Hawaiian Green Sea Turtle...

Did You Know?

- ...is called "honu" in the Hawaiian Language.
- ...is a Threatened Species and is protected under the Endangered Species Act and the Hawaii state law.
- ...has a shell that can grow up to 40" long. Its body can weigh up to 400 lbs.
- ...is estimated to live up to 60 - 70 years old.
- ...can swim in short bursts of up to 20 mph.
- ...feeds primarily on seaweed ("limu" in Hawaiian) and sea grass as an adult.
- ...doesn't have teeth, but does have serrated jaws that can inflict a serious bite.
- ...has excellent underwater vision and can see colors. On land they are nearsighted due to the shape of their lenses which are adapted to seeing underwater.
- ...has no external ears. It can hear low-frequency sounds underwater as a result of vibrations through its skull and eventually to its inner ear. Sound can also be conducted through its shell and backbone, allowing the turtle to sense vibrations on land.
- ...gets its name from the greenish color of its internal body fat.
- ...has an outer shell layer made up of thin plates of keratin (the same material that your fingernail is made out of). Underneath this layer are bones, cartilage and tissue which give the shell its strength.
- ...is mainly preyed upon by large tiger sharks.
- ...becomes sexually mature at 25-35 years old.
- ...when mature, can be distinguished as being either a male or female by the size of its tail. A mature male will have a much longer and thicker tail than a mature female.
- ...will return to nest and reproduce in the same general area where it was born. The Hawaiian green sea turtles at Laniakea, like all green sea turtles here in the Main Hawaiian Islands, were born 500 miles NW of Laniakea beach in the Northwestern Hawaiian islands on the beaches of the French Frigate Shoals. This is where the honu migrate to mate and lay their eggs.

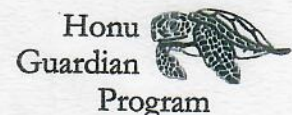
Here at Laniakea Beach...

- ...20 basking green turtles have been harmlessly identified using Passive Integrated Transponder (PIT) tags in their hind flippers for research purposes similar to the PIT tags used by veterinarians for cats and dogs. The turtles are numbered L-1 through L-20 and some have been given personalized names by local residents. (i.e., L-1 is called "Brutus")
- ...periodically scientists place **satellite tags** and **time-depth recorders (TDR)** on the shells of the turtles. The satellite tags will enable scientists to track the turtles' travel away from Laniakea beach, possibly to nesting sites in the French Frigate Shoals. These devices will also provide insight into possible exposure to potential hazards at sea and along coastlines. The TDRs will provide information about how deep the turtles dive (possibly greater than 100 meters!) along their individual routes of travel.
- ...the turtles can be found year round, feeding on the limu and basking ashore when the surf is not high.
- ...scientists believe that the honu likely come for the abundance of natural food and the safety of the cove.
- ...most of the turtles are at least 20 years old.
- ...the turtles have been basking ashore since 1999.
- ...the turtles usually come onto the beach in the afternoon hours.

Show Turtles Aloha

- State and Federal laws prohibit harassment of sea turtles
- Observe sea turtles from a distance
- Do not touch, feed, harass or tease sea turtles

For more info on sea turtles/volunteering:
www.fpir.noaa.gov





“Old Injury – I’m Fine Now”

The short story of Hawaiian Honu “L2” sleeping ashore at
Laniakea’s HonuLani Beach

“L2”, as she is affectionately called, is a large female sea turtle that can regularly be found basking on the beach at Laniakea on the North Shore of Oahu. Quite a few turtles come here to sleep ashore and feed on seaweed in the shallow waters. The turtles seem to happily share the sand and sea with hundreds of people that also come here daily for surfing and sightseeing. L2 has a fissure or “crack” on the top of her shell resulting from an old, healed injury. The fissure has completely mended from inside the turtle’s body. Although the grooves and scar tissue detract from L2’s beauty, she is healthy in every other way.

While no one knows for sure, L2’s injury was most likely caused by a speeding boat colliding against her shell. It’s amazing, and a great credit to a sea turtle’s will to survive, that she didn’t die from this bad accident. L2 was treated by our sea turtle veterinarian, Dr. Robert Morris, in December of 2001. At that time L2’s injury had already begun to heal and was probably more than 6 months old. L2 was taken to Dr. Morris’ veterinary hospital to have the broken portion of the shell repaired with an acrylic dental patch. She was returned to the ocean and several months later the patch started to shed as the injury continued to heal from within.

In June of 2002, L2 surprised everyone when she was seen nesting and laying eggs 500 miles northwest of Laniakea at French Frigate Shoals. L2 was healthy enough to swim like other turtles on an ocean migration to this famous Hawaiian sea turtle breeding site northwest of Kauai. Later in the summer she returned to Laniakea, thereby accomplishing a round-trip voyage of 1000 miles or more. Since most adult female sea turtles in Hawaii only breed once every 3 years, it’s very possible that L2 will migrate again to French Frigate Shoals in 2005. So if you see L2 asleep on the beach at Laniakea, please let her rest in peace—she has a long trip ahead of her.

By Cody Hooven and George Balazs

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<http://www.turtles.org/nmfs>

nested again in 2006 ?

Update as of 7/19/06:
2006 satellite-tracked movements of male green turtle Lopeka (L7), Argos ID 24193
ST-24 Duty Cycle: 6 hours on, 48 hours off SCL: 91.2 cm
Date deployed: 3/6/06 Days to last Transmission: 126 days



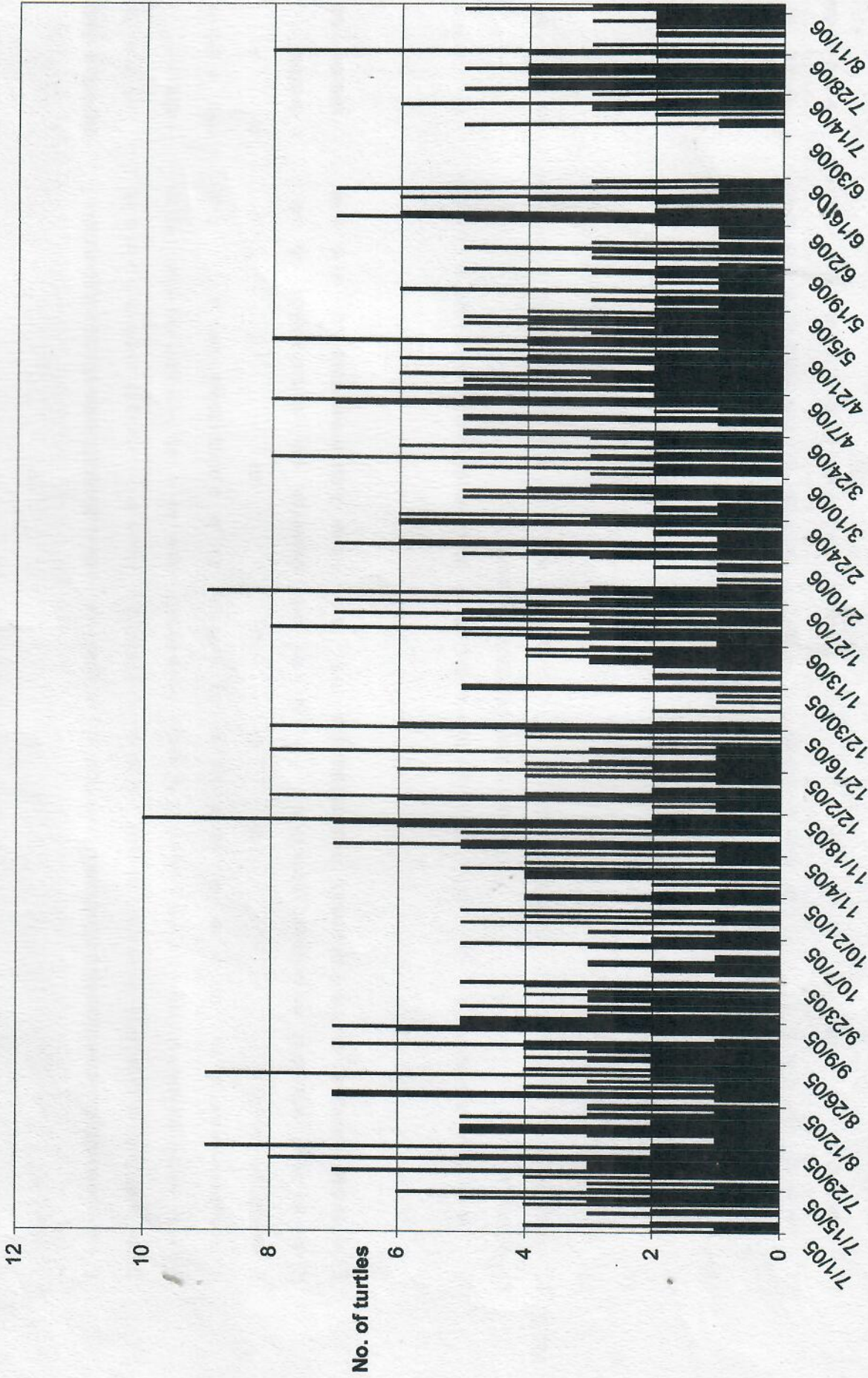
L - 7

Satellite-tracked movement

Laniakea Beach Census Sheet

Date	Time	Turtles				People		Notes
		# basking	Place on Beach (Shoreline, Mid, Rock Shelf)	ID (i.e., L1, L2, etc.)	# on-beach <i>(in water)</i>	# on beach	# in ocean	

Daily Number of Basking Turtles Observed at Laniakea on Oahu's North Shore 7/7/05 to 08/13/06

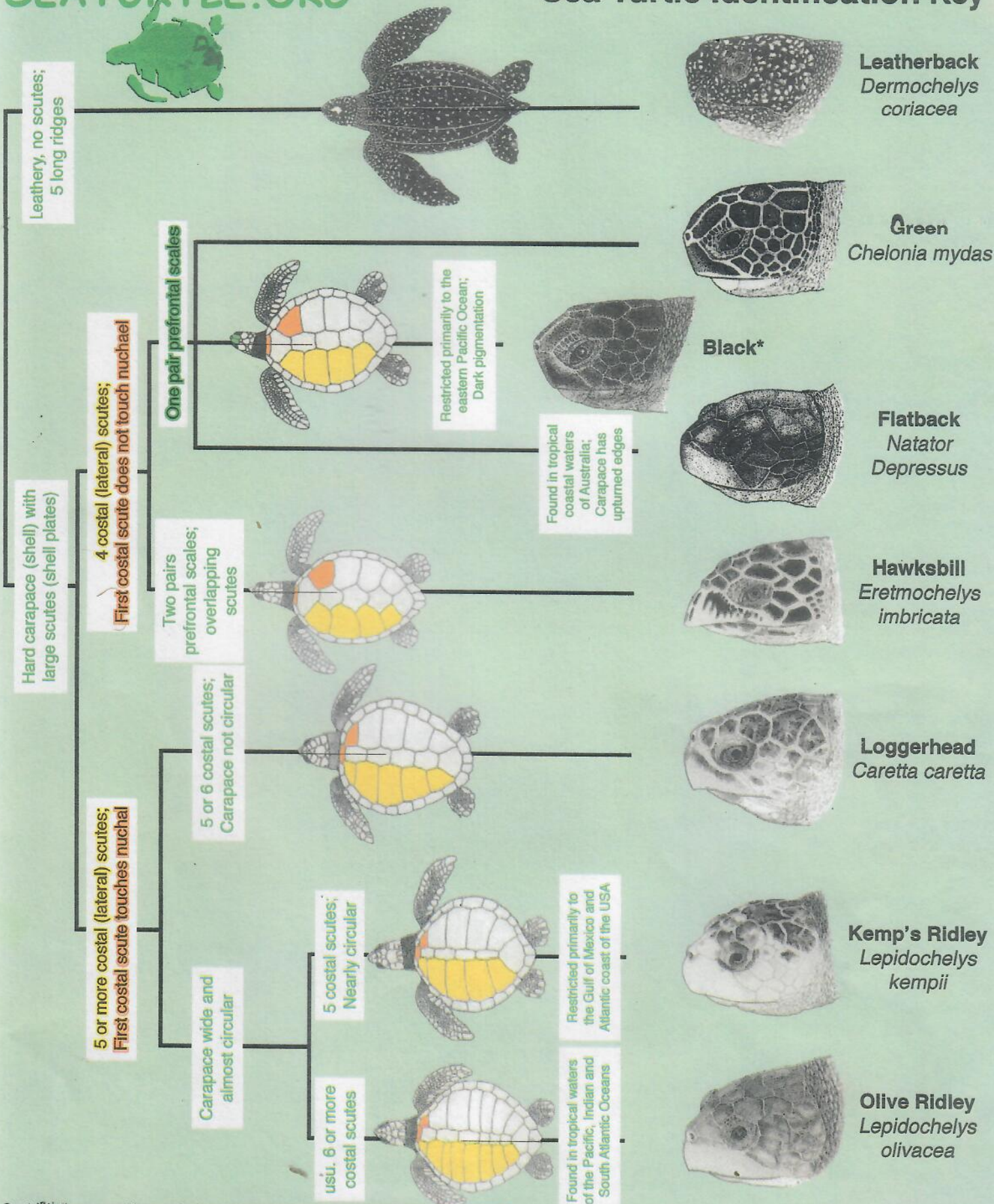


Marine Turtle Research Program
 Pacific Islands Fisheries Science Center
 NOAA National Marine Fisheries Service
 2570 Dole Street
 Honolulu, Hawaii 96822-2396

Laniakea_basking_data.as.of July 2005
 09/28/06 CBH

Numbers of days individual turtles were observed basking N= 222 days of observation (7/7/05-2/13/06)





Sea turtle figures used by permission of the Marine Turtle Specialist Group (iucn-mtsg.org)
 Source: Pritchard, P. C. H. and Mortimer, J. A. (1999) Taxonomy, External Morphology, and Species Identification. pp. 21-38. In: Eckert, K.L., K.A. Bjorndal, F.A. Abreu-Grobois, and M. Donnelly (Editors). 1999. Research and Management Techniques for the Conservation of Sea Turtles. IUCN/SSC Marine Turtle Specialist Group Publication No. 4. (for further details see <http://www.seaturtle.org/publications.htm>)
 Illustrations by Tom McEvoy

Species Descriptions

Last updated: 30 May 2005

<u>Common Name</u>	<u>Spanish Name</u>	<u>Scientific Name</u>
Leatherback	Baula, Tortuga Laúd, Tora	<i>Dermochelys coriacea</i>
Color dark gray/black with white spots	Carapace	tapered; leathery with 5 ridges
Max Length 165 - 190+ cm	Plastron	relatively small
Max Weight 400 - 500 kg	Head	tooth-like notch on either side of upper jaw; no scales
Range all oceans, subarctic to tropical; pelagic		
Green Turtle	Tortuga Verde, Tortuga Blanca	<i>Chelonia mydas</i>
Color J: radiating streaks; A: brown, buff	Carapace	4 costal scutes
Max Length 120 cm	Plastron	yellowish; 4 inframarginal scutes
Max Weight 230 kg	Head	round face; serrated jaw; 1 pair elongate prefrontal scales
Range all subtropical and tropical seas; bays and coastal waters		
Black Turtle*	Tortuga Negra, Prieta	<i>Chelonia mydas</i>
Color black or grayish with black markings	Carapace	4 costal scutes
Max Length 90 cm	Plastron	cream to gray; 4 inframarginal scutes
Max Weight 150 kg	Head	round face; serrated jaw; 1 pair elongate prefrontal scales
Range East Pacific Ocean; bays and coastal waters		
*The status of the Black turtle or east Pacific green turtle, sometime referred to as <i>Chelonia agassizii</i> or <i>C. mydas agassizii</i> , remains uncertain. Recent genetic evidence supports an Atlantic-Mediterranean vs. Indian-Pacific grouping, while morphological and behavioral data suggest an east Pacific species or subspecies.		
Flatback Turtle	Kikila, Tortuga Franca Oriental	<i>Natator depressus</i>
Color olive grey	Carapace	4 costal scutes; broad and round; upturned margins
Max Length 100 cm	Plastron	yellowish; 4 inframarginal scutes
Max Weight 90 kg	Head	preocular scale; wide; flat; triangular
Range tropical coastal Australia		
Hawksbill Turtle	Tortuga Carey	<i>Eretmochelys imbricata</i>
Color amber and brown streaks	Carapace	4 costal scutes; (usually) overlapping scutes; oval
Max Length 90 - 110+ cm	Plastron	cream with dark blotches front and rear; 4 inframarginal scutes
Max Weight 80 kg	Head	curved beak; distinct overbite; 2 pair prefrontal scales
Range all oceans; tropical waters; reef areas		
Loggerhead	Caguama, Amarilla, Cabezona, Tortuga Boba	<i>Caretta caretta</i>
Color red brown to brown	Carapace	longer than wide; 5 or more costal scutes, first very small
Max Length 90 - 110 cm	Plastron	yellow to orange, 3 inframarginal scutes
Max Weight 100 - 180 kg	Head	large head; 4 or more prefrontal scales
Range all oceans; primarily temperate waters; near shore, often associate with structures (i.e., wrecks, platforms)		
Kemp's Ridley	Tortuga Lora, Cotorra	<i>Lepidochelys kempii</i>
Color gray to light olive green	Carapace	round; 5 (sometimes 6) costal scutes
Max Length 70 cm	Plastron	white to yellow; 4 inframarginal scutes with pores
Max Weight 40 - 50 kg	Head	triangular; relatively large; 2 pair prefrontal scales
Range Gulf of Mexico, eastern USA; coastal; < 16° N		
Olive Ridley	Tortuga Golfina, Tortuga Olivacea, Parlama	<i>Lepidochelys olivacea</i>
Color gray to olive green	Carapace	nearly round; 6 - 9 costal scutes, number may be asymmetrical
Max Length 70 - 80 cm	Plastron	cream/white; 4 inframarginal scutes with pores
Max Weight 45 - 60 kg	Head	triangular; relatively large; 2 pair prefrontal scales
Range tropical waters of Pacific, Indian and South Atlantic Oceans; pelagic		

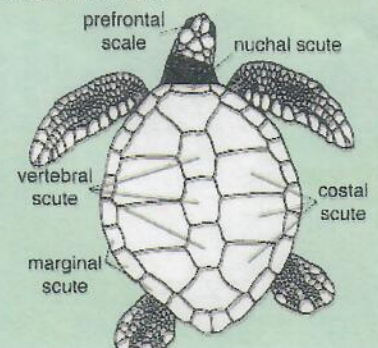
Produced in cooperation with:



Report sea turtles sighted during REEF surveys as an additional species on the back of your survey report form. Visit <<http://www.reef.org/data/seaturtle.htm>> for more information.

SUGGESTED REFERENCES

- Bjorndal, KA (Editor). 1995. *Biology and Conservation of Sea Turtles (Revised Edition)*. Smithsonian Institution Press, Washington, DC.
- Eckert, KL, KA Bjorndal, FA Abreu-Grobois, and M Donnelly (Editors). 1999. *Research and Management Techniques for the Conservation of Sea Turtles*. IUCN/SSC Marine Turtle Specialist Group Publications No. 4.
- Lutz, PL, and J Musick (Editors). 1996. *The Biology of Sea Turtles*. CRC Press, Boca Raton, Florida.



A SON OF MAUI IS "UNCLE OF ALL LIFE"

by David S. Boynton

Standing there in the framework of his old boat house on the beach at Paia, on the Island of Maui, Rene Sylva gestured toward the fishing grounds that put food on many a neighborhood table.

"Hawaiians were very observant," he explained. "They named everything, the landmarks, big rocks, parts of the reef. There were over 1,000 native plants and every one had a Hawaiian name.

"As fishermen, we know most things go by the season. Plants have their flowering seasons. Animals have their seasons too. When enenui come in full of eggs, some plant is in flower. When akule come in, some other plant is in flower.

"We watch the flowering seasons. When the hau comes in flower, first there are a few flowers, then plenty flowers. Fish are the same; first a few come in, then the big schools. Manini in February or March, akule in June, lobster in July, enenui in September... When you know the seasons, all you have to do is look at what plant is in flower and then you know what fish to go for."

Looking down the beach, Rene was the old man of the sea - strong hands, a rugged man with white hair against dark tanned skin, replaying images from earlier decades when life was simpler and fish were plentiful. "My brothers were fishermen, too. We were kind of aggressive, but there was so much back then." Fish populations were wiped out, he believes, because fishing methods and equipment have become so much more efficient, especially since the 1950s.

In Rene's youth, eight or ten canoes were pulled up along the shoreline in front of the Portuguese-Hawaiian family's beach-front home and the style of fishing was not much different from the days of the old Hawaiians. "With a canoe, we wouldn't go out on a day like this," said Rene, as we watched half a dozen youngsters surfing chest-high waves.

Later came flat-bottomed skiffs that were rowed through the surf, and then outboard motors. "Eighteen horsepower was the biggest, and they had exposed spark plugs, so once the water washes up on the engine, you're down. It was just small-time fishing back then."

Fishing nets were made of cotton, and they would rot after three years use. Later there came linen nets, then nylon and monofilament nets that last for years without any care. "The old-timers had to patch their nets. All day long they would be patching nets. Now, they just cut out the bad sec-

tion, put in a new one. Not like before."

"There were plenty of fish until the 1950s. During World War II, they had shut off fishing. Especially the Japanese couldn't go fishing. Schools of fish were breeding because hardly anybody was out there, nobody going out in boats. The war had shut the shoreline off to most fishing, and also most of the men went off to war. So much fish. I've never seen that again. And the turtles!"

The turtles, green sea turtles weighing up to several hundred pounds, once so plentiful, are now a threatened species. "Turtle meat was what I liked to eat most," said Rene, as he described how they used to put turtle meat with a few pieces of the juicy green fat between two turtle shells, add some chopped vegetables and spices, and cook it all in the imu.

Rene said he had caught well over a thousand turtles in his time. Some days they would catch eight or ten turtles, most weighing 200 - 300 pounds. His fishing partners wanted to keep the whole catch, but Rene believed the younger turtles should have a chance to grow up to breeding size, and often he would throw back the small ones under a hundred pounds.

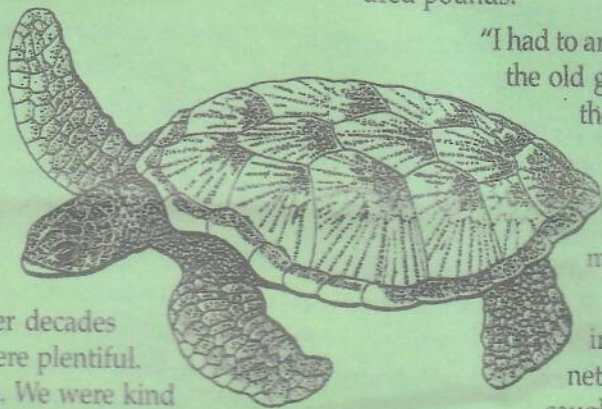
"I had to argue with the other fishermen, especially the old guys. But it was my boat, my nets, so if they don't go by my rules, they're not going to eat turtles. Indecision is a great destroyer. So finally I'd just say: 'No argument. If you like go fishing with me, we do it my way.'"

Over the years, Rene began to increase the size of the eye in his turtle nets so that the smaller ones wouldn't get caught. He also put on just a small amount of lead to hold the net down, and lots of floaters on the top line. This way, turtles that were caught could rise to the surface to breathe, and the smaller turtles would still be alive and healthy when they were released.

When the number of turtles took a dive in the early 1970s, government hearings were held to regulate turtle fishing, and to consider listing the green sea turtle as an endangered species.

At the hearings on Maui, Rene said "there was a whole bunch of turtle fishermen and they were angry." It took some bravery on his part, but Rene got up in front of the crowd and voiced his support for strong regulations on turtle fishing "even though I was the biggest turtle fisherman." The proposed rules would allow a person to catch one turtle with a permit, over 30" in shell length so the turtle would reach breeding size, with nets and bang sticks prohibited.

To Rene, that was not enough. "If you're going to protect the turtles, you've got to protect them 100%. Allowing fishermen to catch one turtle leaves the opportunity for cheating.



"We're always blaming someone or something else, but the reason we were losing the turtle was because of guys like me. If I only need two but we catch five, we would slaughter all five. And the guys selling turtle commercially, that was also a problem."

With prohibition of turtle fishing about to become law, Rene burned all his turtle nets. "My friends told me 'Why not sell them so you can get some cash?' But if I sell, then someone else is going to catch turtle. Might as well just get rid of the nets."

A few fishermen are still strongly opposed to laws that prohibit turtle fishing, especially native Hawaiians who believe the laws violate their cultural rights to gather and collect food from the sea.

One thing for sure, since the laws were passed, there has been a great increase in the number of turtles, but most of these have not reached sexual maturity. Because green sea turtles don't breed until they are 20 - 25 years of age, it's going to take a while before a strong breeding population is established.

"Everybody had the idea that there's no way you could fish out the ocean, look how big it is. But you can, maybe not the whole ocean, but look what's happened in our island waters."

Ancient Hawaiians opened and closed fishing areas and seasons under the kapu system, and Rene believes we should try a modern version, the "moving reserve." This modern-day kapu has been tried with good success near Diamond Head on O'ahu.

"Take some areas, maybe a mile or two long and half a mile out to sea, close the fishing there for two or three years, give everything in that area a chance to grow up and breed. This way, a whole, complete breeding cycle has been saved." The kapu area would then be reopened, during the winter when fishing conditions are rough, and the next area of shoreline would be closed. Eventually, the kapu would be returned to the original location and the cycle would begin again.

For Rene Sylva, fishing was the skill of his past, but he is known better now for his work with propagating and preserving native plants. In the 1970s, he developed a thriving landscape of native Hawaiian plants, including many endangered species, at the Maui Zoo. Since then, he has provided thousands of native seedlings for other reforestation projects on Maui and Kaho'olawe.

"We've got to do something to save the native plants," he said. "The result of doing nothing is nothing. But let's do it right from the beginning, give the plants a good fighting chance of survival."

In some revegetation projects, trees have been planted "like troops on a parade field, all in even rows. But nature is not like that. Plant them in a natural way, not all in a row.

"There are lots of people who want to save native trees, but what about the herbs, creepers, shrubs, grasses, sedges,

and ferns underneath the trees? They're important too. These small plants provide habitat for insects, which pollinate flowers and break down leaves. It's also bird habitat, and the birds help to pollinate flowers, and disperse seeds. Eventually, you create a diverse forest."

Rene has been frustrated at the use of non-native species on some revegetation projects, especially on Kaho'olawe where hardy alien trees are being planted. In 1985, he planted 37 different native plant species on Kaho'olawe for the Navy. Some survived, others didn't. "Kaho'olawe will tell us what's working," he explained. "We should use only native plants at native sites. Let's keep it as authentic as you can get it. What if a contractor used hollow tile bricks to make a heiau because it's easier than using rocks? It wouldn't be right. Same thing with plants.

"Why use introduced species? Tamarisk is an Asian tree. Ironwood is also introduced. Look at ironwood, you won't see plants growing under it, or bird nests in it. It's an anti-social tree. We should be smarter now, but we're not. To me, ironwood is a botanical mongoose."

For the time being, Rene is focusing his efforts at creating a diverse native landscape around his home in Paia. He says it will be a seed source, but also "It's mostly for education so people can learn, so they don't have to go into the forest and cut things. People need to learn it right from the beginning, or they'll develop bad habits. People shouldn't dig up plants from the forest. When they do, they always take the biggest ones. The babies get exposed to the sun, so they'll probably die."

Over the past 25 years, Rene has become skilled at propagating native plants from seed, and he's always willing to share with others. "There's a right way to collect plants, and to grow them," he explained. "When you plant native plants, give them a good start but then they should be able to make it on their own. They shouldn't be given too much fertilizer, or too much water." If they grow too fast, he cautions, they won't be able to survive the hard times, such as periods of drought.

Rene would like to see as much concern about native plants as there is on archaeological sites when an area is going to be developed.

"Plants don't get much credit, but think of the ancient fisherman. His canoe, his sail, paddle, nets, fishing lines and ropes were all made of plants. He couldn't go fishing without plants. Plants played a major role in Hawaiian culture; we need to recognize their importance."

Rene will never really be retired. He works for nature, doing something more than just talking about his deep concern for recovering disappearing native plants. Stewardship is in his blood, and the islands' natural environment is a better place for it.



Sea Turtles' Mystery Hideout Revealed



AFP/File Photo: Injured and weak day-old Olive Ridley sea turtles are put in a nursery pond in...

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Jeanna Bryner
LiveScience Staff Writer
[LiveScience.com](#)

Wed Sep 19, 12:25 AM ET

Once sea-turtle hatchlings hit the surf, they vanish for up to five years. Where the size tots spend these "lost years" while ballooning to the size of dinner plates has mystery, until now.

New research, published today in the online edition of the journal *Biology Letters*, indicates the green sea turtles (*Chelonia mydas*) hide out in the open ocean, where they feast on jellyfish and other marine creatures.

Not only did the researchers spot their short-lived sea homes, but they discovered that these reptiles, thought to be lifelong vegetarians, are actually meat eaters as juveniles.

The results help to solve a 50-year-old mystery about the hideouts. "This has been a really intriguing and embarrassing problem for sea-turtle biologists, because so many green-turtle hatchlings enter the ocean, and we haven't known where they go," said student member Karen Bjorndal, a zoologist and director of the University of Florida's *Arnold Center for Sea Turtle Research*.

Before this study, scientists had two "snapshots" that provided scant clues about information on the lives of green turtles: When they hatch, the 2-inch-long (5-cent turtles push through seemingly colossal surf. Then, between three and five years now juveniles reappear closer to shore.

"Literally, when green turtles run off their nesting beach and into the ocean as little they disappear. And nobody sees them again [for years]," Bjorndal told LiveScience.

The scientists collected samples from the shells of 44 green sea turtles at a site inagua in the Bahamas. They analyzed heavy and light stable isotopes of carbon from both the oldest (earliest-grown) and newest sections of the shells. The isotopes

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fingerprints for an animal's diet (carnivore or herbivore) and where in the ocean it lived.

The results indicated the green sea turtles spent their lost years in the deep ocean carnivores, before moving closer to shore and switching to a vegetarian diet of sea

The findings have implications for conservation of the green turtles, because as E explained, "you can't protect a species if you don't know where it is."

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The New, Old Leopard  at The New Times (reg. req'd), Mar 16

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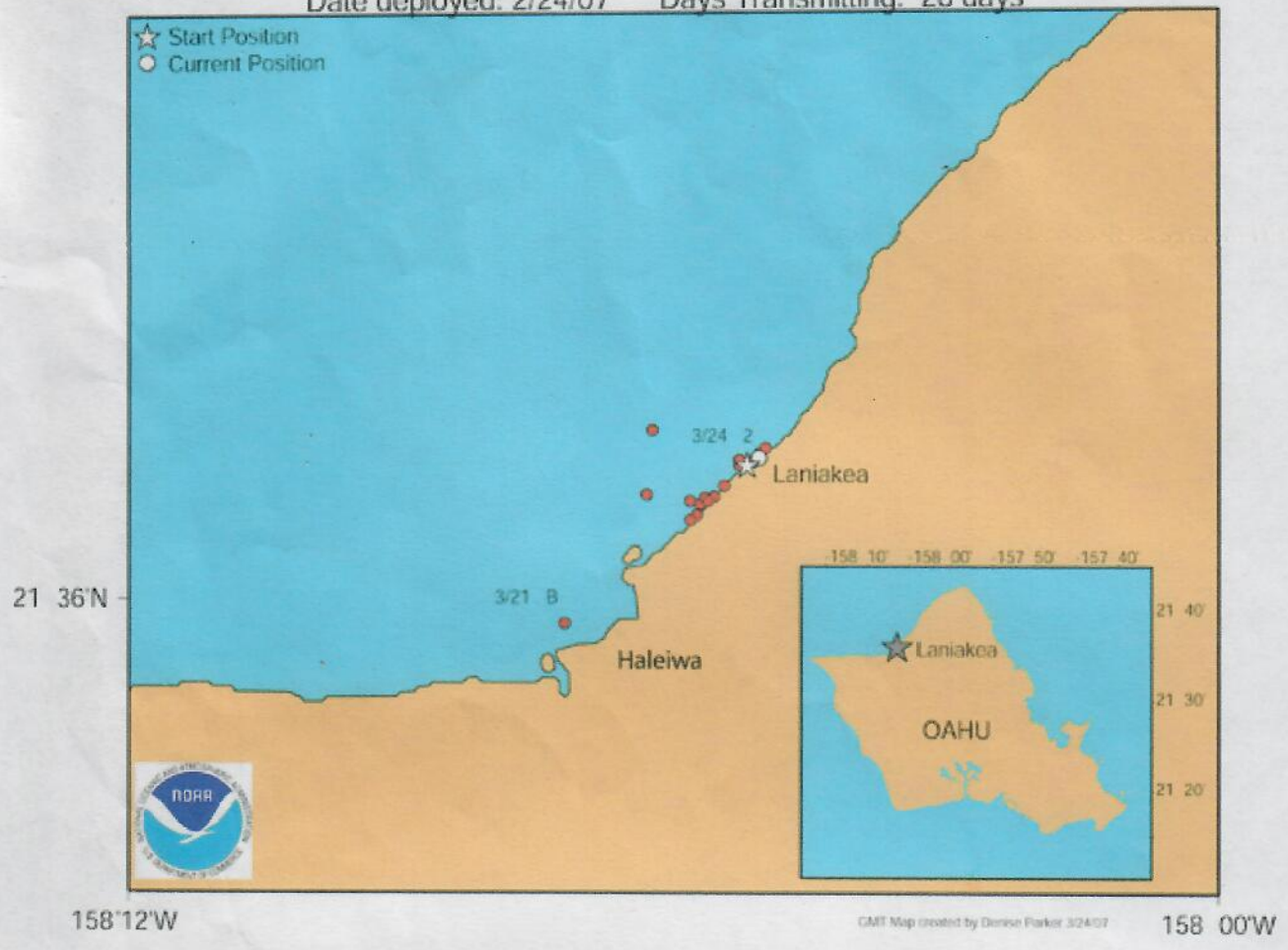
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Watching the eastern Gulf of Mexico weather.com

Update as of 3/24/07:
2007 satellite-tracked movements of female green turtle Olivia-Dawn (L4), Argos ID 29066
ST-24 Duty Cycle: 6 hours on, 24 hours off SCL: 87.4 cm
Date deployed: 2/24/07 Days Transmitting: 28 days



Subj: **3/24/07 mapping update for our 3 satellite/TDR tagged Laniakea turtles- so far no one has left for French Frigate Shoals**

Date: 3/25/2007 12:40:07 PM Hawaiian Standard Time

From: gbalazs@honlab.nmfs.hawaii.edu

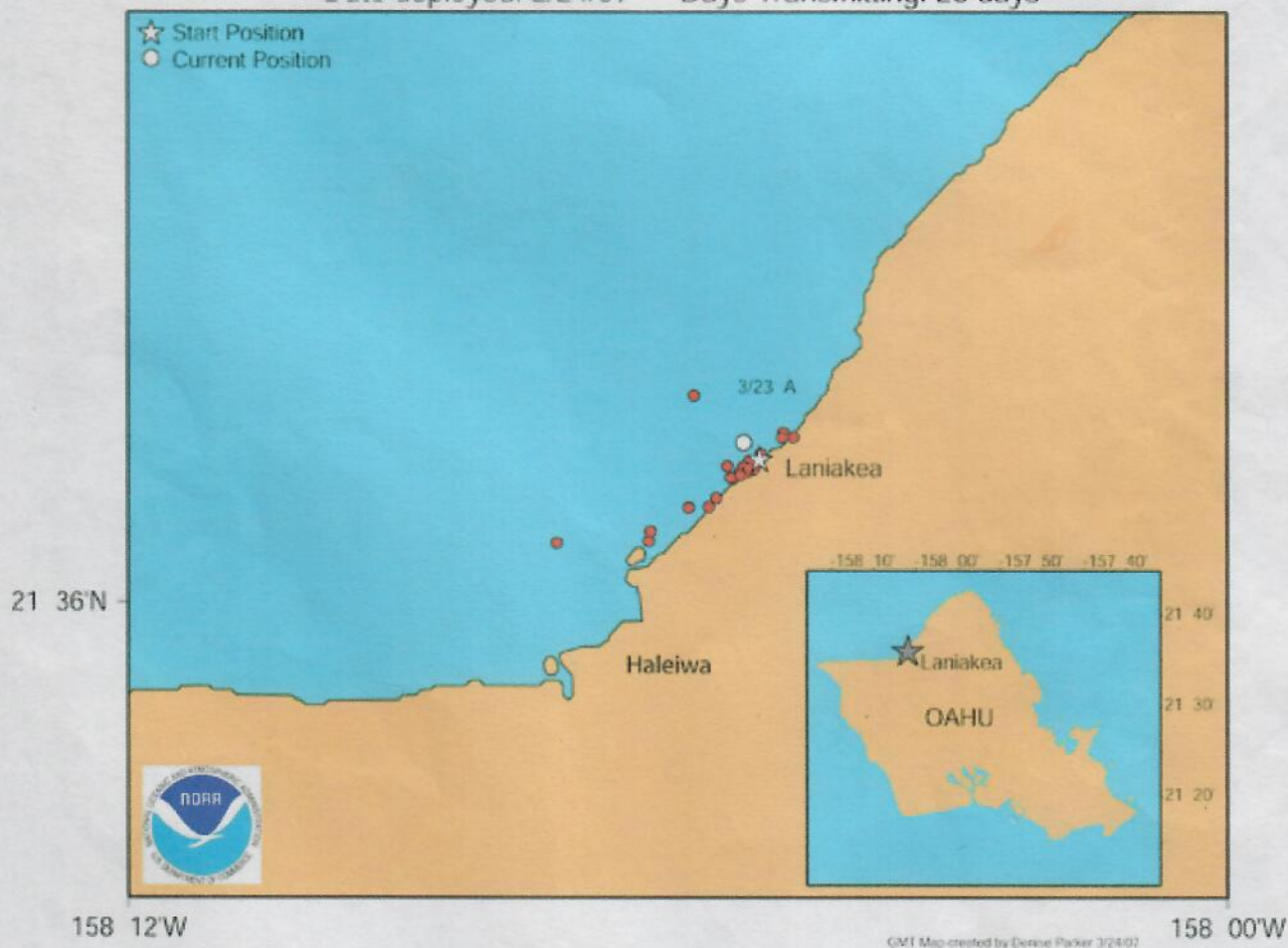
To: brandee.gerke@noaa.gov, jennifer.metz@noaa.gov

CC: Kimberly.Maison@noaa.gov, laniakea1@aol.com

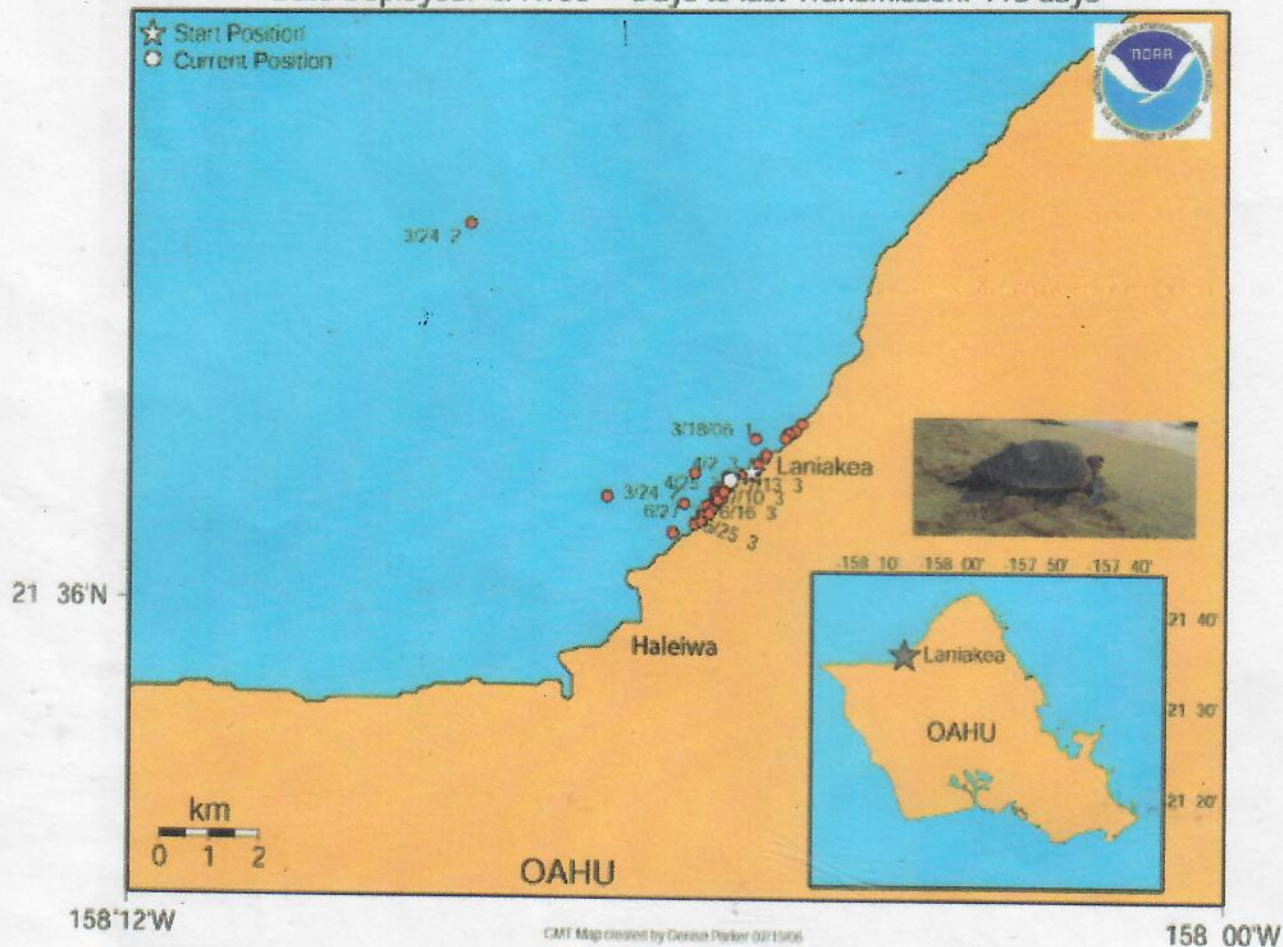
Sent from the Internet ([Details](#))

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 2570 Dole Street
 Honolulu, Hawaii 96822-2396 USA
 Tel:(808) 983-5733
 Fax:(808) 983-2902
gbalazs@honlab.nmfs.hawaii.edu

Update as of 3/24/07:
 2007 satellite-tracked movements of male green turtle Brutus (L1), Argos ID 19603
 ST-24 Duty Cycle: 6 hours on, 24 hours off SCL: 85.3 cm
 Date deployed: 2/24/07 Days Transmitting: 28 days



Update as of 7/19/06:
2006 satellite-tracked movements of female green turtle Pukalani-Yuka (L18), Argos ID 23569
ST-24 Duty Cycle: 6 hours on, 48 hours off SCL: 86.6 cm
Date Deployed: 3/17/06 Days to last Transmission: 118 days



L-18

Satellite-tracked movement

ID GUIDE TO LANIAKEA'S BASKERS

- L1 (BRUTUS) Adult Male- White "1" on L&R shell; Left hind flipper 1/3 amputated.**
- L-2 (HIWAHIWA) Adult Female- Prominent 5-year old healed injury (crack) top of shell.**
- L-3 (SAPPHIRE) Adult Female- Very faint fiberglass remnant bottom of left side of shell.**
- L-4 (DAWN) Adult Female- Rectangular Time-Depth computer box glued to left side of shell.**
- L-5 (ISABELLA) Adult Female- Right eyeball is missing under eyelid (old injury).**
- L6 (OAKLEY) Subadult- Clear plastic disk glued to left side of shell.**
- L7 (WOOLEY BULLY/ LOKELA) Adult Male - White "L7" on L&R shell; Satellite tag glued to shell.**
- L10 (SQUIRT) Subadult -- Very faded fiberglass remnant bottom left side shell. Left and Right lateral scutes missing and healed on either side of tail(double "scallop")**
- L11 (T-BOY) Adult Male- Modest eye tumors treated with drug Dermex Oct 2005.**
- L12 (MISSY) Adult Female- No distinguishing features. Very rounded carapace.**
- L15 (MANAGIRL) Adult Female- Never known to bask, but commonly seen near shore feeding; Remnant of rectangular Time-Depth computer box glued to left side of shell.**
- L18 (PUKALANI) Adult Female- White "L18 on L&R shell; Satellite tag glued to shell.**
- L19 (SCALLOP)-Subadult- has "scalloped" edge to right rear lateral shell.**
- L20 (HONEYGIRL) - Shell is a distinctive "honey" tortoise shell color.**

20100 ID GUIDE TO LANIAKEA BASKERS

L-1 (**BRUTUS**) ADULT MALE- WHITE "1" ON L & R SHELL; SATELLITE TRANSMITTER REMOVED MAY,2007, LEAVING FIBERGLASS ON TOP OF SHELL. LEFT HIND FLIPPER 1/2 AMPUTATED.

L-2 (**HIWAHIWA**) ADULT FEMALE- PROMINENT 5 YEAR OLD HEALED INJURY (CRACK) ON TOP OF SHELL.

L-3 (**SAPPHIRE**) ADULT FEMALE – VERY FAINT FIBERGLASS REMNANT ON BOTTOM LEFT SIDE OF SHELL. VERY ROUNDED SHELL.

L-4 (**OLIVIA-DAWN**) ADULT FEMALE- RECTANGULAR TIME-DEPTH RECORDER (TDR) ON LEFT SIDE OF SHELL

L-5 (**ISABELLA**) ADULT FEMALE- RIGHT EYEBALL IS MISSING UNDER EYELID (OLD INJURY). VERY ROUNDED SHELL.

L-6 (**OAKLEY**) SUBADULT-LEFT AND RIGHT LATERAL SCUTES MISSING AND HEALED ON EITHER SIDE OF TAIL. A SQUARE NOTCHED SCUTE PIECE MISSING ABOVE RIGHT HIND FLIPPER

L-7 (**WOOLEY BULLEY, LOPEKA**) ADULT MALE- FAINT WHITE "L7" ON SHELL; VERY LONG TAIL. LEFT HIND FLIPPER 1/3 AMPUTATED.

L-8 (**KUAI**) "HIBISCUS" GOLDEN DESIGN ON LEFT SIDE OF SHELL. NIGHT BASKER.

L-10 (**SQUIRT**) SUBADULT- LEFT AND RIGHT LATERAL SCUTES MISSING AND HEALED ON EITHER SIDE OF TAIL (DOUBLE SCALLOP)

L-11 (**GENBU- formerly T-BOY**) ADULT MALE- TUMORS ON EYES, MOUTH AND NECK. .TREATED WITH DRUG DERMEX (10/05, 03/07) DAMAGE TO FRONT FLIPPER TIPS

L-12 (**MISSY**) ADULT FEMALE- VERY ROUNDED SHELL. SATELLITE TAG REMOVED MAY, 2007. SOME FIBERGLASS REMAINING ON TOP OF SHELL.

L-15 (**MANAGIRL**) ADULT FEMALE-NEVER KNOWN TO BASK, BUT COMMONLY SEEN CLOSE TO SHORE FEEDING. REMNANT OF RECTANGULAR TIME DEPTH RECORDER BOX ATTACHED TO LEFT SIDE OF SHELL.

L-18 (**PUKALANI**) ADULT FEMALE- FAINT WHITE "L-18" ON L&R SHELL; REMNANT OF OLD FIBERGLASS ON TOP OF SHELL.

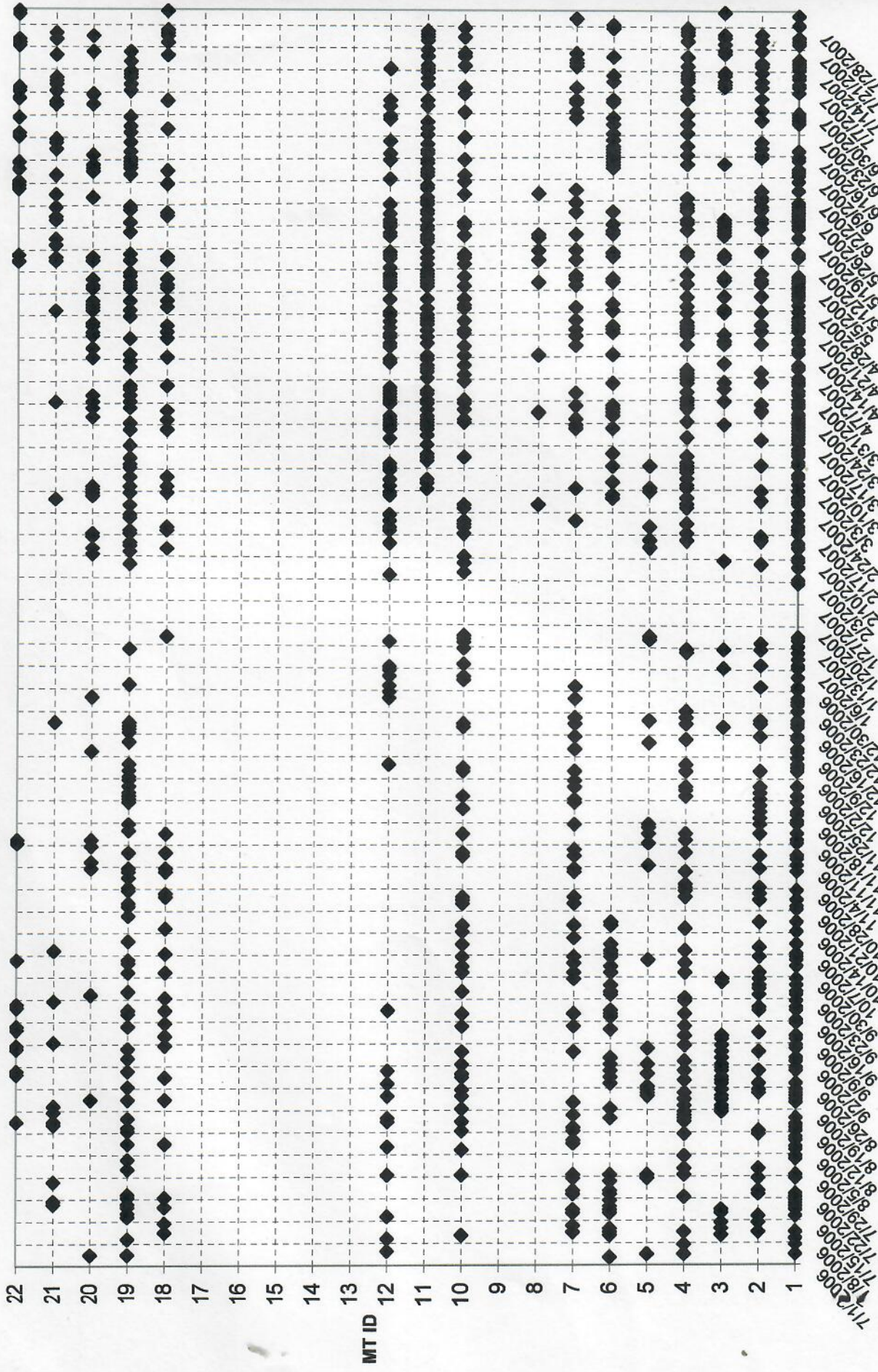
L-19 (**SCALLOP**) SUBADULT- HAS "SCALLOPED" EDGE TO RIGHT OF TAIL DUE TO MISSING RIGHT REAR LATERAL SCUTE.

L-20 (HONEYGIRL) SHELL IS A DISTINCTIVE "HONEY" TORTOISE COLOR.

L-21 (PUNAHELE) ADULT FEMALE WITH QUARTER SIZE PUKA (HOLE) ON FORWARD RIGHT SHELL.

L-22 (TRIPOD) ADULT MALE- HEALED AND AMPUTATED RIGHT BACK FLIPPER.

Mototooled Green Turtles Observed Basking at Laniakea on Oahu's North Shore 7/1/06 to 8/1/07



Marine Turtle Research Program
 Pacific Islands Fisheries Science Center
 NOAA National Marine Fisheries Service
 2570 Dole Street
 Honolulu, Hawaii 96822-2396

Laniakea_basking_data.begin..July2006
 10/10/07 INH

Laniakea Beach, located a few miles north of Haleiwa on Oahu's North Shore, is well known for its pristine sandy cove and premium surf break. Within the past ten years, Hawaiian green sea turtles, known as "honu" in the Hawaiian language, have appeared close to shore, actively feeding on the abundant "limu" or green algae that grows there. In 1999, the honu began hauling out onto the beach in the sandy cove to bask ashore. Word traveled quickly and soon tour busses, local residents and island visitors were stopping at Laniakea to see the turtles sleeping on the beach and calmly swimming and feeding inches from the shoreline.

Unfortunately, some of the beachgoers were not respectful to the honu, choosing instead to sit, ride and even feed the turtles. During the summer of 2005, the increasing interaction between the honu and humans prompted George Balazs, leader of the Marine Turtle Research Program for the NOAA Pacific Island Fisheries Science Center, to create a campaign called *Show Turtles Aloha*. Local community members stepped in to help and began volunteering their time to educate and inform residents and visitors about respectful turtle viewing at Laniakea.

It is now a year later and the volunteer program, currently being run by NOAA's Pacific Island Regional Office (PIRO), is still strong and growing. If you are interested in helping to protect the honu and educating visitors about these magnificent creatures at Laniakea, please contact Joanne Pettigrew, Honu Guardian Volunteer Coordinator, at laniakea1@aol.com. If you have any general inquiries about the volunteer program or PIRO's Protected Resources Department, please contact Jen Metz, Outreach and Education Coordinator, at jennifer.metz@noaa.gov.

Subj: Re: Limu
Date: 8/15/2006 7:53:02 AM Hawaiian Standard Time
From: gbalazs@honlab.nmfs.hawaii.edu
To: Jokaloke@aol.com
 Sent from the Internet ([Details](#))

Limu

two kinds of greens prominent at Lani's that they eat. Ulva-- leafy of sorts. And Enteromorpha-- stringy. The former is the most commonly eaten, in my opinion. But, the reds there are even more commonly eaten, because they are more abundant.

Happy to help!

On Tue, 15 Aug 2006, Jokaloke@aol.com wrote:

- > Hi George,
- > Can you tell me the name of the green limu which grows on the rocks at
- > Laniakea? It must be one or several of those you mentioned in the Behavioral
- > Changes article a few years ago..
- > " Foraging Times-- The most striking change in behavior by green
- > turtles in the Hawaiian Islands involves the time of day when juveniles and
- > subadults actively feed. Several kinds of benthic algae are utilized (e.g.
- > Pterocladia, Gelidium, Acanthopora, Hypnea, Amansia, Codium, Ulva and Halophila
- > hawaiiensis.) All of these food items frequently grow in shallow water close to
- > shore. Prior to the mid-1980's turtles were seldom seen foraging during the
- > daytime, except in very remote areas or at the base of ocean cliffs inaccessible to
- > humans."
- >
- > Thanks!
- > Joanne
- >
- >
- >
- >

rhodophyta red



the Tortuga Gazette

California Turtle & Tortoise Club Founded in 1964

November | December 2010

Dedicated to Turtle & Tortoise Preservation, Conservation and Education

Volume 46, Number 6



Adult pair of speckled tortoises (*Homopus signatus*) sharing a *Lavatera* blossom. The male of the pair (left) measures 3.4 in (8.6 cm) long, 2 in (5 cm) wide and 1.5 in (3.8 cm) tall. The female (right) measures 4.1 in (10.4 cm) long, 2.9 in (7.4 cm) wide and 1.8 in (4.6 cm) tall. Photographed at the Behler Chelonian Center in Southern California by Dave Friend.

Turtle of the Month Speckled Tortoise (*Homopus signatus*)

The Speckled Tortoise, *Homopus signatus*, in Captivity by Mike Palmer

The South African speckled tortoise is my favorite chelonian. Not only is it the smallest of all tortoises, rarely growing more than 3¾ inches (9.5 centimeters) in length, it is among the most beautiful. I will not give detailed description of the

tortoises. You can read all that in Richard C. Boycott and Ortwin Bourquin's wonderful *The South African Tortoise* book. Instead, I will talk about keeping and breeding them in captivity. However, I do have to say that mine are much prettier than the one pictured in

Boycott and Bourquin's book, having a reddish ivory-colored background with jet black radiating streaks on the carapace, with the outside edge of the marginal scutes and the plastron being almost solid black.



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It is easy to see why they are called speckled or little rock tortoises by their appearance and their life-style. Like the pancake tortoise, they spend much of their time under or on top of rocks and are rather flat and elongated, with long legs which allow them to climb. They resist being pulled from under a rock by wedging themselves in either by raising up against the rock or by putting one leg up to the rock above them and pushing the other front leg to the floor. I usually can't get them out without lifting up the rock they're under. Besides being much smaller than the pancake tortoise and not as proportionately flat, the shell of the speckled tortoise is hard.

Like the parrot-beaked tortoises (*Homopus areolatus*) I have, they run for cover when they see me coming. However, unlike the parrot-beaked tortoises, the speckled tortoises will usually come right back out looking for food. At least the male does. He raises himself up as tall as he can on three legs and reaches up with the other leg as if trying to climb the air to get to me and the food. The female is more aloof and would rather be left alone. They walk about slowly and deliberately, and are very careful about climbing and descending. However, they do pull off some amazing high dives every once in a while.

I have had both parrot-beaked and speckled tortoises for more than 4 years. The speckled tortoises have become the more personable of the two species. Another major difference is their water need. While parrot-beaked tortoises can stand a lot of rain and need lots of grass and plants in their pen, speckled tortoises are dry weather animals that can't stand much rain and need little vegetation in their pen to avoid raising the humidity.

In the speckled tortoises' pen the soil is very sandy with a few desert plants that need little care. The entire pen is raised up so it will have good drainage. And, of course, there are lots of large rocks. I picked out smooth speckled rocks to make the tortoises feel at home, and when the tortoises are dry and dusty they're quite hard to see. I have gotten to the point of panic trying to find them in their 4 feet x 8 feet (1.2 meter x 2.4 meter) brick pen. In the wild they spend a lot of time under dry rocks and walking around in dry dust. This is the kind of



Male speckled tortoise among the rocks in his habitat. Photo by Dave Friend.

habitat I've tried to duplicate for them.

When I first acquired the speckled tortoises we lived in Arkansas with its rain and humidity. They developed some kind of skin rash that would come and go but never was anything serious. I had them for about 1 year when we moved here to Mendoza, Argentina. This place makes a dry Arkansas summer seem like the rainy season in the Amazon. In the hottest weather, we have temperatures similar to southern Arizona. I may give them water once a week if it hasn't rained during the peak of summer in December and January, which amounts to once every two weeks or less. If it rains more than once a week I bring them inside until it stops. It usually rains about once every two months during spring and fall, and almost never during winter. If it has not been too hot that's all the water they seem to need. I'm afraid I've learned their water needs the same way I have learned just about everything else in life, the hard way.

When we arrived here I made a temporary pen of bricks on a grassy place in the yard. Much to my surprise, despite the dry climate, the male and female developed infections in the soft skin around the legs and neck. At first, I thought it was the same rash they had had before. The infection spread and became life-threatening to both animals one week or so after I first noticed it. Antibiotic creams seemed only to make things worse. The veterinarians here have been less than useless as far as tortoises are concerned, but that's for later.

So I hurried and finished the indoor tortoise pens I was building. I brought the tortoises in and placed them on dry sandy dirt. The infection was quite severe by now with pus erupting and large pieces of skin dying and coming off. It may sound bad, but the only thing that I could think of to use was Mercurochrome. It obviously hurt like

hell because they ran like they were on fire when I used it. But, it "seemed to work". I used it 3 or 4 times and they started healing. Within a few weeks they were as good as new. I just kept them inside for the rest of that summer and winter and they did very well.

As soon as spring came I put everybody back outside in the new pens. They did well until the end of the rainy season, then I noticed the skin infection had recurred. I brought them inside and used Mercurochrome as before believing that it would be like last time and they would be well in a short time. But, the male grew worse and worse to the point that it looked like he would not live long. The female seemed to get well just by being inside in the dry. The male's infection became so bad that his front legs and neck were swollen to the point that he could no longer withdraw them. Death seemed sure when I picked him up and a thimble of pus exploded from his shoulder, and the skin that connects to the shell above and below the neck was loosening. I gave up on Mercurochrome, it wasn't working and may have been making it worse.

I have a variety of injectable antibiotics and I took a sample of infected skin to a veterinarian so he could grow a culture and find out which, if any, antibiotic I should use. He told me to come back after one week. When I did, I found out that he had destroyed the culture by stupidly putting the skin in alcohol and, now, the lab was closed for two weeks vacation. We do not have a telephone and he had not bothered to drop me a card to let me know what had happened. So, we never got it done.

The male speckled tortoise did not take one bite of food for the next six weeks. He could not open his mouth and he smelled like he was already dead. Then, when I was looking through some of our luggage that we had never unpacked, I found something a U.S. veterinarian had given me before to treat the rash they had in Arkansas called Nowasam (anti fungal). I had only used it once. It had to be mixed with water and the animals left to soak in it for an hour. The problem with these guys is that they will drink for one hour if they have the water. I did not think that drinking all that Nowasam would be good for them, so I had packed it away and forgotten about it. Figuring it was a do or die situation, I mixed the Nowasam half and half with purified water. I sprayed it onto the male's open wounds using a syringe and dried him off with a hair dryer twice that day. The next day the runny sores were looking drier. Day by day he got better. By the fifth day he started

eating again, and was eating like he was making up for lost time. At the end of 30 days all signs of infection were gone, but I continued the treatment for another week just to make sure. The stuff was great—but I think the hair dryer may have done as much good as anything. It was a few months before his skin returned to its original gray color with black speckles and no signs that anything had ever been wrong.

Since then, I have stopped sprinkling them so often. They get most of their moisture from rain and their food. There has been no sign of the infection for the last two years.

Well enough of that, let's talk about the every day life of the little speckled tortoise here on the farm. As far as food, I only give them grasses and such. There's a little Bermuda grass growing in their pen but the pen is so dry it does not grow very well. They eat elm leaves which have fallen into their enclosure from nearby trees, but only after the leaves have dried out. That is a good indication of their life style. They ignore fresh leaves placed out for them until they have dried out and turned crumbly, then they eat them like dry corn flakes. I often see them walking about eating little bits of dry grass and leaves. Their diet includes dandelions, clover, sweet pea leaves, elm leaves, grape leaves. They will pass over all that to get at a blossom of any kind. I feed them every other day and sometimes I give them grated carrots as well, but no supplements.

When it rains they come out to drink water by pushing their noses against a rock as the water runs down. We recently had a terrible hail storm that destroyed 100% of the crops on many of the farms in the area. Hail, the size of Chaco tortoise eggs, fell for 30 minutes and covered the ground with a few inches of ice balls. The storm hit at sunset and unexpectedly. All the tortoises were outside. All we could do was quickly put a cover over the baby parrot-beaked tortoises, get back in the house and pray that the speckled tortoises would stay under their rocks. When we went out to check for damage, we found no less than 25 dead birds in the tortoise yard, but there were all the speckled tortoises, babies and all, walking around on top of the ice drinking water!

These tortoises seem to be more active and happiest when it's cool but sunny. I have seen them breeding when it was only 50° F (10° C). When it is above 85° F (29.4° C) they stay hidden. Though I have not left them outside all winter, I do leave them out and let them have a shut down period during the fall and

early winter when the coldest it gets is 35° F (1.7° C) or so in the early morning hours. That way, the female is ready to breed when I bring them in and warm them up. I do not have much of a heater in the tortoise room, my office, and it gets down to 50° F (10° C) or so in here on the coldest nights, when it's below freezing outside. I don't use any kind of full spectrum lamp, just 100-watt tungsten bulbs under which they bask every morning—climbing up on top of a rock to get closer to the light when it's really cool.

On cold and cloudy days they stay hidden even when they are inside, so I leave the lights off and let them sleep for a few days. I do not know how they know it's cloudy outside. Maybe they look out the window. I do know this. When they are outside if I find them wedged in a corner almost straight up as if they are expecting high water it will almost certainly rain. I've also noticed that when they get wet or walk through water their scaly legs absorb water like a sponge. It's like they are made to absorb moisture from their surroundings.

Now, about breeding them. The male is ready to mate almost any time but the female will only submit after a cold spell. So, by the time I bring them in for the coldest part of the winter (June, July and the first part of August) she is ready. The male follows her about jerking his head up and down as if he is trying to flip something off the top of his head. If she is not in the mood she will just turn around, ram him a few times and then run away.

He never gives up though and chases her about nodding his head and making a little squeaking sound. When the great event actually occurs he makes a similar but louder squeaking sound with his mouth wide open like most tortoises. He never bites or pushes her; he just climbs on and holds on until she goes under a rock and knocks him off. After a few weeks of this she will finally hide from him and not even come out to eat. When that happens I separate them so they can both rest and eat. He still runs around squeaking and searching for her for a few weeks afterwards.

It is easy to tell when a speckled tortoise is gravid. She will gain $\frac{1}{4}$ to $\frac{3}{8}$ of an ounce (7 to 10.6 g) and the distance between the back of the carapace and the plastron will increase by about 8-10 mm in (0.31-0.39 in) a period of about 60 days. After that, she will be unable to completely withdraw all four limbs at the same time and the hind part of the plastron and carapace will become more flexible.



I have noticed no difference in her actions until the day she is ready to lay. She starts to look around for the perfect place, which for her is under a rock. That makes catching her in the act or finding the nest difficult, and I rarely saw her actually laying.

We moved to Mendoza, Argentina in November 1990, after having had the tortoises for a little less than a year. She laid an egg on 01/12/91 in the middle of the day with temperatures in the 90's F (32° C). This was in the temporary pen that was on turf and she could not dig a hole through it all. I found the egg under a rock covered with grass. I put the egg in moist potting soil in the incubator at 82° F (28° C). After a few days the egg was nice and white and looked to be good. I am sure it was but it never hatched; neither did the parrot-beaked tortoise eggs that I placed in the same incubator that year. It was obvious that what I had seen work for others in hatching red-footed tortoises was not going to work with these.

On September 24, 1992, a cool 65° F (18° C) spring day (in the outside pen) at 6:00 PM she dug a hole in the sand under a rock that is in the sun most of the afternoon. The hole measured 42 mm (1.7 in) deep by 48 mm (1.9 in) wide and she had used urine to moisten the sand. This time she evidently had some difficulty in passing the egg. This is the smallest tortoise in the world but they lay the largest egg for their size. I found her walking around with the egg less than half way out. She had given up laying it in the nest and was trying to get rid of it. She dragged it on the ground, rubbed against rocks, wedged herself between rocks so that she was vertical and did everything but turn herself upside down trying to get the egg out.

I brought her inside, dipped her in warm water and then placed her in the indoor pen. Within a few minutes the egg came out. The egg was 30.5 mm by 25 mm (1.2 in by 0.9 in) and weighed half an ounce. That's a pretty good size for a tortoise that's only 90 mm (3.5 in) long. I placed it 2 inches (51 mm) deep in sand that was not quite moist enough to make a sand ball with. I incubated the egg at 78°-85° F (25.5-29.4° C), and sprinkled the top of the sand lightly with water once a week.

It was one of the most glorious days of my life when on the morning of January 17, 1993 I looked in the incubator and saw the most beautiful little critter I have ever seen running around. I like to leave the eggs buried to allow the tortoises to come out on their own. He had no egg sac, and his shell had already straightened out. He drank and ate

immediately and I placed him outside with the adults. The first thing he ate out there was fecal matter from the adults. He did this the first two weeks or so and then stopped. The feces of these tortoises are like dark, very small cigars. That's the way tortoise feces should be.

Upon hatching he weighed ½ ounce (14.2 g) and measured 33 mm (1.3 in) long, 29 mm (1.1 in) wide and 20.5 mm (0.8 in) high. He had long legs with big, fat, elephant-type feet and walked tall like he was afraid for his belly to touch the ground. He had the same colors as the adults from the start and looked all the world like a VW bug that had been painted up by a herd of hippies. One year later he weighed 1 ounce (28 g) and measured 51 mm (2 in) long, 41 mm (1.6 in) wide, 28 mm (1.1 in) high and was already bobbing his head at the female. Now (March 3, 1994), he weighs 1½ ounces (43 g), is 62 mm (2.4 in) long, 46 mm (1.8 in) wide, 28 mm (1.1 in) high and attempts to mount the adult female with his mouth open. In comparison the adult male weighs 3½ ounces (99 g) and is 81 mm (3.2 in) in length, 57 mm (2.2 in) wide and 35 mm (1.4 in) high. I believe that because of the natural and meager diet they get, the hatchlings growth is not accelerated but is the normal growth pattern.

An egg laid on 08/28/93 in the indoor pen under a rock while nobody was around hatched on 12/23/93. This egg was incubated at 80°-86°F (26.6-30°C) and the hatchling is a little smaller with less black than the first but is just as beautiful. At hatching, it weighed just over ¼ ounce (7 g), was 29 mm (1.1 in) long, 26.5 mm (1 in) wide, and 20 mm (0.8 in) high. As of 03/03/94, it is 38.5 mm (1.5 in) by 33 mm (1.3 in) by 22 mm (0.9 in) and weighs ½ ounce (14 g). It seems to have a shorter tail but really it is too soon to tell its sex. The adult male has never shown

any aggression towards either hatchling, but the female has been aggressive towards the first. Fortunately these little guys are hard shelled, tough as nails, and seem to have no problem pushing the adults out of the way to get to the food.

It was thought that this tortoise lays only one egg per year, and at the time I wrote this article that was my observation. Some time later I made a most interesting discovery. Two eggs were laid outside, under a rock, that I knew nothing about until they hatched. During the next four years, I observed her laying pattern more closely. She laid one egg per month for three consecutive months! All of them hatched.

It appears that the babies reach full size in 3 to 4 years. No one knows how long they live, and I have not read previous reports of their being bred in captivity although they must have been. They are rarely imported because of their size and that's probably for the best. I've only seen them advertised for sale a few times and at a very high price. Because they are so delicate I do not recommend buying them (even though I did) unless they are captive bred or have been kept as long term captives by someone you know.

In the year 2000 the speckled tortoises were moved to the United States. Some of the young were transferred to zoos. The adult pair and the first hatchling were given to the care of Rusty Grimpy of Tulsa, Oklahoma. In 2001 the adult male was found dead in his outdoor enclosure with no apparent reason for death. Both of the adults were full grown when I acquired them in 1989, so they lived for twelve years in captivity. The female and the first born male were transferred to San Diego, California in 2001.

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Pair of adult speckled tortoises (*Homopus signatus*). Photo by Dave Friend.



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World's Rarest Eggs Fail to Develop

by the Turtle Survival Alliance Administration <www.turtlesurvival.org/>

The female *Rafetus swinhoei* (Yangtze Giant Softshell Turtle) nested this year during the night of June 16 (63 eggs), again during the night of July 2 (63 eggs), and laid a third clutch on July 17. All eggs of the first two clutches were numbered and about half of those eggs were artificially incubated (29, 31 and 33 degrees Celsius [84, 88, and 91 degrees Fahrenheit], various substrates), the other half was left in the nests constructed by the female. The third nest was not disturbed at all and the eggs were left in place, without being handled.

Dr. Gerald Kuchling checked and candled the artificially incubated eggs on July 3, July 5, and August 9. Apart from 2-3 eggs of each clutch which showed yolk sedimentation and had a possible white blotch (no clear banding) all eggs (which were not cracked and rotten) appeared homogenous – which indicates that they were not fertilized.

Yolk sedimentation and banding is generally a sign of early development (and thus of a fertilized egg), but even in the eggs which showed some signs of fertilization, the sedimentation was weak and white blotches were not very clear. For this reason, it appears that in the first two clutches, only 5-10% of the eggs were fertilized, and none of those continued to develop. This compares to an estimate of 25% in 2009.

All three nests on the beach have been fenced and they are checked daily in case any hatchlings emerge from the nests dug by the female.

After hibernation this year, the male was observed swimming and basking on March 19 and the female was observed swimming on April 18. The turtles were put together from April 20-May 15, from June 18-28 and from July 3 to the present. Mating activity was observed from April 21-May 5 and the female was clearly receptive in late April and early May.

We are learning more about this rarest of species each year. The most likely spermatogenic cycle of *Rafetus* is that spermatogenesis takes place in summer (June to August/early September), that sperm is transferred into the epididymis (a sperm storage organ in turtles) in early autumn (spermiation) and the male is ready to copulate from about October to spring. Androgen levels may be high in summer and decline during autumn. Due to this dissociated androgen cycle the

(extremely old) male in at the Suzhou Zoo may actually be better primed for copulation in autumn than in spring. There is a very good possibility that *Rafetus* may mainly mate in late autumn prior to hibernation, with mating activity tapering out in early spring.

By pairing them only in spring and summer in previous years, we narrowed the opportunity for the male to inseminate the female to a short window. It also means that by that time the (extremely old) male had to store his sperm for more than half a year. It may be better for the sperm if the presumably much younger female stores it. It was the plan last year to let male and female stay together over the winter. Thus, the male stayed together with the female in the small breeding pond from early August to early October 2009. By late September, he again showed mating behavior which resulted in the female developing lesions and white scar tissue at her neck and forelimbs due to biting of the male when he tried to grab her for copulation attempts. This resulted in zoo personnel becoming concerned about her safety and separating the animals.

For this reason, Dr. Kuchling worked very hard in 2010 to get a glass barrier around the large breeding pond (completed in July 2010 with funds from the Chinese government) and we opened all gates of the *Rafetus* facility on 24 August 2010. This will allow both male and female to roam through an area more than three times as large as what they had for the last 2.5 years. This will make it more difficult for the male to corner and bite the female, but will give him access to the female for mating all through autumn and winter and spring. Our hope is that by giving the male the chance to inseminate the female with fresh sperm while still primed by a higher androgen level in October/November, we will have better fertilization results next year.

The nutrition and breeding pond setup for this pair has improved each year and hopefully allowing them to remain together throughout the autumn will improve the chances for successful breeding in 2010/2011. □

Reprinted with permission from Turtle Survival Alliance. Originally published in the Turtle Survival Alliance e-newsletter of September 13, 2010.

Lawsuit Filed to Protect Desert Tortoise From Mining

— Center for Biological Diversity press release

LOS ANGELES, CALIFORNIA—August 27, 2010—The Center for Biological Diversity and the Desert Tortoise Council filed a lawsuit today against the city of Twentynine Palms for approving the expansion of a mining project on lands that are home to the federally and state-protected desert tortoise. Ignoring wildlife protection laws, the city council failed to require that the desert tortoise be protected and that permits be obtained before moving forward with the project. Both the California Department of Fish and Game and the U.S. Fish and Wildlife Service, the wildlife agencies charged with protecting desert tortoises, told the city that permits were needed before the mine expansion could go forward.

“Why the city of Twentynine Palms is ignoring state and federal law is mystifying,” said Ilene Anderson, a biologist with the Center. “All projects that affect desert tortoises must go through the permitting process so that this unique species stands a chance at survival.”

The Granite Mine expansion is proposed on 356 acres, with 178 acres of active mining. Desert tortoises have been documented in areas where active mining is proposed. In the original environmental review, the city recognized the need to comply with state and federal laws and seek a permit for the expansion. The city later did an about-face and simply abandoned plans to acquire a permit, in direct conflict with law.

“The city council should have and must respect the recommendations of the state and federal agencies that are mandated to protect the Mojave desert tortoise,” said Sid Silliman of the Desert Tortoise Council. “It is a matter of due diligence under the law.”

Today’s case was filed in superior court in San Bernardino County.

Having survived tens of thousands of years in California’s deserts, desert tortoise populations have declined precipitously in recent years. The population crash has been caused by a combination of pressures, including disease; crushing by vehicles; military, industrial and suburban development; habitat degradation; and predation by dogs and ravens. Because of its dwindling numbers, the desert tortoise – California’s official state reptile – is protected under both federal and California Endangered Species Acts. □

New CTTC Branch Forming in Ridgecrest, CA

In November of 2009, a small group in Ridgecrest and the nearby community of Inyokern met with Leonard Plunkett and Kirk Muth of the Kern County Chapter of the California Turtle & Tortoise Club. We recognized the need to have a formal group in the Indian Wells Valley to deal with the captive tortoise population.

We had our first meetings in 2010 with varying attendance levels. By July we had over a dozen memberships, mostly family memberships. Attendance has varied from 7 to over 25 people.

We had a presence at Earth Day at the local community college where we had some smaller tortoises on display. We provided information on turtles and tortoises and acquired some new members. We selected officers and people to handle adoptions and other tasks. We currently meet on the second Tuesday of each month at 7:00 PM at the Grace Lutheran Church, located at 502 North Norma Street in Ridgecrest, California.

Please call (760) 446-2001 or email rsparker7@msn.com for more information.

Calendar of Events

November 18-19, 2010 – 1st Annual Conference on Captive Care and Breeding sponsored by the Turtle and Tortoise Preservation Group to be held in Mesa, Arizona at the Phoenix Marriott. Visit www.ttpg.org for more information.

Panel Discussion at TTCS November Meeting

The November 19th Care Society meeting will feature a panel discussion on the topic of "Successful Care and Breeding of Turtles, Tortoises and Reptiles – An Opportunity to Bring Your Questions to the Floor."

Panel members (listed alphabetically):

- Lynda Bagley
- Helen Cain
- Ralph Hoekstra
- Kenneth Tang
- Liz Underwood
- Jerry Weir

Panel moderator: Anita De Leon.

Meetings and Programs

Cen-Val: November 4; December 2

Chino Valley: November 19; December 17

Foothill: Contact Chapter for November and December meeting dates.

High Desert: November 8; December 13

Inland Empire: November 5; December 3

Kern County: November 19; December 17

Low Desert: December 6

Merced: November 17; December 15

Orange County: November 12; December 17

Silicon Valley: November 1; December 6

Santa Barbara-Ventura: meetings are held in members' homes. Contact the chapter for information.

TooSio (San Luis Obispo): November 10; December 15

TTCS (Long Beach): November 19 - Panel discussion (see description above); December 17 - Annual Christmas Party and Cut-Throat Gift Exchange

Valley: November 19; December 17

Executive Board: January 8, 2011. Meetings are held at the Los Angeles County Arboretum in Arcadia, CA.

Check your Chapter website for the latest program information. www.tortoise.org has links to all CTTC chapters. Programs may be scheduled after the newsletter is published.

Mike's Turtle Net Picks by Michael J. Connor, Ph.D.

A varied selection of recent articles, stories and sites on the Web that some of you may find as interesting as I did. The list is posted at www.tortoise.org/turtlenetpicks.html for your clicking convenience.

FDA Sued Over 4 Inch Rule

Louisiana turtle farmers are suing the Food and Drug Administration to allow the sale of hatchling turtles.

<http://tinyurl.com/4inchsuit>

More Sliders Being Dumped In California

Wildlife experts and CTTC officers see increase in abandoned pet turtles.

<http://tinyurl.com/lostrears>

Authorities Order Culling of 40 Tonnes of Red-ear Sliders

Lots of news coverage of a Viet Nam government plan to destroy "farmed" sliders.

<http://tinyurl.com/namrescull>

Turtle Poachers of Hainan

Graphic depiction of illegally poached sea turtles.

<http://tinyurl.com/hainanturtles>

Zoo Atlanta Hatches Impressed Tortoise

A rehabilitated impressed tortoise has produced offspring at Zoo Atlanta.

<http://tinyurl.com/zooimpressed>

DiCaprio Buys a Sulcata

Too bad Mr. DiCaprio didn't call CTTC – he could have adopted one for free...

<http://tinyurl.com/dicapriotortoise>

Remembering Sinkey Howell Boone

The inventor of the "Jellyball shooter" Turtle Excluder Device which saved many sea turtles from drowning has died.

<http://tinyurl.com/jellyball>

Watching Green Sea Turtles in Hawaii

Sea turtles enrich Hawaiian island life.

<http://tinyurl.com/honuisland>

Leatherback Returns to Nest After 32 Years

Leatherback "princess" returns to Terengganu, Malaysia, and nests.

<http://tinyurl.com/leatherprincess>

CEC Approves Power Plants

Despite the opposition of many environmentalists, the California Energy Commission voted to approve licensing the Ivanpah power plant project on 3,500 acres of desert tortoise habitat.

<http://tinyurl.com/CECivanpah>

...and the Commission has recommended approval of a second at Calico.

<http://tinyurl.com/CECcalico>

USFWS Provides Guidance on Moving Tortoises

To facilitate giant power plant projects, the USFWS has issued guidance on how to shift desert tortoises out of the way.

<http://tinyurl.com/usfwprotocols>

We Want Your Photos for Our Readers' Favorites Features!

- 1 Please submit high-contrast photos (color, if possible) for scanning or high-resolution digital images (TIFF, print-quality PDF, or high-resolution JPEG format).
- 2 Please include the species of turtle/tortoise and the name of the photographer.
- 3 No images of turtles with glitter, paint or other harmful materials will be published.
- 4 Images will become part of the *Tortuga Gazette* image pool and may be used in subsequent articles and illustrations.
- 5 Mail print images to CTTC Readers' Favorites, P. O. Box 7300, Van Nuys, CA 91409-7300, or email digital images to gazette@tortoise.org



CTTC Long Beach Care Society Chapter's Turtle & Tortoise Care Expo 2010

The Value of Teamwork

By Helen Cain and Anita De Leon



Helen Cain (left) and Anita De Leon (right)

Meanwhile, Estte and Ed Engel were a few blocks away at the "Family Fun Day" at the El Dorado Community Center doing the same.



Jerry Weir with the Show sign displayed across the street from the entrance to the parking lot of the El Dorado Community Center.

It was 8:45 AM on Sunday, May 23, 2010, and the excitement was escalating. Doors at the El Dorado Community Center would be opening at 9:00 AM for the 2010 Care Expo. After months of planning and hard work, the time had finally arrived. We had not foreseen the overwhelming turnout. The day turned out to be exhilarating!

We had actively promoted the CTTC Long Beach Care Society Chapter's Turtle & Tortoise Care Expo on May 1 by participating in Peggy Nichols' Annual Mini-Show at the El Dorado Park Nature Center in Long Beach. Peggy has been organizing her Mini-Show for over 25 years. Several of us lined up along the nature trail with our turtles and tortoises, where we passed out hundreds of flyers and invited people to attend the Show.

Ed Engel called raffle ticket numbers three times per hour. Raffle tickets were given to those who made a donation at the door, and the prizes were donated by Chapter Members



Helen Cain (right) with "Velvet," a Burmese Flapshell Turtle (*Lissemys stucata*). Velvet was rescued from a food market in China in 2003



The show announcement was posted in the *Tortuga Gazette*, and numerous emails had been sent out. In addition to passing out flyers to local businesses, local newspapers were contacted. Posters and banners were made, and Kenneth Tang even prepared a video for YouTube. Thanks to Show Chair, Estte Engel, the Care Society Chapter was organized, and no stone was left unturned.

The camaraderie was remarkable, and the display of teamwork was astounding. While many of us had separate responsibilities, we were all working in concert to make this Show a huge success – and we were not disappointed.

The size of the crowd was unimaginable! Care Society Chapter President Ralph Hoekstra commented, "At the height of the attendance all of the aisles were packed with visitors. I became concerned that we were exceeding the maximum attendance

allowed by the Long Beach Fire Department. I looked around and didn't see a 'Maximum Attendance Allowed' sign anywhere, and I breathed a sigh of relief.

"We did not charge for admittance, but we did have a sign at the entrance table stating we accept donations."

Ralph further commented, "I asked if people were making donations as they came in and was told, 'yes' and also that many people even made an additional donation when they left!"

The donations were unsurpassed and more than exceeded our expectations.

Not only did we have great fun, we also let the community know about us, our adoption program, and our conservation efforts. Additionally, we were able to show off our turtles and tortoises and share how we care for them.

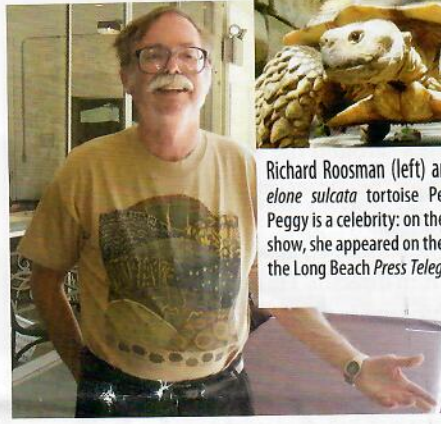
Mission accomplished! ☐



Chapter president Ralph Hoekstra (left) and show chair Estte Engel (right) present a Certificate of Appreciation to the El Dorado Community Center Supervisor, Terri Eggers (middle).



Richard Roosman (left) and his *Geochelone sulcata* tortoise Peggy (above). Peggy is a celebrity: on the day after the show, she appeared on the front page of the Long Beach Press Telegram.



Gifts were given to all children under 12 who participated in "Name the turtle." The winning name was "Fred," and the winner received a large stuffed animal





Bernard Devaux Receives the 5th Annual Behler Turtle Conservation Award at the 2010 Symposium on Conservation and Biology of Tortoises and Freshwater Turtles

The IUCN/SSC Tortoise and Freshwater Turtle Specialist Group (TFTSG) and the Turtle Survival Alliance (TSA) are pleased to announce that the 5th Annual Behler Turtle Conservation Award was presented to Bernard Devaux from SOPTOM, Gonfaron, France, at the 8th Annual Symposium on Conservation and Biology of Tortoises and Freshwater Turtles in Orlando, Florida, on 19 August 2010. Presenting the Award were Rick Hudson, President of TSA, and Anders Rhodin, Chair of TFTSG, with Peter Pritchard providing a personal introduction and history of the awardee's accomplishments.

Bernard Devaux is a leading turtle conservationist whose work in France and around the world has been inspirational for many, as he has created a series of educational "turtle villages" around the world and worked tirelessly for the conservation of wild populations of turtles and tortoises. He is essentially a self-taught naturalist, as well as a traveler, writer, and film director. He believes that a new way of thinking is needed to protect the world's turtles and tortoises better, by disseminating information and raising awareness among children and the general public, starting with the premise that tortoises are not creatures to be kept in a garden or an aquarium, they are not toys for children to play with, nor are they trophies for collectors—they are wild animals that should be protected in their natural habitat.

In 1986, Bernard created the SOPTOM association (*Station d'Observation et de Protection des Tortues et de leurs Milieux*) [Station for the Observation and Protection of Turtles and their Habitats] in order to study and protect the Hermann's tortoise (*Testudo hermanni*). He then created the *Village des Tortues* [Turtle Village] in Gonfaron in southern France in 1988. The idea was to finance conservation by opening a visitor center that was not only scientific but also accessible to the public. Spurred on by the success of the concept, he opened the first Turtle Clinic in Europe (1989) followed by other Turtle Villages in Corsica (at Moltifao in 1992), Senegal (at Noflaye in 1995), and Madagascar (at Ifaty in 2003).

Through making films about reptiles, as well as holding conferences and meeting other tortoise and nature enthusiasts such as David Stubbs, Ian Swingland, Gerald and Lee Durrell, and Peter Pritchard, Bernard became a fierce protector of Europe's

tortoises, then of tortoises in other French-speaking countries, and finally all over the world. He uses a variety of media in France and abroad (television, radio and films, as well as specialized and general press) to raise as much public awareness as possible regarding the fate of our planet's turtles and tortoises. He has written over ten books on tortoises, both specialized and generalized, as well as an Encyclopedia of Turtles of the World (1996), in four languages, in conjunction with two other naturalist photographers, Alain Dupré and Franck Bonin. He is a specialist on the African tortoise, *Centrochelys sulcata* and the Aldabra tortoise, *Dipsochelys dussumieri*, and wrote two monographs in French and English on these species in 2000 and 2007. He has also recently published a bilingual monograph on the Madagascan tortoise, *Astrochelys radiata*, which he studies and protects on the south of the island.

He is a great believer in globalizing conservation. By developing a worldwide network of specialists, enthusiasts, and those who work tirelessly to protect turtles, we can combat trafficking, collecting, and the removal of turtles and tortoises from their natural habitat. With this aim, he has organized and sponsored several international chelonian conferences and symposia on conservation (1995 in Gonfaron and 2003 in Senegal), pathology (1992), the European turtle, *Emys orbicularis* (1999), and the palearctic tortoises, *Testudo* (2002). In October 2010, he will co-sponsor the fifth European Symposium on *Emys orbicularis* (in conjunction with the Swiss association, P.R.T.).

To encourage the creation of a worldwide chelonian conservation network, he visits and assists centers and programmes around the world (Spain, Italy, Costa Rica, China, Malaysia, Australia, South Africa) and keeps specialists informed via his *La Tortue* magazine, which is distributed in 25 countries (3 issues a year, in French but with a small English supplement). He firmly believes that globalizing skills and consciences is the only way (thanks to the internet, and powerful organizations such as the International Union for Conservation of Nature, Conservation International, World Wildlife Federation, and Turtle Survival Alliance) to act quickly in order to prevent major turtle and tortoise sites from being destroyed, such as in Aldabra in 2005 and in the Mary River in eastern Australia in 2009.

His ambition is to put an end to the turtle and tortoise trade, and to see every country restore its territory's biotopes and chelonian populations. He also hopes that other information and conservation centers similar to the Turtle Villages will be opened in several countries, encouraging the desire to protect local chelonian populations efficiently. In addition, he hopes that young herpetologists, environmentalists and biologists will fiercely devote themselves to much-needed chelonian conservation on our planet. He often reminds us (as P. Pritchard and J. Behler said): tortoises have been on our planet for 230 million years, but we have a responsibility now, in the 21st century, to make sure they do not disappear!

The IUCN/SSC Tortoise and Freshwater Turtle Specialist Group and Turtle Survival Alliance established the Behler Turtle Conservation Award in 2006, a major annual award presented jointly by these groups to honor leadership and excellence in the field of tortoise and freshwater turtle conservation. The award honors the memory of John L. Behler, previous Chair of the Tortoise and Freshwater Turtle Specialist Group and Curator of Herpetology at the Bronx Zoo, Wildlife Conservation Society. The Award includes an honorarium of \$3000, and co-sponsors this year are Chelonian Research Foundation, Conservation International, Chelonian Research Institute, Behler Chelonian Center / Turtle Conservancy, World Chelonian Trust, Wildlife Conservation Society, Deborah Behler, and Brett and Nancy Stearns.

Previous Behler Award honorees have been Ed Moll, Whit Gibbons, Peter Pritchard, and Gerald Kuchling. A history of the Award and details on its honorees are available at

<www.iucn-tftsg.org/behler/>

In addition to honoring the life-time achievements of senior turtle and tortoise conservationists, the Award also honors conservation efforts by younger individuals who make major contributions to the field. Recognizing and valuing the often tireless and dedicated efforts made by all these individuals is important, and the Behler Award hopes to provide some inspiration and reward for those who have demonstrated excellence and leadership on the front lines of global turtle conservation efforts.

— Turtle Survival Alliance press release, September 13, 2010

<www.turtlesurvival.org/>



Hibernation for Desert Tortoises by Dr. Todd Driggers, D.V.M.

It is hibernation time for desert tortoises. For more information please read the following from Dr. Todd Driggers, D.V.M.

Hibernation for Desert Tortoises

When concepts below are followed, hibernation can be done safely. The incidence of death during or shortly after hibernation is higher than at any other time of the year for desert tortoises. Questionable health before hibernation lends itself to post-hibernation death. If or when the tortoise is deemed potentially ill, it should be evaluated further medically by routine blood analysis, x-rays, and potentially cultures.

Tortoises begin the process of hibernation when nighttime temperature drops are into the 60's Fahrenheit (16 degrees Celsius) for several consistent days. Feeding slows markedly a month or so prior to hibernation. In Arizona this time of slowdown is usually mid-September to mid-October. Supplemental feeding (if started) in a healthy tortoise should stop when natural eating begins to slow down to prepare the bowel for hibernation.

Healthy tortoises should be allowed to naturally hibernate as the process is important for reproductive health, is part of their natural behavior, and probably has other unknown benefits. During hibernation, the decreased temperature causes the body's natural processes to slow down. As a result, the immune system functions less effectively, making it easier for a tortoise to become ill. Therefore, it is important for a tortoise to have a pre-hibernation exam to ensure overall health. Health can be determined by accessing body weight compared to body measurements, fecal parasite exams, as well as physical exams.

Hibernation is a natural process for a desert tortoise. In the wild, mountains, weather, and freedom allow a tortoise to pick an appropriate area in which to hibernate. In a captive backyard environment, selection of an appropriate burrow is significantly limited. Burrow optimization for hibernation requires understanding and implementation of methods to control burrow flooding, excess humidity, and temperature regulation. Hibernation temperature should ideally be 60 degrees or less and always above freezing.

The goal of the hibernating tortoise is to avoid winter freezing and flooding. On the valley floor, the burrow opening direction is not as important as it is in the mountains (the floor of the desert is warmer which is the goal

for tortoises in the winter. In the wild, the base of the mountains facing south to west would be the most ideal burrow sites to accomplish both goals. Avoiding flooding can be more challenging on the desert floor in a back yard environment as burrows are often not built out of the flood plane. When roofs are pitched toward the burrow or in a flood area, hibernating tortoises may drown or possibly wake up extremely ill. Outside hibernation should not be attempted in such burrows. Drip and sprinklers systems may also get damaged by the tortoise or develop leaks that will result in the tortoise developing similar problems. Burrows over and around such areas should be avoided.

Hibernation Indoors (not usually recommended)

The process of hibernation can be started outside. When temperature dictates the tortoise's hibernation activities, it can be collected and brought inside a cooled garage to complete the process. Tortoises can be placed in a cardboard box with shredded paper or hay. Garage temperatures below 60 degrees are adequate for hibernation and result in less weight loss through it. The tortoise can be soaked in a shallow tub of water in order to avoid significant weight loss or dehydration.

Hibernation continues throughout the spring and females begin to come out in April and May. Most males wake up around the same time, although in the wild hibernation is usually about a month longer. Waking up is also a process. Most tortoises begin by drinking only until sufficient enough temperature is achieved to aid in digestion.

The Arizona Desert Tortoise Adoption Program is a unique program that allows residents of Arizona to adopt one of our native species. Desert tortoises have been kept as pets in Arizona for many decades. It is not surprising that so many people find this endearing animal so appealing. Tortoises are highly personable and often appear to interact with people and other animals around them.

Reprinted with permission from the Phoenix Herpetological Society (PHS) president Russ Johnson. Posted on the website of the PHS < www.phoenixherp.com/ >

Author Dr. Todd Driggers is a veterinarian with the Avian and Exotic Animal Clinic in Gilbert, Arizona. He is a member of the PHS Board of Directors.

Desert Tortoise Nutrition

—an abstract from a paper published in the *Journal of Herpetology* in 2009, volume 43, number 1

L. C. Hazard, et al. [2009, *J. Herpetology* 43(1):38-48] note that wild desert tortoises, *Gopherus agassizii*, are eating different foods now than they were decades ago, because exotic plant species have invaded and flourished in the Mojave Desert over the last century. Reservations about the nutritional quality of exotic vegetation compared to native vegetation led the authors to conduct feeding experiments with growing, juvenile desert tortoises. They determined the digestibility of dry matter, energy, fiber, and nitrogen in four foods : *Achnatherum hymenoides*¹ (a native grass), *Schismus barbatus*² (an exotic grass), *Malacothrix glabrata*³ (a native forb), and *Erodium cicutarium*⁴ (an exotic forb). The largest nutritional differences among diets were between food types (fresh forbs⁵ and dry grasses) rather than between native and exotic species. The two grass diets were higher in fiber content and contained less digestible energy than the two forb diets. The grasses contained little protein and tortoises actually lost mass and body nitrogen while eating them. The exotic forb yielded more energy and nitrogen per unit dry mass than did the native forb, but this may be related to differences in phenological⁶ stages and associated fiber contents of these foods when they were collected. Juvenile tortoises gained weight rapidly when eating forbs and showed no evidence of having a lower digestive capability than did adults, despite their small size and immaturity. Estimates of nitrogen requirements compared to annual nitrogen intake on these diets suggested that growth of juveniles may be limited in part by dietary nitrogen.

Reprinted with permission from the *Bulletin* of the Chicago Herpetological Society, 44(4):81.

¹Indian Rice Grass

²Common Mediterranean Grass, Arabian Grass

³Desert Dandelion

⁴Redstem Filaree, Common Stork's Bill

⁵Forb: a botanical term for an herbaceous (non-woody) plant other than a grass

⁶Phenological: referring to the cyclic or seasonal stage in a plant's (or animal's) life.

When you have seen one ant, one bird, one tree, you have not seen them all.

— Edward O. Wilson, American biologist and conservationist, 1929-present



HiwaHiwa Lays Her Eggs and Safely Returns to Laniakea after a Treacherous 1,000 Mile Round-Trip Journey

Text by Anita De Leon, CTTC Turtle & Tortoise Care Society Chapter

Photos and Tracking Map provided by George H. Balazs, Leader, Marine Turtle Research Program, National Oceanic and Atmospheric Administration and Joanne Pettigrew, Educational Outreach Coordinator, Malama na Honu



HiwaHiwa on East Island, French Frigate Shoals, basking with a group other Honu.

Laniakea, located on the North Shore of Oahu, is one of the few places where Hawaiian Green Sea Turtles (*Honu* in Hawaiian) bask on the beach almost every day of the year. It is believed that the *Honu* come to bask in Laniakea because it is an abundant foraging area and possibly to escape from tiger sharks.

In 1999 Brutus (L-1) was the first *Honu* to appear in Laniakea. Since that time there have been a total of 28 resident *Honu*.

Each of the regular baskers at Laniakea has been given an affectionate nickname by the locals, as well as being identified by the marine scientists as L-1 through L-27 and E-4.

Honu are not known to nest every year. Both males and females tend to return to their natal beach, the beach where they were born, to mate and lay their eggs. Their migration to the Northwest Hawaiian Islands is a treacherous 1,000 mile round-trip journey. During their migration many are targets of tiger shark attacks.

HiwaHiwa (L-2) last nested in 2002. Recently a Satellite Transmitter and a Time

Depth Recorder (TDR) had been affixed to her shell by marine scientists. The Satellite Transmitter tracks location, and the TDR records diving patterns.

She was last seen basking in Laniakea on April 23, 2010. She arrived on East Island in the French Frigate Shoals on May 25.

One day prior to her arrival at French Frigate Shoals, her TDR indicated she accomplished a record-breaking deep-sea dive at 570 feet (174 meters). This is the deepest dive recorded for Green Sea Turtles. Although it is not known why they dive, scientists speculate it may be to feed on mid-water animal-like pyrosomes.

On June 10, HiwaHiwa laid her first clutch of eggs. By August 5, she was still alive and nesting on East Island. There was growing concern about her safety inasmuch as she had not been seen and no satellite transmission had been received since that time.

On September 6, 136 days since her departure from Laniakea, HiwaHiwa incredibly returned back to Laniakea. Her satellite



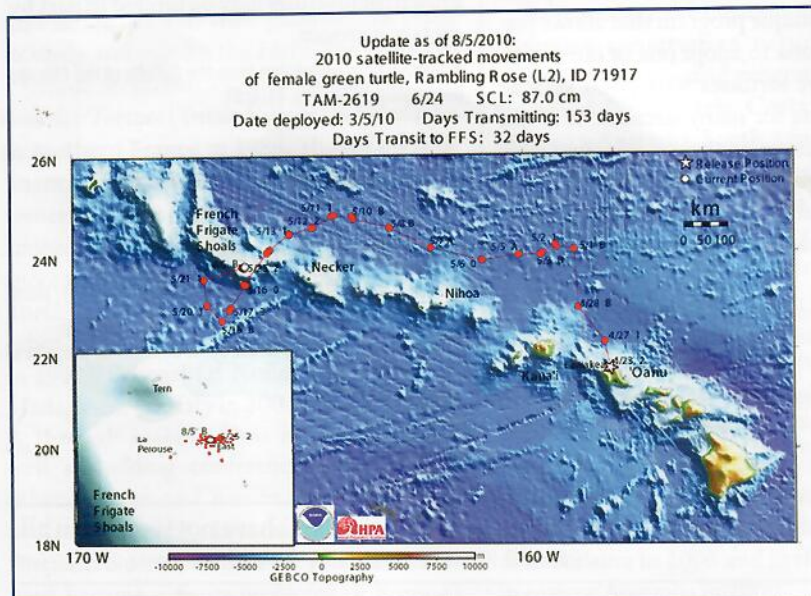
HiwaHiwa nesting on East Island, French Frigate Shoals.

antenna had somehow gotten lost.

HiwaHiwa is the first *Honu* to have been successfully tracked to French Frigate Shoals, nest and return safely to her basking and foraging grounds. To date, her deep-sea dive of 570 feet is a record breaker.

Welcome home HiwaHiwa! Your journey has been an amazing adventure.

Mahalo nui loa to Joanne Pettigrew and George Balazs for keeping me updated on this exciting and historic event. □



Satellite-tracking map of HiwaHiwa, recently nicknamed Rambling Rose, during her 2010 migration from Laniakea, Oahu to her nesting beach in French Frigate Shoals.

Chronology of HiwaHiwa's Journey

- April 23: Seen basking at Laniakea Beach on Oahu's North Shore
- April 25: First satellite transmission from the Kauai Channel confirming departure
- May 16: HiwaHiwa comes within 40 miles of the French Frigate Shoals
- May 25: Arrives at East Island in the French Frigate Shoals
- June 10: Successfully nested on East Island
- June 21: Still in the vicinity of the French Frigate Shoals
- August 5: Reported to be still at French Frigate Shoals, and periodically nesting on East Island
- September 6: HiwaHiwa returns to Laniakea

To learn more about the *Honu*,
visit <malamanahonu.org>





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As Efforts to Rescue Sea Turtles Affected by the Gulf Oil Spill Continue, Surviving Turtles Now Face Drowning in Gulf of Mexico Shrimp Nets—Sea Turtle Conservancy press release <www.conserveturtles.org>

GAINESVILLE, FLORIDA—AUGUST 24, 2010—State and federal personnel, aided by teams of volunteers and turtle conservation groups around the Gulf of Mexico, have undertaken heroic efforts to protect and save sea turtles impacted by the BP oil spill. Despite the great outpouring of support around the world for the protection of sea turtles in the Gulf, a major new threat to these species looms.

Shrimp fishing off the Louisiana coast was reopened by federal regulators last week (on Monday, August 16). Consequently, the very turtles that have been lucky enough to escape harm from the oil spill face the very real threat of drowning in shrimp nets pulled by fishermen who historically have not complied with federal regulations requiring the use of Turtle Excluder Devices (TEDs) – simple devices placed at the end of trawl nets that allow sea turtles to escape from shrimp nets before being drowned. In addition, according to government enforcement agencies, some shrimpers in eastern Texas are not using TEDs, and skimmer trawls in LA, MS and AL are also drowning turtles.

Since the earliest days of the oil spill, 517 sea turtles have washed ashore dead; many of these animals had no apparent injuries or signs of contact with oil. Necropsies of these animals by federal officials confirmed that interactions with commercial fisheries were

the likely cause of death. The use of TEDs on shrimp boats has saved many thousands of sea turtles since being required in all U.S. waters. However, the State of Louisiana and the majority of its commercial shrimpers have refused to use TEDs on their trawls. Meanwhile, federal agencies have been unsuccessful in addressing this problem.

“There is no doubt that shrimp trawls without TEDs will kill sea turtles off the coast of Louisiana,” said Marydele Donnelly, Director of International Policy at the Gainesville-based Sea Turtle Conservancy, the world’s oldest sea turtle research and protection group. “It’s unthinkable that the efforts of so many agencies and individuals to save turtles from the oil spill could be undone because the State of Louisiana and its shrimpers refuse to take simple steps to make their fisheries safer for sea turtles already clinging to life.”

“Coming on the heels of a major cold-stunning event in Florida during January, which killed about 1,000 sea turtles and landed 3,000 more in rehabilitation centers, the BP oil spill has been a one-two punch for sea turtles,” added David Godfrey, the organization’s Executive Director who has just returned from a trip to Louisiana’s coastal fishing communities. “Families whose living depends on shrimping need to get back to

work, but this will exact a high toll on large numbers of adult loggerhead turtles that now are inexplicably foraging in an area off the coast of Louisiana where shrimp fishing has just resumed. If they were using TEDs, this would not be a problem.”

The high density of loggerheads in Louisiana waters was discovered by U.S. Army Corps of Engineer trawler crews charged with moving them to prevent capture by dredges building berms along Louisiana’s fragile coast. From July 9 – 23, the trawlers caught 194 turtles. “The capture of so many large loggerhead turtles in this area is unprecedented,” Donnelly said. “And now all of these turtles are going to be in the direct path of shrimpers’ nets.”

In light of new evidence of non-compliance with TED regulations outlined in a recent internal NOAA memo, and to prevent the needless deaths of hundreds of vulnerable breeding age sea turtles, particularly loggerheads that have recently been seen in unprecedented numbers off the Louisiana coast, Sea Turtle Conservancy is calling on the federal government to take all steps necessary to protect sea turtles in the Gulf from capture and death in the Gulf shrimp nets. We also call on BP to help turtles and the fishery by purchasing TEDs for trawl fishermen. □

Online www.tortoise.org

Webmaster Michael J. Connor <mconnor@tortoise.org>

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☒ P. O. Box 1753, Chino, CA 91708-1753
Pres Jim Misiak (909) 627-0424
Corr Sec/Treas Penny Hyde (951) 734-3119
Adopt Lynda Misiak (909) 627-0424
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Adopt Linda Crawford lacurturtle@earthlink.net
Meeting: Fourth Friday, 7:30 PM @ Los Angeles County Arboretum, 301 No. Baldwin Ave, Arcadia, CA 91007

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Pres Dave Zantiny (760) 248-7877
Sec/Adopt Mary Dutro (760) 247-2364
Treas Bruce Rogers (760) 243-4518
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V-P Mary Burrows (909) 793-0518
Corr Sec Vendy Martin (909) 864-0978
Meeting: First Friday, 7:30 PM @ San Bernardino County Museum, 2024 Orange Tree Lane, Redlands, CA 92374

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Pres/Adopt Leonard Plunkett (661) 809-5527
Treas Linda Moore (661) 391-0220
Meeting: Third Friday, 7:00 PM @ Rasmussen Senior Center, 115 E. Roberts Lane, Bakersfield, CA 93308 [Note change of day]

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Sec Carol Wilcox (760) 329-0036
Adopt Bill Powers bpowers@livingdesert.org
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Meeting: Third Wednesday, 7PM @ Forte Frozen Yogurt, 319 W. Main Street, Merced, CA 95340.

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Adopt Gilbert Castro gilbert-castro@att.net
Meeting: First Monday, 7:00 PM @ Round Table Pizza, 14940 Camden Ave. (at Union), San Jose, CA 95124.

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☒ P. O. Box 14222, San Luis Obispo, CA 93406
Pres Johnny Rodriguez (805) 312-5143
V-P Ray Suydam (631) 839-0450
Adopt Bob Thomas (805) 481-5222
Meeting: Second Wednesday, 7:00 PM @ PG&E Community Center, 6588 Ontario Rd, San Luis Obispo, CA 93405

Turtle & Tortoise Care Society <www.tortoise.org/ttcs>

☒ P. O. Box 15965, Long Beach, CA 90815-0965
Pres Ralph Hoekstra (714) 962-0624
Treas Judy Leong-Belcher (562) 425-6798
Adopt Peggy Nichols (562) 429-8002
Meeting: Third Friday, 7:30 PM @ University Baptist Church, 3434 Chatwin, Long Beach, CA 90808

Valley Chapter <www.tortoise.org/valley>

☒ P. O. Box 7364, Van Nuys, CA 91409
Pres Larry Reiners (818) 787-8683
Corr Sec Jennifer Franklin valleycttcjen@me.com
Treas Karen Berry theflyingturtle1953@yahoo.com
Meeting: Third Friday, 7:30 PM @ Woodland Hills Christian Church, 5920 Shoup Ave., Woodland Hills, CA 91367