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Sand Island, Turtle Beach - Midway Atoll
#39 - 5 April 2000

SEA TURTLE TAGGING FORM

CAPTURE DATE, LOCATION AND METHOD: 2:00 P.M. Turtle Beach - Sand Island / Midway Atoll

PERSON RECORDING DATA: J.S.J. Hand

OLD TAGS: RFL N-30 NEW TAGS: RHF 4149124554
LFL N-29 LHF 411E7C3E7B

TUMOR SCORE: 0 OTHER NEW TAGS:

STRAIGHT CARAPACE-LENGTH: 80.5 cm WIDTH: 67.6 cm

NOTCH LENGTH: 80.0 cm DB: L.O. VB: L.O.

CURVED CARAPACE LENGTH: 87.5 cm WIDTH: 84.0 cm

HEAD WIDTH: 11.4 cm SEX: MALE, FEMALE OR UNDETERMINED F

PPS: YES OR NO OR NE NE

TAIL LENGTH: T 22.0 cm C 18.0 cm

RIGHT FRONT FLIPPER WIDTH: 14.6 cm SAMPLES COLLECTED:

PLASTRON LENGTH:

WEIGHT:

DESCRIPTIVE REMARKS:

Mototool #39

Date: Wed, 3 May 2000 11:56:22 -1000 (HST)
 From: "George H. Balazs" <gbalazs@honlab.nmfs.hawaii.edu>
 To: Nancy Hoffman <nhoffma@aloha.net>
 Cc: Robert Shallenberger <rshall@aloha.net>, Marc- HPA Rice <mrice@hpa.edu>
 Subject: Amazing, pretty darned Amazing!

*new
 Moto
 #40*

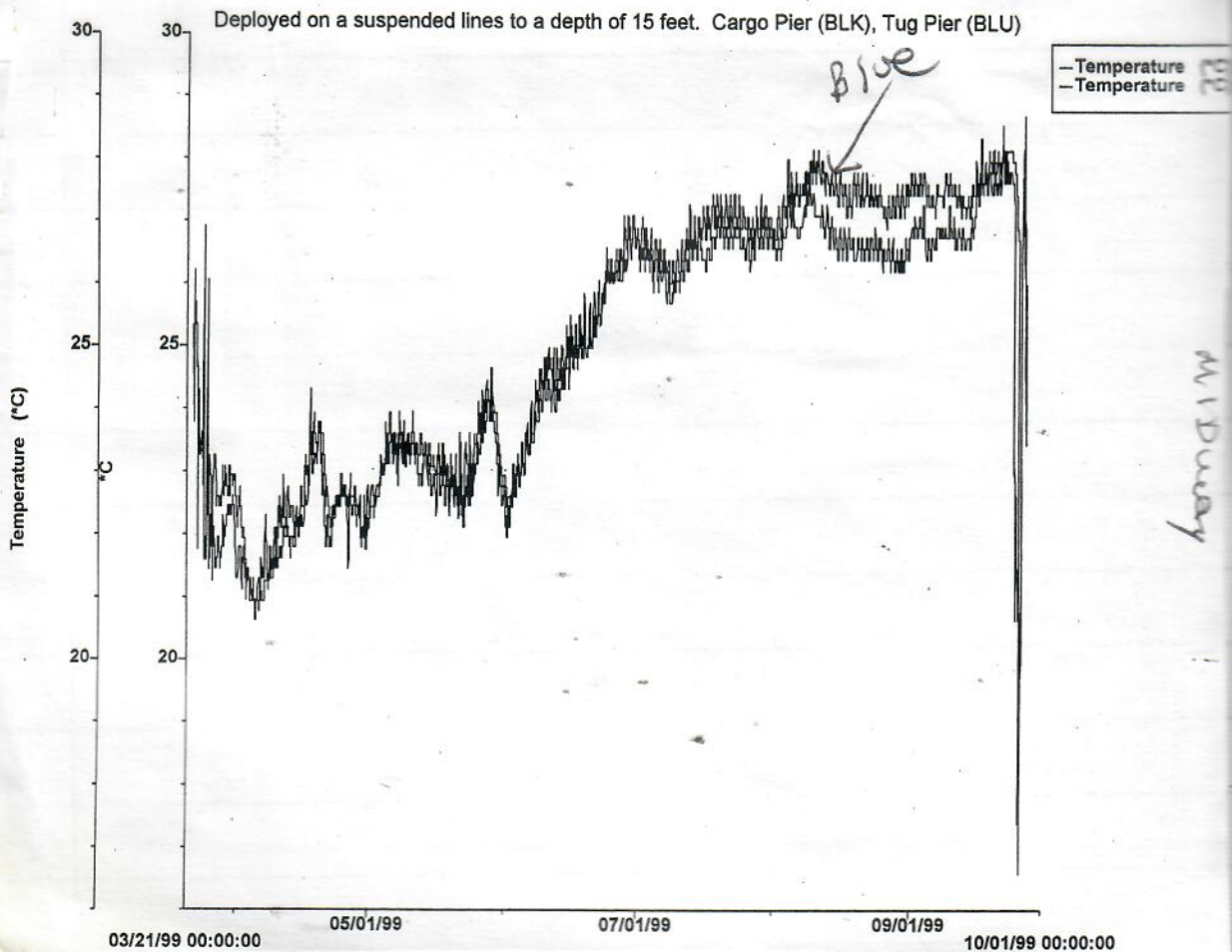
TAG 2566 6/18/78

Congratulations to Nancy and to all the Midway USFWS "turtle-loving" staff! Nancy, I just received your mailing of data for new turtles marked at Midway. Amazing, pretty darned Amazing. You captured at Turtle Beach a turtle with tag 2566. And you gave it mototool #40 (plus a pair pit tags). It measured 70.5cm with the caliper and 75.0 with the tape.

Well, you-all have now accomplished what Marc and I set out to do by working with turtles at Midway after my absence there of about 18 years. A turtle tagged at Midway in the 1970's has now been found. How did the tag look, good condition, in-gown, barely on, or still attached nicely? Turtle 2566 was caught on the back side of Eastern Is. on June 18, 1978 (nearly 22 years ago). Two tags were applied, 2566 and 2567 (latter to the right front flipper). When captured back then, it measured 59.4 cm SCL and 63.0 CCL. So for SCL, that's only 11 cm in 22 years, the turtle is still immature it needs to grow to at least 85-90 cm to even think about maturity. Will you and others at Midway promise to continue to take good care of it for at least another 44 years so it can be seen I FFS? Please. Thank you for that commitment.

This turtle certainly adds some confidence to my earlier stated and published speculations, based on scan data at the time, that the green at Midway grow so slowly that maturity is long delayed beyond what we see here in the Main Islands. I suspect water temperature is the key factor, but maybe also quality and quantity of food.

Please share this message with others, including Ken (I don't have his current email address) and, of course, with Cynthia who has the pictures in her camera of this exceedingly valuable and interesting animal. Aloha, George



SEA TURTLE TAGGING FORM

4/8/2000

CAPTURE DATE, LOCATION AND METHOD: Island Midway Atoll NWR Turtle Beach 5 April 2000

PERSON RECORDING DATA: Nancy Hoffman

OLD TAGS: LFF 2566

NEW TAGS: LFF 414841000E
LHF 413B16185B

TUMOR SCORE: 0

OTHER NEW TAGS:

STRAIGHT CARAPACE-LENGTH: 70.5 WIDTH: 61.7

NOTCH LENGTH: 70.5 DB: L.O. VB: L.O.

CURVED CARAPACE LENGTH: 75.0 WIDTH: 79.0

HEAD WIDTH: 12.0

SEX: MALE, FEMALE OR UNDETERMINED U

PPS YES OR NO OR NE YES

TAIL LENGTH: T 17.5 C 17.5

RIGHT FRONT FLIPPER WIDTH: 13.0

PLASTRON LENGTH: Back side of plastron

WEIGHT: 6/18/78 2566
2567

DESCRIPTIVE REMARKS: CEL 62.9 x 67.9
SEL = 59.4 x 50.5
Jumped from boat

Mototool
40

No noticeable notch
mototool #40

Photo was taken by Cynthia Vanderlip. She will give us a copy of the picture.

Date: Wed, 15 Dec 1999, 09:29:28 -0800
 From: Nancy Hoffman <nhoffma@aloha.net>
 To: "George H. Balazs" <gbalazs@honlab.nmfs.hawaii.edu>
 Subject: Re: Entanglement of a turtle?

[The following text is in the "iso-8859-1" character set]
 [Your display is set for the "US-ASCII" character set]
 [Some characters may be displayed incorrectly]

George, we caught another one! There was a line hanging off the cargo pier (not your logger line). On Sunday, the Strong Texan came to drop off goods and the harbor guys saw another... littler on <70 cm. They released it alive. I don't know the details exactly. I removed your logger yesterday from the cargo pier and I have both in a bag in my office. Strange! We seem to have things happen in two's! The inner harbor had four large (>80 cm) turtles playing around at about 4:00 yesterday evening. The sonic tags are still working. Your project dates in Feb. How many people will be coming out with you? talk to you later, Nancy

NOT TAGGED

SEA TURTLE TAGGING FORM

CAPTURE DATE, LOCATION AND METHOD:

Island, Midway Atoll NWR - Turtle Beach 20 April 2000

PERSON RECORDING DATA: Michele Kastler

NEW TAGS: 413574621D



NEW TAGS: 413E402733



OLD TAGS:

TUMOR SCORE

0

RHF
LHF
MFL

Empty boxes for recording tag details.

OTHER NEW TAGS:

STRAIGHT CARAPACE-LENGTH: 81.3

81.3

WIDTH: 68.7

68.7

NOTCH LENGTH: 81.1

81.1

DB: L.O.

L.O.

CURVED CARAPACE LENGTH: 87.0

87.0

WIDTH: 85.0

85.0

HEAD WIDTH: 11.4

11.4

SEX: MALE, FEMALE OR UNDETERMINED

U

PPS: YES OR NO OR NE

Yes

TAIL LENGTH: T 17.0

17.0

C 14.5

14.5

RIGHT FRONT FLIPPER WIDTH: 13.2

13.2

SAMPLES COLLECTED:

PLASTROM LENGTH:

WEIGHT:

DESCRIPTIVE REMARKS:

Sand Island, Midway Atoll NWR
Turtle Beach #41 20 April 2000



#41

CAPTURE DATE, LOCATION AND METHOD:

9-26-00 Sand Island, Midway Atoll NWR
Turtle Beach Hand

PERSON RECORDING DATA: Jenn Schramm

OLD TAGS

NEW TAGS:

LHF

413619091C

OTHER NEW TAGS:

This tag was attached in the turtle upon capture

TUMOR SCORE

0

STRAIGHT CARAPACE-LENGTH: 97.5 cm

WIDTH: 78.5 cm

NOTCH LENGTH: 97 cm

DB: L.O. VB: L.O.

CURVED CARAPACE LENGTH: 104 cm

WIDTH: 104 cm

HEAD WIDTH: 13.5 cm

SEX: MALE, FEMALE OR UNDETERMINED

F

RPS: YES OR NO OR NE YES

TAIL LENGTH: T 27 cm

C 18 cm

RIGHT FRONT FLIPPER WIDTH: 16.5 cm

SAMPLES COLLECTED:

PLASTRON LENGTH:

WEIGHT:

DESCRIPTIVE REMARKS:

mototool # 42
digital + polaroid photos taken
mototool battery died
only engraved on right side
black sharpie on left side
Concave shell on upper left + lower right sides see photo
Knotch missing from right rear flipper



Midway Atoll NWR
26 Sept. 2000

42

for Turtle Tag 413619091C

Midway Atoll 42
Date 6/21/99
Tag Type LHF
Tag Position RHF

Historical Information

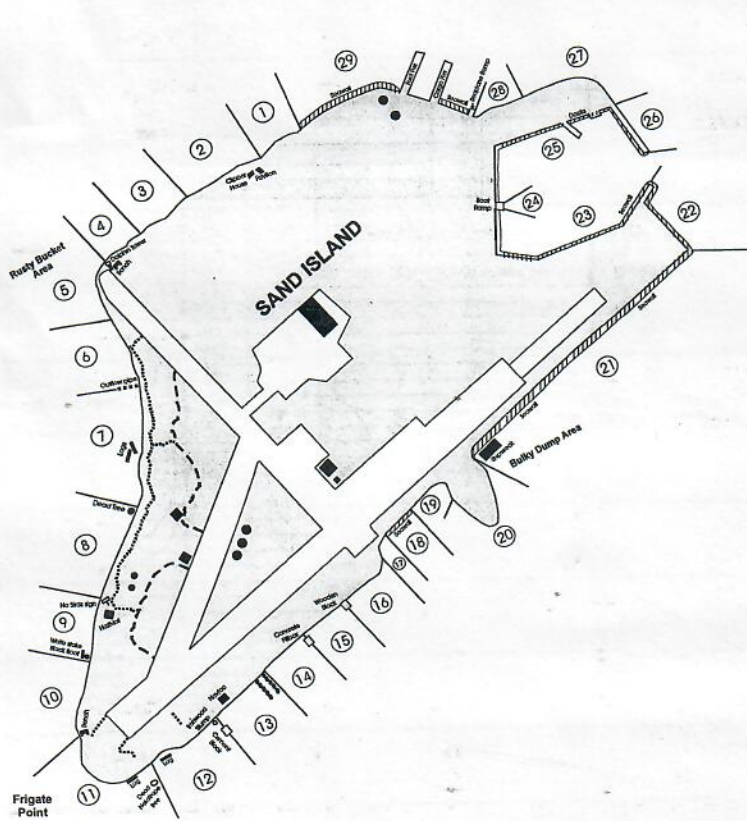
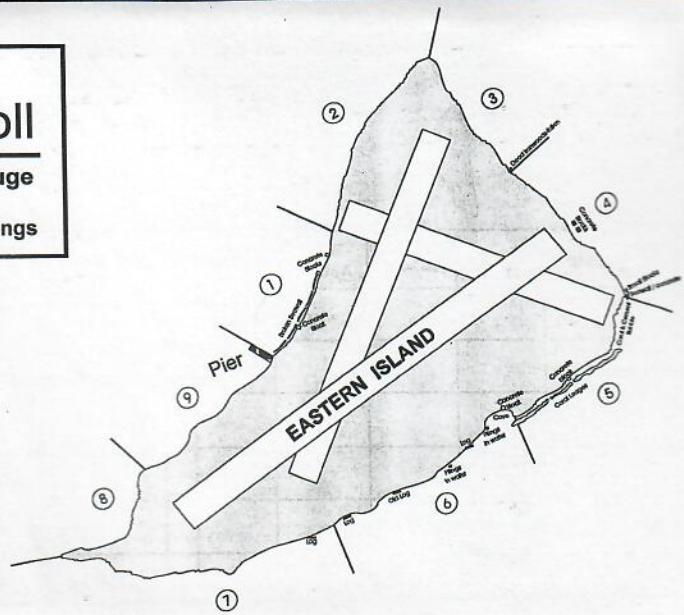
Tag Information:	Date	Type of Encounter	Location:	Tumor Rank:	Nesting Act:	Straight Carapace
Tag Number: 413619091C	6/21/99	Nesting	East	0	G	97.0
413E400209	6/21/99	Nesting	East	0	P	97.0



Midway Atoll

National Wildlife Refuge

Sector Maps for Sea Turtle Sightings



PIT Tag Nos.	Date	Carapace Length (cm)		Weight (lbs)	Captured Method
		Straight	Curved		
037A7E7D, 041A0725	10/16/98	42.4	44.5	24.0	Scoop Net
04134854, 04227317	10/16/98	42.5	44.5	20.0	Scoop Net
04160C2F, 04180D30	10/16/98	53.3	57.0	43.0	Scoop Net
071E2219, 70031D51	10/16/98	45.3	48.5	27.0	Scoop Net
6D662A64, 71572871	10/16/98	44.2	47.5	26.0	Hand/Scuba
07094907, 6C012F45	10/17/98	50.0	53.5	38.0	Hand/Snorkel
08257C37, 6D1C4117	10/17/98	47.8	51.5	35.0	Hand/Scuba
68771270, 72532C70	10/17/98	54.7	59.0	45.0	Set net throw
694D3E6D, 75366F47	10/17/98	70.6	74.5	98.0	Hand/Scuba
6D5B6039, 6F47416A	10/17/98	56.2	60.0	54.0	Hand/Snorkel
0C784D0F, 4B623004	10/18/98	83.6	88.5	---	Hand/Scuba
1C4C130B, 1F111E25	10/18/98	71.5	76.5	---	Boat/Dive
1C670A23, 4912040E	10/18/98	46.7	49.0	31.0	Hand/Snorkel
1C770209, 4B53240F	10/18/98	47.1	49.5	32.0	Hand/Snorkel
1F481120, 4B3F7B6E	10/18/98	39.4	41.5	20.0	Hand/Snorkel
Recap → 1F4D576F, 4B6C432B	10/18/98	46.2	49.0	28.0	Hand/Snorkel → 3/99 46.4
1F792011, 3B610D79	10/18/98	65.3	70.5	86.0	Hand/Scuba
3B085951, 4B31336D	10/18/98	61.4	65.5	60.0	Hand/Snorkel
Recap → 3B6E3815, 4A486806	10/18/98	50.3	53.0	36.0	Hand/Snorkel → 3/99 50.7
690F3039, 75236A5F	10/18/98	41.0	43.5	20.0	Scoop Net
6D676D20, 71572178	10/18/98	47.6	52.0	43.0	Set net throw
1C726819, 44330940	10/19/98	83.5	87.0	---	Hand/Scuba
1C73127B, 4B1E5328	10/20/98	77.2	84.0	---	Hand/Scuba
1F027D57, 1F19485B	10/20/98	73.6	79.5	---	Hand/Scuba
3B186211, 3B706D7B	10/20/98	48.4	51.0	34.0	Hand/Snorkel
Recap → 1F237B7A, 774B0A3C	10/21/98	44.3	46.0	26.0	Scoop net → 3/99 44.5

Forwarded message
Date: Fri, 6 Nov 1998 23:51:28 -0500
From: Barbara Bilgre <mamanaia@earthlink.net>
To: gbalazs@HONLAB.NMFS.HAWAII.EDU
Subject: Green Turtles at Midway Atoll

Dear Dr. Balaz,

A friend suggested I contact you regarding opportunistic data I collected on green sea turtle sightings in the lagoon at Midway Atoll during 1997. My primary role at Midway was as the field investigator of the spinner dolphins for Oceanic Society. During the course of our boat surveys, I recorded the location of each green turtle sighting on a GPS. I found the synthesis of the sightings fascinating, as many of them were centered close to Sand Island in an area where boats frequently pass.

I have communicated with the US FWS biologist, Nanetto Seto, who I interacted with at the time and asked her permission to write up a note for publication. She was very enthusiastic about the idea. Another friend, Dagmar Ferti, has suggested I put the data together for a poster presentation at the upcoming sea turtle conference in Texas. I have asked her to participate in the write-up with me.

As my main area of research has been with dolphins, I am unfamiliar with the sea turtle literature and would appreciate any suggestions you have regarding articles to review. I had seen your synopsis of the green turtle in the Hawaiian Islands while I was at Midway, but I do not have access to that particular write up. Can you suggest a location where I might find the paper?

During my 13 months at Midway, I never saw a turtle with fibropapiloma, however, a naturalist I was working with, Henry Genthe, is quite certain he saw a tumor on a turtle that was in the harbor in November 1996.

An interesting observation that I made, but have no extensive documentation on, is a local migrational pattern of the turtles from the lagoon into the harbor. On two consecutive evenings in June of 1997, some friends and I witnessed the green turtles migrating from the lagoon, along the exterior harbor wall, into the lagoon. The turtles did not all come at once, but generally one at a time. They remained within 15 feet of the seawall traveling in a southerly direction. When they reached the harbor entrance, each turtle turned into the harbor and headed toward the center of the harbor. Once inside, they no longer remained close to the seawall. This pattern occurred at sunset on both evenings. The first evening, we were not at the wall for very long, but saw 7 turtles perform this maneuver. The second evening, we sat on the wall for 1 hour and saw 24 turtles (17 confirmed females, 2 confirmed males, and 5 dish-sized-unknown sexed turtles) perform this maneuver.

I share this information with you because I know that you were out at Midway and are the authority on turtles in the Hawaiian Islands. Bill Gilmartin (Hawaii Wildlife Fund) and Birgit Winning (Oceanic Society) had both suggested I contact you and share my observations.

I thank you for your time reading this note, and I appreciate any help you are able to offer.

Sincerely,
Barbara A. Bilgre

Barbara A. Bilgre
c/o McField
225 16th Ave SE
St. Petersburg, FL 33701
(727) 822-1174
mamanaia@earthlink.net
<http://www.sci.sdsu.edu/CBL/BBilgre.html>

"Emancipate yourself from mental slavery!" -- Bob Marley

----- Forwarded message -----
 Date: Fri, 19 Mar 1999 08:36:17 -1000 (HST)
 From: Shawn Murakawa <smurakaw@honlab.nmfs.hawaii.edu>
 To: rshall@aloha.net
 Subject: Message from George Balazs

Hi, this is Shawn writing on behalf of George Balazs (I met you while I was up there with George last year). George has been trying to fax you for the past couple of days, but has been unsuccessful. Therefore, I am typing this up and emailing it to you. Here it is:

Rob - I'm faxing these thoughts prior to talking to you by phone today or tomorrow. I see the principal objective of my short Midway visit as follows:

- PRIME - 1) To demonstrate and train FWS personnel in the use of mototool and PIT tagging techniques on emergent ("basking") sea turtles;
 2) To draw blood samples for DNA genetics (RBC's) and plasma banking for fibropapilloma diagnostic research;
 3) To examine turtles for presence of tumors and take biopsies of such tissues that may be found (for histopathology);
 4) To excavate turtle bones buried by past FWS personnel for scientific salvage (skeletochronology);
 5) To retrieve and replace seawater temperature data loggers suspended at the tug pier (inner harbor) and cargo pier.

Items 1, 2 and 3 of the above are dependent upon maximum encounters with emergent turtles during my stay, including hopefully ones on the fringing limestone bench. Ideally, all turtles from the reef should be brought back to Sand Island for work-up/training demo. Or, taken to a boat of sufficient size anchored nearby. Large turtles, ones over say 50 lbs., will require special handling (labor). For example, a large turtle basking on Sand Island could ideally be placed in the bed of a pickup truck for easy/safe manipulation to measure, mototool, PIT tag, bleed, and then release. Keep in mind that proper "restraint and manipulation" are 90% of successfully doing these tasks. If you can't control the animal, you can't work on it. If you can't control the animal, it will be dangerous to the worker, and the turtle.

Other Items:

-We can easily use a coding system with the mototool instead of numbers. This will be less obvious (for photography) than "1", "2",

"3" etc. We can code . (=1) .. (=2) :: (=3) :: (=4) - (=5) .Û (=6) etc.

-Do you have (tree) calipers up there that go at least to 95cm?

-Do you have a centrifuge (for blood) - 5 or 10cc tube holders?

-How much weight am I allowed? With gear I would like 60 lbs.

-Do you have one or more PIT tag readers up there (AVID Power Tracker or Destron) capable of detecting the common 125khz PIT tag?

-I'm not keen on the idea of imposing on your home for lodging. Surely there's some small room, bunk of something, somewhere (Workmen's Quarters?) that I can "call home" for 3 nights. Tell Mike it's me, maybe he'll do something special.

-Phone. I need one for my time there. One of my kids, 13 years old, will be on a field trip in Florida, my wife needs to have easy contact with me. I don't have the cost on my travel order, but I can add it later to be reimbursed.

I think that covers it. I seem to suddenly have lots to do to get ready for this short trip!

Aloha, George

Oh yes, I have an extra large \$250 animal (dog) carrier. It's light (tough plastic), maybe 30 lbs. I'm willing to send it to Midway for you to have available for live tumored turtles - ship to Honolulu. Do you want it? On what flight up there?

Date: Mon, 22 Mar 1999 12:53:44 -1100
From: Rob Shallenberger <rshall@aloha.net>
To: gbalazs@honlab.nmfs.hawaii.edu
Subject: Turtle Trip

91

George:

Got your fax and the email from Shawn yesterday. Our phones/email/fax were down last thurs and friday. I'll respond to your points.

1. I agree with your list of trip objectives. However, as I thought might happen, the number of hauled turtles (beach and reef) has diminished lately, possibly due to a bunch of nasty weather. We're still seeing 2-4 on the beach during nice days but we haven't had the right tide and flat weather that's conducive to hauling on the fringing reef. Cynthia and Suzanne are ready to give the reef a try when you come if the weather is right.

I suggest we do the training/demo with beach turtles and do the work on reef turtles (if we're lucky) in a boat at the site.

Coding system is fine.

We do not have calipers up here. We've been using a soft tape.

The clinic does have a centrifuge and the doctor has been prepped.

The HWF folks have a PIT tag reader they use for seals.

Don't worry about staying in our house. Its not a problem. You can eat in the galley. If you are really anxious about it we probably could get the govt rate in the barracks (\$60/day for room). Mike isn't giving ANYTHING away nowadays. Its up to you.

We'll come up with a phone.

The plane loads are VERY tight now. If you really need some extra space (over the 40 # bag and 15# carryon) let me know. Last night's flight was so tight we did not even get any mail.

Speaking of cargo, it would be very helpful if you could pick us up a mototool and some of the right kind of paint so we will be operational after you leave. We'll reimburse. Alternatively, give me the info and I'll get my secretary to pick one up on Weds. She is coming out on the same plane.

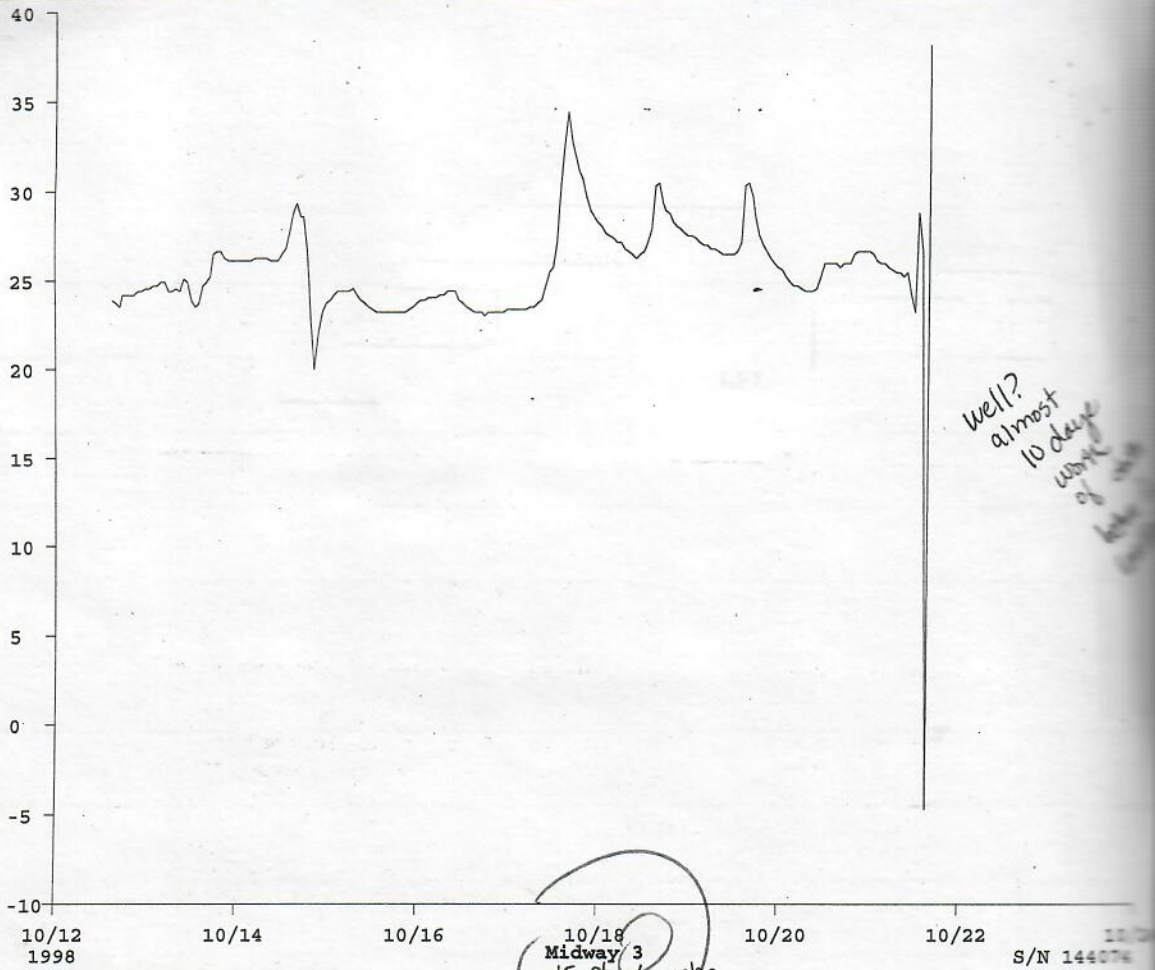
Also on that plane are three people conducting an aviation review. I'll be wrapped up with them for at least part of the time you are here. I'll want you to work most closely with Nancy, Suzanne and Cynthia. I'm sure Ken will want to get involved as well. He was not a particularly happy camper when I told him what we planned to do, but I think he'll be cooperative. I also think he'll come around when we start gathering some good data.

I enjoyed the obake turtle tape. I have not seen the whitetips below the pier before. that was interesting too.

Aloha, Rob

Thanks for sendin

.....



Flights to Midway on Aloha Airlines leave Saturdays from Honolulu International Airport and land after dark so as not to interfere with bird activity. A second flight operates one Wednesday per month through September. Call the Aloha Airlines International Desk at 808-485-2222 from Oahu or 1-888-477-7010 toll free.

The Oceanic Society, the official ecotourism contractor for Midway, offers natural history tours as well as hands-on field research expeditions that go beyond the designated paths within the refuge to help field biologists study the atoll's wildlife. Call 800-326-7491 or 415-441-1106 or visit the Web at www.oceanic-society.org.

For more information about Midway Phoenix Corp., visit www.midwayisland.com or call 1-888-MIDWAY-1.

Information about Midway also is available on the Web at www.fishdive.com or contact: Destination: MIDWAY, phone 888-BIG-ULLA or 808-325-5000, fax 808-325-7023 or e-mail caprick@kona.net.

JON MARCUS IS A TRAVEL WRITER BASED IN BOSTON.

Welcome To
Midway Atoll
National Wildlife Refuge



Squadrons of rare birds maneuver overhead before the backdrop of the empty open ocean. The runway underfoot is overgrown with weeds. Nothing storms the beaches but lounging Hawaiian monk seals and lumbering green turtles, both species almost vanished from the outside world.

One of the most remote populated islands on the planet, this former U.S. Navy base in the middle of the vast Pacific was the site of the decisive World War II Battle of Midway. You'd hardly know it now. Today, Midway is



a peaceful nature preserve—peaceful, that is, but for the squawks and clacking of the millions of extraordinary birds that nest on every patch of unpaved ground. Rare sea life dwells within the turquoise-blue lagoon and heltering reefs of the atoll.

Humans, on the other hand, are sparsely presented. Fewer than 150 live on Midway, and a maximum of 100 guests at a time is allowed. Visitors to this remarkable hideaway stay in refurbished U.S. Navy barracks operated *Fantasy Island*-style by a private corporation in a unique arrangement with the U.S. Fish and Wildlife Service.

Regular commercial flights haven't called here since the days of the elegant Pan American transpacific Clipper flying boats, which stopped at Midway to refuel. But Aloha Airlines' new weekly service (with an additional flight one Wednesday per month through September) brings the atoll firmly within the reach of birders, divers, fishermen, history and aviation buffs, and travelers who care to do nothing but loaf on one

of the prettiest beaches in the Pacific.

Thanks to military security limits that banned fishing for more than half a century, Midway's waters are home to an almost virgin community of marine life. In addition to the threatened green sea turtles and endangered Hawaiian monk seals, there are 250 species of fish, including Pacific blue marlin, yellowfin and big-eye tuna, wahoo, mahimahi and giant trevally, also known as ulua.

The clear surrounding sea also is one of the few places in the world where recreational divers can see masked angelfish and Hawaiian groupers. And while most of the World War II-era shipwrecks lie far offshore, it's possible to dive to a close-in sunken water barge, submarine tender and F4U Corsair bomber lying in 116 feet of water and crawling with dragon morays, rare wrasses and spiny lobsters.

Almost all of this marine life is completely unafraid of people. Ditto the estimated 2 million birds that nest here, including Bonin petrels, fairy terns, red-footed boobies, frigate birds, black-footed albatrosses and wedge-tailed shearwaters. Fully half the birds on Midway are Laysan albatrosses, whose uncoordinated but noisy fertility ritual has won them the nickname "gooney birds."

The Navy spent \$100 million cleaning up the base before it pulled out. In the only partnership of its kind, a contractor called Midway Phoenix Corp. manages the housing, restaurants, generators, piers and airport under a 20-year agreement with the government.

Only two new buildings have gone up on Midway since the Navy left: Captain Brooks' tavern (named for the island's discoverer, Nicholas Brooks) and the Clipper House, a restaurant that remembers the otherwise vanished presence of the Pan Am Clippers.

It's a reminder of an era when traveling was as exotic as it is again today on Midway.

PHOTOS BY DOUGLAS PEEBLES



9

NECROPSY PERFORMED

CAPTURE DATE, LOCATION AND METHOD:

BY NANCY HOFFMAN

99-10-22, North corner of inner Harbor near seawall - FOUND DEAD	
PERSON RECORDING DATA: SUZANNE CANJA	FLOATING IN H ₂ O, BLOATED

OLD TAGS:

NO TAGS

NEW TAGS: RFL

NO TAGS

LFL

TUMOR
SCORE

11

OTHER
NEW
TAGS:

STRAIGHT CARAPACE-LENGTH:

88.4 cm

WIDTH:

65.6 cm

NOTCH LENGTH:

88.4 cm

DB:

L.O.

VB:

L.O.

CURVED CARAPACE LENGTH:

93.3 cm

WIDTH:

89.0 cm

HEAD WIDTH:

12.5 cm

SEX:

MALE, FEMALE OR
UNDETERMINED

F

PPS: YES OR NO OR NE

TAIL LENGTH:

T

27.0 cm

C

17.0 cm

RIGHT FRONT FLIPPER WIDTH:

14.6 cm

SAMPLES COLLECTED:

PLASTRON LENGTH:

77.5 cm

WEIGHT:

?

DESCRIPTIVE REMARKS:

WALNUT size tumor on top right side neck

yellowish/gray

2cm diameter

2cm long puncture on top middle carapace

10" long scratch & 5" long scratch

prolapsed cloaca

small tumor on each rear flipper - ventral sides

small tumor right ventral fore flipper - reddish & ascending. Also small tumor

22-Oct-90

Necropsy of Green Sea turtle

Large female turtle found floating in Nantuxside inner harbor.

Heart - removed. Had small fatty nodules on ventral distal side. Photos taken. Took samples / formalin #001 jar

#001 liver. took samples - slate grey color / foam
Opened mouth - no tumors. fly eggs - fresh
could have laid since turtles been out of H2O

opened up esophagus - took sample of contents
full of algae / freeze

opened up stomach - also full of algae
took sample of contents / freeze sample of stomach / formalin #00

#001 Took sample of pancreas & spleen / formalin

#001 Took sample of lungs - / formalin

Took 2 samples eggs or tumors? one freeze / formalin.

Took 1 sample fallopian tube / freeze

Took ~2cm indid. tumor from left side of neck behind eye

Took both humerus bones / freeze.

Took small tumors, one on ca. hind flipper - thigh area near ^{flap}

See next pg for photos & notes

Photos: #1-3 eggs / tumors?

#4-#5 heart w/ granules

#6 liver

#7 thyroid

#8 thyroid slice

#9-10 inside mouth

#11 - stomach

#12-13. inside esophagus

#14 - pancreas & spleen

#15 - clone of spleen sliced open

#16-20 - eggs / tumors?

#21-24 - tumors/eggs? in cavity

Found ~200 eggs or more than likely tumors
in body cavity. Cut two of them open and
were yoky consistency - yellowish in color.



United States Department of the Interior

FISH AND WILDLIFE SERVICE

MIDWAY ATOLL NATIONAL WILDLIFE REFUGE
PO BOX 29460
HONOLULU HI 96820-1860
PHONE (808) 599-3914 (Voice and Fax)
E-mail: Midway@aloha.net

30 October 1999

TO WHOM IT MAY CONCERN:

It is the understanding of the US Fish and Wildlife Service that the DEAD green sea turtle arriving at Honolulu International Airport from Midway Atoll will be the sole responsibility of USFWS Midway Atoll National Wildlife Refuge. If any fees or penalties may result from this shipment of a biological sample USFWS Midway Atoll NWR will be responsible. Any questions please contact us at the above number.

Sincerely,

Rob Shallenberger
Rob Shallenberger
Refuge Manager

327 0011 3374

AIR WAYBILL
(AIR CONSIGNMENT NOTE) **Aloha Airlines**
P.O. BOX 3009 • HONOLULU, HAWAII 96820

Shipper's Account Number: 327 0011 3374

Shipper: Midway National Station 904
P.O. Box 29460
Honolulu, HI 96820-1860 (808) 599-5400

Consignee's Name and Address: REGIONAL MARINE SERVICES
c/o Aloha Air Cargo
2570 Dale Street
Honolulu, HI 96822 (808) 271-5494

Issuing Carrier's Agent Name and Address: JERRY COOK
Midway Island

Agency/ATA Code: _____ Account No.: _____

Origin and Destination: **Midway** to **Honolulu**

By: **Aloha**

Amount of Insurance: **USD \$150.00**

Very Authorized
10/01/99

NO. OF PIECES	GROSS WEIGHT	N.W.	RATE CLASS	COMMODITY ITEM NO.	CHARGEABLE WEIGHT	NO.	CHARGE	TOTAL D.
01	288 lbs.							

DEAD TURTLE

USFISH & WILDLIFE SERVICE
CLEARED BY
D. [Signature] #W70048

AAH 504 30 Oct 99 Rn 217

Passed - USPHS Inspector
Date: Honolulu OCT. 31. 1999

Signature of Shipper or its Agent: *Rob Shallenberger*

Signature of Issuing Carrier or its Agent: *Keith R. N...*

NO. 2 ORIGINAL FOR CONSIGNEE 327 0011 3374

A219
MotoTool

Historical Information for Turtle Tag 41356E477B

Tag Information:

Tag Number	Date	Tag Type	Tag Position
41356E477B	6/25/99		RHF
413609106B	6/25/99		LHF

Date	Type of Encounter	Location:	TumorRank:	NestingAct	Curved Carapace
6/25/99	Nesting	East	0	M	95.5
6/26/99	Nesting	East	0	M	95.5

Historical Information for Turtle Tag 41356E477B

Tag Information:

Tag Number	Date	Tag Type	Tag Position
41356E477B	6/25/99		RHF
413609106B	6/25/99		LHF

Date	Type of Encounter	Location:	TumorRank:	NestingAct	Straight Carapac
6/25/99	Nesting	East	0	M	90.5
6/26/99	Nesting	East	0	M	90.5

Date: Fri, 29 Oct 1999 07:50:42 -0700
 From: Nancy Hoffman <nhoffma@aloha.net>
 To: "George H. Balazs" <gbalazs@honlab.nmfs.hawaii.edu>
 Subject: new turtle

[The following text is in the "iso-8859-1" character set]
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George, yesterday Wayne spotted a new turtle off the north side of the cargo pier. It had A219 on its right side carapace. It was a T3, sex unknown. It looked to have something hanging off of its front left flipper, but he was not certain what it was. The A219 was white. Who is this!? later, Nancy

See p. 108-109 TW
 Necropsy
 10/29/99
 MotoTool
 A219

MIDWAY turtles that have had Liquamycin injections

As of
8/99

29

Date caught	Pit tag number	Other tags	SCL (cm)	Method	Place caught	Specific
10/17/98	1F68771270	1F72532C70	54.7	Throw setnet	Sand Island	Inner seawall
10/17/98	1F6C012F45	2007094907	50.0	Hand/Snorkel	Eastern Is.	South Shore
10/17/98	1F6D5B6039	1F6F47416A	56.2	Hand/Snorkel	Eastern Is.	South Shore
10/16/98	1F6D662A64	1F71572871	44.2	Hand/Scuba	Sand Island	Boat ramp
10/18/98	1F71572178	1F6D676D20	47.6*	Throw setnet	Sand Island	Outer seawall
10/18/98	1F75236A5F	1F690F3039	41.0	Scoop net	Sand Island	Outer seawall
10/17/98	1F75366F47	1F694D3E6D	70.6	Hand/Scuba	Sand Island	Cargo pier
10/16/98	20071E2219	1F70031D51	45.3	Scoop net	Sand Island	Cargo pier
10/17/98	2008257C37	1F6D1C4117	47.8	Hand/Scuba	Sand Island	Cargo pier
10/21/98	40774B0A3C	411F237B7A	44.3	Scoop net	Sand Island	Cargo pier
10/16/98	4104160C2F	4104180D30	53.3	Scoop net	Sand Island	Outer seawall
10/16/98	41041A0725	41037A7E7D	42.4	Scoop net	Sand Island	Outer seawall
10/16/98	4104227317	4104134854	42.5	Scoop net	Sand Island	Outer seawall
10/19/98	411C726819	4144330940	83.5*	Hand/Scuba	Sand Island	Cargo pier
10/20/98	411C73127B	414B1E5328	77.2	Hand/Scuba	Sand Island	Fuel pier
10/18/98	411C770209	414B53240F	47.1	Hand/Snorkel	Sand Island	Cargo pier
10/20/98	411F027D57	411F19485B	73.6	Hand/Scuba	Sand Island	Cargo pier
10/18/98	411F111E25	411C4C130B	71.5	Boat/Dive	Sand Island	KK Halophila
10/18/98	411F481120	414B3F7B6E	39.4	Hand/Snorkel	Sand Island	Cargo pier
10/18/98	411F792011	413B610D79	65.3	Hand/Scuba	Sand Island	Cargo pier
10/18/98	413B085951	414B31336D	61.4	Hand/Snorkel	Sand Island	Cargo pier
10/20/98	413B186211	413B706D7B	48.4	Hand/Snorkel	Sand Island	Tugboat pier
10/18/98	413B6E3815	414A486806	50.3	Hand/Snorkel	Sand Island	Cargo pier
10/18/98	414912040E	411C670A23	46.7	Hand/Snorkel	Sand Island	Cargo pier
10/18/98	414B623004	200C784D0F	83.6	Hand/Scuba	Sand Island	Cargo pier
10/18/98	414B6C432B	411F4D576F	46.2	Hand/Snorkel	Sand Island	Cargo pier

Date: Mon, 24 May 1999 18:17:50 -1100
 From: Nancy Hoffman <nhoffma@aloha.net>
 To: "George H. Balazs" <gbalazs@honlab.nmfs.hawaii.edu>
 Subject: Re: Turtle Lady

George, great picture! Iia looks like an interesting woman. Thanks for sharing that with me. Rob saw seven turtles on the beach this past weekend. We have seen numbers 3 (in the water under the cargo pier) and 19 basking on the same rocky shore we tagged it on! The numbers do not seem to be a problem with visitors. I put a data sheet in the galley and folks enjoy filling out sightings of the turtles. The photo visitors are less happy with the numbers, but it is not a big issue. They don't like the leg bands on the birds either. I will check on the August dates. I may be floating the middle fork of the Salmon river in Idaho from the 12th to the 19th of August. I will know more after I return from my holiday. I will be off line and island this Sat. I will be back on line 12 June. June will be a crazy month here on Midway! talk to you later! Nancy

Date: Wed, 26 May 1999 08:13:54 -1100
 From: Nancy Hoffman <nhoffma@aloha.net>
 To: "George H. Balazs" <gbalazs@honlab.nmfs.hawaii.edu>
 Subject: optimistic

George, don't give up so easily on my trek to Hono to work with you and turtles on the 15th of August. At this point in time I may be there, but I will know more in a couple of days. I did not note any tumors on the three turtles I saw on turtle beach last weekend. They all looked very healthy. I will be here in Sept. for your visit and turtle fun. Have a great time down-under! later, Nancy

Date: Thu, 27 May 1999 11:34:25 -1100
 From: Nancy Hoffman <nhoffma@aloha.net>
 To: "George H. Balazs" <gbalazs@honlab.nmfs.hawaii.edu>
 Subject: Re: optimistic

George, I will be leaving Sat for two weeks and I will get back to you about my trek to Hono by mid-June. I hope that works for you? Suzanne found a T1 turtle on the beach at Eastern Island yesterday, it was dead. We pulled it up above the tide line letting it decay. It looked clean of tumors. It had no obvious signs (bruises, cuts, marks, etc.) that would help tell the tale of how it died. It may have been dead for a 24-48 hrs based on its condition. It did have bleeding from the mouth. If we find dead turtles would you like any organs or tissue to be collected and sent to you in Honolulu? If not, we will simply let nature take its course and collect the bones and carapace for education and warped biologist curiosity. Talk to you later, Nancy

Date: Tue, 27 Jul 1999 09:28:37 -0700
 From: Nancy Hoffman <nhoffma@aloha.net>
 To: "George H. Balazs" <gbalazs@honlab.nmfs.hawaii.edu>
 Subject: Re: Our Hawaii Visiting Sea Turtle Investigator Program

[The following text is in the "iso-8859-1" character set]
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 [Some characters may be displayed incorrectly]

George (A.K.A. sweet Hungarian),
 Yes, if you can get me into Lincoln Hall I will go there. I have a FWS truck available at the airport for my use upon arrival Sat. night. May I park the truck on the street at the university over night? I am honored you would pick me up, but you have no need since I have a vehicle. Thank you host with the most! If you can not get me into Lincoln Hall, the bunkhouse is OK. Hey George! We had some turtle action this weekend. Two turtles were entangled in net. One was removed alive from the waters near the fuel and cargo pier (Sand Island) and the other was found dead on the beach at Eastern Island by Suzanne on Monday. I will check out the Eastern Island on today. I found the animal carrier and it is now in safe storage. We will get measurements and photos of the turtle on Eastern Island. Talk to you later, Nancy

Date: Thu, 29 Jul 1999 09:34:57 -0700
 From: Nancy Hoffman <nhoffma@aloha.net>
 To: "George H. Balazs" <gbalazs@honlab.nmfs.hawaii.edu>
 Subject: Re: Our Hawaii Visiting Sea Turtle Investigator Program

[The following text is in the "iso-8859-1" character set]
 [Your display is set for the "US-ASCII" character set]
 [Some characters may be displayed incorrectly]

George,
 You may want to kill me...but...No, I forgot, Suzanne forgot, we all forgot to freeze it. Sorry. I will collect and freeze any and all in the future, if freezer space allows. We did measure it, took tons of photos, will scan for PITs tomorrow, and plan to collect the hard parts. It is well on the way to decay. I promise to do better next time, boss! later, Nancy

Date: Fri, 30 Jul 1999 07:26:52 -0700
From: Nancy Hoffman <nhoffma@aloha.net>
To: "George H. Balazs" <gbalazs@honlab.nmfs.hawaii.edu>
Subject: Re: 19

Handwritten signature

101

[The following text is in the "iso-8859-1" character set]
[Your display is set for the "US-ASCII" character set]
[Some characters may be displayed incorrectly]

FFS

George,
I put the data sheet on # 19 out in the mail for this Sat. flight! The jury is still out on IF I forgot to send the data or you misplaced the data!! Yuk! Yuk! You should have data on turtle number 22 being the last turtle we tagged in April. If you do not I need to send them to you. Later, Nancy

----- Original Message -----
From: George H. Balazs <gbalazs@honlab.nmfs.hawaii.edu>
To: Nancy Hoffman <nhoffma@aloha.net>
Sent: Thursday, July 29, 1999 2:13 PM
Subject: Re: 19

> oh great. I'm training nuturing a new sea turtle biology that may have a
> worse memory than me!

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

> On Thu, 29 Jul 1999, Nancy Hoffman wrote:

>
> > George, I may not have sent the data sheet? I will get a copy in the
mail to
> > you. I will double check the photo, but I do not remember seeing a tumor
in
> > the eye, only white gooie stuff.... but, my memory is not too good!
Thanks!

> > Nancy
> > ----- Original Message -----
> > From: George H. Balazs <gbalazs@honlab.nmfs.hawaii.edu>
> > To: Nancy Hoffman <nhoffma@aloha.net>
> > Sent: Thursday, July 29, 1999 11:38 AM
> > Subject: 19

> > >
> > > I can't locate a data sheet for the turtle, did you ever send? The BW
> > > photo arrived yesterday. Mahalo!
> > >
> > > Turtle has a tumor in the left eye, posterior corner.
> > >
> > > More soon, George
> > >

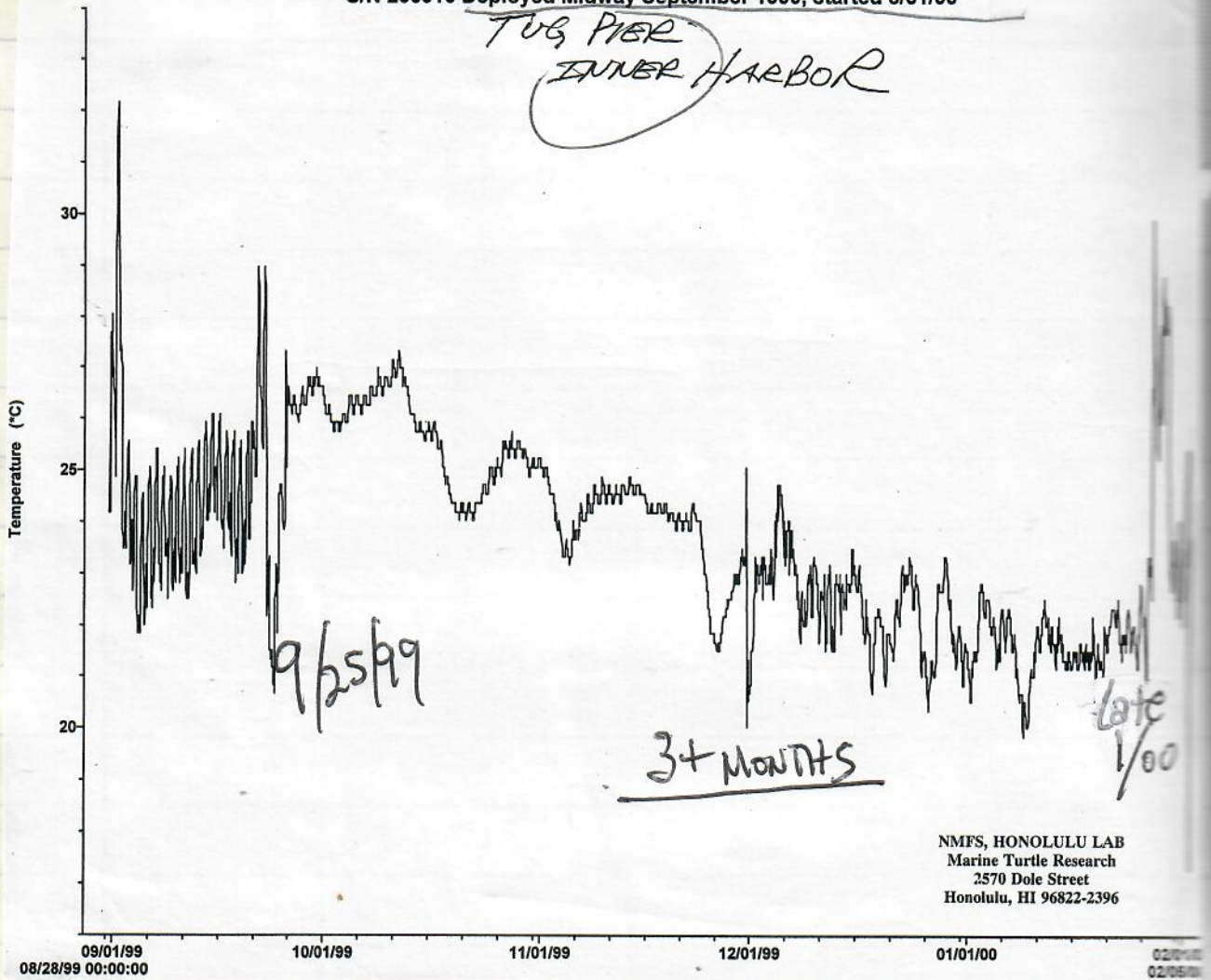
Handwritten notes:
10/25
10/26
10/27
10/28
10/29

Handwritten notes:
10/29

266016

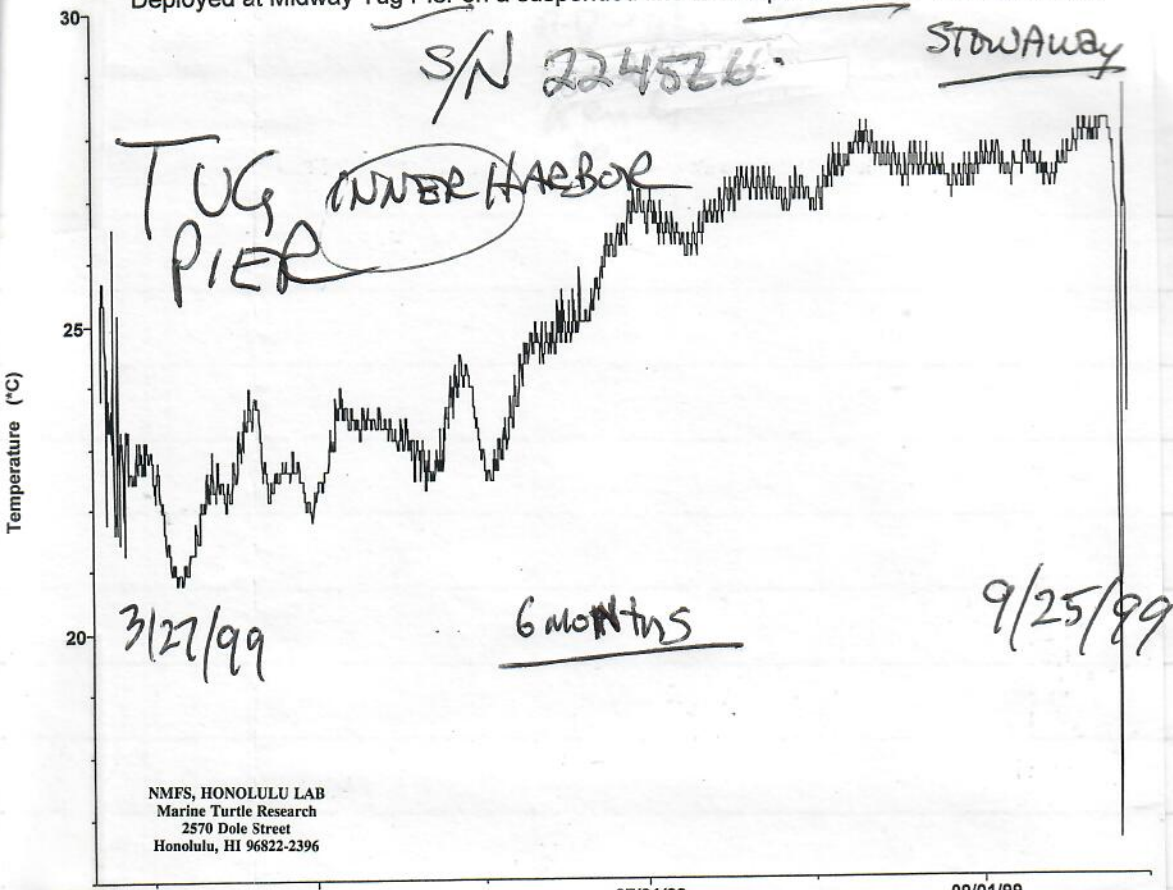
S/N 266016 Deployed Midway September 1999, started 8/31/99

TUG PIER
INNER HARBOR

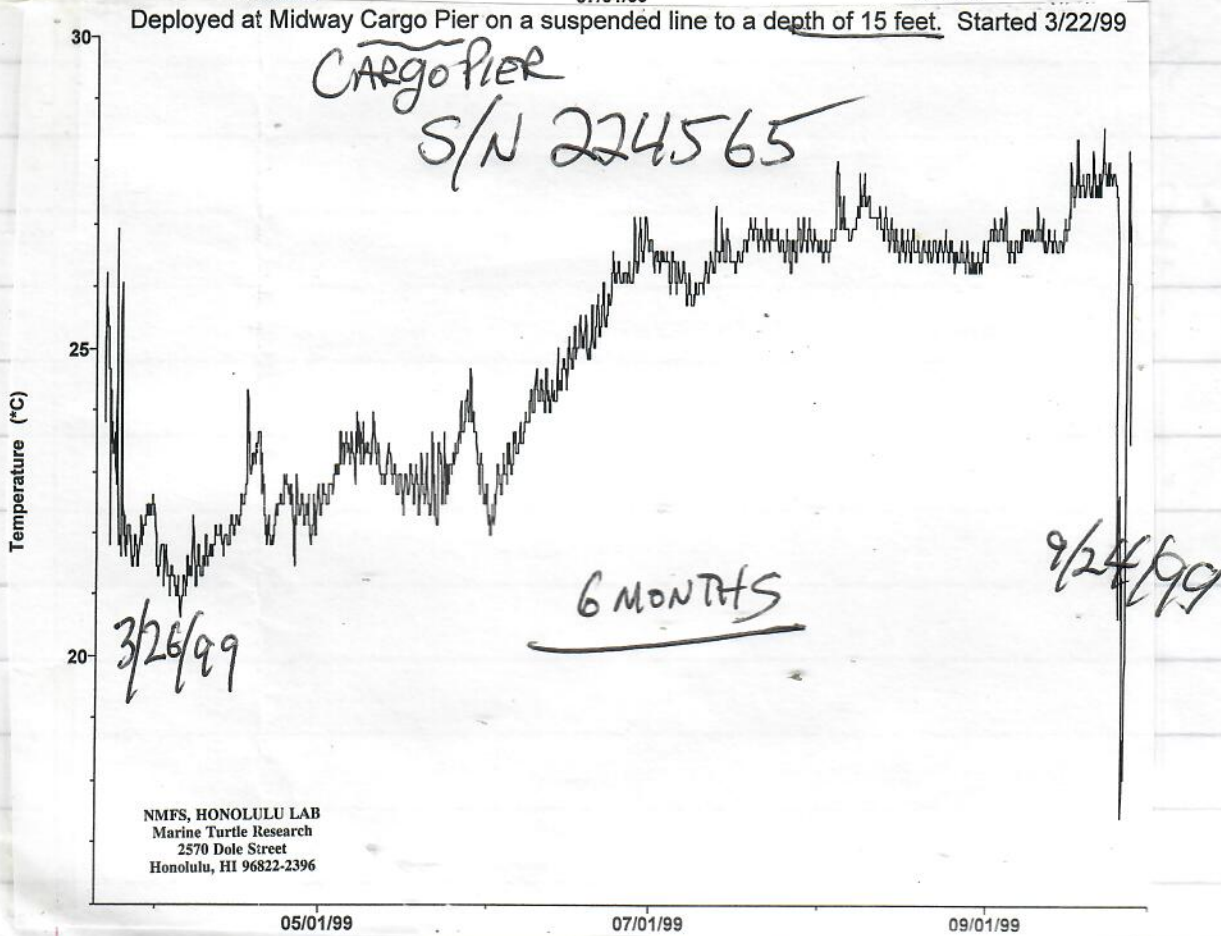


NMFS, HONOLULU LAB
Marine Turtle Research
2570 Dole Street
Honolulu, HI 96822-2396

Deployed at Midway Tug Pier on a suspended line to a depth of 15 feet. Started 3/22/99



Deployed at Midway Cargo Pier on a suspended line to a depth of 15 feet. Started 3/22/99



108

2 turtles *
NMFS, HONOLULU LAB
Marine Turtle Research
2570 Diak Street
Honolulu, HI 96822-2396

SEA TURTLE NECROPSY/TUMOR FORM

05 NO

NECROPSY DATE: 11/1/99 MTRP STRANDING ID: 10-31-99

CONTACT: Nancy Hoff-ven DATE: 10-31-99 LOCATION: Midway, Imer, Kaho

PERSON RECORDING DATA: SME AZ19 - not banded

DESCRIPTIVE REMARKS: Necropsy by D.T. Work case # 5251

Old PIT
TUMOR TAGS: LHP 4135694768 SEX: MALE, FEMALE OR UNDETERMINED F
RHF 4135694775 DB: VB:

STRAIGHT CARAPACE-LENGTH: 91.2 cm WIDTH: 72.3 cm

NOTCH LENGTH: 90.5 cm PPS (Y/N): Y

CURVED CARAPACE LENGTH: 97.0 cm WIDTH: 91.5 cm

HEAD WIDTH: 72.8 cm

TAIL LENGTH: T 25.0 cm C 18.0 cm

RIGHT FRONT FLIPPER WIDTH: 14.8 cm SAMPLES COLLECTED: Humeri / Shell

PLASTRON LENGTH: 74.6 cm Fore stomach contents

WEIGHT: 245.0# Heart, Liver, 1/2 skin for DNA Fore stomach content for dirof/legles

TRANSMISSION
Kameh
Diana
1/25/00

See p. 98

LOCATION, SIZE, AND NUMBER OF TUMORS

	#1	#2	#3	#4	TOTAL	REMARKS
RT. EYE						
LT. EYE	1				1	
MOUTH						
NECK						
RFF						
LFF						
RHF						
LHF						
CLOACA/TAIL						
SEAMS/SCUTES						
INTERNAL						
TOTAL	1				1	

OTHER INFORMATION:

TUMOR SCORE: 1

APPROXIMATE TUMOR SIZE CATEGORIES:

- #1 = DETECTABLE PATCH TO 1CM DIAMETER
- #2 = >1CM TO 4CM
- #3 = >4CM TO 10CM
- #4 = >10CM

Final Diagnosis (in order of importance)

1. Undetermined	topog. (T00010)	morph. ()	etiol. (R00040)	funct. (FY3500)	disease ()	link ()
2. ()	()	()	()	()	()	()
3. ()	()	()	()	()	()	()

Diagnostic findings may not be used for publication without the pathologist's knowledge and consent. COD (01)

NATIONAL WILDLIFE HEALTH CENTER
NECROPSY REPORT

Submitter's Name, Affiliation Address
 Mr. George Balazs
 NOAA-NMFS-SWFC
 2570 Dole Street
 Honolulu, HI 96822-2396

Case: 15251
 Accession: 001
 Collected: 10/31/1999
 Exam Date: 11/01/1999
 Pathologist: T.M. Work
 Processor: T.M. Work

Species: Green turtle
 Sex: (E) Ref/Band No: (A03199) Specimen: Carcass
 Banding Summary: This animal was found dead in the inner harbor at Midway Island. Pit tag numbers: LHF - 4136091069 and RHF - 413565479. Body measurements: SCL - 91.2 cm, CCL - 97.0 cm, TTL - 25.0 cm.

EXTERNAL/INTERNAL OBSERVATIONS - LABORATORY RESULTS

External: There is a 3 mm tumor on the lateral canthus of the left eye. The cloaca is prolapsed.

Internal: The animal is in excellent body condition. There is diffuse subcutaneous intramuscular hemorrhage under the skin of the lower jaw. The glottis is purple. The liver is smooth, firm, and homogeneous purple-brown. The heart is smooth, firm, and homogeneous red-pink. The lungs are spongy and homogeneous pink. The spleen is firm, smooth, and homogeneous brown. The kidneys are smooth, firm, and homogeneous brown. The stomach and small intestines contain large amounts of Codium. No lesions are seen in the myocardial sac, heart valves, gallbladder, ovary, adrenal and thyroid glands, pancreas and superficial and cut surface of liver, heart, kidney, lung, and spleen.

Preliminary Diagnosis: Fibropapillomatosis Exam Type: (00)
 Sex (F) Age (A) / () Body Cond. (G) Postmortem State (G) Gtz. Lead () / ()
 Laboratory Tests/Samples Saved:
 1. Histo: Brain (N); lung (B-C); skin (C); heart (D); salt gland, liver, spleen (E); small intestine (F); glottis (G); kidney (H); eye (J).
 2. Frozen: liver, lung, kidney, heart, spleen, fat, brain, stomach contents.

HISTOPATHOLOGY:

Skin: The skin tumor is characterized by a papillary dense collagenous matrix with numerous pleomorphic plump fibroblasts. This matrix is well differentiated from underlying dermis and is overlaid by markedly acanthotic orthokeratotic epidermis projecting prominent rete pegs. There is a marked lymphoid infiltrate within the dermis and focal erosion and necrosis of the epidermis.

Glottis: There is marked diffuse congestion within the dermis of the glottis.

Salt gland: There are rare trematode eggs surrounded by macrophages and giant cells.

All other organs: No remarkable lesions are seen.

Case No. 15251-001
Page 2

Histopathology (cont.)

Morphologic Diagnoses:
1) Mild, focal, fibropapillomatosis, eye.

Comments: No lesions indicative of cause of death were noted in this animal. The lesions in the jaw and glottis were unusual and could not be explained by infectious agents. It almost appears as though the animal had severe glottal spasms which led to vascular congestion seen both grossly and histologically. It is almost certain that this animal died acutely and rapidly, perhaps from a natural toxin? The presence of exclusively Codium sp. in the stomach was somewhat unusual. Whether this had anything to do with the animal's mortality is unknown. The fibropapilloma was an incidental finding not related to cause of death.

22 DEC 1999

DIAGNOSTIC CASE REPORT

U.S. GEOLOGICAL SURVEY-BIOLOGICAL RESOURCES DIVISION
 NATIONAL WILDLIFE HEALTH CENTER-HONOLULU FIELD STATION
 P. O. BOX 30167, 300 ALA MOANA BLVD., Rm. 3-206
 HONOLULU, HAWAII 96830
 808-541-3445; FAX 541-3472; therry.work@usgs.gov

Case # 15251
 Specimen description/identification:
 1 green turtle carcass

Submitter: Mr. George Balazs
 NOAA-NMFS-SWFC
 2570 Dole Street
 Honolulu, HI 96822-2396

Date Submitted: (11/01/1999) Date Examined: (11/01/1999)
 (mm/dd/yy) (mm/dd/yy)

Location: Inner harbor, Sand Island County/State: Midway

HISTORY: This animal was found dead in the inner harbor at Midway Island. This is NTRP ID 10-31-99.

SIGNIFICANT FINDINGS: This was an adult female in excellent body condition with no external lesions and a small tumor on the left eye. Internally, there was hemorrhage of the intermandibular musculature and marked diffuse congestion of the tongue and total mucosa. Histology revealed the tumor to be a fibropapilloma and confirmed the glottal congestion. The stomach was full of Codium sp.

DIAGNOSIS: Undetermined.

COMMENTS: No lesions indicative of cause of death were noted in this animal. The lesions in the jaw and glottis were unusual and could not be explained by infectious agents. It almost appears as though the animal had severe glottal spasms which led to vascular congestion seen both grossly and histologically. It is almost certain that this animal died acutely and rapidly, perhaps from a natural toxin? The presence of exclusively Codium sp. in the stomach was somewhat unusual. Whether this had anything to do with the animal's mortality is unknown. The fibropapilloma was an incidental finding not related to cause of death.

MANAGEMENT: None.

Preliminary Report (/ /) date
 X enclosed available upon request.

Copies of this report sent to:

Pathologist: Therry M. Work MS, DVM, MPMH

If you have questions regarding this case, contact Therry M. Work MS, DVM, MPMH at 808-541-3445. Include above Case Number. Diagnostic findings may not be used for publication without the pathologist's knowledge and consent.



United States Department of the Interior

FISH AND WILDLIFE SERVICE

MIDWAY ATOLL NATIONAL WILDLIFE REFUGE

P.O. BOX 4, MIDWAY ATOLL

FPO AP 96516

PHONE/FAX: (808) 471-1110 EXT 416

*transfer
get from
of the
one?*

23 May 1995

MEMORANDUM

To: George Balazs,
National Marine Fisheries Service

From: Kenneth Niethammer, Refuge Manager

Subject: Green Turtle Mortality at Midway

*No Tumors
Tags were very readable
Tags were in primary
position and looked like
they were applied by a pro!!*

George:

Ken

On 22 May, a dead adult green turtle washed ashore near the cargo pier on Sand Island, Midway. This turtle had been recently recently killed by a shark. The shell was scraped up with tooth marks and indentations and there were the following injuries. The left rear flipper had a bite taken out of it, the distal end of the right front flipper was almost severed (just hanging on by some flesh), and the tail area was severely damaged. The tail area injury was probably the lethal injury. Also, a section (about a 8 inch bite) of the carapace was removed by the shark on the right side.

The tail area was so badly damaged that I could not determine sex (but probably was a female). However, the turtle was tagged.

Right Primary position tag 5530
 Left Primary position tag 7109

Curved Carapace 93.25 cm

Was this anybody I knew from French Frigate Shoals?

No necropsy performed. Tags were removed (attached).

Ken

Historical Information for Turtle Tag 5530

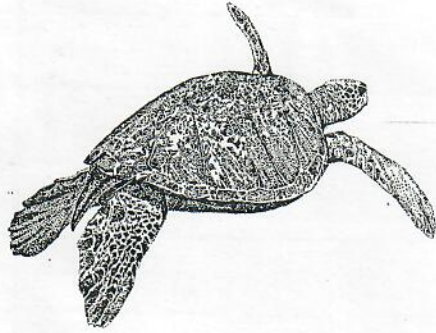
Tag Information:		Date		Tag Type	Tag Position	Since Last Encounter										
Tag Number	7109	Date	8/22/91	1681	RFL	Type of Encounter	Location	Tumor/Rank	Nesting Act	Curved Carapace	Interval Month	Year	Growth-Rates cm/mon	cm/yr	Interval Month	Year
						Near Shore	Pearl and Hermes Reef, Southeast Island, Sector 5	0	-	93.3	45.0	3.8	---	---	---	---
						Near Shore	Midway Island, Sand Island	0	-	93.3	45.0	3.8	---	---	45.0	3.8

Historical Information for Turtle Tag 5530

Tag Information:		Date		Tag Type	Tag Position	Since Last Encounter										
Tag Number	7109	Date	8/22/91	1681	RFL	Type of Encounter	Location	Tumor/Rank	Nesting Act	Straight Carapace	Interval Month	Year	Growth-Rates cm/mon	cm/yr	Interval Month	Year
						Near Shore	Pearl and Hermes Reef, Southeast Island, Sector 5	0	-	---	---	---	---	---	---	---
						Near Shore	Midway Island, Sand Island	0	-	---	45.0	3.8	---	---	45.0	3.8

Midway's Sea Turtles

The green turtle often feeds throughout the lagoon at Midway Atoll National Wildlife Refuge. Though occasional sightings of leatherback, loggerhead, and hawksbill turtles exist, green turtles dominate the Hawaiian Archipelago's turtle population. Severe exploitation throughout their range during the early 20th century led to an alarming reduction in the population by the '60's, but biologists now detect a slow increase in the green turtle population since they became listed as an endangered species in 1978. A recent estimation of more than 200,000 turtles led to the downgrading of the green turtle from an endangered to a threatened species.



About 90% of the Hawaiian green turtles (*Chelonia mydas*) migrate from the main islands, Johnston Atoll and Midway Atoll to nesting beaches at French Frigate Shoals, an atoll located about halfway between Midway and Kaua'i. A few green turtles nest at other locations throughout the Archipelago. Though no nesting has been observed at Midway in recent history, green turtles may once again nest here as the amount of human beach disturbance diminishes. Sea turtles usually crawl up to an area above the high tide line between late April and mid-October to nest at night, leaving bulldozer-like tracks as evidence. Female sea turtles usually nest every other or every third year. They dig an egg chamber, deposit the eggs, cover the nest site with sand, and return to the sea. They may lay up to nine clutches at two-week intervals, averaging about 90 eggs, and totaling about 800 eggs per season. Hatchlings emerge from early July

through December. As a group, the hatchlings dig themselves out of the nest after an average of 66 incubation days. They usually emerge during the first few hours after sunset and scurry down toward the shimmering surf. In some areas lights from houses, hotels, and roads confuse hatchlings and they scramble inland to their deaths, prompting town leaders and volunteer groups along nesting beaches to switch to yellow lights which do not attract hatchlings.

Researchers can't follow hatchlings out to sea, so we know little about their first few years of life, but turtle biologists estimate that only one of every 20,000 hatchlings survives to breed. Those hatchlings that do survive reappear as platter-sized juveniles. An adult green turtle carries a 4 foot long shell (carapace) and may weigh 400 lbs. Look for these mostly herbivorous creatures using their hard jaws to scrape algae and other marine plants off rocks and piers as they cruise the shallow coastal area. Look for males with their large tails. Opportune onlookers may witness turtles gulping down man-o-war jellyfish on the surface.

You may encounter this cold-blooded reptile as it basks on our sunny beaches to thermo-regulate, rest and digest. Disturbing basking turtles may chase them off the Atoll. The Endangered Species Act provides legal protection from harassment that may reduce the chances of survival for this ancient species. Occasionally, dead or injured turtles entangled in marine debris wash up on our beaches.

You can help by:

- staying at least 100 feet (31 meters) away from both turtles and monk seals,
- and by reporting turtles, tracks, or disturbed sandy areas to the Fish and Wildlife Service for investigation of possible ailment, entrapment hazard, or nesting activity.

Thank you
in gratitude



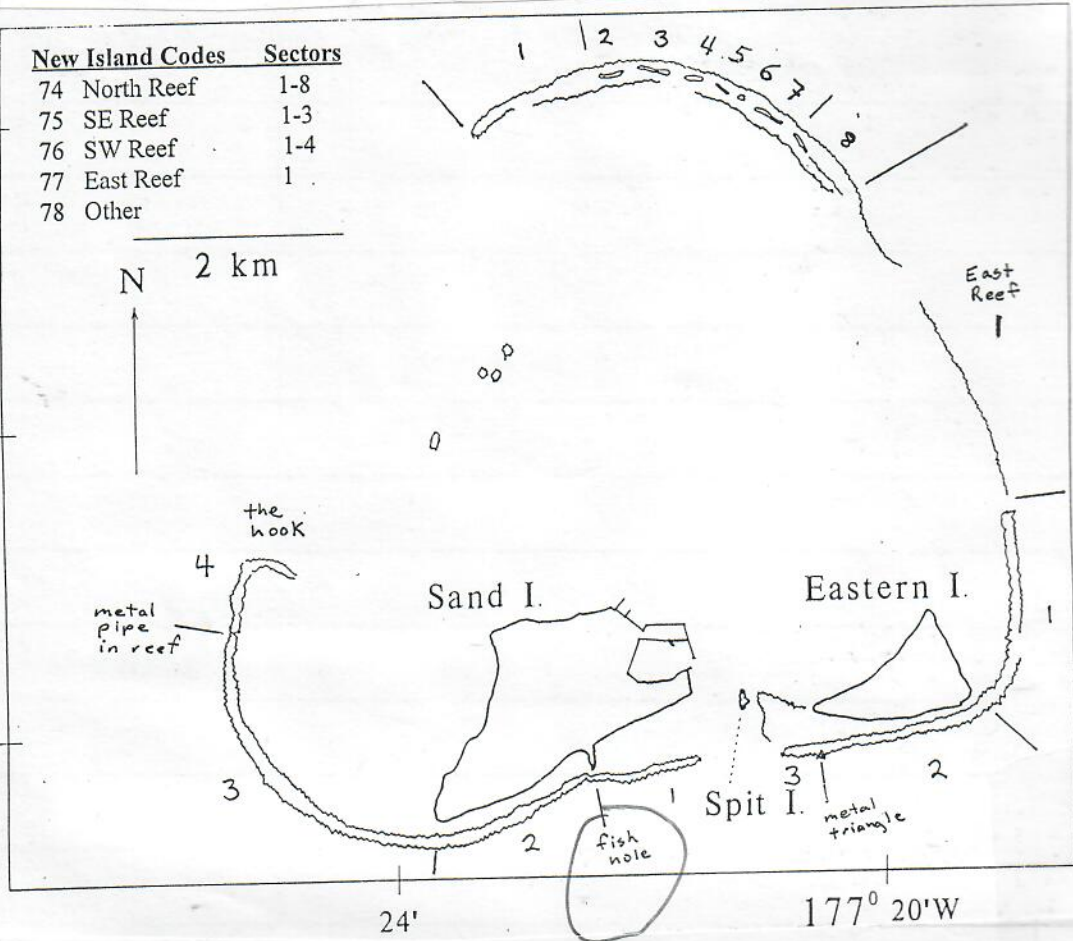
28°
16'N

New Island Codes	Sectors
74 North Reef	1-8
75 SE Reef	1-3
76 SW Reef	1-4
77 East Reef	1
78 Other	1

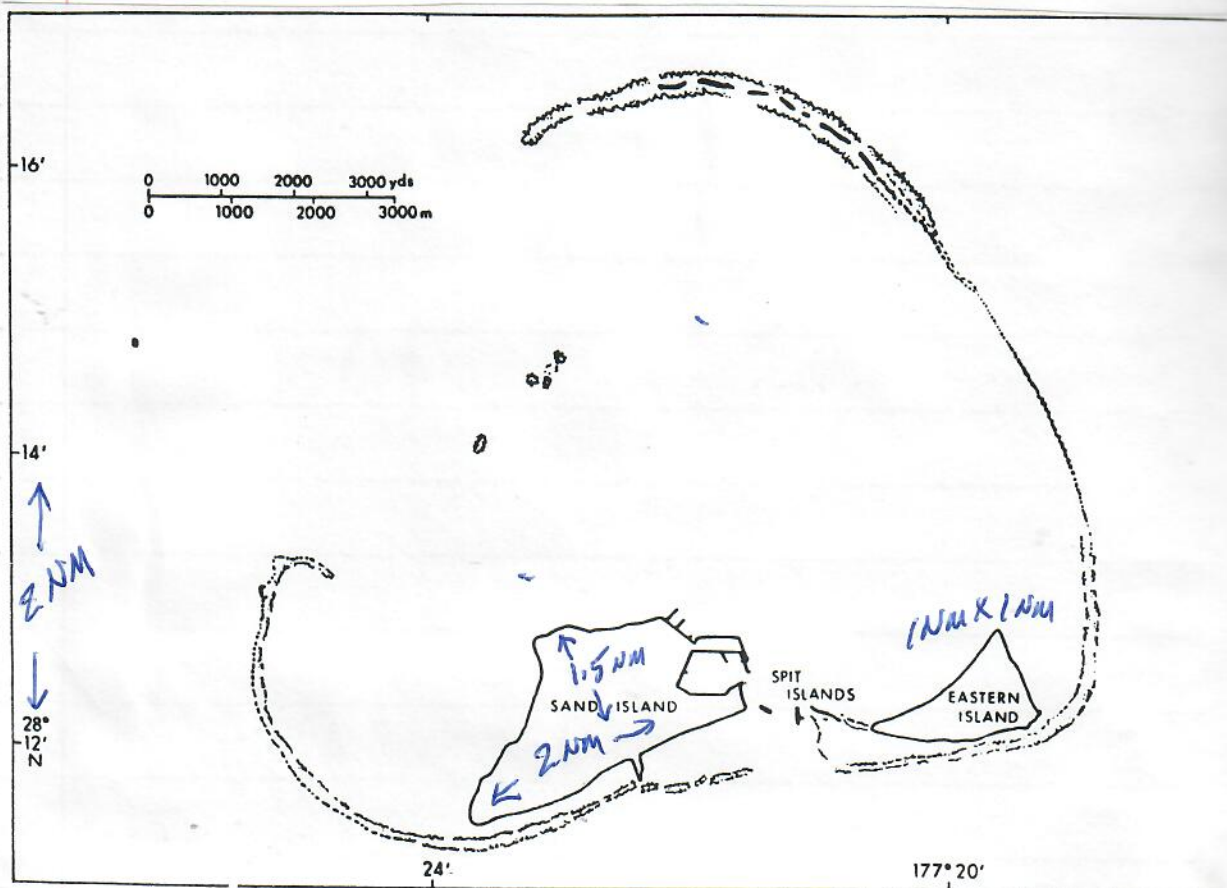
N 2 km

14'

12'



[Faint handwritten notes and scribbles on the lined paper below the map, including 'Carg... Sea...']



INNER Harbor Seawall

Sand Island, MIDWAY

115

N $28^{\circ}12.850'$

W $177^{\circ}21.678'$

Eastern Island

South Shore Swartel Site

N $28^{\circ}12.332'$

W $177^{\circ}20.214'$

CARGO PIER GPS = $28^{\circ}13.064' N$
 $177^{\circ}22.121' W$

Rusty Bucket (Pickett Point)

GPS $28^{\circ}12.889' N$

$177^{\circ}23.188' W$

INNER Harbor TUG BOAT PIER GPS =

$28^{\circ}12.803' N$

$177^{\circ}21.783' W$

Cargo Pier Seawall = GPS

$28^{\circ}12.991' N$

$177^{\circ}22.068' W$

10/21/08 1245pm Saw painted #4 &

scratched paint
swimming back & forth

MIDWAY 1998

10/14/98 Depart Aloha Airlines ~ 6 PM
 Wednesday INTER ISLAND TERMINAL HONOLULU
 3 hour flight - Arrive ~ 8 PM Midway time
 one hour earlier than Honolulu.

night time
 Check in Bravo Hotel Room 113
 - walk to Midway Mall - Bar, Burrito.
 Golf-cart Drive to Cargo pier

and Inner Harbor. Photo at Power plant
 large Diesel engines

10/15/98 UP ~ 6 AM TO GALLEY BATTERY
 Thursday 8 AM Midway/Phoenix Corp. Briefing -
 USFWS Briefing. Met w/ Ken Neithamer

9:30am TO Boat House. Met NORIEL TABATA
 Harbor MASTER 335 cell Cell 77

"DRIVE of Discovery" in van loaned to us by MIKE
 Day of Rediscovery GONCALVES

10:30am 3 4 1 juveniles right

up against seawall of inner harbor -

near wharfs where 2 tugs & SS Midway

are tied up. Drove to Cargo Pier / Fuel Pier -

Small turtle eat Portuguese Man-of-war. Reservoirs
 TO RUSTY BUCKET (Pickett Point).

10/15/98

Thurs. 12 Noon Rusty Bucket, observation

platform in Ironwood tree 30m W

NO Turtles seen. Beach to Frigate Point
 around to "Bulky Dump" (Million Dollar Point)

10/15/98 ~~191~~ is off limits due to work seals
 hauling out (but someone said there are more
 work seals on "O" beach - by French Restaurant
 and bar. Drove to South Shore (same
 swell) walked along seawall (all students)
 viewing for turtles - none seen. Walked
 out Bulky Dump Point - cement chunks
 have been placed along shoreline - sand
 cover, vegetation throughout. ~~to~~ Drove
 to opposite side of inner harbor
 entrance, walked along seawall to
 the south. I saw one turtle
 surface. Lately resting they - not
 feeding. ^{MPEC} ~~we~~ walked along inner
 harbor south seawall - nothing
 seen.

Returned to sea wall inner harbor
 and KK "boat"

SATURDAY Reef Hotel 10/17/98
"Freddie's" & Casino

1150^{AM} data logger in sea water
~ 20 MIN

9/23/99 KATIE

11 Feb

130, 14 CIP

~~SAT~~ SATURDAY
4:30pm 10/17/98 Suba Cargo pier
DATA logger in my vest.
15 min. 10/17/98

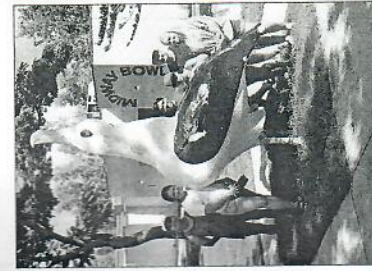
119

10/16/98 Sunrise ~ 7 AM Midway time (= 8 AM Hawaii)
FRIDAY Spent morning with Scoop net back and
forth Cargo pier sea wall and Inner Harbor
seawall (inside & outside). Scoop netted
one at Cargo (seen eating Portuguese Man o' war)
and 3 at Inner Harbor (outside). Saw
turtle feeding on algae on IRON Sheeting.
Launched 11 boats after lunch ~ 1:30pm
Center Steering "KURE II." MAEC, me, Kalia, ~~London~~
Katie & Josh suba & inner harbor searching
for ledges where turtles were caught
with Horal King late 1970's.

not of
MIN
QUART



Hawaii Preparatory Academy Newsletter



HPA Team Journeys to Midway Atoll To Help with Turtle Study

Above: Students check out a giant replica of Midway's famous sooty terns.

Five students and Assistant Headmaster Marc Rice flew to Midway Atoll in October to assist the National Marine Fisheries Service with their studies of sea turtles at this remote site. Participants were Kalia Goo, Katie Harrington, Josh Johansen, Kenny Shimo, and Candace Sullivan.

George Balazs, leader of the NMFS Honolulu Laboratory's Marine Turtle Research Program, led the study. Midway, 1,100 miles northwest of Honolulu, was the site of a decisive naval battle at the beginning of WW II. It is now a National Wildlife Refuge/Ecology venue managed by the U.S. Fish and Wildlife Service.

The green turtle population of the atoll has not been monitored formally for 18 years. The HPA crew was along to assist Balazs and research associate Shawn Murakawa in capturing, tagging, measuring, weighing, health screening, and taking blood samples from as many green turtles as possible. The team made its first SCUBA dive inside the main harbor. The water was murky and they found and captured only one turtle during the dive. Still, several turtles had been seen traveling out of the harbor to feeding grounds in the lagoon outside. Earlier, turtles had been spotted traveling along the breakwater

and Rice made the first net capture of a Midway turtle using a scoop net. The team subsequently captured eight turtles at this site, some by scoop net and some by throw net.

During the next four days, students dove around cargo piers and near feeding grounds to capture a total of 24 green turtles. They also traveled to nearby Spit and Eastern islands where they captured two more turtles. All of the turtles appeared healthy and free of fibropapilloma tumors. One was observed to have tumors in the eye and neck region but could not be captured.

In addition to their turtle work, students

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learned about the history of Midway, observed the atoll's wildlife, and enjoyed the beautiful scenery of both Sand and Eastern Island. Several students learned how to handle motorboats and a bit of seamanship.

The days were long and strenuous, but the students worked right up to the last day and Balazs expressed exceptional praise for the students' motivation, endurance, and good cheer and for the research results obtained. Future trips are possible and plans are being made for more HPA students to assist on a follow-up expedition to this unique atoll.

10/18/98 3:30 pm - 4:30 pm
Sunday

data loggers
in my SCUBA vest
under Cargo Pier

8121

Resighted ^{twice} #3 Inner Harbor outer

(same place ~~Scuba~~ ^{Scuba} ~~hottel~~ ^{hottel} ~~originally~~ ^{originally}) 9:30 AM 10/18/98

#9 Cargo Pier Hand Scuba

(same place hand scuba 10/17/98 ~~10/18/98~~)

^{Released}
Inner Harbor #4 Hand snorkel Josh
4:30 pm Cargo Pier

(same place hand scuba 10/16/98) ~~release~~ 10/18/98

10/19/98 ^{TUG BOAT} INNER HARBOR ~~Pier~~ Saw painted 11 & 15

10/19/98 CARGO PIER ^{SAW PAINTED} 20, 6 and 4

10/19/98 FUEL PIER Saw #21 Swimming
+ Adult Male + Subadult (Both under
steel guides/plate on bottom. Lots of cement
chunks on bottom from underside of pier.
Warning signs present on pier.

Meeting 8 AM w/ Ship Nattel etc.
Regarding Paradise Queen wreck
at here

10-18-98

Sunday

Seawall ^{Turtle} Scooped
^{Turtle} (Set net now)

2-boats - patrolled inner
harbor, south wall.

Moved to Rusty Bucket, on way
dove on Subalt off to ^I
6-8' ⁴ large on bottom near ^{dove on one}
each other, feeding on ^{and caught}
No turtles seen off fuel piers
on Rusty Bucket, although fishers
on shore said they saw two close
to shore near Rusty Iron.

Anchored by Cargo Pier -
Kathie, Max and I Scuba -
Josh on snorkel. 8 captured between
05 - 11 total for the day.

10/20/08 9:40 AM Scuba

Secp. 131

10, 20, 16, 18, 4, 9, 25 + 5 with no numbers

= 12 Totals seen

10/21/08 8:30 AM Adult seen swimming along
Wednesday outer seawall and into Inner Harbor
toward center. 3 Chelonia or carapace



Faint handwritten notes at the top of the page, possibly including a date like '10/17/08'.

Faint handwritten notes in the middle section, possibly describing a collection site or method.

Codium edule

Collected from
South shore
of Eastern
Islands
Saturday 10/17/08
Tumbling on bottom,



Faint handwritten notes on the left side of the page, partially obscured by the red margin line.

B L D (SUN) (TUE) (THU) (SAT)

GUEST NAME: George LAST: Balazs

MIDWAY (UPPER MEAL PLAN) ARRIVAL DATE: 10/14

DEPARTURE DATE: 10/21

2315

Laura Sacasas "French Restaurant wife
of chief ALAN SACASAS Clipper House

2/5/99

over

NANCY

HERE ARE THE MAPS WITH SEA TURTLE BURIAL SITES MARKED. AS I REMEMBER, THERE WERE AT LEAST 2 BURIALS NEAR THE OLD SEAPLANE RAMP (NOT THE CARGO DOCK). ONE OF THOSE ** INCLUDED MULTIPLE TURTLES. THERE SHOULD BE SLIDES AT MIDWAY BT. THE TUMOROUS TURTLE THAT WAS IN THE INNER BOAT HARBOR. IF YOU CAN'T LOCATE ANY, LET ME KNOW. I DID THROUGH MY PERSONAL SLIDES TO SEE IF I HAVE ANY. OVER

10.20.98 9:30 Cargo pier
#16 by Sandell



Inner Harbor Tug pier
down 10:30 up: 10:49

saw 11:14
Cargo pier 10/20/98
down 11:16 up 11:49
down 11:57 up 12:00

~~10/20/98~~
~~from Sandell~~

P.O. BOX 510, BRIDGETOWN, BARBADOS, TEL: (246) 426-0200
TELEX: 2272 HILTELS WB, FAX: (246) 426-P046

10-19
Inner harbor pier
1107 - data loger

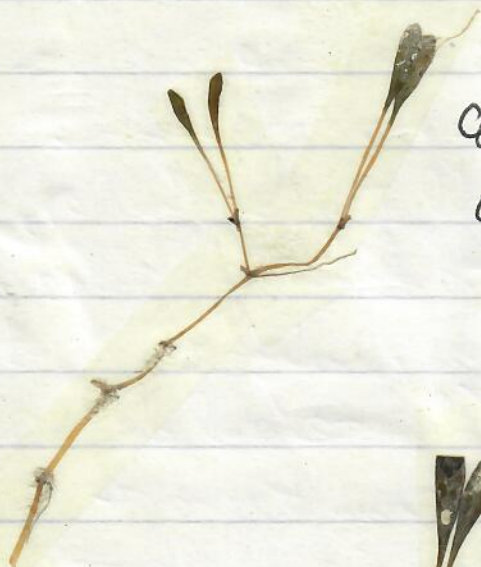
saw #11 & 15 turtles
down 4:33 up 1:53
* Cargo pier
down 2:50 up 3:10

#20, 6, 14
sleeping

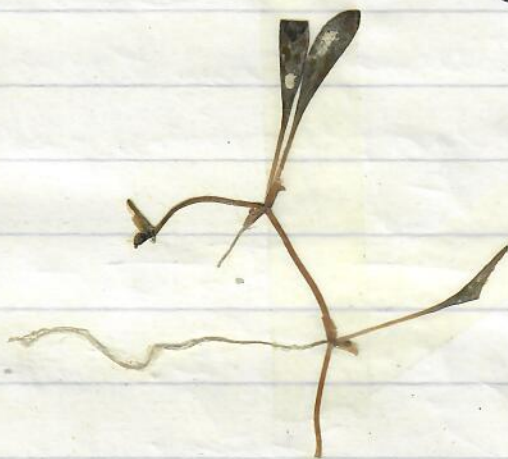
#21 - under other pier across
from Cargo pier



P.O. BOX 510, BRIDGETOWN, BARBADOS, TEL: (246) 426-0200
TELEX: 2272 HILTELS WB, FAX: (246) 426-P046



collected 10/21/98 Sampled
off KH Boat ramp offshore
NE shore Sand Is. Midway.
Sparse,
limited distribution?



Date: 2/9/99 10:49 AM
Sender: Thea Johanos-Kam
To: George Balazs
Priority: Normal
Subject: Fwd:Midway turtles

George,
This came in from Midway for you. -- Thea

Forward Header

Subject: Midway turtles
Author: cici55@hotmail.com
Date: 2/9/99 9:24 AM

Hi Thea, please forward this to George I don't have his email. Thanks!
Oh just a quick question for you. Temp. M49 was here in 1997 and 1998.
She pupped here in 1998. We haven't seen her for months. Should we give her a perm. ID?

Hi George,
We are seeing up to 3-8 adult turtles haul out everyday on the little beach next to the seaplane ramp (seal sector 28). This has been happening for about two weeks. Herbert has lived here 16 years and never seen more than 2 turtles on this beach. Also Suzanne and I are seeing record numbers hauling out on the emergent reef on the north side of the atoll. Last patrol we saw 19 mostly J1's and J2's. Can you explain this? I wonder if we should close sector 28 to the public. The refuge rule is to stay 100 ft. from turtles, but on that little beach there is only 60 feet from the turtles to the 4' sand cliff. I see foot prints where folks have walked by the turtles.

Could these turtles be migrating? They don't look like the ones that have been hauling out here in the past. They are thick bodied and fat. Well I'm not sure if turtles can be considered fat, but they seem to have plenty of meat on them. Pardon the word "meat"!!!

Also you should know Rob. Shalenberger tagged turtles on that beach about a month ago. I asked Bill G. to mention this to you. None of the turtles that are presently hauling out have tags that I can see.

One last turtle update for you. There is a T2 that is tumored and very thin hauling out with all the healthy ones. It looks like it will die

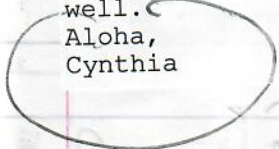
soon. When it is on the beach it can only breath when it lifts its head. It seems like we should get it away from all the healthy turtles. Do you have any suggestions? If it dies do you want any samples?

The weather has been great. Like summer!! Hope this finds you well.

Aloha,
Cynthia

129

AC250



[Faint, mirrored handwriting from the reverse side of the page, including phrases like 'I, Mrs. I', 'March 19', and 'I scored FUEL PIR']

10/20/98 up 630am, Breakfast 715am. Phone
 TUESDAY call from Bud re: kure shipwreck and
 Hilda change of rules for submission.

Drove to Sea Wall Inner Harbor, only
 one turtle seen - adult right against
 iron seawall - feeding on algae. Not
 not from an it - (M. Rice and I not there)
 YTB try returned from kure ~ 830am.

Checked Cargo pier seawall - 2 seen,
 one was painted 16.

Launched two boats - Scuba
 under Tug Boat pier - ^{new} ~~one~~ ^{one} ~~had~~ caught
 snorkel by Josh.

Motored to Cargo pier - Scuba - MARC, I
 and Kathie - Josh on snorkel

MARC AND I scubaed FUEL PIER. Saw
 white paint 21. (small) + 2 subadult - Adult.
 Caught second one. Lots of large cement
 chunks under pier - flaked off, hence
 Warning signs.

10/20/98
TUES

39 minutes

23 ft 940^{PM}

1025 PM

Cargo Pier Dive Kattie, Marc & me 131

Saw PAINTED TURTLES 16, 18, 20, 4, 25, 9, 10 see page 123

+ 5 no apparent paint = 12 TOTAL
7 painted, 5 no apparent paint

10/20/98 Motored to Eastern Is. 2 boats, Walked to Tuesday South Shore. ~ 45 min snorkel. Two turtles (seen (moving) are by Josh, one by me - could have been the same turtle.

Runway scraped clean. Landing lights present (installed ^{SKID} 6 months ago - solar powered).

MORBOL
#20

SEA TURTLE TAGGING FORM

CAPTURE DATE, LOCATION AND METHOD:
4/13/99, Sand Island, Midway Atoll, Inner Harbor, seawall near boat house

PERSON RECORDING DATA: Mikael Romich Scoop net.

OLD TAGS:

TUMOR SCORE:

NEW TAGS:



STRAIGHT CARAPACE-LENGTH: WIDTH:

NOTCH LENGTH: DB: L.O.: VB: L.O.:

CURVED CARAPACE LENGTH: WIDTH:

HEAD WIDTH:

PPS: YES OR NO OR NE SEX: MALE, FEMALE OR UNDETERMINED

TAIL LENGTH: T C

RIGHT FRONT FLIPPER WIDTH: SAMPLES COLLECTED:

PLASTRON LENGTH:

WEIGHT:

DESCRIPTIVE REMARKS:

Morbol #20 3rd lateral right + left.

SEA TURTLE TAGGING FORM

CAPTURE DATE, LOCATION AND METHOD:

29 April 1999 Sand Island, Inner Harbor, Southern Seavall
Midway Atoll

PERSON RECORDING DATA: Nancy Hoffman

NEW TAGS: HLF 411D043928



OTHER NEW TAGS: FLF 4149580748



OLD TAGS:

TUMOR SCORE

0

STRAIGHT CARAPACE-LENGTH: 42.5

42.5

WIDTH: 35.8

35.8

NOTCH LENGTH: 42.0

42.0

DB: L.O.

L.O.

VB: L.O.

L.O.

CURVED CARAPACE LENGTH: 44.5

44.5

WIDTH: 40.0

40.0

HEAD WIDTH: 7.2

7.2

SEX: MALE, FEMALE OR UNDETERMINED

U

PPS: YES OR NO OR NE Y

Y

TAIL LENGTH: T 10.0

10.0

C 6.5

6.5

RIGHT FRONT FLIPPER WIDTH: 8.2

8.2

SAMPLES COLLECTED:

PLASTRON LENGTH: 33.5

33.5

WEIGHT:

DESCRIPTIVE REMARKS:

Photo # 21 3rd lateral rl. and left

no photo

photo to 2002 #21

Mototool #22

SEA TURTLE TAGGING FORM

CAPTURE DATE, LOCATION AND METHOD:

29 APRIL 1979 SAND ISLAND MIDWAY ATOLL TURTLE BEACH

PERSON RECORDING DATA: DRUCE ROGERS

OLD TAGS:

NEW TAGS: HLF 411C710056 HLF 411C3D1C4E

TUMOR SCORE:

OTHER NEW TAGS:

STRAIGHT CARAPACE-LENGTH: WIDTH:

NOTCH LENGTH: DB: VB:

CURVED CARAPACE LENGTH: WIDTH:

HEAD WIDTH:

PPS: YES OR NO OR NE

SEX: MALE, FEMALE OR UNDETERMINED

TAIL LENGTH: T C

RIGHT FRONT FLIPPER WIDTH: SAMPLES COLLECTED:

PLASTRON LENGTH:

WEIGHT:

DESCRIPTIVE REMARKS:



Mototool # 22

2nd lateral FC + 10ft

#23



135

SEA TURTLE TAGGING FORM

125

CAPTURE DATE, LOCATION AND METHOD:

AUG 24, 1999 SAND ISLAND MIDWAY
TURTLE BEACH MIDWAY
PERSON RECORDING DATA: SAURETTA MARR

OLD TAGS: N28 LF NEW TAGS: REF 41486C2055

TUMOR SCORE: 0 NEW TAGS: REF 41486C2055

OTHER NEW TAGS: N27 RF NEW TAGS: REF 41486C5212

STRAIGHT CARAPACE-LENGTH: 93.5 WIDTH: 70.3

NOTCH LENGTH: 93.2 DB: L.O. VB: L.O.

CURVED CARAPACE LENGTH: 100.5 WIDTH: 90

HEAD WIDTH: 12.6 SEX: MALE, FEMALE OR UNDETERMINED F

PPS: YES OR NO OR NE

TAIL LENGTH: T C

RIGHT FRONT FLIPPER WIDTH: 12.5 SAMPLES COLLECTED:

PLASTRON LENGTH:

WEIGHT:

DESCRIPTIVE REMARKS

R hind flipper removed
Mototool #23 2nd LATERAL RYH & LEAF