

The Sea Turtle Stranding Research Network in the Hawaiian Islands

夏威夷群島的擱淺海龜研究網



by

George H. Balazs

Marine Turtle Research Program 海龜研究計畫

NOAA Fisheries 海氣局漁科中心

Green
Honu
綠蠐龜



Hawksbill

Honu'ea

玳瑁



PIFSC MARINE TURTLE RESEARCH

太平洋島嶼漁業科學中心的海龜研究

Focus of Investigations and Activities

調查與活動的重點

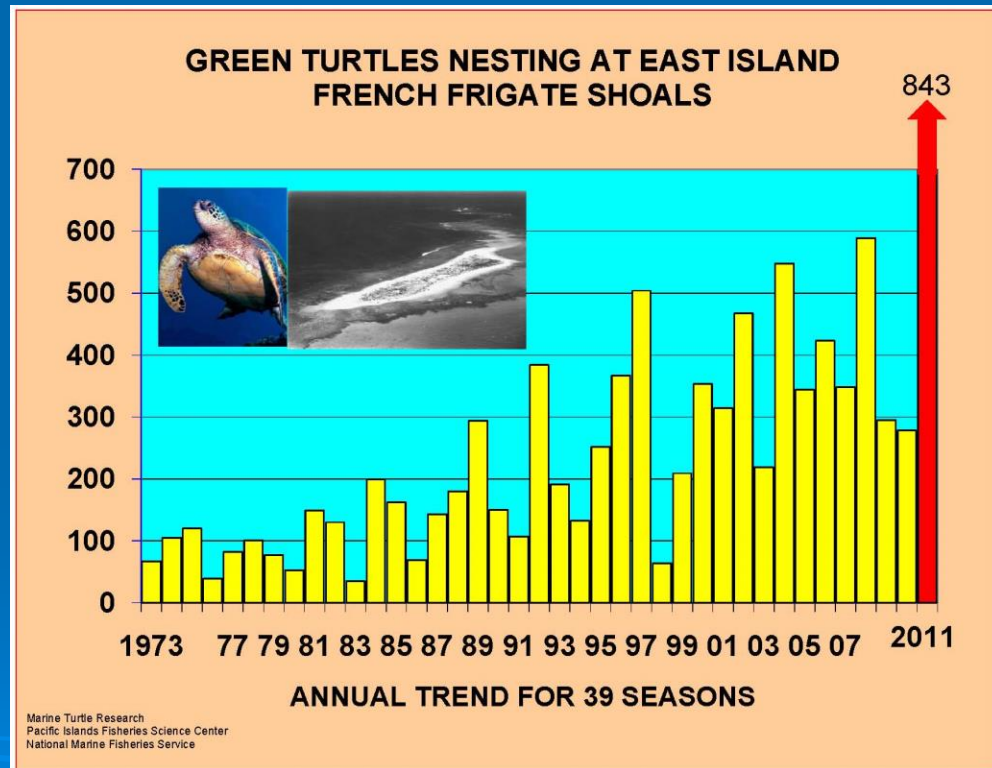
- Pacific Islands sea turtle biology, ecology and life history
太平洋島嶼海龜的生物學、生態學與生命史



PIFSC MARINE TURTLE RESEARCH

太平洋島嶼漁業科學中心的海龜研究

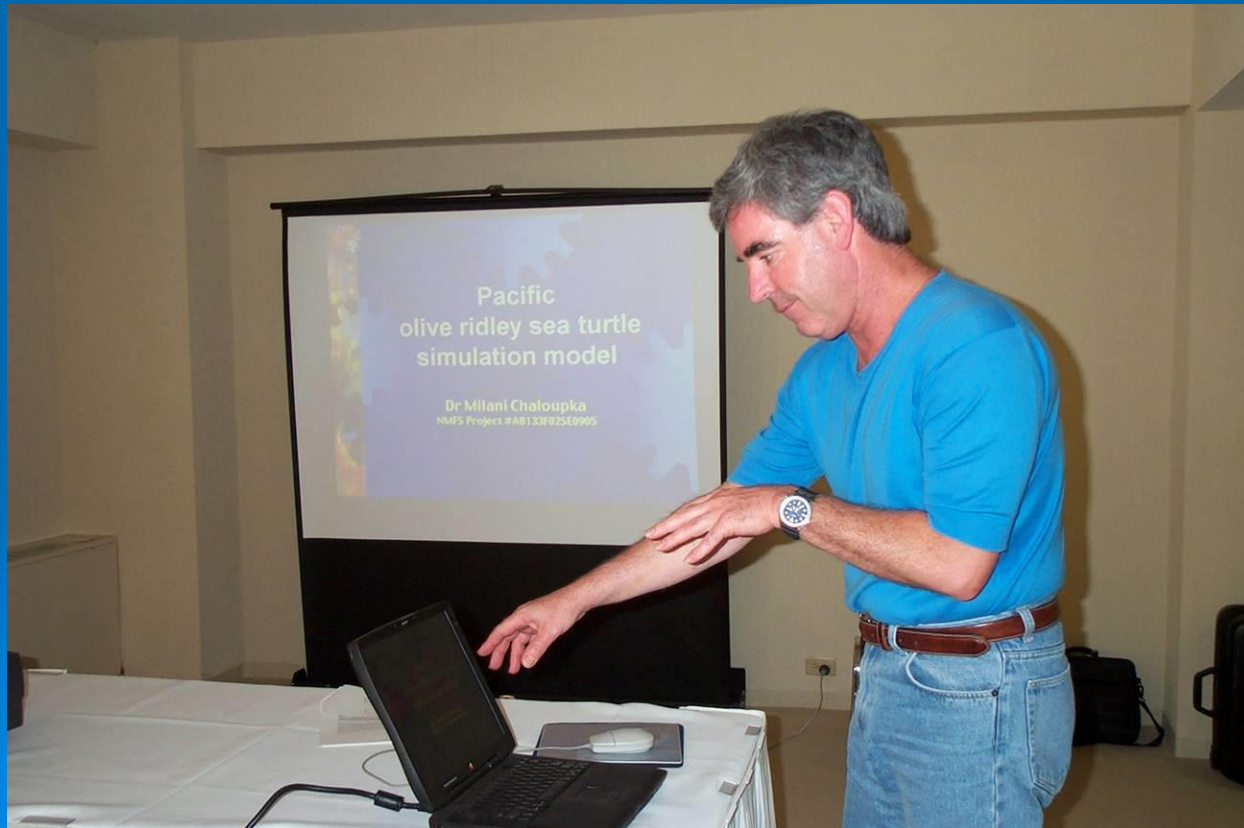
- Monitoring long term trends at nesting beaches and in foraging areas
在築巢海灘與覓食區監控長期的趨勢



PIFSC MARINE TURTLE RESEARCH

太平洋島嶼漁業科學中心的海龜研究

- Simulation modeling of population dynamics for stock assessment
群體動態的模擬模型，以利餘量分析



PIFSC MARINE TURTLE RESEARCH

太平洋島嶼漁業科學中心的海龜研究

- Fishery observer training for pelagic data collection
漁業觀察員的訓練，以利遠洋資料的蒐集



PIFSC MARINE TURTLE RESEARCH

太平洋島嶼漁業科學中心的海龜研究

- Research training and capacity building of Pacific islanders and Pacific Rim personnel

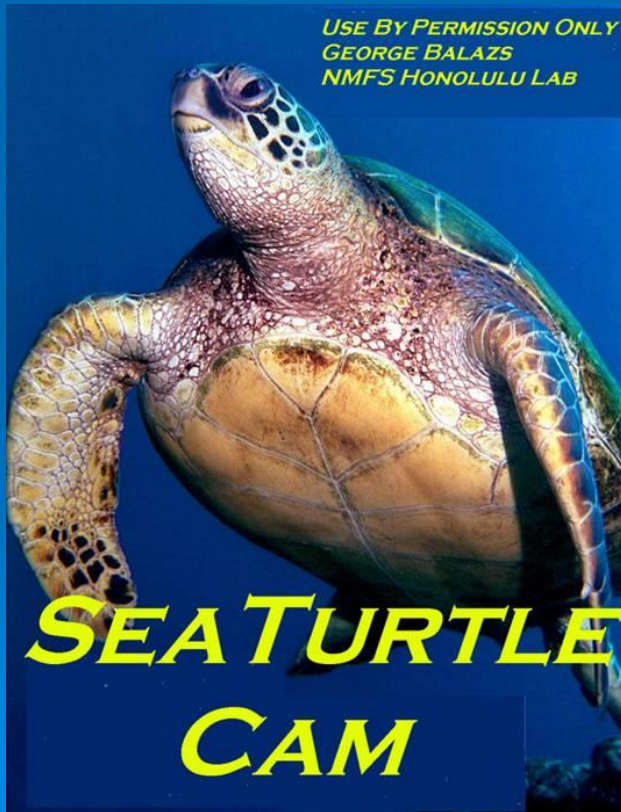
研究上的訓練，以及太平洋島民與環太平洋人員的培訓



PIFSC MARINE TURTLE RESEARCH

太平洋島嶼漁業科學中心的海龜研究

- “Remote Viewing” for experimental turtle monitoring using hi-tech cameras
運用高科技攝影機測試海龜遠端監控的成效



PIFSC MARINE TURTLE RESEARCH

太平洋島嶼漁業科學中心的海龜研究

- Educational outreach using our research results
運用研究結果進行教育宣導



PIFSC MARINE TURTLE RESEARCH

太平洋島嶼漁業科學中心的海龜研究

- Pelagic ecology of Taiwanese and Japanese loggerheads for bycatch reduction

台灣與日本赤蠟龜的遠洋生態，以減少混獲



PIFSC MARINE TURTLE RESEARCH

太平洋島嶼漁業科學中心的海龜研究

➤ Rescue and treatment 救援與治療

10 MidWeek November 16, 2004

Dr. Robert Morris NEWSMAKER

The Turtle Doc Of Hawaii

Dr. Robert Morris has saved hundreds of injured sea turtles after they're hit by boats or tangled in fishing lines

By YU SHING TING

When a sick or injured sea turtle is retrieved by the National Marine Fisheries Service, they call Dr. Robert Morris, aka the Turtle Doc. Morris has been the only contract veterinarian for the NMFS turtle stranding response team for over a decade, treating about 40 to 50 turtles a year.

"The most exciting cases are the ones that we can help out," says Morris. "We see a lot of line entanglements, and we have to do flipper amputations because the line usually will get wrapped around the flipper and cut through the bone. But they do quite well with three flippers. We also do some shell repair, like when they're hit by boats. And we had to sometimes wire the shell together.

"The ones that are the most frustrating are ones with fibropapilloma tumors because those we can't do as much. When they come in they're pretty sick."

Morris was a veterinary practitioner and owner of Makai Animal Clinic in Kailua for 27 years before selling it last month. He is retired from active practice, but continues to do sea turtle work at the clinic.

"The biggest difference

between working on turtles and on common pets like cats and dogs is the fact that turtles are reptiles," says Morris. "Their metabolism is much slower, so it takes them a very long time to recover from the anesthesia. And just the dosage of the medication we use, it lasts a lot longer in sea turtles than it does in mammals because they're cold-blooded creatures. So they're completely different as far as their reaction to medication and anesthesia."

Morris also takes care of the turtles at Mauna Lani on the Big Island. His past experience includes assistant director at the Waikiki Aquarium, curator at Marineland in Florida and curator at the New York Aquarium.

"Dr. Morris began doing sea turtle veterinary work for our program initially because he expressed an interest in treating sea turtles," says Cody Hooven, a biological research technician for the NMFS Marine Turtle Research Program. "Eventually, he gained experience treating the animals, and now has more experience with sea turtles than any vet in the state of Hawaii, and is the only qualified veterinarian to provide the best treatment possible."

There are five species of tur-



Dr. Robert Morris releases a loggerhead turtle after treating it for shark bites to its rear and front flippers.



Dr. Robert Morris repaired this cracked shell and saved the turtle. The injury was probably caused by a boat strike.

les found in Hawaiian waters — the leatherback, olive ridley, loggerhead, hawksbill and Hawaiian monk seal. All are listed and protected under the U.S. Endangered Species Act and wildlife laws of the state of Hawaii, which means that they can't be harvested,

caught, or have any parts processed. "Generally speaking their population, since they've been put on the endangered list, has come back almost to normal," says Morris. "The most common cases we see are fibropapilloma tumors, which is a virus caused by herpes, and fishing line entanglement from nets. And I think we get a lot of interaction between the turtles and fishermen and nets mainly because there's more turtles and there's more fishermen."

Morris is on-call 24 hours a day, seven days a week, and treats any sick or injured sea turtle that is retrieved by the NMFS. Most of the turtles are green sea turtles, and mostly found on Oahu. When a turtle is retrieved from a Neighbor Island, called in by one of the NMFS's col-

laborating sea turtle stranding teams. It is immediately flown to Oahu for treatment by Morris. But there are also times when Morris is flown to a Neighbor Island to provide the treatment.

"One interesting case happened about two years ago when I flew over to Kona because they had a turtle with a hook in its flipper," recalls Morris. "It was a big turtle, so they drove it to the airport. I flew over and we went and parked under a tree and did surgery on the turtle. I took the hook out and then they took the turtle back and let it go. It was a big turtle; it weighed several hundred pounds."

Morris, who lives in Kailua with his wife Sally, has a bachelor's degree in biology from the University of Delaware, a mas-

SEE PAGE 57

PIFSC MARINE TURTLE RESEARCH

太平洋島嶼漁業科學中心的海龜研究

- Health assessments including fibropapilloma disease complex

健康評估，其中包含纖維狀乳凸瘤疾病綜合症



PIFSC MARINE TURTLE RESEARCH

太平洋島嶼漁業科學中心的海龜研究

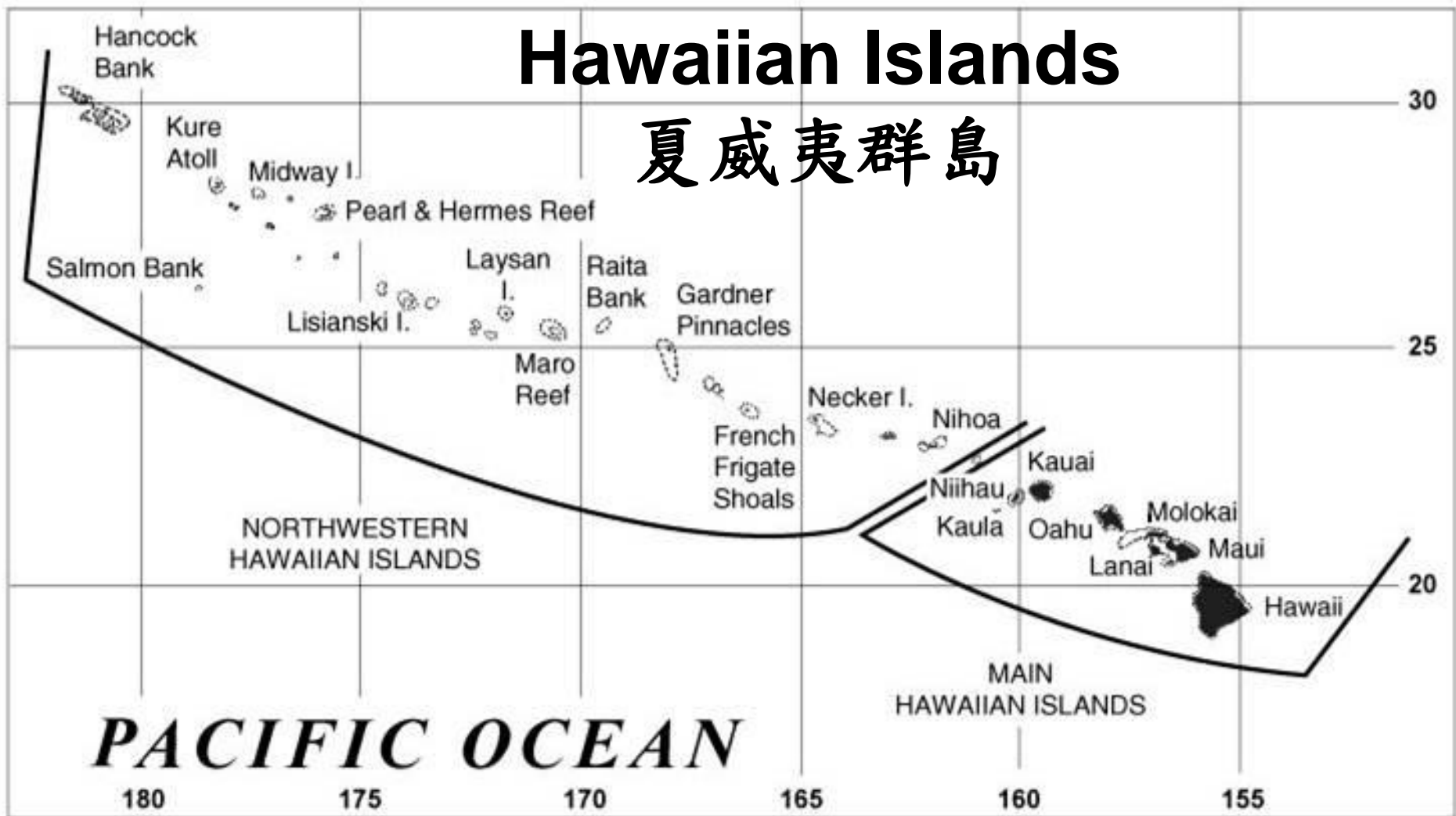
- Stranding, salvage and necropsy research for long term population dynamics data collection

擱淺、搶救與解剖研究，以長期蒐集群體的動態資料



Hawaiian Islands

夏威夷群島



The Hawaiian Archipelago

Marine Turtle Stranding Partners

海龜擱淺研究伙伴

- Concerned Public 熱心的民眾
- University of Hawaii at Manoa Marine Option Program (UHM MOP)
夏威夷大學瑪諾雅分校的海洋學程
- Hawaii Preparatory Academy
夏威夷預備中學
- UH Hilo MOP
夏威夷大學希洛分校的海洋學程
- Maui Community College MOP
茂宜社區大學的海洋學程
- NOAA Sanctuary Kihei, Maui and Kauai
海氣局位於茂宜島奇海區與可愛島的庇護所
- State of Hawaii DLNR-DAR-DOCARE
夏威夷州陸地暨資源部：海洋資源處與保育暨資源執法處

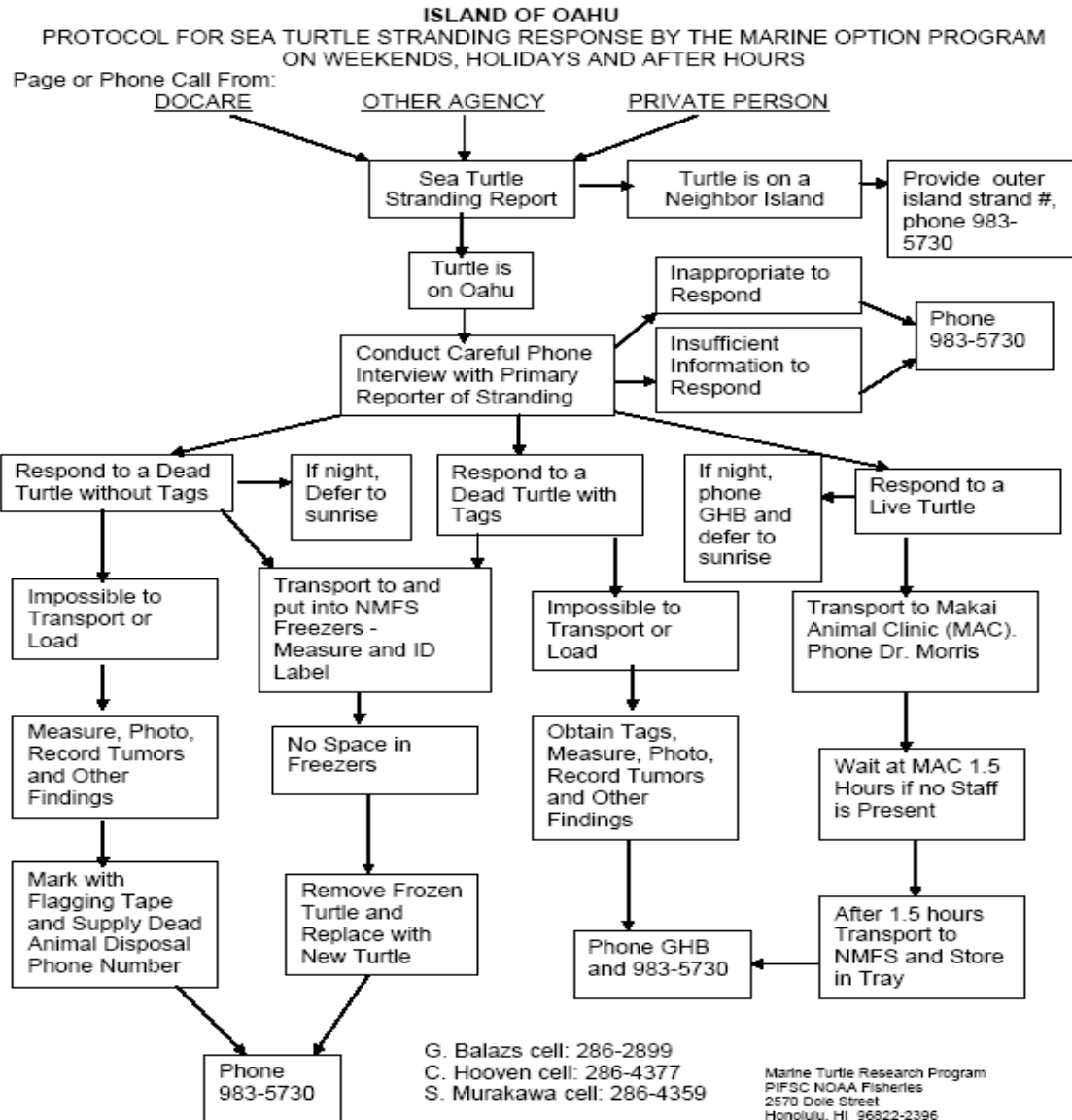
Turtle stranding response students

海龜擱淺應變組的學生



Flowchart

流程圖



Note: Illegal activities involving sea turtles should be reported to DOCARE (587-0077) and/or NMFS Law Enforcement (541-2727)

Types of
stranding cases
in Hawaii
夏威夷的擱淺
案例種類

Canal
渠道



Beach Shoreline

海灘海岸線



Beach 海灘



Shoreline 海岸線

Coastal Net Entanglement

漁網纏繞



Hooks 魚鈎



Fishing line entanglement

魚線纏繞



Stuck in rocks

困在岩縫內



Hit by boat

遭船撞擊



8/20/03 Alive 存活
Anaehoomalu Bay, HI

Shark attack

鯊魚攻擊



8/31/04
Kapalua, Maui

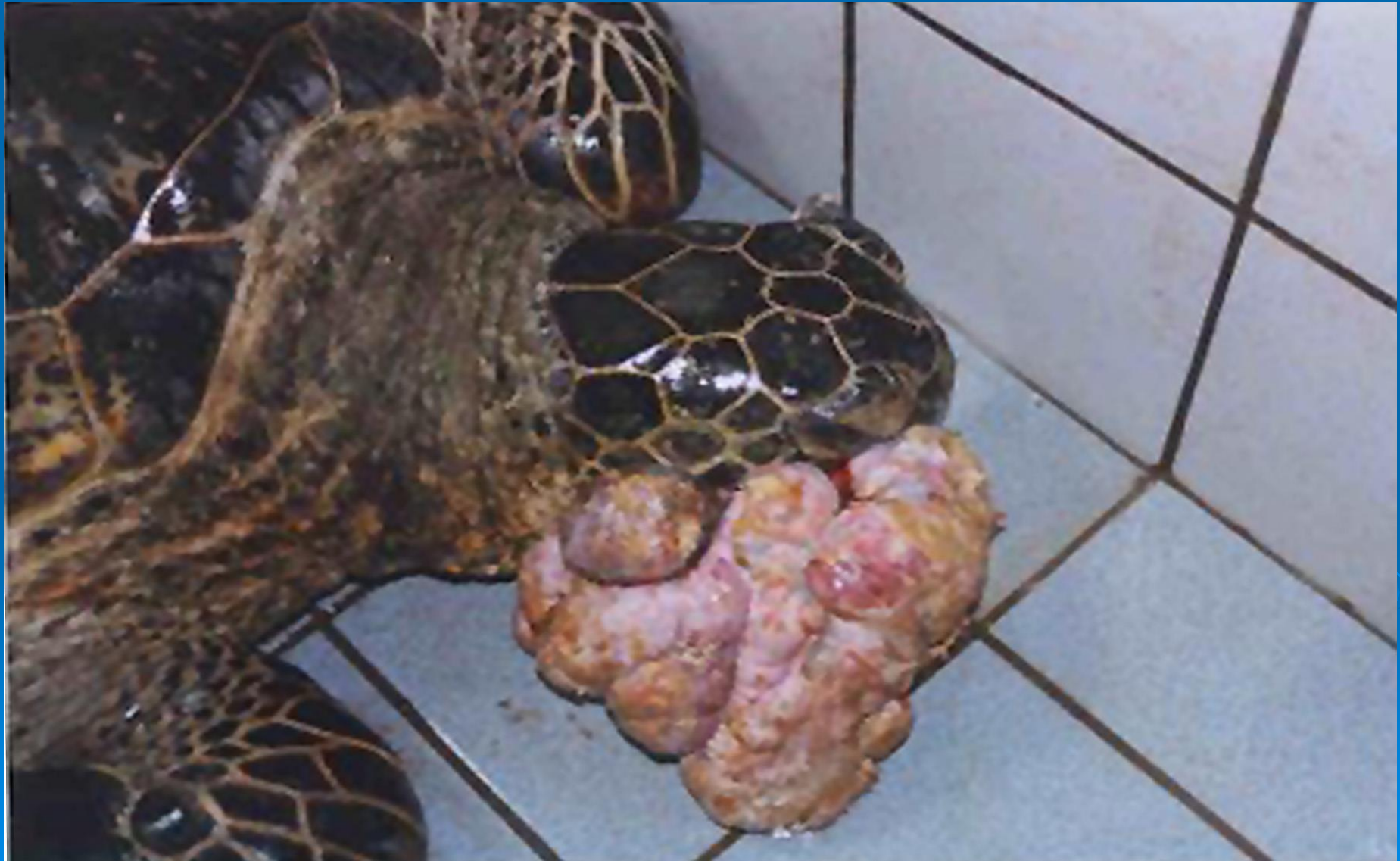
Fibropapilloma tumors

纖維狀乳突瘤



Large tumor

大型腫瘤



Example of Rescue 救援案例

03.07.2006





03.07.2006



03.07.2006



03.07.2006



03.07.2006



Examine plastron for body condition

03.07.2006



03.07.2006



Turtle stranding educates Hickam

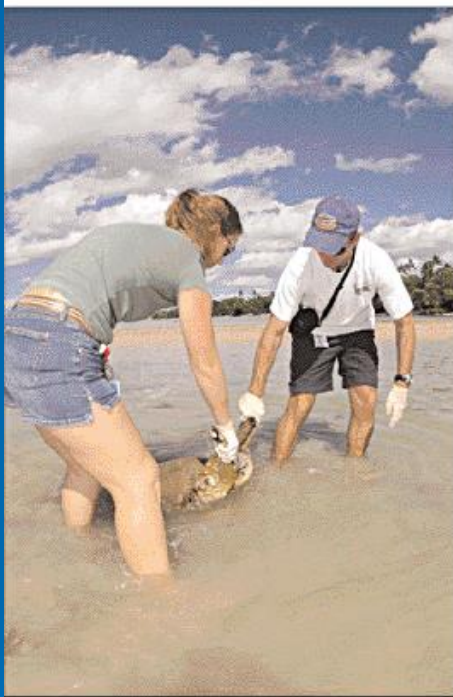


PHOTO BY ANGELA ELLIOTT
Cody Hoover and Richard Herren, Biological Research Technicians from the Marine Turtle Research at the National Marine Fisheries Service, pull a stranded Green Sea Turtle from the water near Kam Housing Dec. 28.

By Tech. Sgt. Andrew Leonhard
5th Air Wing Public Affairs

Two local youths and their mom tried to help save a stranded sea turtle off a sand bar near Kama Housing housing Dec. 28.

Rachel Sands and Kady Walker, both 11, were out strolling along the water when they saw something looking back at them.

"We saw his head looking around as we approached," said Kady, who lives on Pearl Harbor. The girls noticed something was wrong with the turtle. "I saw a growth on his eyes," said Kady. That is when the girls went into action.

"I got on my cell phone and called my mom," said Rachel, who lives in Kam Housing and is the daughter of Tech. Sgt. Janet Buehler, 50th Information Warfare Flight.

According to Rachel, her mom, Kathy Sands, called the humane society and got the phone number for the National Marine Fisheries Service in Honolulu. While Mrs. Sands contacted people to report the turtle, Rachel and Kady stood guard and kept a close eye on the 90-pound Green Sea Turtle, which is listed as a threatened species under the U.S. Endangered Species Act.

"I'm very proud of how Rachel and Kady quickly called me for help and watched over the turtle to give it a better chance at surviving," said Mrs. Sands. Unfortunately, not all strays have a happy ending. The turtle had to be euthanized, said Cody Hoover, Biological Research Technician, Marine Turtle Research



PHOTO BY ANGELA ELLIOTT
This sea turtle had large tumors on each eye, making it completely blind in one and nearly no vision in other.

at the National Marine Fisheries Service.

"After a veterinarian examined the turtle, it was determined to be beyond medical treatment," Ms. Hoover said.

The technician said in addition to the external tumors, it had almost no vision in the left eye, was blind in the right eye (due to tumors), was anemic, had poor body condition (little body fat, emaciated), and also had a small tumor on the right lung.

This turtle was previously tagged by one program in October 2002 in Kaneohe Bay," Ms. Hoover said. "Not only did the severity of its tumor affliction increase, but the animal has badly grown (10 lb.)! Average growth according to Ms. Hoover is 2 to 2.5 cm per year."

"This was an unfortunate case, but was definitely in a state where the turtle was suffering and received the only humane treatment," she said. According to the fisheries service data, on average 204 turtles are stranded each year

around Hawaii, and Hickam accounts for about three a year.

"Sea turtles most often strand, or beach themselves when they are sick or injured and need to rest safely out of the water away from predators and other obstacles," she said. "Occasionally, healthy green turtles at Hickam will show some behavior to sleep and bask in the sun and just need to be left undisturbed. This can be seen on the North Shore of Oahu at Lanikai Beach."

The two girls may not have saved this turtle, but Ms. Hoover and Richard Herren, who responded to the stranded turtle, praised the efforts of the girls.

"They did a beautiful job," said Ms. Hoover. "They noticed something was wrong with the turtle, called us, and kept an eye on the turtle from a short distance while we were on our way."

Enforcement issues related to sea turtles or any other protected resources can be reported to the NOAA - NMFS Enforcement at 541-2727, or State of Hawaii Dept. of Land and Natural Resources Division of Conservation and Resource Enforcement at 987-0073.

Also, check out www.fisheries.gov for more great sea turtle information.



PHOTO BY ANGELA ELLIOTT
Topsy Turtle

(Right) Richard Herren and Cody Hoover, Biological Research Technicians from the National Marine Fisheries Service, points out a few things to Hickam beach goers about the Green Sea Turtle that stranded itself Dec. 28. To find out what happened with the turtle see Page A5.

Turtle trivia

Spotted a stranded turtle or other marine life

□ Note what might be wrong with it, and call the turtle stranded line at 963-5730 on Oahu.

□ For other stranded Marine Mammals in Hawaii call (838) 256-9840.

□ Check the phone book for any other animals that may strand from the ocean (Sea Life Park may take sea birds, etc.).

How can you help reduce the chance?

□ Enjoy sea turtles from a distance.

□ Do not attempt to disturb their natural behavior or bother them.

□ Take care and learn about the ocean in general, and how to preserve it as a resource so that it, and all that it supports, remain healthy.

□ Discard fishing line properly, do not throw into water.

Amputation

截肢



Dr. Bob and Nurse Bob 醫師與護士



Release 野放





The Honolulu Advertiser

HAWAII'S NEWSPAPER

TUESDAY | May 3, 2005

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STATE EDITION
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Island neighborhoods produce abundance of everyday heroes

ISLAND LIFE | E1

Confronting campus sit-in

UH president promises to address protesters' list of demands

HAWAII | B1

Time to halt abuse of refs

Sports officials must be protected

FERD LEWIS | D1

Second-string homemaker

Hooking a man who cooks better than you like hitting the jackpot

ABOUT WOMEN | E1



Torrent of

Back to the sea for hooked turtle



Fishing barbs, line removed from its flipper and neck

BY JAN TENBRUGGENCATE
Advertiser Science Writer

A green sea turtle was released back into the ocean at Hanauma Bay yesterday after being brought ashore Sunday with two fishing hooks in its flesh and trailing a tangle of line.

One hook in the animal's flipper was removed on the beach, and a second hook in its neck was surgically removed by veterinarian Robert Morris of Makai Animal Clinic in Kailua, who concluded that the animal

TURTLE SAFETY

Some tips to prevent injury to turtles. | A2

was healthy enough to be returned to the sea.

Sea turtle hookings and entanglements in fishing line are increasing, especially on O'ahu, which has about 75 percent of the known cases that occur in Hawai'i, said George Balazs, sea turtle biologist with the NOAA Fisheries' protected species office.

"I think it's because there

SEE TURTLE, A2



Wai'anae applauds girl's bravery

BY ROD OHIRA
Advertiser Staff Writer

WAI'ANA'E — Pearl Bautista said she clapped along with dozens of others Saturday night when police arrested her neighbor's 39-year-old brother in the rape and kidnapping of an 8-year-old girl in a vacant lot.

The crowd's reaction had nothing to do with the arrest of Yomeo Eieta at 8:31 p.m.

Bautista, coordinator of Kau'ioikalani housing's Neighborhood Security Watch, said the community's reaction was for the little girl.



Eieta

Bautista said police brought the girl in a police SUV for a field lineup. The girl picked out Eieta as her attacker, according to a court document.

"We were clapping for her because it took a lot of courage and bravery to do what she did," Bautista said.

Eieta, a native of Chuuk (Federated States of Micronesia) who is unemployed, was charged yesterday with four counts of first-degree sex assault, one count of third-degree sex assault and kidnapping. His bail totals \$150,000. Eieta was scheduled to appear today at District Court.

Eieta has no criminal record in Hawai'i, said police Detective Phillip Lavarias, the lead investigator.

Necropsy

驗屍解剖



Shawn

Bridget

Talking 聊天

Dr. Bob

Bridget

Bob

George

Dr. Work



Summary of important points 重點摘要

- Details on turtle strandings have been collected in Hawaii since 1982
夏威夷自1982年起就開始蒐集海龜擱淺的相關資料
- 97% of the strandings are green turtles
- Flowcharts provide stranding protocols for responding // 流程圖提供了擱淺事件的處理程序
- 250-300 turtles strand each year // 每年約250至300頭海龜擱淺
- 30% of the turtles are alive // 30%的海龜是活的
- A clinical veterinarian, Dr. Bob Morris, treats the turtles
臨床獸醫Bob Morris醫師負責治療海龜
- A turtle pathologist, Dr. Thierry Work, conducts necropsy research
海龜病理學家Thierry Work博士負責解剖研究
- Causes of strandings include tumor disease, fishing line and hooks, nets, boat collision, shark attack, and miscellaneous.

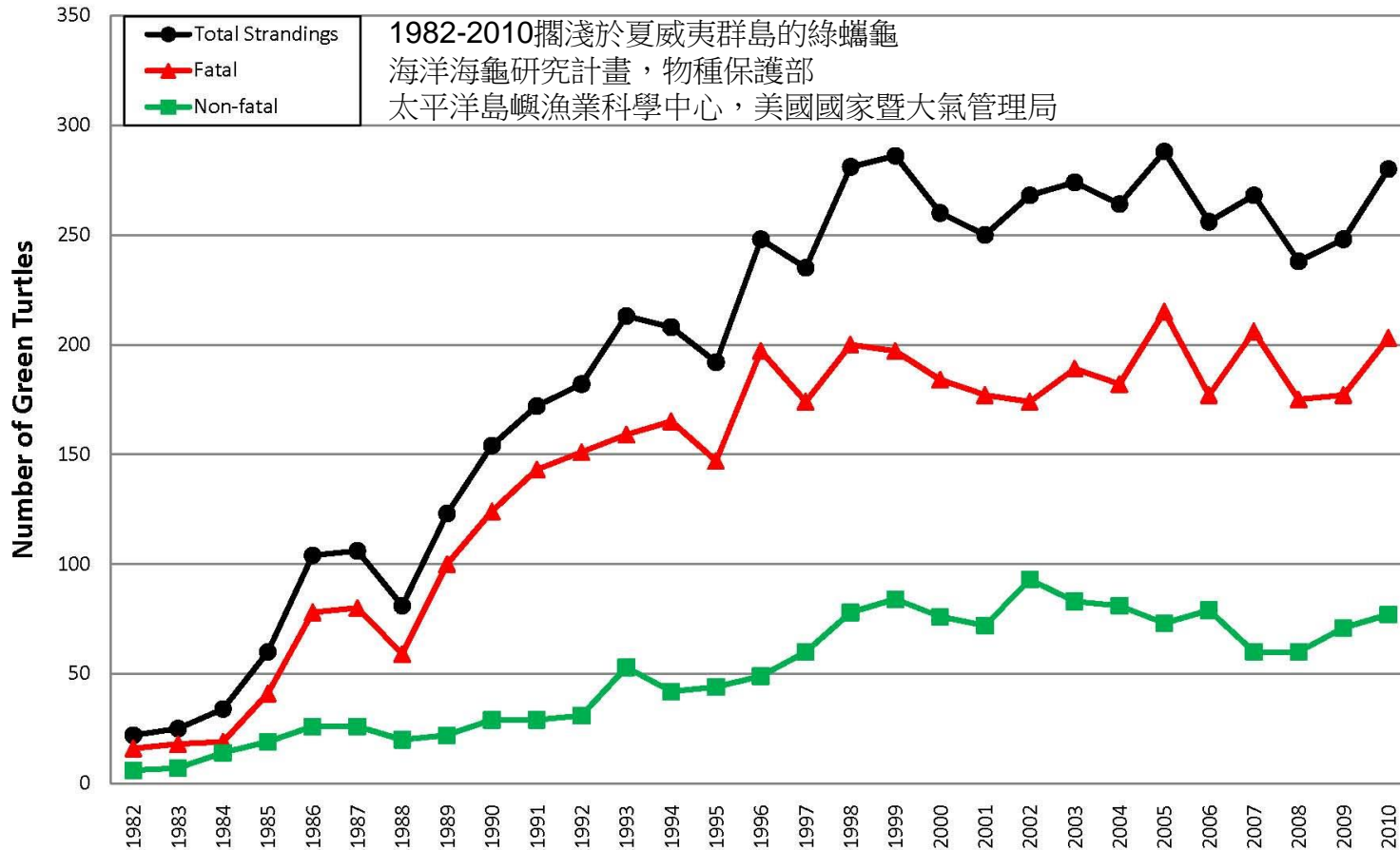
擱淺原因包括：腫瘤、魚線、魚鉤、魚網、遭船撞擊、鯊魚攻擊，還有其他原因。

Green Turtle Strandings in the Hawaiian Islands 1982-2010

Marine Turtle Research Program , PSD

Pacific Islands Fisheries Science Center, NOAA

(n=5621)



Reef fish cleaning a green turtle

珊瑚魚正在為綠蠟龜清洗

The End

報告完畢

