

Report on NWHI Green Turtle Activity Survey

May 18 – June 4, 2007

OES-0704



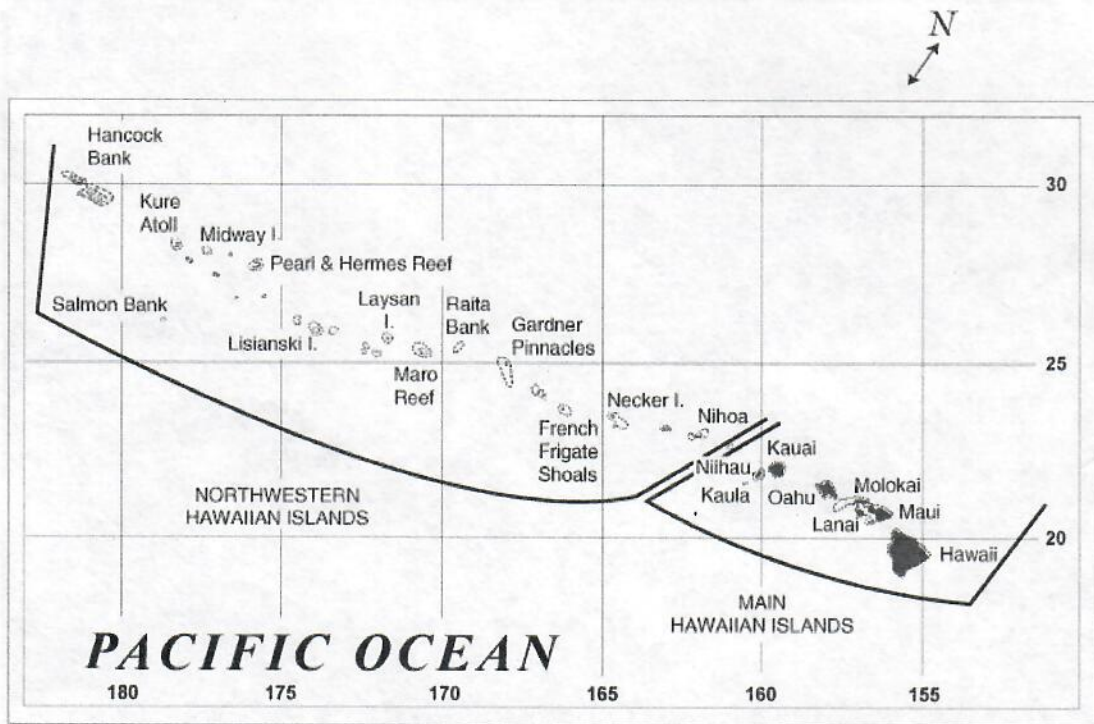
**Marine Turtle Research Program
Protected Species Division
NOAA, Pacific Islands Fisheries Science Center**

Prepared by:

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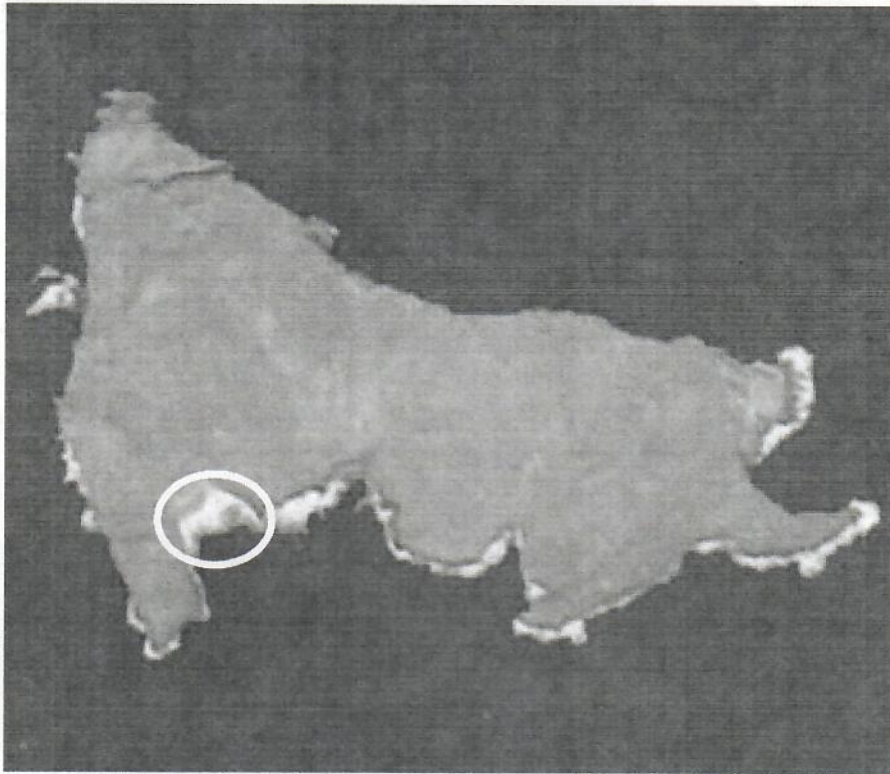
July 2007

JIMAR Marine Turtle Research Biologist, Stacy Kubis, participated in NOAA research cruise OES-0704 to the NWHI from May 18 – June 4, 2007. Stacy assisted with setting up monk seal field camps and when time allowed conducted surveys at Tern Island - FFS, Laysan Island, Lisianski Island, Pearl and Hermes Reef (Southeast Island, Seal-Kittery Island, and North Island), Midway Atoll, and Green Island – Kure Atoll to document green turtle nesting and basking activity. A summary of observations and knowledge gained from communications with field campers and FWS researchers are provided in this report.



The Hawaiian Archipelago

Nihoa Island – 19 May 2007

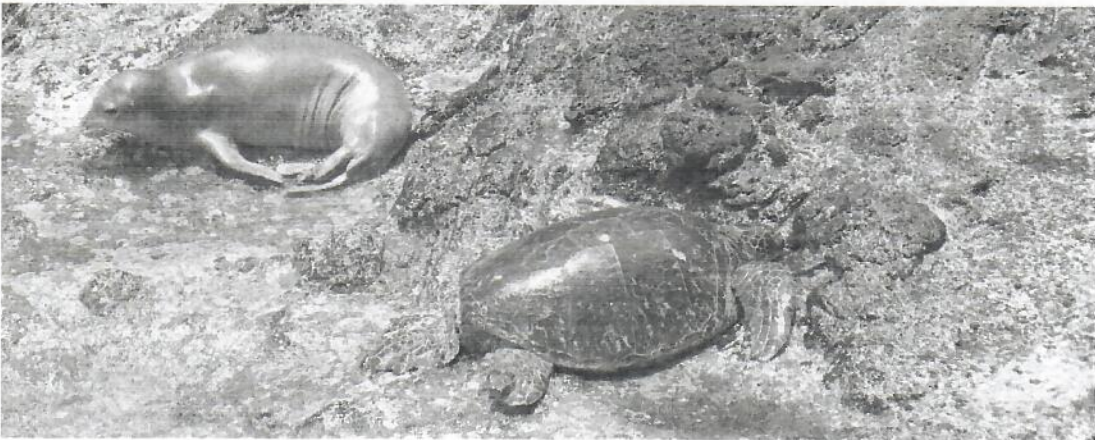


Monk seal biologists, Jessie Lopez, Tracy Wurth and Brenda Becker, surveyed the sandy beach on the South side of Nihoa Island. No turtles were seen in the water or basking on the beach or rocks.

Necker Island – 20 May 2007



Monk seal biologists, Tracy Wurth and Brenda Becker, surveyed Necker Island. They entered at Sharks Bay and surveyed the rock ledges to the East. Two turtles were seen basking on the rocks at Shark Bay – one juvenile and one adult – and one turtle was seen swimming in the water. The adult turtle appears to have a suspicious bump on the right shoulder (turtle on left in photo). The juvenile turtle (on right in top photo) returned to the water when a monk seal hauled out next to it.



French Frigate Shoals (Tern Island) – 21 May 2007

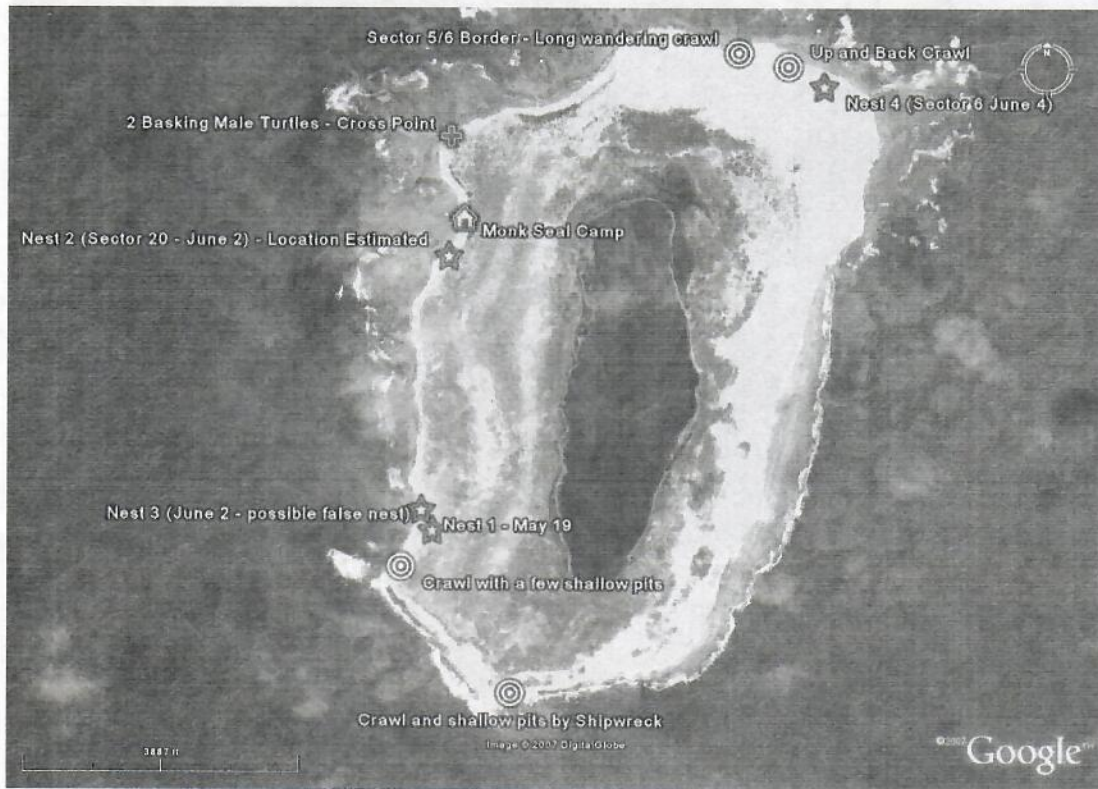


We arrived at Tern Island, French Frigate Shoals at 10:00. I met Angela Anders (FWS) and spoke briefly with her about the current nesting season. Angela felt that this season was on par with other recent nesting seasons in terms of the number of turtles and nests at Tern Island. However, she was somewhat surprised at the appearance of East Island in terms of the relatively low number of pits for this point in the season – she had expected more nesting activity on East Island. Morgan, a frigatebird research technician, accompanied me on a tour of the beaches from 10:30 – 11:30. We started on South Beach and counted approximately 13 new nests. Two basking turtles (adult females) were seen near the water. We surveyed East Beach next, but did not cross the fence onto the beach because many seals were present. Since the beach was surveyed from a distance, I was unable to determine the sex of most turtles. The beach had many pits and crawls, at least 11 basking turtles (most were on the North side; at least one male; all near the water line), and two turtles swimming in the water. On the bird colony side of the fence, a female turtle from the night before was still trying to find her way back to the water at 10:50. Morgan and I tried to direct the turtle towards a break in the fence, but we were not successful. Since there was nobody else around to help move the turtle, Morgan and I continued on at 11:05. Two juvenile turtles were seen basking on Crab Beach at 11:15; both were on dry sand and alert. One adult turtle was basking in the wave-wash (unknown sex, seals present) and one new nest was identified on Shell Beach at 11:25. The turtle survey on Tern Island ended at approximately 11:30. At that time, a group of us (Monk Seal Team – Sean, Mark, Paula, Suzanne; Stacy, and one other FFS technician)

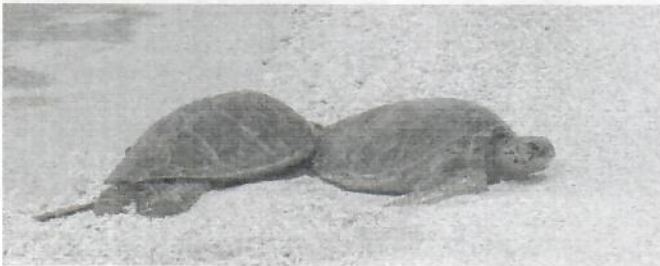
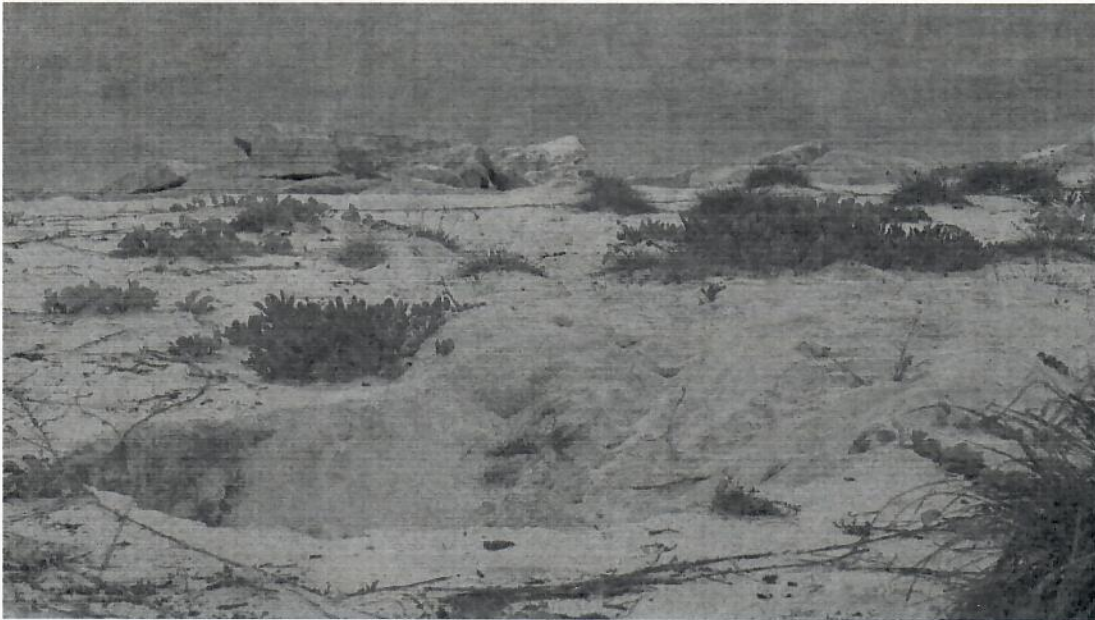
gathered the turtle net to transport the wayward female turtle from the bird colony back to the water on East Beach (11:30).



Laysan Island – 23 May 2007



We arrived at Laysan Island at 8:10. I met FWS researchers, Carissa, Kevin and Chris, and talked with them about the green turtle mating event they observed in mid-April and basic sea turtle biology. Chris reported that he saw 6 pits on the southwest side of the island on 19 May 2007, 5 shallow pits and 1 large pit. Chris gave me his GPS unit with the waypoints of the recent turtle crawls. Monk seal biologist, Brenda Becker, accompanied me on a walk around the island from 09:00 – 14:30. We started at the northwest end and walked clockwise around the island. No turtles were seen in the water or on the beach during the survey. Two long and wandering sets of tracks were found on the North end of the island – the first one was 100cm wide and no pits were associated with either set of tracks. Another set of tracks with a few shallow pits was found on the South end of the island by the Shipwreck. The track was long and wandering. There was another set of tracks with a few shallow pits on the SW side of the island just S of the flat rock formation known as "the sidewalk." Just North of "the sidewalk" there was another set of tracks with a nest near the vegetation. The turtle crawled over a wide band of flat rock to reach the vegetation. The nest was a classic green turtle nest with a large mound and a big pit. The turtle crawled back over the mound on her return to the water. These tracks were first seen on Saturday May 19 and assumed to be from the night before.



I returned to Cross Point at 15:00 and found 2 adult male turtles basking at the water line.

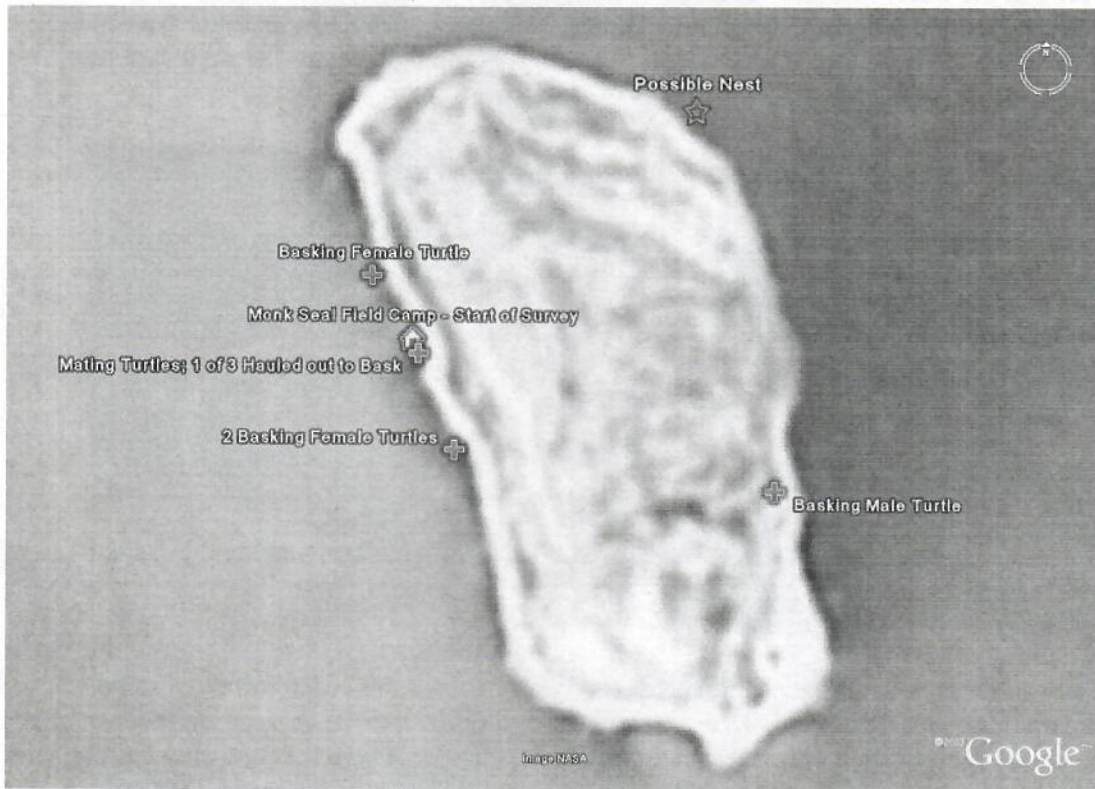
I examined and photographed a marine turtle skull found entangled in marine debris several months ago. The FWS staff collected a tissue sample which will be shipped to Honolulu at the end of the monk seal field camp season. The skull was not from a green turtle. Upon further examination and the use of a sea turtle skull identification key, the skull was determined to belong to a loggerhead.



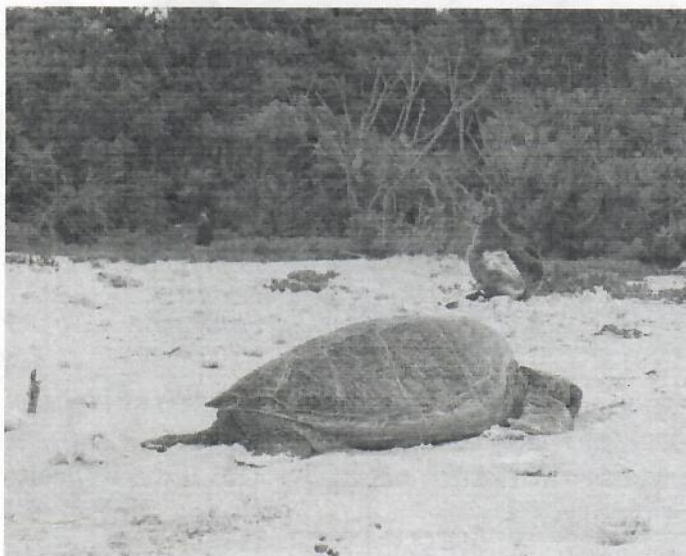
The beaches on Laysan Island were large and the sand was coarse (large grain size). The habitat appears to be suitable for

green turtle nesting. Brenda Becker documented nesting events on Laysan Island through 2000. She will provide the MTRP with a summary of her field notes.

Lisianski Island – 24 May 2007

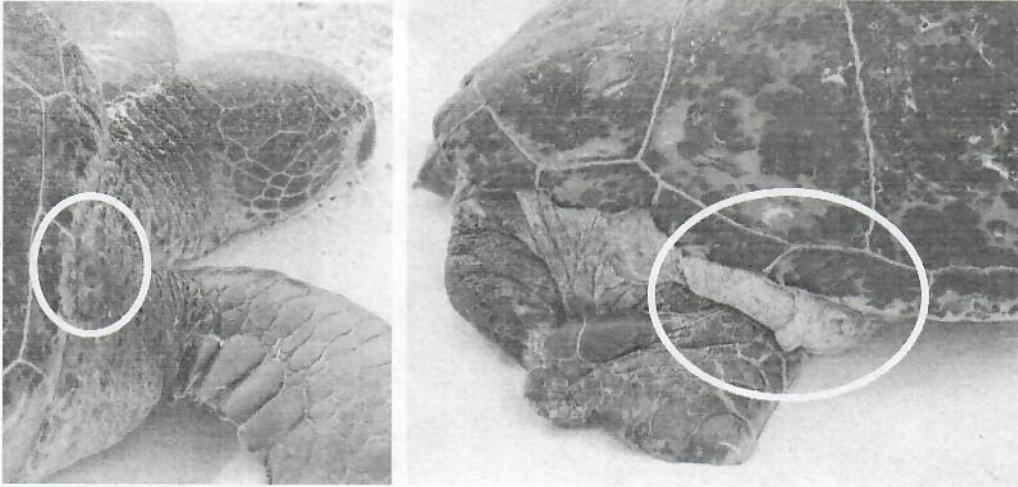


We arrived at Lisianski Island at 09:00. A basking turtle was seen less than 100 meters north of the landing site high up on the beach. The turtle was an adult female (approximately 95 cm CCL) with a minor injury on the dorsal surface of her RFF.

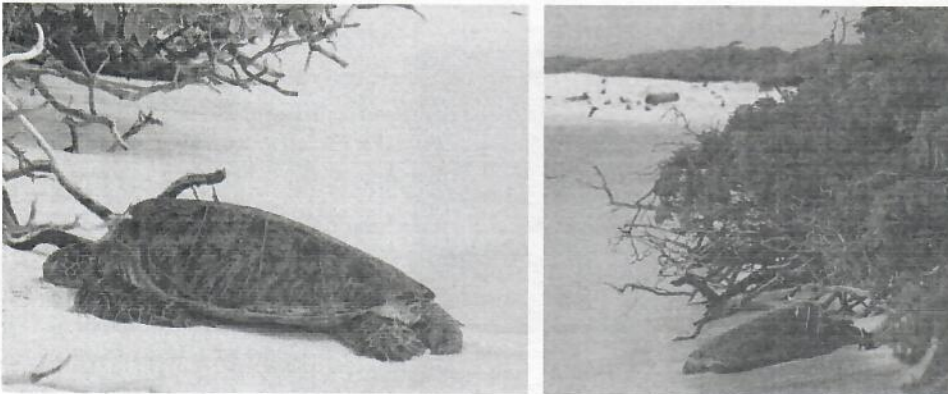


Monk seal biologist, Tracy Wurth accompanied me on a walk around the island from 09:15 – 12:15. We started at the monk seal field camp on the NW side of the island and walked counter-clockwise around the island. The first set of tracks was encountered approximately 100 meters south of the starting point. No pits were associated with the crawl; it went up to the vegetation (Naupaka) and back to the water. Two basking turtles were seen at 09:20. Both were adult females and

they were approximately 20 yards apart basking at the high tide line (half the distance between the water line and vegetation line). The second turtle was missing 50% of its left hind flipper and 30% of its right hind flipper. The turtle also had a necrotic area on the skin above the right hind flipper and a suspicious bump (~5 cm) on the right shoulder. These abnormalities may be FP tumors (see photos).



The southwest side of the island was severely eroded and the beach formed a steep escarpment. We continued on to the southern end of the island – a large and ever-changing sandy beach covered in floats and other debris. There was one crawl at the water line on the east side of the beach, most likely from a basking turtle. On the southeast side of the island we observed a large tiger shark swimming in the shallow water less than 10 feet offshore. At 10:30 we encountered a large male turtle basking in an area with little beach and dense vegetation nearly reaching the water.

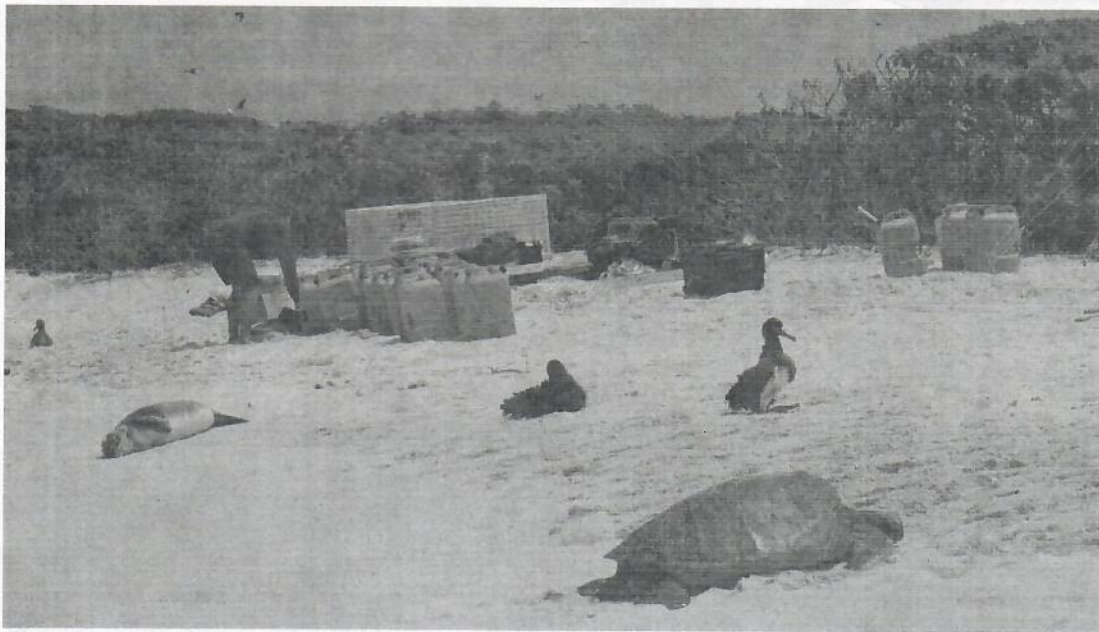


The habitat changed to a rough, rocky ledge on the central east side of the island. No turtles were observed in the water or on the rocks. On the northeast side of the island a set of old turtle tracks entered the vegetation and lead to a disturbed area. It was difficult to determine whether or not a nest was deposited.

We returned to camp at 12:15 and observed mating turtles in the surf zone. The pair was washed up on the beach and rolled around before they separated.

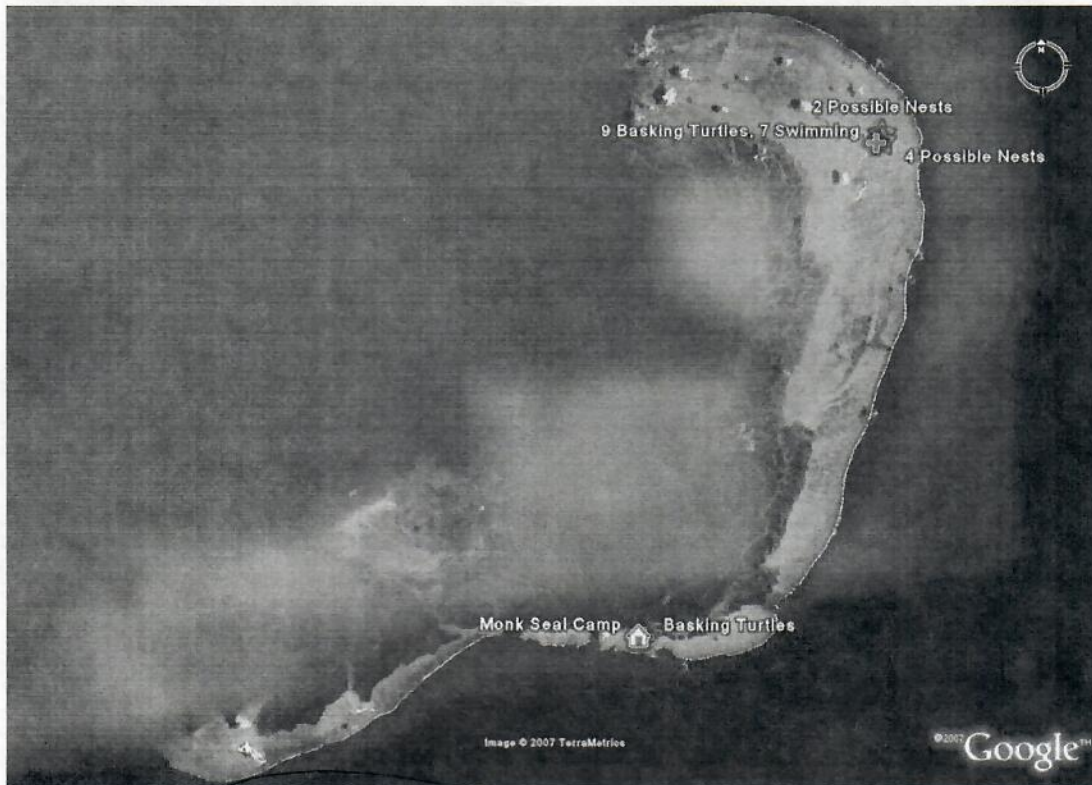


The female hauled out to bask and the male briefly washed ashore then returned to the water and immediately mounted another turtle. The female was identified by the injury on her right front flipper as the same turtle seen basking north of the camp earlier in the morning.



The beach on Lisianski Island is much narrower than Laysan Island and the sand is soft and extremely fine, like powder. The habitat appears to be suitable for green turtle nesting.

Pearl and Hermes (Southeast Island) – 25 May 2007, 29 May 2007



We arrived at Southeast Island at 10:30. A complete survey of the island was not conducted due to the need for additional personnel to set up the monk seal field camp. However, the stretch of beach on the north side of the island and east of the camp was frequently visited by basking turtles throughout the day. Three turtles, one male and two females, were basking when we arrived on the island. At 13:50 there were two basking turtles, one male and one female, and another turtle swimming in the lagoon. At 14:10 a male turtle swam past the camp in the shallow waters. At 15:10 two male turtles and one female turtle were basking (one was the male turtle seen basking at 13:50) and one male turtle was in the water. A juvenile turtle <50 cm SCL was swimming in shallow water a few feet off the beach.



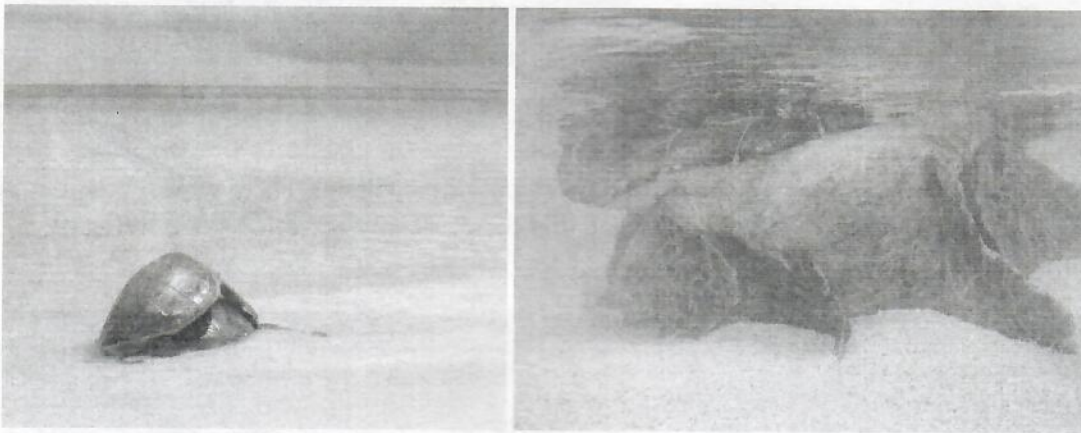
The sand was coarse, coral rubble similar in consistency to the beaches at French Frigate Shoals.

Pearl and Hermes (Seal-Kittery Island) – 29 May 2007

We arrived at Seal-Kittery Island at 08:50. We surveyed the island as a group, but found no evidence of turtles (ie: no tracks on the beach). Jessie Lopez reported that one morning last summer the entire island was covered with turtle tracks and pits. Nesting may begin later in the northern reaches of the Northwestern Hawaiian Islands.

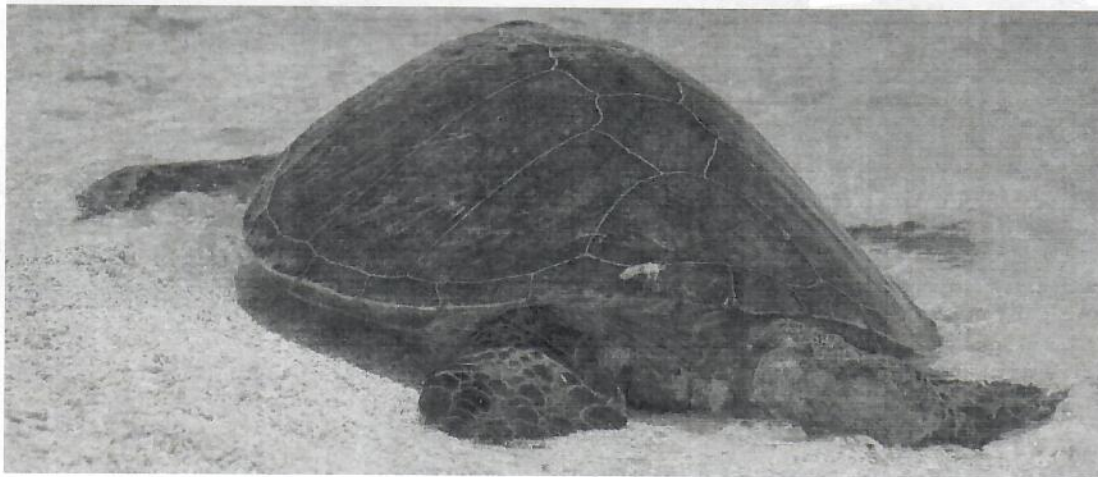
Pearl and Hermes (Southeast Island) – 29 May 2007

We stopped at Southeast Island on our way to North Island. A pair of mating turtles was washed up and resting on the beach near camp. The pair eventually moved out to deeper water and stayed connected while swimming away.

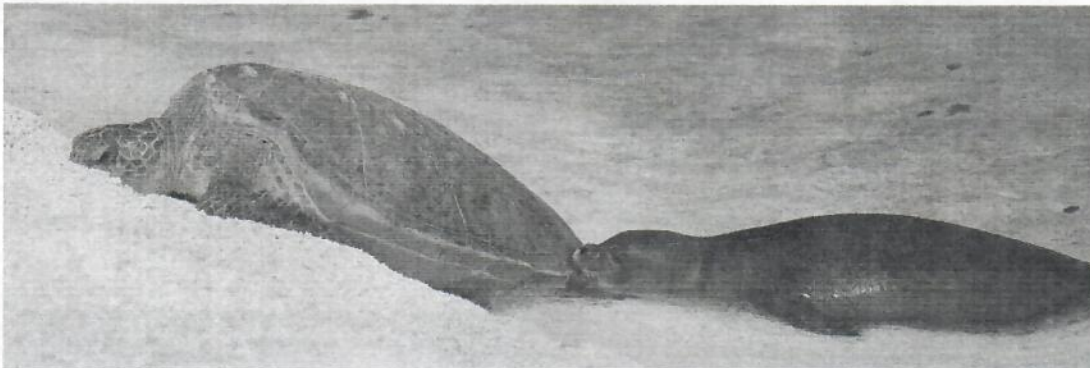


Pearl and Hermes (North Island) – 29 May 2007

We arrived at North Island at 13:00. Nine turtles were basking (4 males, 3 females, 2 juveniles) in a small cove on the East side of the island and seven turtles were seen swimming. These animals ranged in size from small juveniles (<50 cm SCL) to adults. One of the juveniles was covered in silt and resting in the water less than two feet from the beach. A basking male turtle had a significant injury on the ventral surface of his tail.



A newly weaned monk seal approached several turtles and nipped on their rear flippers and nuzzled their tails. Several turtles abandoned basking and returned to the water because of the seal.

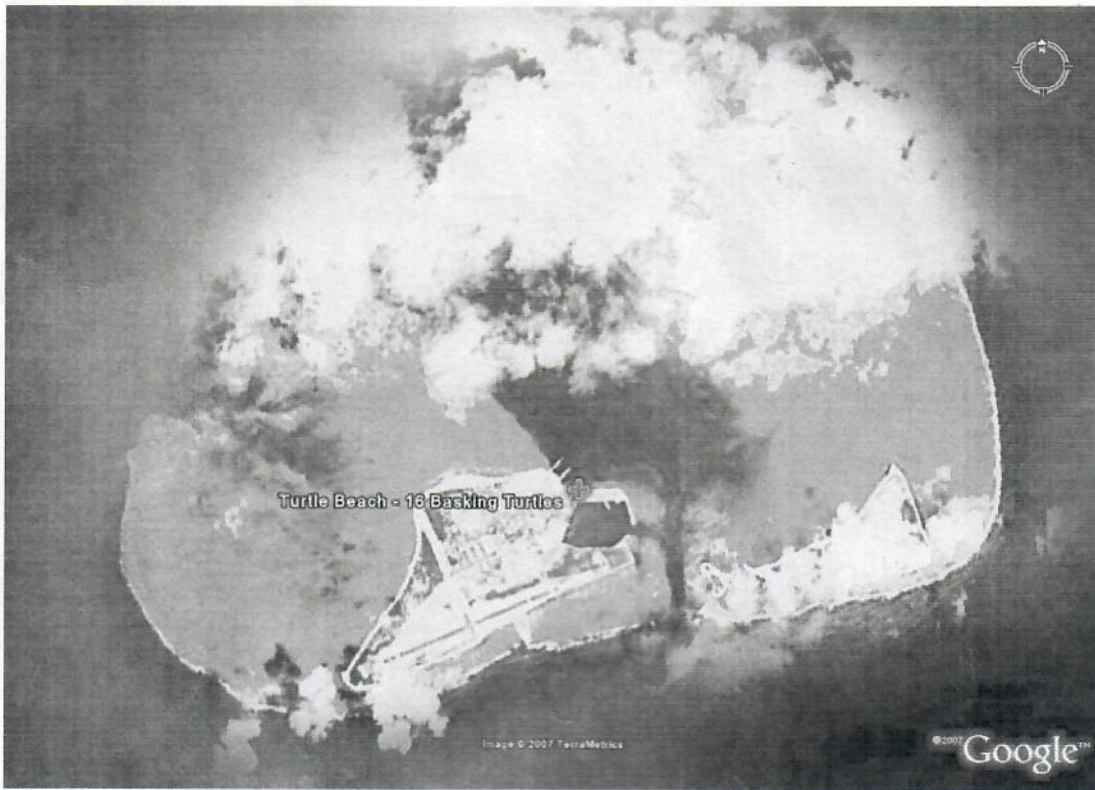


A lone basking turtle was seen further down the beach towards the sand spits.

Nesting activity was documented on the North end of the island. There were 6 possible nests, 2 in the sandy areas to the north and 4 in the dense coral rubble on the northeast side.



Midway Atoll – 26 May 2007

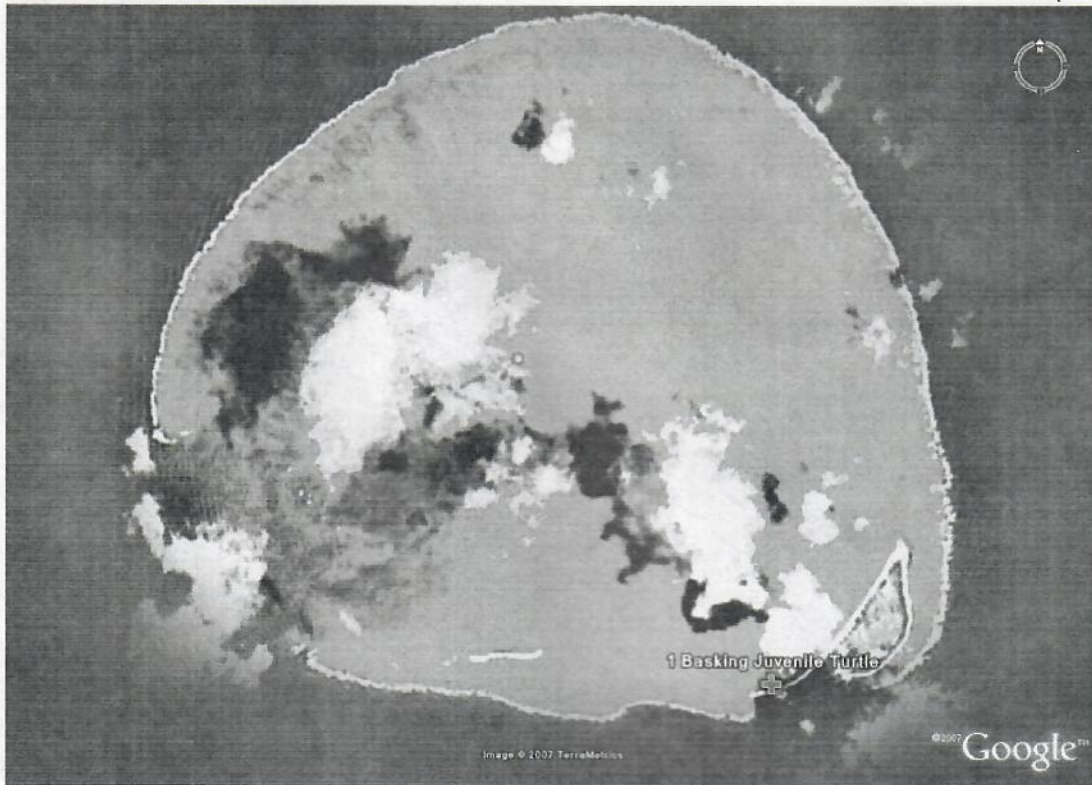


The ship arrived at Midway at 14:30. I could see 16 turtles basking on turtle beach from the ship. The turtles ranged in size from juveniles to adults. Since turtle beach is a closed area, I was not able to determine the size or sex of the basking turtles.



I met with ~~John Klavitter~~ and ~~Barry Christenson~~ and spoke with them about turtles on Midway. John reported that the only nest ever recorded at Midway was laid on Spit island in 2006. John feels like there are more adult turtles seen at Midway every year. ~~Elise Christenson~~ mentioned that a heavily tumored turtle was seen on Turtle Beach last fall or winter. She thinks either John or Leona have photographs of the turtle. After our talk, I walked around the Inner Harbor and various turtle spots on the island but did not see any other turtles.

Kure Atoll (Green Island) – 27 May 2007



We arrived at Kure Atoll at 13:00. DLNR volunteer, Heather Eizenger, accompanied me on a walk from the pier to the southwest point of the island (not more than a couple hundred meters). We stayed high on the beach to avoid monk seals. One juvenile turtle was seen swimming in the water close to shore at the southwest point. Irene Nurzia-Humburg and I walked to the point again at 18:30 and found one juvenile turtle basking near the water. Based on the size of the turtle, it was most likely the same turtle seen earlier in the day. Cynthia Vanderlip reported that they only ever see one turtle at the southwest point of Green Island and two turtles on Sand Island.



Post-cruise Communications

Communication with the monk seal field campers at FFS, Laysan, Lisianski, and Pearl and Hermes has continued via email. The FFS campers are keeping an eye out for moto-tooled turtles at places other than East Island. The FWS researchers on Laysan have been given permission to excavate nests after they hatch. A bucket of supplies for sample collection was sent to Laysan onboard the Hi'i'alakai in July. The Lisianski field campers continue to report nesting activity and are keeping track of all new nesting attempts during a two week period to ascertain the approximate number of nesters. The Pearl and Hermes crew reported on the first nest at Seal-Kittery Island in mid-June. All field campers have been asked to collect dead hatchlings for DNA analysis.

Future Research

The continued low-levels of nesting at Laysan, Lisianski, and Pearl and Hermes and the turtles that make up the nesting populations are interesting from a biological perspective. There is much we do not know about these isolated nesting populations. The collection of dead hatchlings by monk seal field campers would be a major contribution to our understanding of how these populations relate to the primary Hawaiian green turtle nesting stock at FFS.

- i) the number of nesters
- 2) foraging grounds of nesters (MHI, NWHI, Johnston, Wake?)
- 3) migratory routes (satellite telemetry)
- 4) clutch frequency
- 5) sex-ratios of hatchlings
- 6) FP prevalence
- 7) Genetic haplotype