Reduce

DIVISION OF AQUATIC RESOURCES - MAUI
DEPARTMENT OF LAND & NATURAL RESOURCES
130 Mahalani Street
Wailuku, Hawaii 96793
Phone # (808) 243-5834
FAX #(808)243-5833
July 7, 1998

To: Bill Devick, Acting Administrator
Emily Gardner, Marine Mammal Specialist

From: Skippy Hau, Aquatic Biologist

Subject: Turtle Nest in Kihei Beach Reserve Fenced On 30 June 1998

Last week, I was contacted by Dr. Steve Williams, coordinator for the Fish and Wildlife volunteers patrolling South Maui beaches. I received telephone messages at home reporting that a nest appeared to have been dug into by a dog. He estimated about 15 eggs were broken from the nest. After the incident, he and Mike Nishimoto, Fish and Wildlife Biologist inspected the nest damage.

Ms. Margaret Dupree (NMFS) and Ms. Karen Rosa (FWS) planned to meet with Steve Williams and inspect the nest areas in the afternoon on June 30. I was invited to meet with them and inspect a third possible nesting site found the day before (June 29).

We inspected the three sites in the Kihei Beach Reserve. I also explained that I had buried a temperature logger supplied by George Balazs (NMFS Marine Turtle Research Group). It was placed near the first 1997 nest site.

After inspecting the second nest, we decided it would be best to put up a fence to protect the remaining eggs in the nest. I've observed several dogs being walked along the beach without leashes. Other loose dogs also appeared to be from the neighborhood and were unleashed and without owner.

In the late afternoon, Steve Williams and I, pounded pieces of one-foot reinforcement bars into the ground to anchor drift fencing around the nest area. We also removed the coconut leaves used to block the trail from access by people. On July 2nd, I placed a small laminated sign on the fence identifying it as a turtle nesting area.
As with other turtle notices, both agencies, Fish and Wildlife Service and State DLNR Division of Aquatic Resources were listed along with telephone numbers.

We believe through neighborhood cooperation, the area is being carefully guarded by volunteers and neighbors.

c: George Balazs & Margaret Dupree, NMFS
Karen Rosa & Kiti Jensen, FWS

DIVISION OF AQUATIC RESOURCES - MAUI
DEPARTMENT OF LAND & NATURAL RESOURCES
130 Mahalani Street
Wailuku, Hawaii 96793
Phone # (808) 243-5834
FAX #(808)243-5833
September 2, 1998

To: Eric Onizuka, Acting Administrator
Emily Gardner, Endangered Species Specialist

From: Skippy Hau, Aquatic Biologist

Subject: Hawksbill Hatchlings Found at Nest Site VFW-3 at Kihei Beach Reserve

On Monday, 1 September 1998 (day 65), Mrs. Barbara Noel and other volunteers found hatchlings near the third nesting site. She reported finding many dead hatchlings in the grass and vegetation. I inspected the site and photographed some of the tracks to the ocean and several dead hatchlings. The hawksbill hatchlings appeared to have died from dehydration.

About ten hatchling tracks were found leading to the ocean. Two live hatchlings were released before my arrival. There was one weak hatchling that was kept in a bucket of water and released later around noon. It appeared calm and floated in the water. It was not an active swimmer.

The dead hatchlings were brought back to the office, measured and kept in the freezer. Straight carapace lengths were taken to the nearest tenth of a millimeter. Seventy-two hatchlings averaged 37.2 millimeters (S.D.=1.3). The minimum and maximum lengths were 34.0 and 39.5 millimeters (See Attachment).

I contacted Ms. Kiti Jensen and Ms. Glynnis Nakai (FWS) to discuss the options for weak hatchlings. If hatchlings would not be allowed to be held temporarily to rest and gain strength, I would like Fish and Wildlife Service to determine what action should be taken. Ms. Jensen said she would be meeting with Ms. Karen Rosa to discuss weak hatchlings.

Attachment (1)
c: DOCARE - Maui
Glynnis Nakai, FWS, Kealia NWR
George Balazs, NMFS
Margaret Dupree, NMFS
Karen Rosa, FWS
Hannah Bernard, Hawaii Wildlife Fund

September 1, 1998 VFW-3 Nest DEAD HATCHLINGS RECOVERED
STRAIGHT CARAPACE LENGTHS MEASURED

35.7	36.6	COUNT = 72
37.5	38.2	MIN = 34.0
35.8	38.7	MAX = 39.5
38.6	34.4	AVE = 37.2
38.8	37.4	STDEV =1.3
38.5	37.2	
38.2	36.9	
38.1	35.8	
37.9	35.2	
37.5	37.4	
38.8	39	
36.2	35.1	
39.4	38.7	
37.6	37.5	
36.4	36.3	
36.8	37.3	
35.7	35.8	
37	37.9	
38	36.7	
37.1	36.5	
35.9	35.2	
36.4	39.5	
38.5	39.1	
38.5	35.1	
38.1	37.4	
36.4	38	
36.9	37.8	
38.5	36.3	
37.5	37.3	
36.4	37.5	
36.3	37.9	
37.7	38.4	
35.6	34	
35.5	37	
38.4	36.5	
38.2	35	

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DEPARTMENT OF LAND & NATURAL RESOURCES
130 Mahalani Street
Wailuku, Hawaii 96793
Phone # (808) 243-5834
FAX #(808)243-5833
September 3, 1998

To: Eric Onizuka, Acting Administrator
Emily Gardner, Endangered Species Specialist

From: Skippy Hau, Aquatic Biologist

Subject: Excavation of Hawksbill Turtle Nest Site VFW-3 at Kihei Beach Reserve

Due the large number of dead hatchlings found on the first day and one hatchling observed the evening before by Hawaii Wildlife Fund personnel, we decided to excavate on Wednesday, 02 September 1998 (day 66). Around 17:00, we searched the VFW-3 area for about 30 minutes. One hatchling was found crawling in the grass by Mrs. Esten Williams. It was immediately released on the beach.

We tried clearing the grass around the nesting site. The nest was found around 18:04. The second live hatchling was uncovered on the surface. Live hatchlings were found near the surface. Several hatchlings were blocked beneath grass roots.

The female appears to have nested beneath the grassy area. The diameter of the nest was about 28 centimeters across. The bottom of the nest was about 48 centimeters deep. With the assistance of FWS Volunteers and members of the Hawaii Wildlife Fund, we recovered: 47 live hatchlings; 8 dead hatchlings;

148 empty shells (est.)
59 undeveloped & partially developed eggs

207 Total Estimated Eggs

Forty-six of the live hatchlings were released after being measured. Two weak hatchlings were held for observation overnight. One hatchling was dead in the evening and one was released this morning. The nest remains were shipped along with the 72 dead hatchlings to NMFS Honolulu Laboratory for further analysis and final accounting.

c: DOCARE - Maui
Glynnis Nakai, FWS, Kealia NWR
George Balazs, NMFS
Margaret Dupree, NMFS
Karen Rosa, FWS
Hannah Bernard, Hawaii Wildlife Fund

DIVISION OF AQUATIC RESOURCES - MAUI
DEPARTMENT OF LAND & NATURAL RESOURCES
130 Mahalani Street
Wailuku, Hawaii 96793
Phone # (808) 243-5834
FAX #(808)243-5833
September 22, 1998

To: Bill Devick, Acting Administrator
Emily Gardner, Endangered Species Specialist

From: Skippy Hau, Aquatic Biologist

Subject: Excavation of Hawksbill Turtle Nest Site VFW-4 at Kihei Beach Reserve

While I was on vacation, hatchling tracks were found at the nest indicating emergence on 12 September 1998 (day 54). Excavation was conducted by Ms. Glynnis Nakai (FWS) on Tuesday, 15 September 1998 (day 57). This morning, I recovered the nest remains and excavation summary.

According to Ms. Hannah Bernard (Hawaii Wildlife Fund), the nest was also disturbed by a dog or other animal. Ms. Susan Scott and Mr. Gary Kubota, a writer and reporter for the Star Bulletin came to inspect the nesting area and wrote articles about the hawksbill turtle nesting.

The bottom of the nest was about 49 centimeters deep. The top of the nest was around 20 centimeters. With the assistance of FWS Volunteers and members of the Hawaii Wildlife Fund, they recovered: 17 live hatchlings; 3 dead hatchlings;

117 empty shells (est.)
46 undeveloped eggs
40 partially developed eggs

203 Total Estimated Eggs

The live hatchlings were released.

The nest remains for the fourth nest will shipped along with 4 dead hatchlings from the third nest to NMFS Honolulu Laboratory for further analysis and final accounting.

c: DOCARE - Maui
Glynnis Nakai, FWS, Kealia NWR
George Balazs, NMFS
Margaret Dupree, NMFS
Karen Rosa, FWS
Hannah Bernard, Hawaii Wildlife Fund

9/7/98 B1 The Honolulu Advertiser

Shore lights appear to affect breeding

By Edwin Tanji
Advertiser Maui County Bureau

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

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

On Maui, Canja is involved in a project developed by National Marine Fisheries scientist George Balazs to place radio-tracking devices on hawksbill turtles to follow their movements.

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

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

Last summer, when a turtle approached a section of Kealia Beach on Maui's south shore, it appeared to be disturbed by a bright light from a construction site at Maalaea, Canja said.

The turtle did not come ashore, she said.

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

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

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

She said it is generally

# of hawksbill turtles

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

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

But she knows little else about their habits. Tracking during 24-hour cycles has found periods when the turtles appear to be active and others when the turtles do not surface for 60 to 90 minutes, she said.

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

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

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

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DEPARTMENT OF LAND & NATURAL RESOURCES
130 Mahalani Street
Wailuku, Hawaii 96793
Phone # (808) 243-5834
FAX #(808)243-5833
August 12, 1998

To: Bill Devick, Acting Administrator
Emily Gardner, Endangered Species Specialist

From: Skippy Hau, Aquatic Biologist

Subject: Excavation of Hawksbill Turtle Nest Site VFW-2 at Kihei Beach Reserve

On Sunday, 09 August 1998 (day 63), at 17:00, we excavated site VFW-2. We removed the drift fence. Hatchlings emerged from August 5th (day 59). Two dead hatchlings were recovered by FWS personnel. Volunteers reported seeing tiny tracks every morning. More tracks were observed on day 60 and 62.

The first live hatchling was found around 14 centimeters. The first egg was approximately 23 centimeters from the surface. The diameter was about 31 centimeters across. The bottom of the nest was about 47 centimeters deep (nest was reburied after being disturbed on June 24, 1998). With the assistance of FWS Volunteers and members of the Hawaii Wildlife Fund, we recovered: 7 live hatchlings; 5 dead hatchlings;

114 empty shells (est.)
29 undeveloped eggs
28 whole egg
4 dead turtles in shell

---

175 Total Estimated Eggs

The seven hatchlings were released. One dead hatchling and one dead turtle in shell were preserved for the Humpback Whale Sanctuary educational program.

This morning, the nest remains were shipped to NMFS Honolulu Laboratory for further analysis and final accounting.

c: DOCARE - Maui
Glynnis Nakai, FWS, Kealia NWR
George Balazs, NMFS
Margaret Dupree, NMFS
Karen Rosa, FWS
Hannah Bernard, Hawaii Wildlife Fund

Redone -
Maui
book

DIVISION OF AQUATIC RESOURCES - MAUI
DEPARTMENT OF LAND & NATURAL RESOURCES
130 Mahalani Street
Wailuku, Hawaii 96793
Phone # (808) 243-5327
FAX #(808)243-5326
July 30, 1997

To: Bill Devick, Acting Administrator
Emily Gardner, Endangered Species Specialist

From: Skippy Hau, Aquatic Biologist (initialed: Sh)

Subject: Excavation of Hawksbill Turtle Nest Site VFW-1 at Kihei Beach Reserve

On Monday, 27 July 1998 (on day 69), at 17:00, I excavated two locations near site VFW-1. No eggs were found in the monitored location.

We checked an adjoining area also photographed in slides after finding the turtle tracks. We initially found the first egg approximately 27 centimeters from the surface.

With the assistance of volunteers and members from the Hawaii Wildlife Fund, we recovered 213 undeveloped and decomposed eggs. The diameter was about 28 centimeters across. The bottom of the nest was about 56 centimeters deep.

At the office six eggs were placed in a ziplock plastic bag. The rest of the remains were placed in plastic bags and frozen. Ms. Hannah Bernard tried to contact Dr. Peter Dutton for his assistance in checking the eggs. We were unable to contact him so the eggs were also placed in the freezer.

The nest remains were shipped to NMFS Honolulu Laboratory on Thursday, 30 July 1998.

The GPS position for this nest was 20° 45' 18 N Latitude and 156° 27' 44 W Longitude.

c: DOCARE - Maui
Glynnis Nakai (Kealia NWR, FWS)
George Balazs, NMFS
Margaret Dupree, NMFS
Karen Rosa & Kiti Jensen, FWS

Redwe Maui Book

DIVISION OF AQUATIC RESOURCES - MAUI
DEPARTMENT OF LAND & NATURAL RESOURCES
130 Mahalani Street
Wailuku, Hawaii 96793
Phone # (808) 243-5834
FAX #(808)243-5833
July 30, 1998

To: Bill Devick, Acting Administrator
Emily Gardner, Marine Mammal Specialist

From: Skippy Hau, Aquatic Biologist

Subject: Hawksbill Turtle Update From Bill Gilmartin

According to Bill Gilmartin, on Saturday night, 18 July 1998 (day 20 from the last crawl observation), he and members of the Hawaii Wildlife Fund were able to monitor the return of the hawksbill female in the Kihei beach reserve. While she was digging, a barking dog caused the female to stop nesting. They were able to catch the dog and remove it from the scene. In the morning, it did not appear that she nested.

On her way back to the ocean, they contained her and placed a radio transmitter on the dorsal carapace. Since then, the female hawksbill appears to be staying in the waters around Wailea.

Two days later, the turtle returned on the evening of Monday, 20 July 1998. Tracks were reported the next morning. Photographs were taken of the tracks and two possible nest sites. The location was again very close to the second nest. She was observed trying to crawl through the fence.

On Friday, 24 July 1998, Steve Williams, Suzanne (HWF) and I met to exchange information on their observations and radio tracking. The female turtle stayed in a grassy area for a long time. She could have made a nest in the grass. This third site will not be disturbed. We plan to clean up some of the vegetation before the expected hatching.

After excavating the first nest (July 27), slats on the ocean side of the fence for the second nest were raised up on the ocean side.

This afternoon, I took the GPS coordinates for the four nesting sites.

c: George Balazs, NMFS
Margaret Dupree, NMFS
Karen Rosa & Kiti Jensen, FWS

Date: Fri, 14 Aug 1998 06:50:45 -1000
From: Casey Jarman <jarman@aloha.net>
To: Larry Katahira <larry_katahira@nps.gov>,
George Balazs <gbalazs@honlab.nmfs.hawaii.edu>,
"Bernard, Hannah" <wild@aloha.net>
Subject: radio tags at kamehame

Maui Book

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We were able to get instruments on 2 animals on the night of 8/12. During the day 8/13 we got preliminary positions on the 2. Both have moved N/E of the nesting beach, one 1/4 mile and one at least 1/2 mile.

Suzanne and I are going back today to relocate and confirm positions.

More later. Bill

DIVISION OF AQUATIC RESOURCES - MAUI
DEPARTMENT OF LAND & NATURAL RESOURCES
130 Mahalani Street
Wailuku, Hawaii 96793
Phone # (808) 243-5327
FAX #(808)243-5326
October 17, 1997

To: Bill Devick, Acting Administrator

From: Skippy Hau, Aquatic Biologist

Subject: Hawksbill Turtle Hatchlings From A Second Nest

On Tuesday, 14 October 1997, Mrs. Barbara Noel (Ph.#875-7754/ 244-7687 work) said that she and other morning beach walkers were surprised to find hatchlings on the beach. She contacted our office to report the turtle hatchlings. I contacted Mrs. Noel and arranged to meet her near a shoreline access (#119) on Wednesday morning. She and other walkers helped move more than 25 hatchlings tangled in the vegetation to the beach. I found two more hatchlings in the vegetation and released them on the beach.

The nest was located in the beach reserve area. The turtle had crawled up an embankment and nested about 20 yards back. On Thursday, Land Agent Phil Ohta came with me to inspect the location of the nest. The GPS position for the area was Latitude 20° 45' 17 N Longitude 156° 27' 44 W.

This morning, Brooks Tamaye and I searched the area and was unable to find the nest. We found one dead hatchling. The hatchling will be sent to George Balazs. The dried hatchling weighed 8.9 grams. The straight carapace length was 35.7 mm. The straight carapace width was 26.7 mm.

More than 27 hatchlings appears to have crawled, released or were assisted by morning walkers on Tuesday and Wednesday. The one dead hatchling seems to indicate that most of the hatchlings were found and released on the beach.

c: DOCARE - Maui
George Balazs, NMFS
Kathy Smith, FWS, Kealia NWR
Emily Gardner, DAR

Hawai'i Wildlife Fund
P. O. Box 70
Volcano, HI 96785

June 23, 1998

Public Testimony regarding the State of Hawaii's proposed expansion of the Ma'alaea Small Boat Harbor

My name is William G. Gilmartin and I am the President and Director of Research for the Hawai'i Wildlife Fund. I retired from the National Marine Fisheries Service (NMFS), Honolulu Laboratory in December 1995. I was with NMFS for 16 years as the Chief of the Protected Species Investigation, overseeing research and recovery programs on Hawaiian monk seals and Hawaii's marine turtles. I continue to have a strong interest in recovery of these species and currently hold a FWS permit (issued to the Hawai'i Wildlife Fund) to conduct research on hawksbill turtles on Maui.

I want to express several concerns I have relative to the proposed expansion of Ma'alaea Small Boat Harbor and potential impacts on the hawksbill turtle. These concerns stem from the fact that a small population of federally-protected, endangered hawksbill turtles are known to nest annually along a portion of the beach adjacent to Kealia Pond NWR in north Ma'alaea (approximately 1.5 - 2.0 mi from the Ma'alaea harbor). In 1997, hawksbill nesting was also confirmed at Makena Beach and along the Kihei shoreline.

I am appalled that the NMFS, the lead federal agency responsible for protection of this critically endangered turtle has not fully examined the potential takes that could result from the proposed activity. The NMFS Biological Opinion addressing potential hawksbill takes as a result of the proposed Ma'alaea Harbor expansion must be updated and account for the distribution and amount of hawksbill nesting now known to occur around Ma'alaea Bay. Currently, with regard to construction, the NMFS position is that disturbance, injury and even death of a hawksbill is acceptable. This NMFS opinion is then reflected in other documents of other agencies that generally conclude that since there are only a few hawksbill turtles, takes can be tolerated.

This position is absurd for the federal agency that has the mandate to enforce the ESA, and it should be unthinkable for the State of Hawaii, which espouses a need to protect its coral reefs and protect its marine resources to continue its drive to expand this harbor when viable alternatives that avoid these threats are available.

The ESA and much of this whole EIS process is intended to ensure protection of rare and endangered species and contribute to their recovery. Potential impacts to the much more numerous humpback whales and green turtles are addressed and mitigation actions are proposed, although the sufficiency of these is arguable. In contrast, the entire Hawaii hawksbill population on all islands does not exceed 15-20 nesting females in any one year.

Our hawksbill research project documented a serious problem at the Kealia nesting beach due to lighting at the Ma'alaea Triangle construction site on September 2, 1997: A female coming onto the Kealia beach to nest appeared to be driven back into the water by lights turned on at the construction site (about 1.5 miles away, the same distance away as the proposed harbor expansion project) at the same time she emerged from the water. No consideration appears to have been given to the lighting effects on the nesting hawksbill population during the harbor construction activity or the additional operational lighting that the expanded harbor will require. A comparable problem to the deterrent effects of lighting on the nesting females, is the attraction of emerging hatchlings to lights, confusing their innate sense to move offshore quickly and away from predators. Has the State or the federal government considered that the added lighting in the proposed expanded harbor will be a threat to nesting hawksbill females and especially to the hatchlings emerging from nests along the Kealia beach in Ma'alaea Bay?

NMFS has also required that blasting, as needed for construction, be conducted from June through November. These are the hawksbill turtles' nesting and nest hatching months, the most critical life stages for this highly endangered species, yet no consideration appears to have been given this species in this decision.

Considering the above information:

> How can any lethal take from such a small population of endangered turtles be justified by coral reef blasting during the nesting and hatchling emergence months?

How can coral reef habitat destruction on Maui be justified?

How can this harbor expansion project be justified when it may alter sand deposition along the Kealia Pond hawksbill nesting beach?

How can additional lighting be added to this bay without increasing the risk of loss of hawksbill hatchlings?

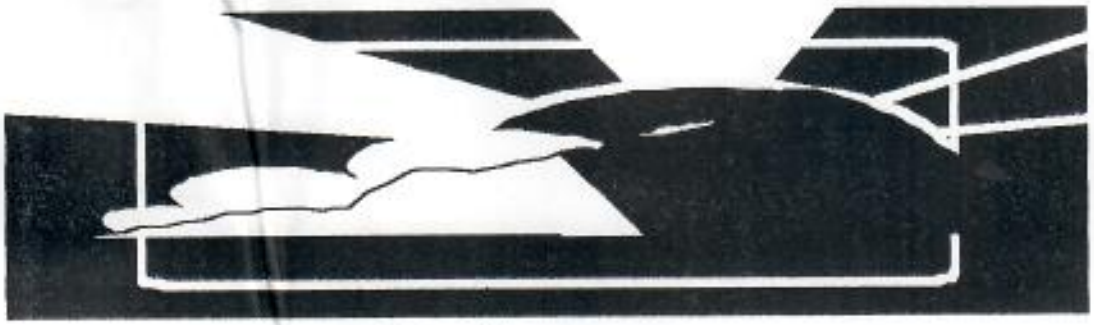
The recently approved (NMFS and Fish and Wildlife Service) and published *Recovery Plan for the U.S. Pacific Populations of the Hawksbill Turtle* states that "the Hawaiian hawksbills stand the best chance for recovery" of all areas covered in the plan because "an aggressive management plan is in place." The wording is interesting because it says that simply having a plan is all you need to do to save this species - and this seems to be how both the NMFS and the State of Hawaii are planning to save the hawksbill: by having a plan on the shelf! And, since the plan says they are saving hawksbills, need they do more?

The Recovery Plan cites "the historic abuse of hawksbill nesting populations throughout Micronesia" for the major declines there, yet at home in Hawaii, here in Ma'alaea Bay, the NMFS and the State of Hawaii seem to find "abuse" of the nesting hawksbill population an acceptable practice.

Summarizing, I believe that the State and federal agencies that have contributed to approval of expansion of the Ma'alaea Small Boat Harbor are evading their legislative mandate and responsibility to protect and encourage recovery of an endangered species because they suggest that the effects of this action on the hawksbill turtle can effectively be disregarded. This is not true! The Hawaii endangered hawksbill turtle population has the possibility of recovering, but it cannot recover if the "responsible" federal and State government agencies continue to disregard their mandate to protect them.

William G. Gilmartin

William G. Gilmartin
President and Director of Research
Hawai'i Wildlife Fund
P.O. Box 70
Volcano, HI 96785



Dawn Patrol Update

Hawksbill sea turtle nest monitoring at Ma'alaea Bay, Hawaii
A USFWS volunteer project in coordination with State of Hawaii DLNR and Hawaii Wildlife Fund

MEMORANDUM

TO: Skippy Hau

FROM: Steve Williams
JUNE
~~JULY~~ 26,1998

RE: Sea Turtle nest site disturbance

This morning beach patrol volunteer Barbara Noel reported a disturbance of the June 8 nest site near the VFW in Kihei. On her morning patrol she discovered the nest site to be partially excavated, apparently by an animal. She reported several egg fragments on the surface of the sand. Mike Nishimoto and I visited the site at 7:45 an found a shallow depression at the nest site measuring 14-16 inches in diameter and 4-5 inches deep. There was evidence of digging, apparently by dog, with fragments of egg shells sprayed mostly in one direction. Egg fragments were found up to 5 feet from the nest site. The egg remains of approximately 15-20 eggs were recovered. The site was photographed and measured, and sand was replaced in the depression. Barbara Noel was alerted to watch the area carefully on her morning patrol for further disturbance.

George Balazs was contacted by the DLNR office and on his advise we are taking no further action. This nest site is bordered by residential neighborhood and there are dogs who freely roam the area. We'll have to wait and see whether this was an isolated incident or whether domestic animals will pose a threat to nesting in the area.

cc: Glennis Nakai
Mike Nishimoto
Beach Patrol volunteers
G. Balazs

STATE OF HAWAII
Department of Land and Natural Resources
Division of Aquatic Resources - Maui
130 Mahalani St.
Wailuku, Hawaii 96793
(808) 243-5294

August 19, 1997

Memorandum

To: Hawksbill Sea Turtle File

From: Brooks Tamaye, Information Specialist BT

Subject: Old Turtle Nest at Maalaea Bay Beach

This morning at approximately 7:45 a.m., I received a call from Mike Nishimoto, Biologist at Kealia Ponds NWR. He reported that "Dawn Patrol" volunteers had found turtle tracks this morning and also broken egg shells. Jean Johnston (875-7324) the volunteer who found the tracks this morning, also called and reported the same. She indicated the tracks were in the vicinity of the possible nest site discovered the previous Saturday (near yellow 35 mph sign east of pond outlet).

I arrived at the site at approximately 9:00 a.m.. The turtle had come up approximately 75 feet Kihei side of the Saturday nest site. It appears to have dug or tried to climb a dune face and in the process uncovered an old nest. It then proceeded toward Kihei for about 20 feet, climbed the dune in a lower area, hit the fence, walked alongside it going toward Maalaea for about 10 feet, dug a little in one spot and went back into the water. It didn't appear to have nested. The rear flipper tracks measured between 28"-31" in width. Marks left by its plastron measured 8"-9" in width.

Another set of smaller tracks about 4 feet Maalaea side of the upward crawl marks was about 15" in width. These tracks lead back toward the water and displayed a possible abnormality with a left rear flipper. No upward crawl marks were observed to explain the origins of this set (This may have been obscured, old crawl marks from the turtle on Saturday).

Old Nest

The egg shells in the uncovered nest were old, evidenced by grass roots growing into some of the eggs and the condition of the remains in the nest. The nest was dug in a sand/soil embankment. I recovered the remains and collected data. The chamber extended from 6" to 16" below the surface. I counted 84 mostly whole egg shells and 21 shells that were at least half intact, the rest of the remains were mostly fragments. It appears then, that at least 105 eggs had been deposited. The species is undetermined, but from the size appears to be hawksbill. George Balazs will be contacted to see if he would like to examine them.

Information on Tracks found on 8/18/97

Teri at Kealia Pond NWR, reported that a Mr. Ed Lynch (244-9244) had seen a turtle on the beach Sunday night. I called Mr. Lynch and was able to determine that he had seen a turtle at about 10:00 p.m. on 8/17/97 while walking the beach. He saw it returning to the water at about 11:00 p.m.. He did not actually see it nesting. This is the turtle which tracks were reported by volunteers to Skippy on 8/18/97 and he and I investigated that morning. This turtle went through an opening in the fence, but was also able to find its way back through it to return to the ocean.

Another crawl near the first nest last year and the nest in 1991 was also investigated on 8/18/97. Nesting at this location does appear to have taken place.

c: K. Smith, USFWS
G. Balazs, NMFS
G. Nitta, NMFS
DOCARE-Maui
DAR-Oahu

Analysis of six Maui hawksbill nest contents excavated by Skippy Hau,
State of Hawaii Division of Aquatic Resources

The counts presented in this table represent the contents shipped to NMFS for analysis
Eggs or hatchlings removed prior to shipment are not included

CLUTCH ID	HATCHED EGGSHELLS	EEM*	PARTIALLY DEVELOPED	FULLY DEVELOPED	DEAD HATCHLINGS	NO APPARENT DEVELOPMENT	TOTAL EGG UNITS	HATCHLINGS EMERGED	PERCENT EMERGED
12/9/97 Kealia	0	0	0	0	0	223	223	0	0
10/28/97 Kealia	0	0	0	0	0	188	188	0	0
11/1/97 Kihei	120	1	28	0	55**	3	152	65	43
09/9/97 Makena	55	0	26	37	22**	23	141	33	23
10/21/96 Maui	13	0	151	0	0	19	183	13	7
9/19/96 Maui	0	0	0	0	0	121	121	0	0
Totals	**188**	**1**	**205**	**37**	**77****	**577**	**1008**	**111**	**11**

**Eggshells for dead hatchlings are included in the hatched eggshell count
*Early embryonic mortality

This hawksbill nest contains egg units from both the 11/21/97 Kihei nest and a previous season's clutch

CLUTCH ID	HATCHED EGGSHELLS	EEM*	PARTIALLY DEVELOPED	FULLY DEVELOPED	DEAD HATCHLINGS	NO APPARENT DEVELOPMENT	TOTAL EGG UNITS	HATCHLINGS EMERGED	PERCENT EMERGED
11/21/97 Kihei	74	0	103	6	0	12	195	74	—

*Early embryonic mortality

Analysis conducted
by G.Balazs and
A. Veit. Table revision
prepared 1/30/98

NMFS, HONOLULU LAB
Marine Turtle Research
2570 Dole Street
Honolulu, HI 96822-2396

Date: Thu, 29 Jan 1998 19:45:07 -0500
From: skippy@DAR.CCMAIL.compuserve.com
To: "INTERNET:gbalazs@honlab.nmfs.hawaii.edu"
<gbalazs@honlab.nmfs.hawaii.edu>
Subject: Summary Received

George,

Thanks for the summary. I found some discrepancies.

1) Dec. 9, 1997 Two eggs were given to Allen Tom at the National Marine Sanctuary Office for educational purposes. Total count should be 225.

2) October 1, 1997 should be November 1, 1997. Shouldn't the total egg units be 152. When you add across you're double counting the dead hatchlings and their corresponding hatched egg shells. Percentage increases to 43%.

3) September 9, 1997 I calculate a total egg units of 141 and 33/141=23% rate.

4) October 21, 1996, were there any dead hatchlings? There were three in my notes. Two hatchlings and two eggs were kept for educational purposes.

5) My records for September 19, 1996 included dead hatchlings; 11 live hatchlings were released. I have 51 dead and 74 partial/undeveloped eggs. 1 dead hatchling and on partially developed in shell was given to Kathy Smith FWS for educational purposes.

6) The 10/21/97 date should be changed to November.

Thanks for the quick processing of information.
Aloha,
Skippy

1) He included this in his note - But his count was 235 if you add 2 then 237 - We were both wrong

2) my error on date, we double counted dead hatchlings & shells

3) error - ours, counted dead hatchlings in total egg units

4) He had 1 dead hatchling, not 3, in his notes. No mention of 2 hatchling / 2 eggs for educ. purposes

5) No mention of any of the above in his notes.

6) my error on date

Staple w/table - file maui

Date: Tue, 27 Jan 1998 21:46:05 -0500
From: skippy@DAR.CCMAIL.compuserve.com
To: "INTERNET:gbalazs@honlab.nmfs.hawaii.edu"
<gbalazs@honlab.nmfs.hawaii.edu>
Subject: Re: Hawksbill nests

Yesterday I prepared a 1997 HAWKSBILL TURTLE NESTING SEASON UPDATE

MAKENA (Possibly delivered on the first week of October - Sustainability Summit in Honolulu according to my calendar; don't remember if I or someone may have delivered it for me.)
Nest emerged on 6 September 1997. Mr. Sean Asuncion and friends from MHS discovered the hatchlings and marked the nest.
Excavation on 9 Sept. 1997.
Recovered items: 10 live hatchlings released; 24 dead hatchlings

147 empty shells
12 undeveloped eggs
1 partially developed
160 Total Estimated Eggs (123/160 = 77%)

KIHEI
Nest emerged on 14 October 1997. Hatchlings were released on the beach by morning walkers. More than 27 hatchlings were released.
Excavation on 17 October 1997. We were unable to find the nest. One dead hatchling recovered. It appears that most of the hatchlings were assisted or found their way to the ocean.

KEALIA
Excavation on 21 October 1997 (day 78 of site A-1). No eggs found; appears to be false nesting.

KEALIA
Excavation on 28 October 1997 (day 74 of site A-2). No eggs found at two possible
locations. We also checked site B-1 (day 71). Brooks found the nest and 192 undeveloped eggs recovered. High tides covered area several times during the incubation period. The remains were sent to Honolulu Laboratory.

KIHEI
On 30 October 1997, hatchlings were again discovered by walkers. Approximately 17 live and five dead hatchlings were found on the first day of emergence.
Excavation on Saturday, 1 November 1997.
Recovered the following items: 12 live hatchlings; 53 dead hatchlings

142 empty shells
9 undeveloped eggs
16 partially developed
167 Total Estimated Eggs (84/167 = 50%)

Dead =(5+53+9+16)=83

KEALIA
On 20 November 1997, Hannah Bernard and Bill Gilmartin excavated an area where the radio tagged turtle showed nesting behavior on September 5th. No eggs were found. It appears to be false nest.

KIHEI[Mixed nest; Not included for summary purposes]
On 21 November 1997, Mr. George Rixey found an old turtle nest in the vicinity of previous nests. It did not appear to be the origin of the first hatchlings.

The hatchlings were found in a different location. Waiting for assessment of nest remains by George Balazs to age nest.

Recovered the following items: No hatchlings found.

75 empty shells
106 partial/undeveloped eggs
2 irregular shaped eggs
183 Total Estimated Eggs (75/183 = 41%)

Excluding this "old" nest, at least 234 hatchlings emerged on their own or were assisted to the ocean this year.

KEALIA
On 9 December 1997 (day 78 of site R-1), Hannah Bernard and I excavated an area where the radio tagged turtle showed nesting behavior on September 23rd. Hannah found the nest and 235 undeveloped eggs recovered.

KEALIA
On 29 December 1997, Hannah Bernard and I checked the area and found no signs of hatchlings or possible nesting sites. No eggs were found.

This year, five nests were excavated. I estimated more than 234 hatchlings emerged on their own or were assisted to the ocean. About 123 hatchlings from Makena and more than 111 hatchlings from Kihei. The nests at Kealia had no hatchlings. Both nest appear to have been inundated by high tides and large swells.

Four nests averaged 188 eggs and clutch size ranged from 160 to 235 eggs. Note: three eggs appeared deformed or undersize (? Waiting for your assessment).

That's what I have for last year.
I've reviewed 1996
1996 HAWKSBILL TURTLE NESTING SEASON REVIEW

KEALIA
On 19 November 1996, at 01:20 received a call from Maui Police Dispatcher about another turtle run over on North Kihei Road. Animal was dead at 01:45.
136 eggs removed and buried in sand.

Curved carapace length 96 centimeters (37.8 inches)
Curved carapace width 84 centimeters (33 inches)
Estimated Weight 240 Pounds

On 15 to 17 September 1996, 31 hatchlings emerged from the nest.
Excavation on 19 September 1996.
Recovered items: 11 live hatchlings released; 51 dead hatchlings
74 partial/undeveloped eggs

Total Hatchlings 31(observed)+11(alive) +51(dead) = 93
Estimated total eggs = 93 + 74 = 167 (42/167= 25%)

On 5 & 6 October 1996, dead hatchlings found by Hawaii Wildlife Fund Volunteers and reported in late evening. Hatchlings were recovered on and next to North Kihei Road:
12 smashed; 8 dead; 1 live (released). NEST NOT FOUND.

On 19 October 1996 (Day 50), Hawaii Wildlife Fund Volunteers observed five hatchlings emerge.

On 20 October 1996 (Day 51), Hawaii Wildlife Fund Volunteers observed one hatchling emerge.

Excavation on 21 October 1996 (day 52)
Recovered items: 4 live hatchlings released; 3 dead hatchlings

14 empty shells
145 undeveloped eggs
32 partially developed
191 Total Estimated Eggs (10/191 = 5%) [Correction ten not eleven live hatchlings. Because of the confusion last year, I've tried to count the number of shell/egg equivalents to determine the total number of eggs in the nest. I've grouped the developed and partially developed together until you could assess each egg and give me a better assessment.]

THAT'S ALL THE DATA WHICH I HAVE. I'VE TRIED TO ACCOUNT FOR THE NUMBERS AND THE THREE DIFFERENT LOCATIONS: MAKENA, KIHEI AND KEALIA. Kealia has always had poor hatching success.

Skippy

DIVISION OF AQUATIC RESOURCES - MAUI
DEPARTMENT OF LAND & NATURAL RESOURCES
130 Mahalani Street
Wailuku, Hawaii 96793
Phone # (808) 243-5834
FAX #(808)243-5833
December 30, 1997

To: Bill Devick, Acting Administrator

From: Skippy Hau, Aquatic Biologist

Subject: Checked the Last Area in Kealia Reported As a Possible Hawksbill Turtle Nesting Area

Yesterday, Ms. Hannah Bernard called to confirm the number of days from the original report of turtle tracks. Tracks were observed on Sunday, 12 October 1997. Yesterday would be day 79 if any eggs were deposited.

Originally, I found no obvious signs of nesting. Around 16:30, I met Hannah Bernard and other members of the Hawaii Wildlife Fund. We reviewed slides which I had taken to help identify areas where tracks were found. No eggs were found. Vegetation made most of the areas inaccessible. While there were signs she may have dug at the surface, we came across bottles and rocks. We removed the bottles, broken glass and debris around a kiawe shrub and surrounding areas.

The tagged female appears to have crawled along the beach without nesting. These reports of beach crawls will help determine the actual effort invested in each successful nesting event. I am waiting for a report from George Balazs on two separate nest remains. This year, we're estimating a total between 234 to 309 hawksbill hatchlings may have reached the ocean from the three hatching events.

c: DOCARE - Maui
George Balazs, NMFS
Kathy Smith, FWS, Kealia NWR
Emily Gardner, DAR
Hannah Bernard, Hawaii Wildlife Fund

1-4-98 The Honolulu Advertiser A21

David Scull/The Honolulu Advertiser

Biologists hope the endangered hawksbill hatchlings that made it from seashore nests to the ocean this year off Maui will have the chance to grow up like this male hawksbill turtle at Sea Life Park.

Progress seen in protecting turtles

Biologists credit awareness of nesting sites

By Jan TenBruggencate
Advertiser Staff Writer

Efforts to protect nesting areas are beginning to show promise for restoring healthy populations of Hawaii hawksbill turtles, or *honu 'ea*.

More than 200 endangered hawksbill turtle keiki made it from seashore nests to the ocean this year off Maui, where until a few years ago they were not known to nest. More have hatched at isolated Molokai and Big Island beaches.

This sea turtle's nesting sites are especially susceptible to being disturbed by humans. The turtles are believed to have been much more common once, and human activity along the coastline is probably a major cause of their decline, said National Marine Fisheries Service biologist John Naughton.

"A lot of the former nesting beaches are in developed areas. Habitat is the main issue for hawksbills," Naughton said.

And the answer seems to be to protect remote beaches and to limit disruption of nests on beaches in developed areas.

"A lot of their nesting in the main islands is dependent on nesting beaches not getting disturbed," said Skippy Hau, a state aquatic biologist on Maui.

Hau said he's thrilled that three nests of turtle eggs hatched on Maui this year, one at Maui's Oneloa, or Big Beach, and two at a beach reserve near Kihei.

Three nests yielding more than 200 baby turtles make it much more likely that hawksbills will continue to survive in Hawaiian waters, because the animals tend to return to their native beaches when they mature and begin nesting themselves, Naughton said.

On the other hand, three

See Turtles, Page A24

Turtle: Credit for new hatchlings

FROM PAGE A21

nests within the Kealia Pond National Wildlife Refuge failed to produce a single hatchling.

"We excavated one nest with 235 eggs, and not one of them had developed. It could be that they were unfertilized, or it could be that the nesting habitat is still too degraded," said Hannah Bernard, director of education of the Hawaii Wildlife Fund, which conducts nesting and tagging research on the species.

"In one way things are looking up for the hawksbill because of a higher level of awareness" but there is still need for rehabilitation of nesting habitat, she said.

Many oceangoers around Hawaii are familiar with the more common green sea turtle, a seaweed eater. The smaller hawksbill, which feeds on sponges and other invertebrate sea animals, is so rare little is known about it.

There may be as few as three dozen hawksbills nesting on three of the main Hawaiian Islands, and perhaps fewer than that. Unlike the green sea turtle, most of whose nesting is on the isolated sand islets of the protected Northwestern Hawaiian Islands, the Hawaii population of hawksbills is only known to nest around the main islands.

A small beach at Halawa, on the eastern end of Molokai, several beaches along the rugged Puna and Ka'u shores of Hawaii, and the leeward Maui beaches around Makena and Kihei are the known nesting sites.

"Very little is known because so few are left."

— JOHN NAUGHTON
NATIONAL MARINE FISHERIES SERVICE

Hau said the presence of lights may be one major problem for hawksbill nesting. The Maui beaches where turtle hatchlings made it to sea this year are ones without resort or highway lights shining on the shore. Such lights seem to drive away certain forms of marine life, attract others and confuse still more, including hatchling

given to efforts to protect nesting sites

turtles that may scamper toward the lights instead of toward the sea.

"We're trying to call attention to the lighting. Light on the shoreline alters the food chain and you're probably going to change the wildlife situation," Hau said.

Two hawksbill beaches on the Big Island are within the Hawaii Volcanoes National Park, and the park has an aggressive program involving staff and volunteers, of tagging adult female turtles, rescuing hatchlings that get lost or stuck while seeking the sea, and controlling feral animals that may feed on eggs and hatchlings.

A group of high school bodyboarders noticed little turtles scrambling on the sand and helped hatchlings at Oneloa get to the sea this year.

At Kihei, a diverse group of volunteers — canoe paddlers, inmates, visitors and others — got involved after two highly publicized cases in which female hawksbills were killed by cars when they scrambled onto a road while seeking nesting spots. They've fenced potential nesting grounds, stood guard over nest sites and restricted vehicle access to areas where nesting may occur.

"We've had some very encouraging nesting at Kihei," Naughton said.

Now a key is to study the animals to learn more about what needs to be done to protect them.

"Very little is known because so few are left. We really don't even have an idea what the numbers are," he said.

Hawksbill turtles are found throughout the world's tropical oceans, but they are considered endangered everywhere they appear. The only other U.S. nesting sites are in Florida and isolated beaches of Puerto Rico and the U.S. Virgin Islands.

Unlike green sea turtles, which have primarily been killed for their meat, hawksbills are sought for their thick shells, which can be worked into jewelry. Their flesh is sometimes toxic, perhaps a result of something in their diet.

It is illegal in the United States to kill either species of sea turtle.

Hawksbills nest between April and November, and can produce clutches of more than 100 eggs at a time. The females nest at night and can produce nests several times during a season.

Turtle life is focus of this student work

Endangered Hawaiian hawksbill turtles are being tracked along the windward coasts of the Big Island and Maui by Marine Option Program students from the University of Hawaii at Hilo and Maui Community College.

"This project has been a great way to get students involved in crucial marine conservation work," said Bill Gilmartin, president of the Hawaii Wildlife Fund, which is supporting the students' work.

The tracking effort started after attachment of satellite and radio-frequency transmitters to two females when they completed nesting on the Big Island back in August. The small transmitters were glued on the backs of the turtles by George Balazs of the National Marine Fisheries Service and Gilmartin. The work was done in cooperation with the Fish and Wildlife Service and Hawaii Volcanoes National Park.

Gilmartin said, "Positions from the satellite tracking system led us to the general vicinity of the turtles' positions, but then it was up to the students on the shoreline, using the radio-frequency directional antennas to locate the turtles more precisely."

It took several weeks of attempts to find the turtle along the Hamakua Coast and then get a good directional "fix" on her. UH-Hilo student Amarisa Gunsaulus was surprised to hear it ticking on her headphones just a few minutes after she and her project partner, Julie Rocho, set up their listening station one morning at the top of the cliff below Paauilo.

"I couldn't believe we had finally found it," she said. Rocho heard it too, but said, "I thought Amarisa was tricking me somehow with the radio signal!"

UH-Hilo Marine Option program students Julie Rocho and Amarisa Gunsaulus track a female turtle.

Hilo MOP students will begin to look at the marine habitat these two turtles are using. The long-range goal is not only to characterize this habitat, but see if there are threats to the turtles at those sites that could be mitigated. This is Hawaii's most endangered turtle and we hope to learn a lot about the species through this tracking and habitat survey work."

Unless they become damaged, the transmitters on the turtles should work for about two years and more deployments may be made during the 1997 nesting season. Gilmartin said the project may run three to five years.

Since locating this turtle several months ago, these two MOP students now make weekly trips to Paauilo to check in on her and they find her there every week.

"This is certainly her home, she spends both day and night at the same place," Rocho said.

The students aren't certain if they've actually seen her. Gunsaulus said, "Whenever she surfaces to breathe, we hear her signal ticking on the receiver for a few minutes and while she's up we look in her direction with binoculars trying to see her, and we think we saw her briefly once."

The second turtle swam to Kahului Bay, Maui after nesting on the Big Island. She is being monitored by Hawaii Wildlife Fund volunteers and naturalist Suzanne Canja and Maui Community College Marine Option Program student Alika Gomes. Canja says, "It's been exciting learning where these endangered turtles are spending their time; hopefully we'll be able to learn why these particular feeding and resting sites are so important to them."

That kind of follow-up is part of the plan according to Gilmartin. He said, "During next summer, Hawaii Wildlife Fund and the UH-

Scientists learn from rare turtle killed on Maui

By TIMOTHY HURLEY
Staff Writer 8-28-96

KIHEI — Last week's hit-and-run killing of a hawksbill turtle was bad news for a species struggling to survive. But the death may serve in the long run to advance scientific knowledge about the critically endangered sea turtles.

"We're trying to make the best out of a bad situation," said George Balazs, National Marine Fisheries Service zoologist and turtle expert.

The Bishop Museum in Honolulu has agreed to accept the carcass into its zoology collection, the first adult hawksbill available for archiving, preservation and display.

In addition, samples of the hawksbill's tissue will be examined by a University of Hawaii researcher, and some of the bones will be sent to a laboratory in Washington, D.C., to determine how old the animal was.

The large egg-bearing hawksbill was struck and killed on North Kihei Road at about 1 a.m. Aug. 19.

A necropsy was conducted last week at the Honolulu Field Station of the National Wildlife Health Center in Honolulu. Federal veterinarian Thierry Work found what he described as a normal healthy turtle that died of major trauma.

Work said it was the first necropsy he had conducted on a hawksbill, although, internally, the animal appears very much like its more common cousin, the green sea turtle.

Work said the hawksbill was absent the cancerous tumors that plague so many green sea turtles. Hawksbills are not known to have tumors.

As part of the necropsy procedure, Work extracted 70 eggs, which he sent to the National Marine Fisheries Service for possible hatching. Work also noted the presence of developing egg follicles, which means the turtle's hatching season was long from over.

The turtle weighed in at 230 pounds and was measured at nearly 37 inches long. Although the hawksbill was probably was more than 30 years old, the exact age remains uncertain, Balazs said, and some bones will be sent to a Washington laboratory to determine the age.

Balazs said U.H. pathology Professor Yoshitsugi Hokama, an expert on ciguatera toxin, has agreed to examine a portion of the hawksbill's tissue.

Hawksbill turtles are occasionally known to be toxic, Balazs said. A recent incident in the island nation of Zanzibar off the east coast of Africa resulted in 47 dead and hundreds ill after some hawksbills were eaten. Another incident in Fiji 1½ years ago resulted in illness.

Balazs noted that at least one Native Hawaiian historical account calls the hawksbill a "kapu turtle" that is not supposed to be eaten. That might point to the toxicity.

There has never been an opportunity in Hawaii to test an adult hawksbill for toxicity, the scientist said.

After reviewing the facts of Aug. 19 accident, Balazs said wildlife officials have two theories for what happened that early morning: A tire ran right over the animal, from posterior to anterior, explaining why the turtle's shell was crushed and broken along natural seams; or, perhaps the turtle was hit by something underneath the body of a raised 4-by-4 vehicle, such as a strut. A good size shell chip was found 50 feet from the accident scene, and there were no skid marks on the shell or the street.

Police were called to the scene north of the Sugar Beach condominiums on North Kihei Road at 1:20 a.m. and found the fatally injured hawksbill. By the time a state Department of Land and Natural Resources official arrived, the animal was dead.

DLNR aquatic biologist Skippy Hau pulled more than 100 eggs from the turtle's carcass and buried them in a safe, undisclosed location in the dunes.

Wildlife officials said they believe the animal was looking for a suitable nesting spot and, finding none on the narrow beach or eroded dune, headed inland across the road.

The death represents a significant blow to a species considered extremely rare. Officials have estimated that only a couple dozen hawksbill turtles nest in the Hawaiian islands each year. The animal is on the U.S. endangered species list.

Only a handful of hawksbill nests have been discovered on Maui in the last five years, all in the Kealia area.

Two nests have been found at Kealia this year — more evidence that the hawksbill is either continuing to establish a presence at Kealia or making a comeback. The area is not known as a traditional hawksbill nesting site.

The nesting season of the hawksbill ranges from late July to November, during which the large females come onshore to bury their eggs at night.

RECENT FINDINGS AND MANAGEMENT OF HAWKSBILL TURTLE NESTING BEACHES IN HAWAII

Lawrence K. Katahira [1]
Charlotte M. Forbes [1]
Andrew H. Kikuta [2]
George H. Balazs [3]
Michael Bingham [4]

[1] Hawaii Volcanoes National Park, PO Box 52, Hawaii National Park, HI 96718 USA
[2] Hakalau Forest National Wildlife Refuge, 154 Waianuenue Ave., Hilo, HI 96720 USA
[3] National Marine Fisheries Service, 2570 Dole St., Honolulu, HI 96822 USA
[4] Falklands Conservation, PO Box 31, Stanley, Falkland Islands

The Hawksbill turtle (*Eretmochelys imbricata*) is an endangered marine species, occurring in tropical waters of the Atlantic, Pacific, and Indian Oceans (Witzell, 1983). In the United States, nesting has been documented in southern Florida and Hawaii, however, in recent years Hawksbill turtles have rarely nested in Florida. Regular nesting activities are currently found only in the Hawaiian Islands, particularly on the southeastern coast on the Island of Hawaii.

From 1989 to 1993, Hawaii Volcanoes National Park (HAVO) located nesting beaches and followed-up with a monitoring and protection program. Eight beaches were found having nesting activities, two within HAVO (Apua and Halape) and six outside its boundaries (Kamehame, Punaluu, Horseshoe, Ninole, Kawa, and Pohue). Eighteen turtles were tagged and 98 nests were documented, most occurring at two principal sites, Kamehame (51 nests) and Apua (37 nests). The nesting season, from egg laying to hatchling emergence, began in late May and extended to early December with peak egg laying periods from late July to early September.

The limiting factors affecting nesting and hatchling success were predation by mongooses, hatchling strandings, overcrowding nests, artificial lights, unregulated vehicle traffic, fishing activities, and camping. During five years of monitoring nests and trapping predators at Apua, and three years of effort at Kamehame, approximately 2,750 hatchlings were rescued, 797 hatchlings died stranded on rocks, and 326 mongooses, 12 feral cats, and 141 rats were removed.

In addition to Hawksbill nesting activities at Kamehame, we observed nocturnal basking of Green sea turtles on about 75% of our visits. It is suggested that the Green sea turtles are utilizing this beach as a resting refuge.

Two additional nesting beaches were discovered by hikers in 1993. A nest with 205 hatched eggs was found at Pohue Bay which is located approximately 10 miles northwest of South Point. The other site, Papai, located approximately eight miles southeast of Hilo, has not yet been visited by HAVO personnel to confirm the nesting report.

To ensure the success for future nesting, an intensive management program on almost a daily basis from June through early December is needed to locate all nests for each beach, to control predators, and to rescue hatchlings. In addition, surveys need to be conducted at other potential nesting sites on the Island of Hawaii.

LITERATURE CITED

Witzell, W.N. 1983. Synopsis of biological data on the hawksbill turtle *Eretmochelys imbricata* (Linnaeus, 1766). FAO Fisheries Synopsis No. 137, 78 p.

NOAA Technical Memorandum NMFS-SEFSC-351

PROCEEDINGS OF THE FOURTEENTH ANNUAL SYMPOSIUM ON SEA TURTLE BIOLOGY AND CONSERVATION

1 - 5 March 1994
Hilton Head, South Carolina

Compilers:

Karen A. Bjorndal
Alan B. Bolten
Dale A. Johnson
Peter J. Eliazar

August 1994

U.S. DEPARTMENT OF COMMERCE
Ronald H. Brown, Secretary

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
D. James Baker, Administrator

NATIONAL MARINE FISHERIES SERVICE
Rolland A. Schmitten, Assistant Administrator for Fisheries

DIVISION OF AQUATIC RESOURCES - MAUI
DEPARTMENT OF LAND & NATURAL RESOURCES
130 Mahalani Street
Wailuku, Hawaii 96793
Phone # (808) 243-5834
FAX #(808)243-5833
December 9, 1997

To: Bill Devick, Acting Administrator

From: Skippy Hau, Aquatic Biologist

Subject: Hawksbill Turtle Nest Excavation at Kealia

Arrangements were coordinated with Hannah Bernard from the Hawaii Wildlife Fund to excavate the nesting location identified as R-1. The tagged hawksbill female was observed on September 23, 1997 by Hannah and Bill Gilmartin. Today's excavation is on day 78.

After 16:40, we began to excavate the beach area with shovels. Around 17:45, Hannah found some undeveloped eggs. A total of 235 undeveloped eggs were extracted. One of the eggs appeared to be slightly smaller than the rest. The top of the nest was about 30 centimeters (11.8 inches) from the surface. The width of the nest was between 30 and 32 centimeters (11.8 to 12.6 inches). The bottom of the nest was between 57 to 58 centimeters (22.4 to 22.8 inches). No hatchlings were found.

Two eggs were preserved in ethanol and will be given to Allen Tom at the National Marine Sanctuary for display purposes. The remaining eggs were frozen and will be shipped to George Balazs at the Honolulu Laboratory for further analyses.

c: DOCARE - Maui
George Balazs, NMFS
Kathy Smith, FWS, Kealia NWR
Emily Gardner, DAR
Hannah Bernard, Hawaii Wildlife Fund

Rodney

COPY

DIVISION OF AQUATIC RESOURCES - MAUI
DEPARTMENT OF LAND & NATURAL RESOURCES
130 Mahalani Street
Wailuku, Hawaii 96793
Phone # (808) 243-5327
FAX #(808)243-5326
October 31, 1997

To: Turtle File

From: Skippy Hau, Aquatic Biologist

Subject: Update of Possible Hawksbill Turtle Nesting Sites at Kealia

On Tuesday, 28 October 1997 (on day 74), at 17:00, Brooks Tamaye and I excavated two possible locations near site A-2. We did not find any evidence of nesting. We checked the location with slides taken after finding the turtle tracks. No eggs were found.

We also checked another location identified initially as site B-1 for a different female. The first depression appeared to be a false nest (day 71). The second area was near beach vegetation (corrected to B-2 (day 53) per Steven Williams). We dug down to the roots. Brooks found the nest and recovered 192 undeveloped eggs. The volunteers from the Dawn Patrol described the area as being inundated by several high tides. The top of the nest was about 14 inches from the surface. The diameter was about 15 inches across. The bottom of the nest was about 21 inches deep.

The GPS position for this nest was Latitude 20° 47' 49 N Longitude 156° 28' 58 W.

c: DAR - Oahu
DOCARE - Maui
Kathy Smith (Kealia NWR, FWS)
George Balazs (NMFS)

COPY

DIVISION OF AQUATIC RESOURCES - MAUI
DEPARTMENT OF LAND & NATURAL RESOURCES
130 Mahalani Street
Wailuku, Hawaii 96793
Phone # (808) 243-5834
FAX #(808)243-5833
November 1, 1997

To: Bill Devick, Acting Administrator

From: Skippy Hau, Aquatic Biologist

Subject: Hawksbill Turtle Hatchlings From A Third Nest

On Thursday, 30 October 1997, Mrs. Barbara Noel (Ph.#875-7754/ 244-7687 work) and other morning beach walkers again found hatchlings in the same location. She contacted our office. They estimated helping a "hundred" hatchlings that were found in two locations of the beach reserve. I inspected the areas and found one more hatchling and released it on the beach.

On Friday, walkers reported different numbers of hatchlings being released. This morning, I talked with most of the people and determined about 17 live and 5 dead hatchlings were found on the first day after emergence. Three dead hatchlings were placed with the remains from the nest excavation (see excavation memo).

c: DOCARE - Maui
George Balazs, NMFS
Kathy Smith, FWS, Kealia NWR
Emily Gardner, DAR Subject:

Redlum

COPY

DIVISION OF AQUATIC RESOURCES - MAUI
DEPARTMENT OF LAND & NATURAL RESOURCES
130 Mahalani Street
Wailuku, Hawaii 96793
Phone # (808) 243-5834
FAX #(808)243-5833
November 1, 1997

To: Bill Devick, Acting Administrator
From: Skippy Hau, Aquatic Biologist

Subject: Turtle Nest Excavated at Kihei (corrected)

On Saturday, 1 November 1997, I went to check the nest area and discovered two dead hatchlings which a neighbor found the day before. According to neighbors and beach walkers, the hatchlings appeared smaller and weaker. Although this was the second day after the first hatchlings, I decided to excavate the nest around 08:00. The original location we had marked did not appear to be the location of the nest. Mr. George Rixey (Ph.#879-8996), owner of the neighboring property reported that his dog tried to dig beneath the ironwood tree. I asked Mr. Rixey to show me where the dog was digging. I decided to check the location and discovered dead and live hatchlings beneath the surface.

After 09:00, we came across hatchlings at the top of the nest (about 9 inches from the surface). The top of the nest with eggs was about 11 inches deep. The diameter was about 10 inches. The bottom of the nest was about 18 inches. We found 12 live hatchlings and 53 dead ones. We recovered the following items:

142	empty shells
9	undeveloped eggs
16	partially developed
167	TOTAL ESTIMATED EGGS

The dead hatchlings were scattered around the nest. Some were caught between the roots of the ironwood. We recovered approximately 83 hatchlings that were dead or undeveloped. Twelve live hatchlings were released on the beach. Seventy-two hatchlings appears to have emerged on their own. The 84 hatchlings represent a 50% success rate. The GPS position for the area was Latitude 20° 45' 17 N Longitude 156° 27' 44 W. The egg shells were re-inspected after I returned to the office. Four more partially developed eggs were reclassified. The remains will be frozen and shipped to George Balazs at the Honolulu Laboratory (NMFS).

c: DOCARE - Maui
George Balazs, NMFS
Kathy Smith, FWS, Kealia NWR
Emily Gardner, DAR

DIVISION OF AQUATIC RESOURCES - MAUI
DEPARTMENT OF LAND & NATURAL RESOURCES
130 Mahalani Street
Wailuku, Hawaii 96793
Phone # (808) 243-5327
FAX #(808)243-5326
September 9, 1997

Re June

To: Bill Devick, Acting Administrator

From: Skippy Hau, Aquatic Biologist

Subject: Turtle Nest Excavated at Makena

On Saturday, 6 September 1997, Mr. Sean Asuncion (Ph.#878-2938), a student at Maui High School found turtle hatchlings emerging on the white sand beach between 09:30 and 10:00. He and his friends marked the nest with charcoal and made an "X" with sticks. He said there were between 30 and 40 hatchlings.

This evening, after three days, Brooks Tamaye and I went to excavate the nest. We had no problem finding the location. At 18:01, we came across a live hatchling at the top of the nest (about 8 inches from the surface). The hatchlings appeared to be hawksbill turtles. The nest was about 17 inches deep. The diameter was about 8.5 inches. We found ten live hatchlings and 24 dead ones.

We recovered the following items:

147 empty shells
12 undeveloped eggs
1 partially developed
160 TOTAL ESTIMATED EGGS

Approximately 113 hatchlings appears to have emerged on their own. The 123 hatchlings represented a 77% success rate.

At 18:18, the ten hatchlings were released on the beach. The GPS position for the nest was Latitude 20° 38' 01 N Longitude 156° 26' 53 W.

The remains were sorted after we returned to the office. They will be shipped to George Balazs at the Honolulu Laboratory, National Marine Fisheries Service.

c: DOCARE - Maui
George Balazs, NMFS ✓
Kathy Smith, FWS, Kealia NWR
Emily Gardner, DAR

DIVISION OF AQUATIC RESOURCES - MAUI
DEPARTMENT OF LAND & NATURAL RESOURCES
130 Mahalani Street
Wailuku, Hawaii 96793
Phone # (808) 243-5327
FAX #(808)243-5326
October 21, 1997

To: Turtle File

From: Skippy Hau, Aquatic Biologist

Subject: Update of Possible Hawksbill Turtle Nesting Site A-1 (Day 78)

Yesterday (on day 78), at 17:00, Brooks Tamaye and I excavated three possible nesting areas at site A-1. We checked the location with slides and photographs taken Fish and Wildlife volunteers at the time turtle tracks were discovered. The areas were in white sand, near beach vegetation. We dug down to the roots or when hard substrate was discovered. At around 18 inches, we stopped digging deeper. No eggs were found. The areas appear to have been false nests.

c: DAR - Oahu
DOCARE - Maui
Kathy Smith (Kealia NWR, FWS)
George Balazs (NMFS)

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

CHAIRPERSON
MICHAEL D. WILSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTY
GILBERT S. COLOMA-AGARAN

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CONVEYANCES
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LAND MANAGEMENT
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WATER AND LAND DEVELOPMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF AQUATIC RESOURCES
130 MAHALANI ST.
WAILUKU, HAWAII 96793

April 2, 1997

To: Dr. Steven A. Williams

From: Skippy Hau, Aquatic Biologist

Subject: Hawksbill Sea Turtle Nesting Article

According to your note, this article is being prepared for the Endangered Species Bulletin. I've read through the draft and have the following suggestions. Citations from our Division memos which are public records should be identified and referenced to the Hawaii Division of Aquatic Resources. The excavation work was done cooperatively by both Agencies represented by Kathy Smith, Brooks Tamaye and myself.

While, I understand that there may be a limit on the length of the article, discussing preservation, humpback whales, ecotourism, and Maui tourism might be improved by using less buzz words and possibly describing about how the green turtle population appears to have improved in numbers since their protection and management.

George Balazs (Ph.#943-1240) should be contacted. He may have more hawksbill sightings or nesting information to provide about Kealia. There have been instances where people have contacted or sent turtles to him directly. He's helped identify the different marine turtles we have worked with.

Turtle nesting along the Maui shoreline appears to have been observed with minimal disturbance by the public. Several older residents have stated that nesting females were "kapu" or as children, told by elders to be left alone because prior to the 1970s, people could harvest turtles for consumption. They realized that nesting females would maintain turtle populations. The exact species of the turtles were never documented (from Kihei to Ukumehame). Confirmed hawksbill nesting and the subsequent excavation of nests in the Kealia area began around 1989.

The recent involvement by the Fish and Wildlife Service after 1995 is a relief to our Division's busy schedule. Prior to that time, there was very little interest in turtles by FWS staff in Honolulu except for specific site inspection visits and the recent proposal to expand the Maalaea Harbor.

(Page 1) I suggest presenting the information on Kealia nesting as new information. Describe when the first signs of nesting were observed and the timing of first confirmed emergence. Since there were only two confirmed nests, I would not combine the success rate (or present a range between 6 and 25%). Each situation should be described separately. Both nests were in different locations with very different substrate. Describing the proximity of the road or the size of the nest could make very interesting reading. While the relative success rate was low, we have no other information to compare other Kealia nesting sites. It might always be historically low and a possible reason why the number of returning females are few. The differences with the Big Island nesting success could be used for comparison along with describing the beach differences.

(Page 2) There were two other nesting incidents. The second attempt was successful in having 20 hatchlings emerge. The hatchlings were unsuccessful in crawling to the ocean possibly due to light distractions. Although, we think we recovered most of the hatchlings, there could have been more which we did not find or may have successfully crawled to the ocean. The 20 hatchlings represented a better nesting habitat (better success rate) which was too close to the road. There was one hatchling that was found by Brooks which he released.

You should check with George Balazs (Ph.#943-1240) if any genetic workup has been done on the dead turtles and nest remains. In paragraph 2, the discussion of hawksbill turtles should continue. Green turtle on Grand Cayman (spelling?) would need to be further explained. There are likely many other changes and conditions which were not discussed.

(Page 3) You could describe the nesting site or the area of Kealia Beach nesting. In some reports, they discuss many miles of nesting beaches. Do you want to discuss plans to eliminate off road activity or should you discuss the impacts of off road driving on the beach? I have not read anything about dangers of off road vehicles on turtle nesting. In last week's meeting, we also discussed the possibility of the sand and the quality of the sand at Kealia which could have been naturally blown over from the central isthmus. There could also be a possibility of chemical contamination from large scale agriculture (herbicides, pesticides, etc.). No one has really analyzed the sand at Kealia. The sand quantity and quality could also be affected by the diversion of streams like Waikapu which would likely provide natural substrate at the stream mouth.

How much of the plans for Kealia should be presented in an article on hawksbill turtles? I find the plans for a bronze monument out of place for the article along with the number of tourists. Leave the numbers in if you plan to discuss the impact of more tourists on the shoreline. Do you really want to publicize the easy access to the nesting beach? By discussing how close nests are to the road will already imply an easy access to nesting areas without having to state it. Presenting the Kealia Beach Restoration Project as a coordinated action to improve the beach, dune, and nesting conditions for future nesting activity. It also leaves the article with an optimistic future for hawksbill nesting.

There is only so much you can discuss with information from two nests. The shallow nest may be responsible for poor egg development. Vegetation and the mixture of soil and sand appears to have made nest digging difficult in the second case. Do you have information on the temperature of the nest? It will help describe the conditions and hatchling results. You could also discuss the possibility of large swells soaking the nest.

c: DAR - Oahu
G. Balazs

Kealia Beach Restoration Project

Public Meeting
February 19, 1997, 7:00-8:30pm
Haggai Institute
175 Lipoa Street, Kihei Maui

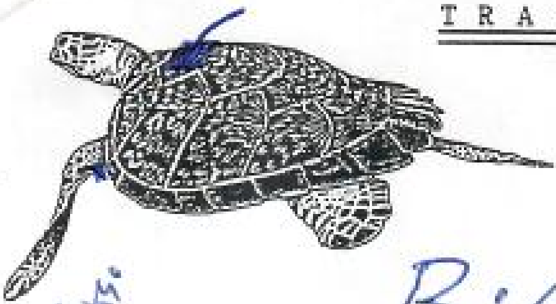
1. Introduction	5 minutes	Charlie Maxwell
2. Overview Coastal Ecology at Kealia and Affects of Erosion	10 minutes	Kathy Smith
3. Hawksbill Sea Turtles at Kealia Beach: The Problem Illustrated	10 minutes	Skippy Hau
4. Proven Beach Restoration Solutions in Kihei & Elsewhere	15 minutes	Gene Thompson Rob Mullane
5. Kealia Beach Restoration Proposal	5 minutes	Charlie Maxwell Kathy Smith
6. Question and Comment Session: Discussion with Interested Parties	45 minutes	Brooks Tamaye

A follow-up meeting will be held on March 27, 1997, from 9:00 - 11:00 am, in the Civil Defense Conference Room in the basement of the Maui County Building in Wailuku. Interested members of the public are invited to attend.

Kealia Beach Restoration Group
(2 pages)

George Balazs	Deputy Chair, IUCN Marine Turtle Specialist Group, c/o 2570 Dole St., Honolulu, HI 96822-2396, ph.: (808) 943-1240, fax: (808) 943-1290
David Blane	Maui County Department of Planning, 200 South High Street Wailuku, HI 96793, ph.: (808) 243-7735, fax: (808) 243-7634
Hannah Bernard	Hawaii Wildlife Fund, P.O. Box 5361, Lahaina, HI 96761 ph.: (808) 667-0437, fax: (808) fax 661-9126
Bill Gilmartin	Hawaii Wildlife Fund 55-472 A Palekana St., Laie, HI, 96762 ph. and fax: (808) 293-9558
Skippy Hau	Aquatic Biologist, Department of Land and Natural Resources, Division of Aquatic Resources, 130 Mahalani Street, Wailuku, HI 96793, ph.: (808) 243-5294, fax: (808) 243-5326
Jimmy Gapero	Maui Police Department, 55 Mahalani St., Wailuku, HI 96793 ph.: (808) 244-6340, fax: (808) 244-6411
Charles Jencks	Director, Dept. of Public Works, County of Maui, 200 S. High Street, Wailuku, HI 96793, ph.: (808) 243-7845, fax: (808) 243-7955
Larry Katahira	Hawaii Volcanoes National Park, P.O. Box 44, Hawaii Volcanoes, Hawaii 96718, ph.: (808) 967-8226, fax: (808) 985-8614
Keith Kcau	Division of Conservation and Resource Enforcement ph.: (808) 984-8110, fax: (808) 984-8111
Charles Maxwell	Hawaiian Cultural Specialist, ph.: (808) 572-8038, fax: (808) 572-0602
Rob Mullane	Coastal Processes Extension Agent, SeaGrant/Maui Community College, 310 Kaahumanu Ave, Kahului, HI 96732 ph.: (808) 242-1254, fax: 984-3251
Gene Nitta	Endangered Species Coordinator, National Marine Fisheries Service, 2570 Dole St., Honolulu, HI 96822 ph.: (808) 973-2987, fax: (808) 973-2941
Phil Ohta	Land Management Agent, Department of Land and Natural Resources ph.: (808) 984-8101, fax: (808) 984-8111
Craig Rowland	Biologist, U.S. Fish and Wildlife Service, Ecological Services, Pacific Islands Office, P.O. Box 50088, Honolulu, HI 96850 ph.: (808) 541-3441, fax: (808) 541-3470
Robert Siarot, P.E.	Maui District Engineer, Highways Division, Department of Transportation, State of Hawaii, 650 Palapala Drive, Kahului, HI 96732 ph.: (808) 877-5061, fax: (808) 877-7072

Kathy Smith	Refuge Manager, Kealia Pond National Wildlife Refuge, P.O. Box 1042, Kihei, HI 96753, ph.: (808) 875-1582, fax: (808) 875-2945
Brooks Tamaye	Information Specialist, Department of Land and Natural Resources, Division of Aquatic Resources, 130 Mahalani Street, Wailuku, HI 96793, ph.: (808) 243-5294, fax: (808) 243-5326
Gene Thompson	Reporter, South Maui Times, 2531 S. Kihei Rd.#C-502, Kihei, HI 96753, ph.:(808) 879-2758/875-4990, fax (808) 875-419
Mercer "Chubby" Vincens	Vice President, A&B Properties, Inc., 33 Lono Ave., P.O. Box 156, Kahului, HI 96732, ph.: (808) 877-5523, fax: (808) 871-7497
Dr. Steve Williams	Hawksbill Sea Turtle Monitoring Program @ Kealia for USFWS, 1839 Wells St., Wailuku, HI 96793 ph.: (808) 874-6194, fax 875-2945
Dr. Thierry Work	Honolulu Field Station, National Wildlife Health Research Center National Biological Survey, 300 Ala Moana Blvd., Suite 3317A, Honolulu, HI 96850, ph.: (808) 541-3445, fax: (808) 541-3472



TRANSMITTAL SHEET

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Fisheries Center Honolulu Laboratory
2570 Dole St. • Honolulu, Hawaii 96822-2396

Commercial: (808) 943-1221
Telefax: (808) 943-1290

Bill- I'm here most every day for 2 weeks.

TELEFAX FOR: Bill DATE: 18 MARCH 97

FROM: George TELEPHONE EXT: 943-1240 395-6409

NUMBER OF SHEETS TRANSMITTED (including this page) ONE.

MESSAGE:

Bill- Hope you had a good trip. I've read the draft hawksbill research plan and have the following comments/questions:

It's not very clear who's doing what, to how many and where. I suggest a small table listing these numbers by activity. Also, the text seems to say that satellite tags will be put on Maui turtles with someone other than me doing it. If that's what you meant I'm not in favor. Also, I'd suggest you delete the part about using "fast setting epoxy." "fast setting" = too much heat. So does "epoxy" as opposed to polyester resin. The polyester resin and cloth is the "bench-tested" material of choice. Tested on two turtles for a year at Sea Life Park. Galveston lab killed (burned the lungs) of a Kemps ridley using epoxy to attach a transmitter. It's a no-no.

I continue to be concerned about the VHF alone being subjected to being smashed. After hearing a presentation at the symposium on the "drag" of sat. transmitters (by a U.S. Navy engineer), the protective buffer in front of VHF would have to be small and streamline.

Out of the blue, Skippy Hau phoned me today. Somewhat distressed. He had received a copy from [illegible] of your plan (but I don't know if it's the same as I have). He wasn't happy because it didn't address correcting all the problems of "monitoring" he encountered last year. You need to call him. Aloha, George

Will you live on Maui, while this is ongoing in order to be 100% on top of everything — the "boss" in charge?

HAWAI'I WILDLIFE FUND
55-472 A Palekana St.
Laie, HI 96762
(808) 293-9558 (voice and fax)

Fax Transmission

To:	**GEORGE BALAZS**
Fax Number:	943-1290
From:	Bill Gilmartin
Re:	Hawksbill turtle research
Pages:	1
Date:	April 23, 1997

Comments:

Welcome home... New info: Kathy Smith, it turns out, is one of those people who does not want to see "her" Kealia turtles tagged or instrumented - this will deter them from future nesting at this site! I can't believe this is a refuge manager talking. She told Hannah that she would not stand in the way of us getting a permit, but she wanted us to know where she stood on this! Even the fact that important habitat info is to be discovered, priority items in the Rec. Plan addressed, doesn't matter.

Hannah suggested to me this morning that (perhaps) a short letter from you to kathy or a phone call could help. If she maintains this attitude, it will be a difficult working environment. Hannah and I discussed a list of items that if you (with your Rec. Team and NMFS expert hat on)addressed each, even briefly, we think it could help. These are: 1) WGG's credibility-- has participated in mgmt. decisions, research planning workshops, etc. and the research for 16yrs. 2)importance of identifying marine foraging and resting habitat sites, 3)potential cost(disturbance)/benefit ratio, 4)address this: she believes this is highly "invasive" and disturbing work..I've told her about the renesting after tagging at Kamahame, but this in itself doesn't seem to help much. You can tell her that you're calling/writing because I asked you to.

Sorry for this, I'm sure you have more important items on your agenda!!! Please call me before you jump into this. Thanks, George.

HE WEST MAUI COMMUNITY FOR MORE THAN 17 YEARS

Lahaina NEWS

Vol. 18 • No. 5

January 30 • February 5, 1997

A hatchling hawksbill turtle (inset), its shell less than 2 inches long, was photographed last year by Suzanne Canja, a volunteer with the Honu'ea Project. Featured is a mature hawksbill, photographed by George Balazs. At maturity, a female hawksbill's shell averages 2.5 feet long.

North Beach may be home for endangered hawksbill turtle

BY KELLY ARBOR
STAFF WRITER

The possibility an endangered hawksbill turtle is nesting in the dunes at Kaanapali North Beach has drawn the interest of marine biologists and naturalists.

Hannah Bernard, education director of the Hawaii Wildlife Fund, said she's heard enough anecdotal reports of hawksbills in the area that she plans to start a North Beach "Honu'ea Watch," similar to the one initiated last year near Kealia Pond.

The Honu'ea Watch dawn patrol, comprised of volunteers, would monitor the beach for signs of turtle tracks or evidence of nests, she said.

The hawksbill is considered critically endangered worldwide, having been hunted for many years for its attractive shell.

Hawaii has an estimated two dozen breeding females, according to Bernard, mostly on the Big Island. Since 1993, two nesting hawksbills were killed by cars on North Kihei Road.

Evidence of hawksbills nesting in areas of Maui besides Kealia has not been documented, said George Balazs, the National Marine Fisheries Service expert on sea turtles. With several people having stories of having seen hawksbills, "It is a place that needs to be checked on, no question about it," Balazs said.

One of those who believes hawksbills nest at North Beach is Pam Meyer, w volunteered this year for the Keal watch. A surf instructor who used to pilot the Atlantis Submarine, Meyer recalls seeing baby turtles in the waters off of North Beach a few years ago.

SEE TURTLES... 16

TURTLES...FROM PAGE 1

"I used to swim there every evening with a friend, up toward Embassy Suites. I didn't know what they were at the time — we saw them three or four nights in a row. There were about a dozen of them. At the time I thought, wow, that's nice.

"They looked like ping pong balls in the water, only a little bigger," Meyer recalled. She said she was new to Hawaii, having recently moved from Saipan where she was used to seeing many different species of turtles.

Since volunteering for the Honu'ea project, Meyer has seen newly-hatched hawksbills, and believes what she saw off the waters of North Beach were baby hawksbills.

Another hawksbill turtle sighting off of the North Beach reef was made about six months ago by Donna Liddicote, who works as a Hawaii Wildlife Fund naturalist aboard the Navatek II. She was diving off her boyfriend's boat, the Kiwi II, at the time.

"It was at the edge of the main in-shore reef," at about 30-foot depth, she said. Liddicote, who is also the coordinator of the Marine Options Program at Maui Community College, said she is certain it was a hawksbill turtle.

"We usually only see the green (turtle)," she said, adding she worked with turtles a few years ago for the National Marine Fisheries Service under Balazs' direction.

The hawksbill turtle she saw was "probably about two feet across," she remembered.

Bernard said it's possible that a turtle is hanging out in the near-shore water during nesting season, and possibly foraging for food on a nearby reef.

Unlike green sea turtles, they do not migrate long distances between their nesting and feeding grounds.

Skippy Hau, aquatic resources biologist with the state Department of Land and Natural Resources, said the reports need to be checked to determine the species and the authenticity of the sighting.

Maui rarely gets nesting turtles, Hau said, recalling one instance of a nesting olive ridley turtle in Paia in the 1980s.

Anyone seeing an endangered turtle, or another endangered species such as the monk seal, should take care not to approach or touch the animal, Hau said.

In the case of the hawksbills, volunteers need to take care to not disturb nests. They shouldn't try to help hatchlings enter the ocean, he said.

Hau said there's been a few undocumented reports of turtles in locations other than Kealia, but he declined to say where.

Reports of endangered marine species can be made to Hau at 243-5294.

Bernard said she hopes to start a dawn patrol beginning in May and continuing through the summer and autumn months.

Volunteers will be trained in identifying hawksbill tracks and nesting areas, she said.

For more information on the Honu'ea project, call the Hawaii Wildlife Fund at 667-0437. ■

Kealia Pond National Wildlife Refuge

U.S. Fish and Wildlife Service
P.O. Box 1042
Kihei, Maui, HI 96753
Tel: (808) 875-1582
Fax: (808) 875-2945

FAX TRANSMISSION COVER SHEET

Fax #: 243-1290 **Date:** 12/6/96

TO: George Balazs **Pages:** 10

From: Kathy Smith, Refuge Manager

Re: Kealia Beach Hawksbill Summary + "Position Statement"

George:

Attached are summary by Steve Williams and a "position statement" on a proposal to eliminate vehicle activity on the beach (drafted for consensus/signature by affected parties s/a land owners, beach user groups, and community assoc. + hopefully the Beach Restoration Committee) The signatures on the position statement would then help promote this proposal with the County of Maui.

Comments?

KS

DRAFT

Hawksbill Turtle Activity on Kealia Beach 1991-1996

compiled from USFWS files by Steven Williams

- 1991
  - First reports of turtle nesting activity on Kealia beach
- 1992
- 1993
  - August 27- A 250 lb. female hawksbill turtle was struck by a vehicle and killed on North Kihei Rd. near 2 mi.. marker.
  - There was a successful nest hatching in a "roadway" through the dunes near the S.E. corner of the mud flat.
- 1994
  - October 5- A turtle was reported to the Maui Police by a passing motorist at approx.. 1:30 a.m. A DOCARE officer responded to the call. A female hawksbill turtle was found by the officer in the mud flat area 250 yds.. south of the pond outlet bridge. Weight was estimated at 200+ lbs. The turtle was caked with mud and appeared to have been out of the water for some time. The turtle was transported to the beach in the bed of the officer's truck where she was released and entered the water on her own. The area was searched, however no nesting activity was found.
  - October 25- 11 p.m. The Maui Police Dept. received a call reporting a turtle on N. Kihei Rd. near the 2 mi.. marker. The area was searched by a MPD officer and a DOCARE officer. No turtle was found.
  - October 26- 7:45 a.m. A turtle was found by a beach-walker tangled in pickle weed and appearing to be in distress. He disentangled her and lifted her out of the depression she has made. She headed to the sea. The incident was reported to a Fish and Wildlife official who searched the area. No nesting activity was found.
- 1995
  - November 6-Dead turtle hatchling found by a diver in the crater of Molokini Island. The hatchling was turned over to a State Division of Aquatic Resources official who identified it as a young hawksbill hatchling.

- November 15- An exposed "old" nest was reported to Kealia Pond Refuge official. The nest was in the vertical bank of an eroded dune 500 ft. east of Kealia pond outlet at the toe of the barrier sand dunes 80 ft. from the ocean water edge. The person discovering the nest reported "hundreds" of eggs falling out of the nest cavity. When the nest was inspected on Nov.16 only six eggs or egg fragments remained. The nest was determined to probably be a failed nest from the previous year.

- 1996

  - July '96- First organized effort begun to locate hawksbill nests over the course of the season.

  - July 25-Nest 96-01 discovered by a USFWS dawn beach patrol volunteer. Location is east of 2 mi.. marker and directly perpendicular to USFWS survey marker on N. Kihei Rd. [GPS 20 '47' 45.11" N lat. 156' 28' 59.10" W long.] The narrow section of beach is bordered by low dunes of lightly condensed sand and loam. A large kiawe tree is located 150' to the east. A distinct crawl led 35' from the low tide line to the toe of the sand dune then along the face of the dune for more than 40' before returning to the sea. There are three excavations averaging 3'X4' of disturbed sand with 13'and 15' between them.
    - Related activity to nest 96-01

      - Sept. 15 [day 52] 9:50 p.m.-first hatchlings emerge. 15-20 hatchlings emerge over period of approx.. 20 minutes and make there way to the ocean without assistance.
      - Sept.17 [day 53] 12:30 a.m. 9-10 hatchlings emerge from nest and enter ocean.
      - Sept. 18 - 5:00 p.m. nest excavated by DNLR biologist
        - Contents recovered
          - 10 live hatchlings (released)
          - 48 undeveloped eggs
          - 26 partially developed hatchlings in shell
          - 32 dead hatchlings
          - 1 weak hatchling (released)
        - First hatchlings discovered at 10 cm.
        - Top of nest 36 cm.
        - Bottom of nest 48 cm.
        - Diameter of nest 50 cm.
        - Estimated total egg count 148
        - Estimated successful hatchlings 37

- Hatchling success rate 25%
- Sept. 22 -dead turtle hatchling sited near Molokini Island eleven miles south of nest site

- Aug. 9 -nesting site 96-02 discovered by USFWS volunteer dawn beach patrol. Approx. 300' east of site 96-01 east of a large kiawe tree and in an area where the dune has eroded very close to the road (<10' from dune top to blacktop) The crawl leads from the water up into the dune and then beach where tracks lead along the steeply eroded dune face for over 50'. She appeared to be checking out the face of the dune bank along the entire length of the crawl as there were disturbed areas and flipper marks on the sand face of the dune. Three areas were most disturbed with torn vegetation and piling of sand. They were inconspicuously marked for observation.
  - The likely nesting areas were monitored during the emergence stage and later excavated. No eggs were found.

- August 19 A female hawksbill turtle, 240 lb. by necropsy report, was struck by a vehicle and killed on N. Kihei Rd. between the 2 & 3 mile markers. Police were called to the scene at 1:20 a.m. The carapace measured 96 cm. in length and 84 cm. in width.The DNLR biologist recovered 134 eggs from the body cavity and buried them 6" deep at a site selected on the adjacent beach.
  - The site where the eggs were buried was excavated on Sept. 19. The eggs were found undeveloped. The "nest site " had been disturbed by vehicle tracks during incubation; a possible facto in the eggs failing to develop.

- August 31- Nest 96-03 discovered by USFWS volunteer dawn beach patrol. Site located 200' west of old aerial navigation marker on N.Kihei Rd. The crawl extends more than 60' along the narrow beach with two climbs into the low dunes. The most likely nesting site is a pair of depressions at the top of the second climb into the dunes. Other areas of disturbed sand and vegetation were at the base of the dune where she retuned to the beach and 30' east near where the crawl began.
  - Related Activity to nest 96-03
    - Oct. 19 (day 50) 6:30 p.m. first hatchlings emerge from nest. Shortly after dark 5 hatchlings emerge from the nest and make there way to the water unassisted. The emergence site is the easterly of the two depressions at the top of the dune. The nest area had been monitored since day 49 by volunteers from the Hawaii Wildlife fund. A low (8") plywood

barrier had been placed between the nest site and the road (25' away) to prevent hatchlings from movin toward the road where they might be disoriented by headlights.

- Oct. 20 (day 51) one hatchling was observed by volunteers moving form the nest to the water at 8:1 No other activity.
- Oct. 20 - 5:35 p.m.Nest 96-03 excavated by DLNR biologist.
  - Contents recovered
    - 4 live hatchlings (released)
    - 145 undeveloped eggs
    - 32 partially developed hatchlings in shell
    - 3 dead hatchlings
    - 14 empty shells
  - Top of nest 10 cm.
  - Last live hatchling recovered 25 cm.
  - Bottom of nest 35 cm.
  - Estimated total egg count 191
  - Estimated successful hatchlings 1
  - Hatchling success rate fo

- Oct. 5- Dead hatchlings discovered on N. Kihei Rd. At 9:15 p.m the DLNR office was notified that turtle hatchlings had been reported on N. Kihei Rd. near the Sugar Beach Condominiums 12 hatchlings were found on the road and road shoulder. They had been run over by passing vehicles. Another 8 dead intact hatchlings were found near the road on the inland side in gra and pickle weed, These apparently died of dehydration. One liv hatchling was found on the ocean side of the road and release to the ocean. Attempts to locate the nest were unsuccessful. is not known whether the nest was on the inland side of the road. The hatchlings may have been disoriented and drawn to road by lights.

- 1996 Summary
  - 5 known nesting attempts
  - 3 known successful nests
  - 42 known live hatchlings entering ocean
  - 1 fatality of mature nesting female, struck by automobi
  - 20 fatalities of hatchlings on North Kihei Rd. (Oct . 5

incident)

- 12 hatchlings run over
- 8 hatchling fatalities from disorientation and dehydration

- 13% average success rate of 2 excavated nests

DRAFT

A Proposal to Preserve the Coastal Dunes and Wildlife of Kealia Beach by Eliminating Vehicle Activity

Executive Summary:

The Kealia Beach area is a unique and beautiful area of Maui, however this fragile environment and it's wildlife are damaged and threatened by uncontrolled offroad vehicle activity. This proposal outlines a program already underway to preserve this area while keeping it open to all, for appropriate recreational use. The proposal recommends designating this area closed to vehicles under Maui County Code to assist these efforts.

← your turtle

A Proposal to Preserve the Coastal Dunes and Wildlife of Kealia Beach by Eliminating Vehicle Activity

Background: Kealia Beach stretches along the scenic open coastline of South Maui from Haycraft Park at Ma'alaea to the Sugar Beach condominium area in Kihei (The sandy beach continues past the condominiums to end at Ka'ono'ulu Beach County Park near the headquarters for the Humpback Whale Marine Sanctuary, making this the longest stretch of unbroken sandy beach on Maui). Over most of it's length, between Ma'alaea and Sugar Beach the beach front is, and will likely remain, undeveloped. The land adjacent to the beach has been owned by A&B properties whose generosity and cooperation has helped to preserve what will undoubtedly become one of Maui's most treasured open-space areas. With the creation of the Kealia Pond National Wildlife Refuge the preservation of a valuable wetland has been assured.

Looking ahead : With the likely realignment of North Kihei Rd. to the mauka side of the pond (a plan supported by both the State Dept.of Transportation and A&B) and the probable designation of the beach front property adjacent to Kealia Pond as a County park, the combined wildlife refuge and park area could become a unique jewel for Maui. The result will be a valuable recreational area for fishing, hiking, swimming, picnicking,and exploring.

As well as being a habitat for the Hawaiian stilt, Hawaiian coot, Hawaiian duck,and a variety of migratory waterfowl and shorebirds, the Kealia area is nesting area for endangered hawksbill sea turtles. Monk seals have used this beach as a resting area and, of course, the nearshore waters of Ma'alaea Bay are a favorite calving and breeding ground for the humpback whale.

This area is not only beautiful and unique in its wildlife diversity, but also very accessable and enjoyable because of its level topography and open vistas. As open land and recreation areas become more scarce on Maui, and with the increasing popularity of eco-tourism in the travel industry, the value of this area to future generations should not be under estimated .

Current problem: Unfortunately this area has suffered from neglect and misuse in the past. The coastal dunes bordering the beach have been severely damaged by continued off road vehicle use. Tire tracks have crushed and killed the dune vegetation that is critical for holding sand in place. Vehicle tracks even near the dunes damage roots and condense the sand, discouraging regeneration of protective plants. The result is accelerated erosion of the coastal dunes, and a receding beach front. The problem is readily apparent from comparison of old aerial photographs with recent images. These show an alarming loss of the beach and barrier dunes. The

DRAFT

beach has eroded so severely in several areas that North Kihei Rd. is threatened.This presents a difficult problem to the State DOT since reinforcing the road by hardening the shoreline with rock or cement barriers will only accelerate the erosion process in adjacent areas.

Just as the dunes are important for the preservation of the coastline they are also critical for the preservation of wildlife. A compelling example of this is the plight of the areas hawksbill sea turtles. Endangered and threatened with extinction, these sea turtles spend nearly their entire life in the ocean, coming ashore only to nest. Their survival depends on the availability of beach dunes as nesting sites. The hawksbill eggs incubate just below the sand's surface and are vulnerable to being crushed by vehicles (as are the emerging hatchlings). Vehicles and nesting turtles don't mix. Native birds and migrant shorebirds, as well as many other smaller but no less significant creatures, can also be adversely affected by vehicle traffic on the beach.

In addition to this, offroad vehicle traffic detracts from the tranquil pleasure of this area for those who come to picnick, fish, swim, or simply for a peaceful walk. It is obvious that for the preservation and enjoyment of this unique beach for all of Maui's residents, the Kealia Beach vehicle traffic should be climinated. The access would be by foot from several parking areas adjacent to the beach just as it is in all of Maui's County and State parks. There is no intent here to limit the use of this beach for fishing, swimming,etc. By contrast the enjoyment of this area will be enhanced and improved by eliminating vehicle activity.

<u>To accomplish this</u> : Making the transition from the present inappropreate beach driving area to a vehicle free beach will involve a coordination of several efforts:

1. Community education: This has already begun, using public service radio announcements, newspaper articles, signage, etc. We believe education is the best way to gain compliance since most of our residents and visitors will gladly "park and walk" once they understand what is being accomplished.

2. Physical barriers to discourage vehicle access to the beach: This also has begun with the placement of the "recycled plastic" barrier along N. Kihei Rd. next to the mud flat area and the closing by A&B of the access at the Ma'alaea end of the mud flat (vehicle traffic on the mud flat has been nearly eliminated, with good compliance and without resistance). A sand capturing dune restoration fence is proposed and should be in place by next spring along the eastern part of the beach (see attached map). Frequent openings in this "drift fence" will allow full pedestrian access.

3. Interpretive Signs: Although some small signs are in place, a set of

DRAFT

more visible and informative signs has been proposed to educate beach users and gain compliance. Signs themselves can become an eyesore and we think their use should be limited to "as needed". The removal of any excess signs can be undertaken after compliance is gained.

4. Enforcement: Although only necessary as a last resort, for those who insist on driving on the beach, it may be necessary to have a law in effect to show where the "bottom line" is. Hawaii State law currently prohibits driving vehicles on unencumbered public lands, which includes beach and coastal areas (Hawaii Administrative Rule 13-221-26). Maui County Code, although prohibiting the use of beaches as " race tracks for motor vehicles", excepts the driving of motor vehicles on beaches to "transport people or supplies for picnicking, fishing camping or swimming" (Chapter 12.28). Inasmuch as State Administrative Rules prevail over County ordinances, there already appears to be authority for enforcement of State vehicle restrictions along Kealia Beach. The conflicting laws could however reduce compliance and increase enforcement and prosecution costs. Whereas aligning County code to agree with State Rules in this area would enhance compliance and should greatly reduce the need for enforcement measures.

We therefor propose that the Maui County Code be amended to designate the Kealia Beach area adjacent to Kealia Pond extending from Haycroft Park to the Kealia Condominium as closed to motor vehicles (with the exception of emergency and official use).

This recomendation appears to be within the scope of the power of the Maui County Council and is in the best interests of the citizens of Maui County.

It is anticipated that eliminating vehicles on the beach would have the added benefits of significantly reducing litter in the area and the potential for criminal activity in offroad areas of this shoreline.

Direct negative economic impact to the County should be minimal. Positive impacts might acrue from increased compliance and reduced enforcement needs. The cost of signs, erosion control fencing and public education will be paid for by a cooperative effort including USFWS, The State Division of Aquatic Resources, A&B Properties and community volunteer groups. The framework for this cooperative effort is already in place in the form of the "Kealia Beach Restoration Committee" (attachment) conveined in the summer of 1996 to advise on sea turtle vehicle accidents.

This proposal is accompanied by a letter of support signed by a number of interested groups and agencies.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pacific Islands Ecoregion
300 Ala Moana Blvd., Room 3108
P.O. Box 50088
Honolulu, Hawaii 96850
Telephone: (808) 541-3441, Fax: (808) 541-3470

FAX TRANSMISSION December 4, 1996 3 pages

To: Kealia Beach Restoration Committee

From: Craig Rowland, Fish and Wildlife Biologist

Subject: November 12, 1996 Meeting Notes and Update

Although many of the members of our ad hoc group were not able to attend the meeting held on November 12, 1996, we did have a good discussion of the past hawksbill sea turtle nesting season and make some discussions on how we should proceed with plans for the restoration effort. The attached meeting notes outline what was discussed.

In order to generate public support for this project and to demonstrate that support to landowners, a public meeting was proposed at which time the restoration idea would be presented and input from the public solicited. We are hoping to hold the meeting around the beginning of February 1997.

If you have any questions, please feel free to contact me at the above numbers or via email at craig_rowland@mail.fws.gov.

attachment

cc: The Honu Project

Craig

RESTORATION PROJECT ISSUES

It was suggested that we seek public involvement in the restoration effort. This needs to be done in an organized manner, perhaps getting the fence well underway with prison labor and then getting various groups to assist where possible.

Sign Messages:

The following ideas were suggested for beach ecosystem restoration signs:
"Dune restoration in progress"
"Long-term hawksbill sea turtle recovery effort"
"thank you for your cooperation"
The sign should include a turtle logo or a logo of a turtle on a beach. To fund signs, we might want to look into obtaining funds from BHP, Maui Electric or some other private firm. We should have a few signs with a sufficient amount of information and many, inexpensive signs with only minimal information.

COUNTY ORDNANCE

Steve Williams (a Kealia Pond NWR volunteer) is interested in seeking support for a resolution to change the county ordnance so that it complies with the State ordnance which prohibits driving on Kealia Beach.

UPDATE LETTER

Craig agreed to prepare a letter to Chubby Vincens and others who were not able to attend today's meeting, to let them know what was discussed and about the propose public meeting.

NESTING ACTIVITY MONITORING

1996

There was a brief summary of the nesting and monitoring activity that took place in 1996. The Hawaii Wildlife Fund organized and trained 145 active volunteers.

1997

Endangered species permits (State and Federal) should be obtained for 1997 monitoring effort. Funds should be pursued to hire a turtle monitoring coordinator for the season.

PRESS RELEASE

It was suggested that a press release should be given to Tim Hurley (Maui News?) to summarize the past turtle season, and stating that we will be seeking input regarding beach restoration from interested people. This should mention the planned public meeting. The information provided should include the fact that hawksbills are continuing to nest along this coast, that 17 hatchlings were rescued by volunteers from entrapment, and that low nesting success in this area could be due to degraded habitat.

GROUP ORGANIZATION

A name was proposed for this group: Kealia Beach Restoration Committee, and Craig Rowland was asked to serve as the group leader.

Maui Hawksbill Sea Turtle Meeting Notes
David Trask Building
Wailuku, Maui
November 12, 1996

MEETING ATTENDEES

George Balazs, Hannah Bernard, Bill Gilmartin, Skippy Hau, Charles Maxwell, Mike Nishimoto, Craig Rowland, Kathy Smith, Brooks Tamaye, Dr. Thierry Work.

PUBLIC MEETING

A public meeting was suggested to propose the plan to the public and seek their input. The meeting, which is planned for early February 1997 should be in the evening. Charlie Maxwell agreed to moderate, with presentations by various people. the meeting should mention the highway problems and solutions but focus on the beach restoration.

Kealia Beach Restoration Public Meeting Structure

1) Ecosystem Description - This is to be presented in the form of a story of a turtle family, and the changes they encounter over time. Charlie Maxwell will narrate a story outline, with various speakers from the group providing detailed information.
   - o Overall (including birds and nearby projects) - Kathy Smith
   - o Plants - Rene Silva
   - o Turtle Biology - George Balazs
   - o Historic Turtle Use of the Area - Skippy Hau and/or Brooks Tamaye

2) Restoration Idea - Kathy Smith

3) Questions (try to anticipate questions and have answers ready)

4) Comments

INFORMATIONAL EFFORT

The idea presented was to get as many people informed about the situation and onboard with the restoration plan as possible before meeting. Part of this effort would involve getting letters of support from:

Maui Offroad (and other offroad vehicle shops)
Fishing Shops
Maui Shorecasters
Condo-dwellers
Sierra Club
Hawaiian Native Plant Society
Na Ala Hele

The Inside Scoop

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PROUDLY SERVING THE RESIDENTS OF MAALAEA * KIHEI * MAUI MEADOWS • WAILEA • MAKENA SINCE 1988

Volume IX, Number 15 | September 20, 1996

HAWKSBILL HATCHLINGS EMERGE TRIUMPHANT

Hawksbill Hatchlings, N. Kihei

Lisa Davis, Meagan Jones and Nancy Greene of Pacific Whale Foundation had their hands full Sunday night when a nest of Hawksbill turtles began to hatch on the beach in North Kihei.

The Pacific Whale Foundation was volunteering for the Honu Ea Watch, an effort launched by the Hawaii Wildlife Fund, the U.S. Fish and Wildlife Service, the Honu Project, the Pacific Whale Foundation and community members in response to the death of a 30 year-old-nesting female hawksbill on North Kihei Road several

see HATCHLING p.2

Turtles turn up in North Kihei

HATCHLING from p.1

weeks ago. Hawksbill sea turtles are critically endangered. At the time of the female's death, there were only two nesting females known to exist on Maui, and only about two dozen hawksbill turtles in all of Hawaii.

The monitoring began on Friday, with about thirty people volunteering to spend their time working in two-person watches to protect the known hawksbill turtle nests. Threats to the nests include four-wheel vehicles driving on the beach, as well as rats, cats, crabs and mongoose which eat the eggs and the hatchlings.

"We are asking that everyone avoid driving on the beaches of North Kihei and Maalaea between now and the end of the nesting season in December," reports Jones.

One of the biggest dangers to the nesting females and to the hatchlings is the presence of the highway. The hawksbill turtles strive to nest above the high tide line. Because of beach erosion and the loss of dunes, the turtles may wander onto the highway in search of a suitable nesting area. In addition, newly hatched hawksbills may become confused by or attracted to the lights of cars on the highway.

Maui residents and visitors are urged to slow down in areas where turtle crossing signs are posted.

The volunteers for the Honu Ea Watch were trained by Dr. Bill Gillmartin, Director of Research for the Hawaii Wildlife Fund. To volunteer for the project, please call 667-0437.

Need sample for DNA in freezer

Maui files

DIVISION OF AQUATIC RESOURCES - MAUI
DEPARTMENT OF LAND & NATURAL RESOURCES
130 Mahalani Street
Wailuku, Hawaii 96793
Phone # (808) 243-5327
FAX #(808)243-5326
September 20, 1996

To: Bill Devick, Acting Administrator

From: Skippy Hau, Aquatic Biologist

Subject: Excavation of Hawksbill Turtle Nest at Kealia

According to Ms. Kathy Smith of the Fish and Wildlife Service, hatchlings emerged from the nest between Sunday and Tuesday (September 15-17). There was a total of about 31 hatchlings observed.

Last night, from 19:00 to 20:45, the hawksbill turtle nest was excavated with the assistance of Ms. Smith and volunteers from the Honu Ea Project. We decided to excavate after no more hatchlings were observed over the past two nights. After dark with the tide rising, I dug from ocean side of the nest site.

Ten more hatchlings were found and released from the nest. There was one weak turtle which Ms. Smith will take care of.

The contents from the nest were broken down as follows:

10	Live hatchlings (released)
48	Undeveloped eggs
26	Partially developed in shell (1 retained KS)
32	Dead hatchlings (1 retained KS)
1	Weak hatchling (KS)
117	Total

About half of the live hatchlings were first discovered about 10 centimeters below the surface. These specimens appeared to be much more active than the hatchlings discovered later. The hatchlings were released on the beach and allowed to enter the ocean unassisted. The remains were separated into three groups: dead hatchlings; empty shells; and dead in shells. The top of the nest was about 36 centimeters depth. The bottom of the nest was around 48 centimeters deep. The diameter of the clutch was about 50 centimeters.

The remains from the nest were placed in plastic bags, stored in the freezer overnight and shipped to the NMFS Honolulu Laboratory for further analyses.

c: DOCARE - Maui
Kathy Smith (FWS)
George Balazs (NMFS)

Turtles are hatching

Rare hawksbill turtles hatching the past two nights from a nest buried in the sand along the shoreline fronting Kealia National Wildlife Refuge offer hope for the endangered species. One of the newly hatched youngsters was photographed in a volunteer's hand Sunday evening (Kathy Smith photo). This morning, just after midnight, nine more turtles emerged from the sand and made their way to the water. Their tracks were inspected at daybreak (Big photo - The Maui News /Matthew Thayer photo). Hawaiian Wildlife Fund co-director Hannah Bernard said the turtles popped from the sand and made a beeline for the ocean. She said the experience left her "totally elated, thrilled." The births come in the wake of a setback for the endangered species when a mother looking for a spot to bury her clutch of eggs was struck and killed by a car on North Kihei Road last month. Some of that turtle's eggs were recovered and buried in the sand. Volunteers are keeping an eye on that site as its time to hatch nears.

The Ma

September 17, 1996

Maui's Newspaper Since 1900

Return to GITB

COPY

STATE OF HAWAII
Department of Land and Natural Resources
Division of Aquatic Resources - Maui
130 Mahalani St.
Wailuku, Hawaii 96793
(808) 243-5294

September 23, 1996

Memorandum

To: Turtle File

From: Brooks Tamaye, Information Specialist BT

Subject: Follow-up on Turtle Nest at Waihe'e and DOCARE Turtle Recoveries

On 9/10/96, I inspected the site at Waihe'e Beach where turtle eggs were reburied. The shoreline had experienced more erosion than anticipated and the area where the eggs had been reburied had changed. I went back on 9/16/96 when I had more time, and tried to locate the eggs. The eggs could not be found. Presumably the eggs were washed away by the waves eroding the shoreline.

If a similar situation arises in the future, the eggs will probably have to be moved to another beach or kept in a container for hatching. The erosion along the shoreline and the number of people frequenting the park makes reburying at that location risky.

Shawn IDPS

On 9/11/96, at approximately 5:30 p.m., DOCARE Officer Okamoto was notified of a large turtle dead on the beach fronting the Maui Prince Hotel in Wailea. Officer Okamoto responded and found a large green sea turtle with tumors on its eyes and front flippers. No tags were observed. He also found a floater tied around the turtle. (Floater apparently tied on by a charter boat who reported the turtle floating in water to our office the previous day.) Since the turtle was too large for Officer Okamoto to carry to his vehicle, it was buried on the beach.

Shawn IDPS

On 9/22/96, at approximately 5:00 p.m., Officer Okamoto received a report of a dead turtle at Paukukalo. Officer Okamoto responded from his home and found a green sea turtle that was estimated to be about 2' in carapace length and weigh about 80 lbs.. The right front flipper and left rear flipper were missing. The carapace also appeared to have shark teeth marks. No tumors or tags were observed. The carcass appeared to be about a week old. This turtle was also buried.

c: W. Devick, Acting Administrator
R. Honebrink, Education Coordinator
G. Balazs, NMFS
G. Nitta, NMFS

eggs
~ 45 mm diameter

The Maui News

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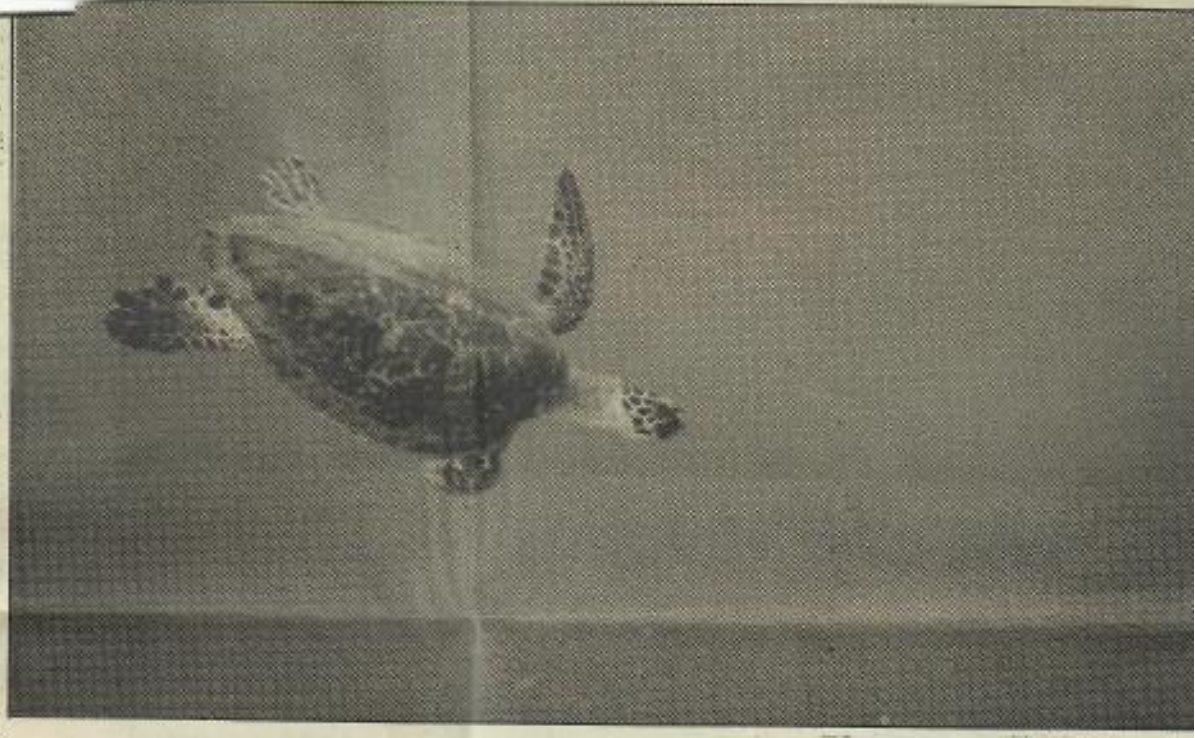

Alan Glaberson pho

An adult hawksbill turtle swims in South Maui waters in this recent photo

Hawksbill hatchlings receive assist

Continued from Page A1

safe from harm.

Some 50 volunteers have so far undergone training and are included in a federal permit allowing them to handle the turtles only in cases of emergency.

The group began its watch Sept. 13, the first day wildlife officials figured a known nest would be active for possible hatchings.

Two nights later, last Sunday night, more than 20 hatchlings emerged from the nest in front of astounded volunteers. Then Monday night, nine more hatchlings found their way to the sea.

"I was awestruck," said Bernard, who witnessed Monday night's hatching. "They were just crawling like mad to the ocean. Sand was in their eyes, and they were so vulnerable."

Indeed, volunteers saved two of the tiny 1-ounce turtles — small enough to fit in the palm of your hand — from a ghost crab hole and set them on their way.

On Sunday night, a 4-wheel-drive vehicle roared by the nest minutes after the main group of hatchlings emerged and entered the ocean.

Volunteers are trained not to be confrontational, but this was too much. They flagged the driver down and told him what he did. The driver expressed remorse and left immediately.

Even tire ruts are obstacles for the fragile hatchlings, so volunteers raked the truck tracks from the sand.

Kealia Pond National Wildlife Refuge Manager Kathy Smith said driving on the beach is a major problem in the area, resulting in severe dune erosion over the years. Ground cover plants and tree roots that hold the sand in place are being damaged by the vehicles, she said.

"We can't emphasize enough the importance of keeping vehicles off the beach right now," Smith said. "No one is trying to keep people off the beach. We're just asking that they access the beach the way their ancestors traditionally did — on foot."

Honu 'Ea Watch volunteers, including a vacationin couple from New Jersey, are trained to be as unintru sive as they can. Flashlights help direct the turtles int the ocean, and boards redirect any animals going to ward the highway.

Despite the volunteer effort, the vast majority o hatchlings are not likely to survive the decades-long so journ to maturity. Many dangers and obstacles lay i their path, including sharks and other predators. It ha been estimated that only 1 percent of a nest's hatch lings survive to reproduce and perpetuate the species.

Still, Bernard noted there are many dangers facin these turtles even before they get to the water, includ ing crabs, mongoose, rats and wild cats. Add four wheel vehicles, the highway and the eroded dunes, an these little critters need all the help they can get, sh said.

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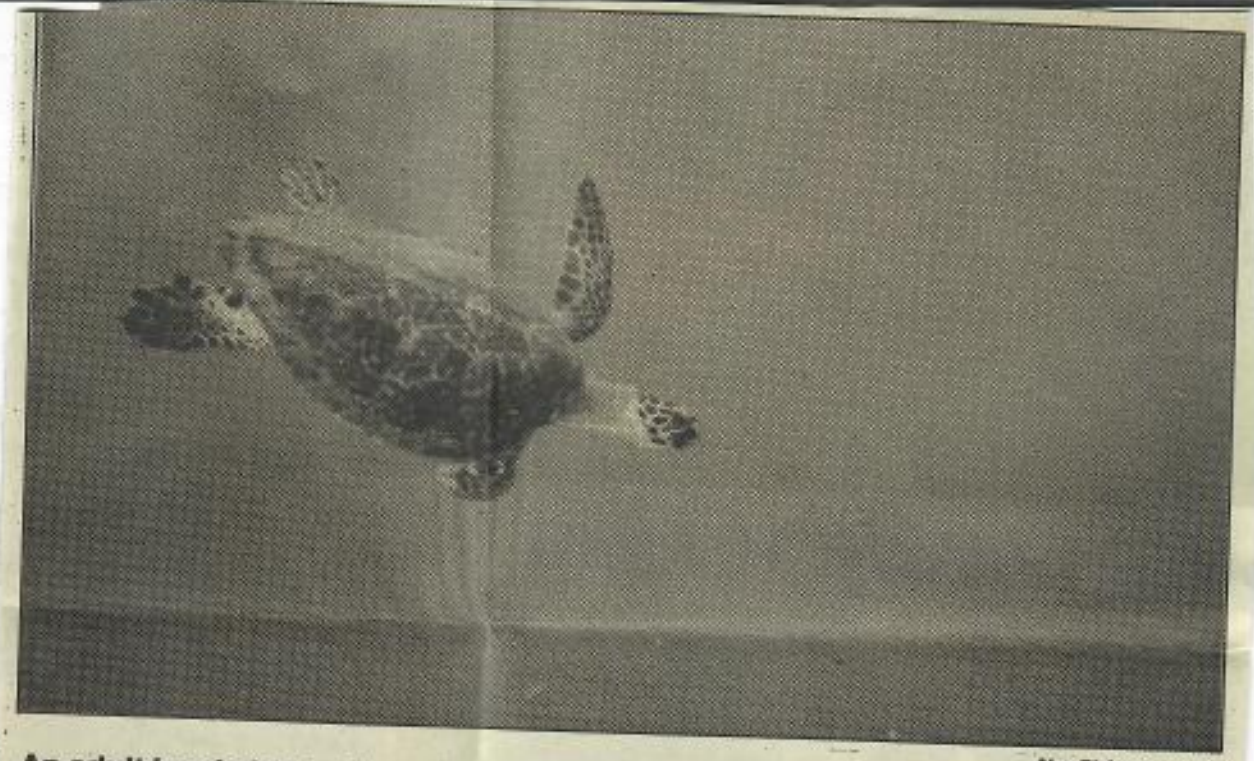
"I was touched by how Maulans came together t support and kokua a highly endangered animal. I makes me think there really is hope for the species," she said.

But the effort is far from over. Members of Honu 'E Watch will continue to patrol the beach at nigh through November to prevent large females from goin onto the road, and they will be ready to guard the re maining nests, including one that might start hatchin next week. During periods of potential hatching, volun teers will be on the job 24 hours a day.

Worried that the tiny hatchlings might get steppe on, Bernard said only trained volunteers should be o the beach at night. If you are interested in signing up for Honu 'ea Watch, call the Hawai'i Wildlife Fund a 667-0437.

For more information on hawksbill sea turtles, cal the state Division of Aquatic Resources at 243-5294 o Kealia Pond National Wildlife Refuge at 875-1582.



Alan Glaberson photo

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MAUI

Date: Mon, 23 Sep 96 10:06:04 MST
From: craig_rowland@mail.fws.gov
To: gbalazs@honlab.nmfs.hawaii.edu
Subject: Operation Molokini Hawksbill

Aloha George,

I emailed Karen Rosa about the rescue operation and this was her response:

Go ahead with the actions you proposed. We should let Law Enforcement know what we plan to do to aid this injured animal, and follow up with a report to them in writing following the capture of the turtle.

Thanks!

Karen R.

I think we can do one of three things to legalize the capture and handling of this hawksbill.

1) sign him up as a USFWS volunteer.

2) sign him up as a NMFS volunteer.

3) designate him an agent of the State.

I am faxing you the regulations I am basing this on. Once we select a legalization method and notify the correct people, I think we can go ahead.

A hui hou,

Craig

MAUI FILE

[42] From: Denise Ellis at ~NMFS-HONO 9/24/96 9:53AM (2321 bytes: 37 ln)
To: Pam Fujiwara at ~NMFS-LB
cc: George Balazs, Shawn Murakawa
Subject: forward of e-mail
---------- Message Contents ----------

Pam - here is a copy of the e-mail sent 9/18/96. FYI and for Clint Freelee of FWS. I guess George wants Kathy Smith to facilitate things. Skippy Hau has a couple of animal cages that we sent him for the purpose of shipping live animals. If you know who is envolved in trying to capture the animal perhaps they could call us directly to coordinate things, as all of the NMFS MTRP personnel will not be available tomorrow (9/25/96).

Re: Emergency medical treatment needed for juvenile hawkbill
To: craig_rowland@mail.fws.gov at EXTERNAL
From: gbalazs@honlab.nmfs.hawaii.edu at EXTERNAL

Text item 1: Text_1

Craig - The turtle has been seen nearly daily by dive operators at Molokini. I've just viewed a viedo of the animal. The right front flipper is strangulated with line of some sort. It is surely bone/subbone deep into the humerus. It needs vet treatment to remove it. The flipper is severely swollen and partly amputated already. In addition, the turtle is severly emaciated. I propose that it be captured (an easy task I believe) and shipped to us for treatment by our contract vet Dr. Morris (Makai Animal Clinic). Kathy Smith could help facilitate all of this. I will phone you in the morning to relay my ideas for the rescue. Or, call me 943-1240 (home 395-6409). George

---

George H. Balazs
National Marine Fisheries Service
Marine Turtle Research Program
Honolulu Laboratory
2570 Dole Street
Honolulu, HI 96822-2396
Email: gbalazs@honlab.nmfs.hawaii.edu
Phone: (808) 943-1240
Fax: (808) 943-1290

498—58 FR 18041; April 7, 1993.
500—58 FR 25754; April 27, 1993.
501—58 FR 25758; April 27, 1993.
504—58 FR 32311; June 9, 1993.
506—58 FR 35891; July 2, 1993.
507—58 FR 37443; July 12, 1993.
509—58 FR 40547; July 28, 1993.
510—58 FR 40551; July 28, 1993.
511—58 FR 41383; August 3, 1993.
512—58 FR 41391; August 3, 1993.
515—58 FR 49879; September 23, 1993.
519—58 FR 52080; October 6 1993.
521—58 FR 53807; October 19/19/93.
523—58 FR 62060; November 24, 1993.
524—58 FR 68480; December 27, 1993
528—59 FR 5510; February 4 1994.
529—59 FR 8141; February 18 1994.
530—59 FR 9327; February 25, 1994.
531—59 FR 10024; March 3, 1994.
532—59 FR 10334; March 4, 1994.
535—59 FR 13840; March 23, 1994.
536—59 FR 14483; March 28, 1994.
537—59 FR 15345; April 1, 1994.
541—59 FR 32837; June 27, 1994.
542—59 FR 35864; July 14, 1994.
544—59 FR 42178; August 17, 1994.
547—59 FR 43952; August 24, 1994.
551—59 FR 48718; September 9, 1994.
553—59 FR 49031; September 26, 1994.
555—59 FR 49863; September 30, 1994.
556—59 FR 50857; October 6, 1994.
558—59 FR 56333; November 10, 1994.
559—59 FR 56350; November 10, 1994.
560—59 FR 59177; November 16, 1994.
564—59 FR 60568; November 25, 1994.
565—59 FR 62332; December 5, 1994.
567—59 FR 64623; December 15, 1994.
570—60 FR 61; January 3, 1995.
572—60 FR 3562; January 18, 1995.
575—60 FR 6684; February 3, 1995.
578—60 FR 12486; March 7, 1995.

[48 FR 38182, July 27, 1983]

EDITORIAL NOTE 1: FOR FEDERAL REGISTER citations affecting the table in § 17.12(h), see the listing above.

EDITORIAL NOTE: FOR FEDERAL REGISTER citations affecting § 17.12, see the List of CFR Sections Affected appearing in the Finding Aids section of this volume.

Subpart C—Endangered Wildlife

§ 17.21 Prohibitions.

(a) Except as provided in Subpart A of this part, or under permits issued pursuant to § 17.22 or § 17.23, it is unlawful for any person subject to the jurisdiction of the United States to commit, to attempt to commit, to solicit another to commit or to cause to be committed, any of the acts described in paragraphs (b) through (f) of this section in regard to any endangered wildlife.

(b) *Import or export.* It is unlawful to import or to export any endangered wildlife. Any shipment in transit through the United States is an importation and an exportation, whether or not it has entered the country for customs purposes.

(c) *Take.* (1) It is unlawful to take endangered wildlife within the United States, within the territorial sea of the United States, or upon the high seas. The high seas shall be all waters seaward of the territorial sea of the United States, except waters officially recognized by the United States as the territorial sea of another country, under international law.

(2) Notwithstanding paragraph (c)(1) of this section, any person may take endangered wildlife in defense of his own life or the lives of others.

(3) Notwithstanding paragraph (c)(1) of this section, any employee or agent of the Service, any other Federal land management agency, the National Marine Fisheries Service, or a State conservation agency, who is designated by his agency for such purposes, may, when acting in the course of his official duties, take endangered wildlife without a permit if such action is necessary to:

(i) Aid a sick, injured or orphaned specimen; or

(ii) Dispose of a dead specimen; or

(iii) Salvage a dead specimen which may be useful for scientific study; or

(iv) Remove specimens which constitute a demonstrable but nonimmediate threat to human safety, provided that the taking is done in a humane manner; the taking may involve killing or injuring only if it has not been reasonably possible to eliminate such threat by live-capturing and releasing the specimen unharmed, in a remote area.

(4) Any taking pursuant to paragraphs (c) (2) and (3) of this section must be reported in writing to the U.S. Fish and Wildlife Service, Division of Law Enforcement, P.O. Box 19183, Washington, DC 20036, within 5 days. The specimen may only be retained,

disposed of, or salvaged in accordance with directions from Service.

(5) Notwithstanding paragraph (c)(1) of this section, any qualified employee or agent of a State Conservation Agency which is a party to a Cooperative Agreement with the Service in accordance with section 6(c) of the Act, who is designated by his agency for such purposes, may, when acting in the course of his official duties take those endangered species which are covered by an approved cooperative agreement for conservation programs in accordance with the Cooperative Agreement, provided that such taking is not reasonably anticipated to result in:

(i) The death or permanent disabling of the specimen;

(ii) The removal of the specimen from the State where the taking occurred;

(iii) The introduction of the specimen so taken, or of any progeny derived from such a specimen, into an area beyond the historical range of the species; or

(iv) The holding of the specimen in captivity for a period of more than 45 consecutive days.

(d) *Possession and other acts with unlawfully taken wildlife.* (1) It is unlawful to possess, sell, deliver, carry, transport, or ship, by any means whatsoever, any endangered wildlife which was taken in violation of paragraph (c) of this section.

Example. A person captures a whooping crane in Texas and gives it to a second person, who puts it in a closed van and drives thirty miles, to another location in Texas. The second person then gives the whooping crane to a third person, who is apprehended with the bird in his possession. All three have violated the law—the first by illegally taking the whooping crane; the second by transporting an illegally taken whooping crane; and the third by possessing an illegally taken whooping crane.

(2) Notwithstanding paragraph (d)(1) of this section, Federal and State law enforcement officers may possess, deliver, carry, transport or ship any endangered wildlife taken in violation of the Act as necessary in performing their official duties.

(e) *Interstate or foreign commerce.* It is unlawful to deliver, receive, carry transport, or ship in interstate or foreign commerce, by any means whatsoever, and in the course of a com activity, any endangered wildli

(f) *Sale or offer for sale.* (1) It i ful to sell or to offer for sale state or foreign commerce an; gered wildlife.

(2) An advertisement for th endangered wildlife which c warning to the effect that no be consummated until a per been obtained from the U.S. Wildlife Service shall not be c an offer for sale within the m this section.

(g) *Captive-bred wildlife.* (1) standing paragraphs (b), (c), (e of this section, any person m import or export; deliver, carry, transport or ship in inte foreign commerce, in the co commercial activity; or sell or sale in interstate or foreign c any endangered wildlife that i captivity in the United Sta vided the principal purpose of tivities is to facilitate capti ling, and provided the followi tions are met:

(i) The wildlife is a species natural geographic distributio cluding any part of the Unite or the wildlife is a species tha rector has determined to be e accordance with paragraph this section;

(ii) The purpose of such acti enhance the propagation or s the affected species;

(iii) Such activity does no interstate or foreign commer course of a commercial activ respect to non-living wildlife;

(iv) Each specimen of wildl imported is uniquely identif band, tattoo or other means reported in writing to an offic Service at a port of export pr port from the United States, a

(v) Any person subject to diction of the United States gages in any of the activitie ized by this paragraph does cordance with paragraphs (i and (4) of this section.

(2) Any person subject to th tion of the United States seek gage in any of the activities a by this paragraph must firs with the Service (Federal Wi

University of Hawaii at Manoa

John A. Burns School of Medicine
Department of Pathology
1960 East-West Road • Honolulu, Hawaii 96822

FAX TRANSMITTAL SHEET

DATE: 9/23/96

TO: George H. Balazs

FAX NO.: (808) 943-1290

FROM: Yoshitsugi Hokama

REMARKS: HAWK TURTLE STUDY FOR MARINE TOXINS

Two types of analyses for marine toxins determined for the hawk turtle tissues submitted to our laboratory.

1. Immunological assay by the solid-phase immuno-bead assay (SPIA) for detection of ciguatoxin and related polyetners.

2. Mouse toxicity for assessment of toxicity of tissue extracts.

The results obtained are as follows:

1. Immunological assay: None of the 12 tissues showed any reactivity in this assay. All samples were in the negative category.

2. Similarly pooled acetone extracts, given at a dose of ∠50 mg/25 gram mouse intraperitoneally showed no clinical symptoms in mice. All animals survived during the /2 hours observed.

Number of pages (including this cover sheet): 1

Faxed from: (808) 956-5506

Please call (808) 956-8682 if you have any questions regarding this transmission.

NEWSWATCH

Collins takes command of isle Army Reserve

Lt. Col. McKinley Collins has assumed command of the U.S. Army Reserve 100th Battalion, 442nd Infantry.

Collins, a civilian employee of the Army at Fort Shafter, succeeds Lt. Col. Matthew Horn, an attorney. Collins, the first African American to lead a Pacific Army Reserve unit, received his commission from the Army ROTC program at the University of Hawaii in 1981. He holds a degree in political science from UH.

Teamsters endorse Morgado for mayor

The Teamsters Union, Local 996, has endorsed Arnold Morgado for mayor and Randal Yoshida for prosecutor.

Among the union's 5,700 members on Oahu are 1,300 bus drivers who work for Oahu Transit Services, the private company which operates TheBus.

Also, the Teamsters yesterday endorsed Suzanne Chun-Oakland for the state Senate 14th district seat and Rey Graulty for the Senate 16th district seat.

Nine more endangered turtles hatched on Maui

WAILUKU — Nine more endangered hawksbill turtles have hatched at Kealia in south Maui.

The turtles climbed out of their nest at 12:30 a.m. yesterday and scurried into the ocean. Some 15 to 20 of the endangered turtles hatched Sunday night.

9/18/96 -- A3

Reported by Star-Bulletin staff

[50] From: Denise Ellis 9/27/96 3:44PM (938 bytes: 14 ln)
To: George Balazs
Subject: Hawksbill at Molokini
---------- Message Contents ----------

Skippy Hau called. I guess Rick Warner, who works on the Prince Kuhio had called him in regards to getting the hawksbill with line at Molokini for us. Skippy noted this is a MLCD area. If we are trying to coordinate collecting the animal with Rick to please give a heads up to Keith Keau, DOCARE Chief on Maui (808-984-8110 or call thru the Oahu office), so they know what's happening, and to smooth the path in case there are calls to DOCARE about this. Skippy will not be in the office next week because they will be diving around the islands. He is transfering an animal carrier to Kathy Smith in case they do collect it sometime next week. Thanks.
Denise

Even baby turtles have guardian angels

All-night vigil on Maui saves hatchlings' lives

By Edwin Tanji
Advertiser Maui County Bureau

KEALIA, Maui — A clutch of endangered hawksbill turtle hatchlings scrambled out of their sandy nest and clambered to the dark ocean off Kealia Beach.

"It was so fantastic," said volunteer Lisa Davis, who counted about 20 tiny hatchlings flopping across the sand around her feet about 9:50 p.m. Sunday.

"We were just standing there talking. We looked down, and there they were."

Six volunteers keeping an all-night vigil on the beach consider themselves lucky to have witnessed what is considered the first documented hatching of hawksbill turtles at Maalaea.

But the turtles, considered on the verge of extinction, were even luckier to have humans watching over them.

Barely an hour later, a four-wheel-drive vehicle came illegally across the sand, passing within 3 feet of the nest, which still might have contained unhatched eggs. The volunteers' presence probably saved the nest.

The vigil at Maalaea is one example of how people are protecting hawksbills from human and natural dangers.

The following day, Monday, another nine or 10 hatchlings popped out of the sand, but by then they were well protected by signs, barriers and guardians. No hatchlings have emerged from the nest since Monday.

Many threats

Vehicles are only one of many threats, said Kathy Smith, manager of the Kealia Pond National Wildlife Refuge.

Hawksbills are known to burrow their eggs on the stretch of beach, a nesting ground about 2 miles long.

Two female hawksbills have been killed by cars after climbing over the low sand dunes and onto North Kihei Road, which runs along the beach.

Signs warning of turtles in the area have not slowed cars along the primary road between Maui's resort districts of Kihei and Lahaina.

On the beach, four-wheel-drive vehicles and people walking on the soft sand above the high-water line can crush eggs or hatchlings accidentally.

Howard Reiken, a New Jersey computer specialist who volunteered for the Sunday night watch, said he stopped the vehicle to warn its driver of turtles in the area. The driver apologized and backed up.

The vehicle backed up next to the nest, said Donna Olah-Reiken, Reiken's wife.

"They just didn't know they were right where there was a documented hatching," Reiken said.

Smith said there are three other known nests along the sandy beach that lines Maalaea Bay. All have been discreetly marked and will be watched by volunteers when those hatching times come.

'Like a kid's toy'

Sunday's incident renewed fears about the multiple threats to turtles, Smith said. She has seen rats and mongooses on the beach. One large rat scampered past the nest early yesterday morning.

She also found two hatchlings stuck in a large hole in the sand, indicative of the kind of difficulty they face when vehicles leave deep tracks on the beach.

"But it was like a kid's toy. As soon as we put it in the water, it began splashing away," she said.

The lights of cars whizzing by on North Kihei Road also are a threat, because baby turtles are attracted to light, she said.

The volunteers used their flashlights to draw the hatchlings into the water, Olah-Reiken said. "They were following whoever's flashlight they saw," she said.

If the volunteers had not been there, car lights on the roadway might have drawn them the wrong way, Smith said.

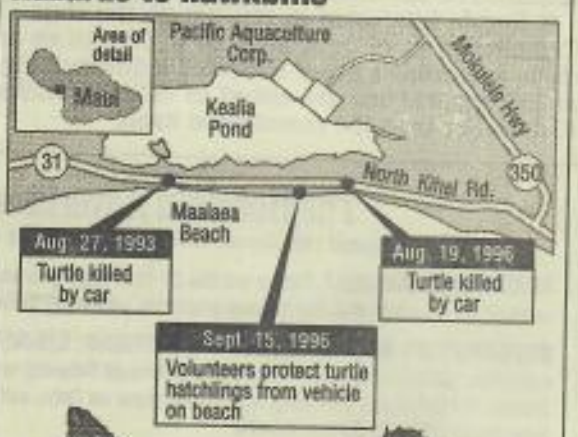
Even volunteers standing near the nest were something of a hazard, said Meagan Jones, a volunteer from the Pacific Whale Foundation. "They're so small, it would be easy to step on them if you're not looking," she said.

Each hatchling is about 3 to 4 inches long and about 2½ inches wide.

In 15 to 20 years, surviving female hatchlings in the group likely will return to Kealia Beach to lay their eggs. By then, the turtles will be 4 to 5 feet long and weigh several hundred pounds.

Hon. Adv. 9-20-96

Hazards to hawkbills



Hawksbill turtle

(Chelonia imbricata)

Size: Largest shell on record is 34 inches long.

Lifespan: Matures at 15 years.

Distinguished by: A sharply hooked beak. Shell is pale brown when young, turns to a deep brown with yellow marbling in adults.

Hunted: At one time, widely sought for their shells for ornamental purposes.

Status: Endangered.

Advertiser graphic

United States Department of the Interior

FISH AND WILDLIFE SERVICE
KEALIA POND NATIONAL WILDLIFE REFUGE
P.O. Box 1042
Kihei, Maui, Hawaii 96753
Tel. (808) 875-1582
Fax (808) 875-2945

September 24, 1996

MEMORANDUM

To: Files

From: Refuge Manager, Kealia Pond National Wildlife Refuge

Subject: A Synopsis of Hawksbill Hatching from Eggs Deposited 7/24/96 (Patrick Ryan's Nest)

This nest is from the farthest west crawl noted so far this season. GPS location 20° 47' 45.11" N. Lat., 156° 28' 59.10" W. Lon. Site is located just west of the large kiawe tree that extends to the water.

9/15/96

9:50 P.M. First emergence of hatchlings was on 9/15/96 (day 52 of incubation). Volunteers from the Pacific Whale Foundation were just changing shifts within twenty feet of this known nest when 15 to 20 hatchlings were drawn to their flashlight. Volunteers watched to see that all made it to water and then checked the vegetation mauka of the emergence pit for misdirected hatchlings--none found.

10:40 P.M. A large pick up truck drove between the nest and the ocean on this narrow (20-30' wide) beach. Although they had been instructed not to approach drivers, volunteers did, politely informing the driver of the possibility of hatchlings in the area. He was sympathetic and departed. Shortly thereafter two more hatchlings were found in a hole on the makai side of the tire tracks. Hole looked much like a ghost crab hole, but could also have been the result of the vehicle's passage. I extracted these two hatchlings unharmed from the hole and allowed them to continue on their way to the sea.

With a flashlight was able to locate emergence hole and check for misdirected hatchlings--none found. Volunteers stayed overnight. I left a rake for them to use to smooth out the ruts the truck left in the sand when he turned around.

Note: a rat was seen within 30 ft of nest, on the sand dune. Numerous mongoose and rodent tracks followed the high tide line in the vicinity of the nest.

9/17/96

12:30 A.M. Nine hatchlings were counted emerging from the nest. Small amount of footage videoed by Hawaii Wildlife Fund. Nest was quiet for the remainder of the night.

9/18/96 No Activity seen at nest in spite of 24hr volunteer monitoring. I installed George Balazs' data logger (temperature probe) at 7:45 A.M. at the toe of the dune excavated by a hawksbill on 8/31/96. To locate--dig at face of dune just makai of central kiawe tree out of three bush-sized tree in a row.

9/19/96 Volunteers noted that a mongoose had dug into the surface of the nest--this based on tracks. No activity throughout day. Consensus from G. Balazs and L. Katahira that given no emergence over past two evenings, was time to excavate nest.

7:00 P.M. Skippy Hau of DLNR Aquatic Resources excavated nest. Ten more live hatchlings made their way to the sea once free of overburden of sand. Skippy 9/20/96 memo documents this work. I kept two of the dead hatchlings and preserved them in alcohol in order for the Refuge to preserve for educational purposes. The one live underdeveloped hatchling that was left in my charge continued to darken (from pink to brown/black) and harden over the next three days. Its shell was however misshapen on the left edge. By the evening of 9/22/96 it was still attached to the drying egg shell and not very lively. I figured if it stood any chance of surviving, it was time to get it to the water. At 8:00 P.M. I placed it near the tide line makai of the nest. When a wave came in, it went out and was not seen again.

Note: Approximately 40 hatchlings made it to the sea from this 7/24/96 nesting out of an estimated 148 eggs laid.

9/22/96 Pacific Whale Foundation reports that one of their boats found a dead hatchling in the Molokini crater this Sunday morning. FAX

9/23/96 The same crew saw a live hawkbill at Molokini -- contact Megan Jones 879-8860 for more information.

cc: George Balazs, NMFS
Skippy Hau/Brooks Tamaye, DLNR
Brooks Harper, USFWS
Larry Katahira, HAVNP
Bill Gilmartin, HI Wildlife Fund

Date: Wed, 25 Sep 96 09:27:11 MST
From: craig_rowland@mail.fws.gov
To: gbalazs@honlab.nmfs.hawaii.edu
Cc: Katherine_Smith@mail.fws.gov
Subject: Operation Molokini Hawksbill Rescue

George:

Looks like we have the go-ahead for the hawksbill rescue effort.

Clint Freely (USFWS-Law Enforcement) called in response to my inquiry into the need for permits or for designating someone as a volunteer in order to rescue an injured hawksbill at Molokini Islet, Maui.

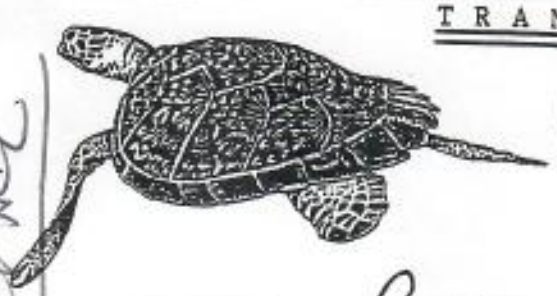
Clint said that he spoke with Pam of the Honolulu NMFS-LE Office. She said that under the emergency provisions of their permitting requirements and under these circumstances, they don't need to issue a permit. He also said the action has been approved by George Balazs and the NMFS-ES office, and that we can go ahead with the project.

Kathy said she would be glad to meet the boat at the dock.

Has anyone contacted Skippy or DOCARE?

Should we do a press release after the mission has been executed?

TRANSMITTAL SHEET



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Fisheries Center Honolulu Laboratory
2570 Dole St. • Honolulu, Hawaii 96822-2396
Commercial: (808) 943-1221
Telefax: (808) 943-1290

- COPY TO MAUI DOCARE

TELEFAX FOR: CINDY KOEHNE — DATE: 27 SEPT. 96
MAUI/MOLOKAI SEP/CERCES
FROM: GEORGE BALAZS — TELEPHONE EXT: 943-1240 / 943-1276

NUMBER OF SHEETS TRANSMITTED (including this page) ONE

MESSAGE: Dear Ms. Koehne; This is to confirm our telephone conversation regarding Rick Werner being authorized (STARTING 9-30-96) by my agency to undertake the emergency rescue of a young hawksbill turtle at Molokini. The turtle's right front flipper is partially amputated and strangulated by line. Veterinary treatment is required. Once captured the turtle would be air shipped to Honolulu with the assistance of Kathy Smith, USFWS at Kealia NWR. our veterinarian, Dr. Robert Morris, will treat the turtle. Your assistance is greatly appreciated.

GEORGE H. BALAZS
ZOOLOGIST AND LEADER,
MARINE TURTLE RESEARCH
DEPUTY CHAIRMAN, IUCN MARINE TURTLE SPECIALIST GROUP

NATIONAL MARINE FISHERIES SERVICE
SOUTHWEST FISHERIES SCIENCE CENTER
HONOLULU LABORATORY
2570 DOLE STREET
HONOLULU, HAWAII 96822-2396

(808) 943-1240
(808) 395-6409
FAX (808) 943-1290

COPY TO NMFS L.E. & DOCARE MAUI

[52] From: Shawn Murakawa 9/26/96 11:25AM (1217 bytes: 20 ln)
To: George Balazs
Subject: Skippy
---------- Message Contents ----------

He called to leave you a message...

He said that the original count of 182 on the night of the excavation may have been high. He said that he might have been counting the broken shells as 1 each. He might have overcounted 50 to 65.

Original memo 5-20-96:	48 undeveloped eggs
	25 (+1) died in shell
	31 (+1) dead hatchlings
	(1 weak) hatchling to Kathy
	--------
	107 total
	10 more hatchlings found and released
	--------
	117 total
	65 empty shells (includes 31 more hatchlings + 34 unaccounted for)

Revised memo	182 total in nest

The Honolulu Advertiser
BUSINESS

Three-legged turtle receives first aid before return to Maui

By Kim Murakawa
Advertiser Staff Writer

"Lefty" the turtle flew home to Maui last night — an end to what probably was the most interesting journey of its life.

A rare, endangered hawksbill turtle with a stump of a right flipper, Lefty was given its name by tour boat operators who first saw it two months ago at Molokini crater, a popular snorkeling and dive tour site.

Photographer Rick Werner made a video last week and sent it to National Marine Fisheries Service biologist George Balazs, who decided the 3- to 6-year-old reptile needed a veterinarian.

"They noticed there was a problem, that it wasn't just a shark bite," said Kathy Smith, refuge manager of Maui's Kealia Pond National Wildlife Refuge. Monofilament fishing line had amputated the limb.

Capt. Tom Harrowby, skipper of the Prince Kuhio tour boat, said diver John Bryce picked up the turtle Monday from its home in the Molokini reef.

The 2-foot, 18-pound animal was flown to Dr. Robert Morris of the Makai Animal Clinic in Kailua on Oahu.

Morris, who cares for turtles under contract with the service, removed the fishing line that had cut circulation to the area.

A blood test and X-rays showed Lefty was in good health. Barring complications, the Prince Kuhio will return it to Molokini today.

"It will not grow back that flipper, but there are a lot of three-limbed turtles out there that are doing well," Smith said.

Advertiser Maui County correspondent Edwin Tanji contributed to this report.

Gregory Yamamoto/The Honolulu Advertiser

Denise Ellis of the Marine Turtle Research Program holds "Lefty."

Wednesday, October 2, 1996
Business Editor:
Ilene Aleshire, 525-8062

Department of Land and Natural Resources

DIVISION OF AQUATIC RESOURCES

Received
Date: 9/20/91

To: George Balazs
From: Skippy
Subject:
Hawksbill Nest Remains
Breakdown

48 undeveloped eggs.
25 (+ 1) died in shell
31 (+ 1) dead hatchlings
(1 weak) hatchling ⇒ Kathy

106 Total

in ULTRA

FAX

Date: Monday, September 16, 1996 **Time:** 3:46:00 PM 1 **Pages**

To: George Balazs

Fax: 943-1290
Voice:

From:
USFWS

Fax: 808-541-3470
Voice: 808-541-3441

Comments:

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pacific Islands Ecoregion
300 Ala Moana Blvd., Room 3108
P.O. Box 50088
Honolulu, Hawaii 96850
Telephone: (808) 541-3441, Fax: (808) 541-3470

FAX TRANSMISSION

September 16, 1996 6 pages

To: September 6, 1996 Hawksbill Sea Turtle Meeting Attendees (see attached)

From: Craig Rowland, Fish and Wildlife Biologist

Subject: Meeting Notes and Update

Thanks for attending the meeting to discuss potential solutions to the sea turtle/beach degradation problem at Kealia Beach. I think we made a lot of progress in a short period of time. Attached are notes from that meeting along with a press release that was distributed to the media today.

Approximately 20 hatchlings were detected by beach patrol volunteers after emerging from a nest last night. The nest has been fenced and is being monitored in order to detect additional hatchlings that are expected to emerge over the next few nights.

Since our meeting, many of us have been working on various aspects of seeking protection for this area:

Beach Patrols: The Hawaii Wildlife Fund organized beach patrols which started on September 13, 1996. The volunteers participating in these patrols will be monitoring the beach for nesting females as well as for hatchlings, and diverting them from the road or untangling them as needed, with minimal disturbance.

Solar Flashing Lights: Bob Siarot obtained a price of $4,000 each for these. He and Kathy Smith also talked about the possibility of using temporary flashing lights (the ones used at road construction sites) for the signs. The problem with these is that the batteries need to be changed often, which is something the beach patrol volunteers might be able to do. One suggestion that came up since our meeting was to use roadside sawhorses (the type used at road repair sites, with flashing lights) to support sea turtle signs. These signs would be deployed in the evening and retrieved in the morning by volunteers or others. Let me know what you think of this idea.

Public Service Announcement: Drafted by Charlie Maxwell and Kathy Smith, this announcement was recorded for air play by Uncle Charlie.

Drift Fencing: Kathy is awaiting for cost estimates and shipping details for wooden drift fencing.

Video Project: The Honu Project, a non-profit conservation group is producing a video on Hawaiian hawksbills (funded by USFWS). They have been filming recently with the Larry Katahira (National Park Service), George Balazs and Bill Gilmartin on the Big Island. The video project will include

information on the Maui population and will be a good way of providing public education. The Honu Project's other video on sea turtle tumors has been shown on public access television over the past couple of years.

Thanks to everyone for keeping the ball rolling. If you have any questions, please feel free to contact me at the above numbers or via email at craig_rowland@mail.fws.gov.

attachments

cc: The Honu Project

Maui Hawksbill Sea Turtle Meeting Notes
Division of Aquatic Resources Conference Room
September 6, 1996

Introduction: Kathy Smith gave a very brief summary of hawksbill sea turtle biology and an overview of the problem. The problem can be split into three categories: Roadway hazards (danger to drivers); Loss or degradation of nesting habitat (dune erosion, tire tracks, light pollution, trash [entraps turtles and attracts predators], and exotic plants; Loss of individuals (direct harm to nesting females and hatchlings by vehicles).

Potential Solutions: The list of potential solutions was discussed with people commenting on the positives and negatives of these idea.

Fencing: No one in the group saw any problems with erecting fences or barriers to keep turtles off the road and/or vehicles off the beach. Many people stated that it would be difficult to keep off-roaders out of the beach area. Kathy estimated that it would cost around $12,000 (material = $5,600, labor = $6,400) to put up a plastic fence along the entire 1.3 mile problem area. Wooden drift fencing was also discussed with the advantage of facilitating natural dune restoration. Kathy will research cost and availability of this type of fence. No firm commitments were made for fence funding.

Old telephone poles might be available to build vehicle barriers. The concern was raised that these probably contain contaminants such as creosote that could leach into the soil or at lease be a disposal problem in the future.

Cement jersey barriers cost about $10,000 each, but there might be some available on Oahu that could be obtained from the DOT. Craig will check with DOT on this.

Rebuilding dunes with on-site materials (pushing up sand) would not be a good idea because of archaeological remains.

Sand deposition - George cautioned that there might be concerns with the turtles imprinting to sand from a different location if deposited sand were brought in from elsewhere. Craig suggested that it might be possible to rebuild the dunes by using drift fences and revegetation with something like naupaka that would facilitate natural sand deposition.

Flashing Lights on Turtle X-ing Signs: Bob Siarot said they could be installed but his department didn't have funds for purchase of the lights. George Balazs brought up the point that the lights must be such that they don't disturb the turtles.

Reduced Speed or Recommended Speed Limit Signs: Bob Siarot said that these could be erected. Advisory speed limit signs could be erected seasonally, and announced via a public service announcement.

Rumble strips: Bob Siarot indicated that these can become road hazards when wet, and are a safety hazard to motorcycles.

"No Vehicles on the Beach" Signs: In addition to the existing Turtle X-ing signs, and the nesting sea turtle signs put up by Greenpeace, the group felt that "No Vehicle" signs are needed.

Beach Patrols: These volunteers would be armed with cellular phones on which they would call MPD if they discovered a turtle up on the beach or a vehicle in the vicinity of a turtle nest. Officer Gapero suggested enlisting the help of the Kihei Community Association, with whom MPD has already organized anti-crime patrols.

Press Release: One of the most important points made by the group as whole was that the FWS should put out a press release letting the public know that we had a meeting and that we plan to do something to protect the turtles. The press release should include the following information: description of the problem, some potential solutions, shoreline ecosystem restoration (actions will benefit not only the turtles, native vegetation, shorebirds, water quality, reef health, fish populations...). The three types of actions we plan to implement (immediate [this season], short-term [by next season], and long-term). The press release will mention the seasonality of turtle breeding and also indicate that the public is to contact the Division of Aquatic Resources (DAR) or the FWS.

Strategies: The group agreed that three levels of action were needed: Immediate (this season); Short-term (by the start of next season); and Long-term (shoreline ecosystem restoration). The State Department of Transportation and Alexander and Baldwin (the landowners) were open to ideas of barriers, closing the beach to vehicles, and shoreline ecosystem restoration. Both A&B and the State thought it would be helpful to have a plan which they could comment on and volunteer for specific portions of. Craig and Kathy will work to come up with an immediate fencing scheme as well as a short-term plan. The county may be

able to provide some man-power through the inmate program for implementing protection actions.

IMMEDIATE ACTIONS

The group agreed that the following actions should be implemented as soon as possible:

Press Release: Craig agreed to work on a press release from the Ecological Services office. The group did not see any need to review this press release before it went out.

Beach Patrols: The Hawaii Wildlife Fund agreed to work with the Maui Police Department (MPD) to organize a group of volunteers to conduct beach patrols.

"No Vehicles on the Beach" Signs: Phil Ohta agreed to look into a source and cost for these.

Fencing: Kathy Smith and Craig will work to come up with an immediate fencing scheme to attempt to keep any additional turtles from coming up on the road. We will work with the State and Alexander & Baldwin to determine placement, and cost sharing.

Flashing Lights on Turtle X-ing Signs: Bob Siarot agreed to research a source and price for solar-powered lights. Bill Gilmartin and George Balazs agreed to research the type of light that would be least disruptive to nesting sea turtles and hatchlings.

Reduced Speed or Recommended Speed Limit Signs: Bob Siarot said that these could be erected. We still need to determine costs.

Ma'alaea Sea Turtle Protection Meeting
September 6, 1996, 1pm
Division of Aquatic Resources Conference Room
130 Mahalani Street, Wailuku, HI 96793
Ph. 243-5294, fax 243-5326

George Balazs	Deputy Chair, IUCN Marine Turtle Specialist Group, c/o 2570 Dole St., Honolulu, HI 96822-2396, ph.: (808) 943-1240, fax: (808) 943-1290
Hannah Bernard	Hawaii Wildlife Fund, P.O. Box 5361, Lahaina, HI 96761 ph.: (808) 667-0437, fax: (808) fax 661-9126
Bill Gilmartin	Hawaii Wildlife Fund 55-472 A Palekana St., Laie, HI, 96762 ph. and fax: (808) 293-9558
Skippy Hau	Aquatic Biologist, Department of Land and Natural Resources, Division of Aquatic Resources, 130 Mahalani Street, Wailuku, HI 96793, ph.: (808) 243-5294, fax: (808) 243-5326
Jimmy Gapero	Maui Police Department, 55 Mahalani St., Wailuku, HI 96793 ph.: (808) 244-6340, fax: (808) 244-6411
Charles Jencks	Director, Dept. of Public Works, County of Maui, 200 S. High Street, Wailuku, HI 96793, ph.: (808) 243-7845, fax: (808) 243-7955
Charles Maxwell	Hawaiian Cultural Specialist, ph.: (808) 572-8038, fax: (808) 572-0602
Gene Nitta	Endangered Species Coordinator, National Marine Fisheries Service, 2570 Dole St., Honolulu, HI 96822 ph.: (808) 973-2987, fax: (808) 973-2941
Phil Ohta	Land Management Agent, Department of Land and Natural Resources
Craig Rowland	Biologist, U.S. Fish and Wildlife Service, Ecological Services, Pacific Islands Office, P.O. Box 50088, Honolulu, HI 96850 ph.: (808) 541-3441, fax: (808) 541-3470
Robert Siarot, P.E.	Maui District Engineer, Highways Division, Department of Transportation, State of Hawaii, 650 Palapala Drive, Kahului, HI 96732 ph.: (808) 877-5061, fax: (808) 877-7072
Kathy Smith	Refuge Manager, Kealia Pond National Wildlife Refuge, P.O. Box 1042, Kihei, HI 96753, ph.: (808) 875-1582, fax: (808) 875-2945
Brooks Tamaye	Information Specialist, Department of Land and Natural Resources, Division of Aquatic Resources, 130 Mahalani Street, Wailuku, HI 96793, ph.: (808) 243-5294, fax: (808) 243-5326
Mercer "Chubby" Vincens	Vice President, A&B Properties, Inc., 33 Lono Ave., P.O. Box 156, Kahului, HI 96732, ph.: (808) 877-5523, fax: (808) 871-7497
Dr. Thierry Work	Honolulu Field Station, National Wildlife Health Research Center National Biological Survey, 300 Ala Moana Blvd., Suite 3317A, Honolulu, HI 96850, ph.: (808) 541-3445, fax: (808) 541-3472

United States Department of the Interior

FISH AND WILDLIFE SERVICE
KEALIA POND NATIONAL WILDLIFE REFUGE
101 N. Kihei Rd., Suite 7
Kihei, Maui, Hawaii 96753
Tel. (808) 875-1582
Fax (808) 875-2945

November 17, 1995

MEMORANDUM

To: Files

From: Refuge Manager, Kealia Pond National Wildlife Refuge K. Smith

Subject: Hawksbill Nest Exposed by Beach Erosion at Ma'alaea Bay

On 11/15/95 Karen Kopec of Kihei reported having seen a turtle nest on the sand dunes fronting Kealia Pond NWR back in early September of this year. She described the site as a weathered and eroding, vertical dune face with hundreds of eggs falling out of a cavity in the sand/soil bank. On 11/16/95 Ms. Kopec showed Refuge staff where the nest was and noted that the condition of the site was little changed except that very few eggs remained in the cavity or on the sand below the opening.

The site is located approximately 500 feet east of the outlet of Kealia Pond and just seaward and west of the highway curve 35 mph sign. The cavity or chamber rests on the toe of the barrier sand dunes and about 80 feet from the ocean water's edge. Approximately six (6) egg or egg fragments were resting in a "hanging" chamber or entangled in small roots and organic debris of the dune. The chamber was approximately 10" x 10" and about a foot down from the soil surface. The soil above the cavity was undisturbed and vegetated with grass. The bottom of the chamber was approximately 2 feet above ground level (the beach). The eggs were all very weathered, collapsed and fractured.

Photos were taken of the site and a call placed to George Balazs, Leader of Marine Turtle Research at NMFS, to report the find. George believes it is probably a failed nest from a previous year that is now uncovered due to erosion of the dunes.* The three eggs in the best condition were sent to NMFS today for examination.

cc: Johnny Beall, Oahu NWR Complex
George Balazs, NMFS
Brooks Tamaye, DLNR - Aquatic Resources, Maui

* Evidence Seizure Tag # 581451

Date: Mon, 16 Sep 96 09:41:01 MST
From: craig_rowland@mail.fws.gov
To: "George H. Balazs" <gbalazs@honlab.nmfs.hawaii.edu>
Subject: Re: Hawksbill nesting on Molokai

> Thanks for the info and for mentioning our interest to Bill Puleloa. Sorry I didn't reply promptly to your two previous emails, I was busy writing up notes from the meeting and putting together an up-date (good suggestions, by the way).

Thanks for the packet of sea turtle info. At this point I'm hesitant to formalize a formal task force primarily because we have so many recovery teams and working groups going now I would rather leave this one informal as long as we are able to get things done and everyone can participate as appropriate. Formal groups seem to be so restricted by having to make official recommendation and having official minutes and so on and so fourth.

Brook's email is: brooks_harper@mail.fws.gov. I think it would be fine if you e-mailed Karen or Brooks and myself with an update on the Big Island hawksbill project.

Great news about the hatch at Kealia (Maalaea)!

Aloha a hui hou,

Craig

_____ Reply Separator _____
Subject: Hawksbill nesting on Molokai
Author: "George H. Balazs" <gbalazs@honlab.nmfs.hawaii.edu> at 9DE-INTR
Date: 9/15/96 12:57 AM

Craig- On the Maui trip you asked me about Molokai. I mentioned the impacts from camping at Halawa and the fact that it's hard for an "outsider" to even monitor what nesting is happening there due to "private property" signs and the river to cross. Well, yesterday Friday I spoke to Bill Puleloa DAR Molokai. He told me that just last week he received a call from campers at Halawa saying that many baby turtles had crawled into their campsite (campfire going, I believe he said). Bill went out there and collected the hatchlings and let them go at a safe place. One or two were dead, which he saved for me (for DNA).
I took the opportunity to tell him of your interest and that you might be contacting you about hawksbill. The other beach where some hawksbill nesting might also be happening is Pohaku iIki, toward Molokai's eastern end.

Best, George

George H. Balazs
National Marine Fisheries Service
Marine Turtle Research Program
Honolulu Laboratory
2570 Dole Street
Honolulu, HI 96822-2396

Phone: (808) 943-1240
Fax: (808) 943-1290
Email: gbalazs@honlab.nmfs.hawaii.edu

Volunteers turn out on Maui to aid baby turtles

BY GARY T. KUBOTA
Maui correspondent

KEALIA, Maui — Meagan Jones stood on a sand dune with other volunteers watching nesting sites of endangered hawksbill turtles Sunday night, when she took a step and heard one of her friends say, "Ahh, Meagan."

"One of the turtles was below me. It was so cute," said Jones.

And there were many, an estimated 15 to 20 scurrying toward the volunteers' flashlights.

Volunteers who had been trained to help the turtles redirected the migration, casting light on the sand to lead the turtles into the ocean.

These turtles were fortunate. Wildlife officials say many are not.

Only about 30 female hawksbill turtles are known to nest in the Hawaiian Islands, the U.S. Fish and Wildlife Service said.

The turtles have been hunted to the brink of extinction because of their shiny hard shells, used for decorative objects such as combs.

At the 700-acre Kealia Pond National Wildlife Refuge, urban growth is threatening the survival of endangered species.

Because of human trash, the number of predators including mongoose, rats and wild cats are increasing and pose a threat to endangered species, officials say.

North Kihei Road, the main link between south Maui and Lahaina, cuts through the refuge. Lights of motor vehicles attract turtles.

BY GARY KUBOTA, Star-Bulletin
Bettina Jones stands near a warning sign in the Kealia dunes area.

A female Hawksbill turtle was killed on Aug. 19 when a vehicle apparently struck it.

Off-road vehicles degrade the sand dunes and crush the turtle eggs buried beneath the sand.

"We can't emphasize enough the importance of keeping vehicles off the beach right now," said Katherine C.E. Smith, manager of the Kealia refuge. "Obviously, hatchlings are pretty difficult to see as they scurry toward the ocean, so it would be very easy to unintentionally drive over them.".

Since the female turtle's death, more than 30 volunteers from wildlife groups have begun a hawksbill turtle watch along the Kealia shoreline.

They have identified four places where the turtle eggs may hatch and are monitoring them to ensure the baby turtles find the sea. About 100 eggs recovered from the dead turtle are buried at one of the sites.

Government officials are considering ways to improve the environment at the refuge. A citizens advisory committee in south Maui has recommended building a bypass road around the refuge and terminating North Kihei Road.

For some volunteers, the vigil will continue through year's end since Hawksbill turtles nest July through October, with eggs hatching through December.

Volunteers Howard Reiken and wife Donna, New Jersey visitors scheduled to leave Maui last night, delighted at the timing of the latest hatchlings.

"It's perfect," said Donna Olah-Reiken. "It could not have been greater."