EAST ISLAND TURTLE CAMP REPORT 2015

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I. GENERAL MONITORING

Summary

The summer of 2015 marks the 43rd consecutive field season of monitoring nesting green sea turtles (*Chelonia mydas*) at East Island, French Frigate Shoals. This season, 492 nesting turtles were marked and identified between May 30, 2015 and July 22, 2015. A total of 22 intermittent nights were spent monitoring nesting turtles, scheduled around the Hawaiian Monk Seal Research Program's (HMSRP) boating schedules and weather conditions.

In 2014, a record number of 811 nesting turtles was observed on East Island. Due to the cyclical patterns of turtle nesting habits, the 2015 field season was not expected to approach that number, and lower presence of nesting turtles does not come as a surprise. This is the second consecutive year in which only one turtle biological technician was stationed on East Island to collect data over the course of two and a half months. This means that, unlike previous seasons, the presence of a technician on the island for the full two and a half month field season was not possible. While nearly 90 turtles were recorded in one night at the peak of the nesting season, the total number of nesting turtles present on East Island during the entire field season undoubtedly was underestimated due to gaps between data collections, and monitoring during only partial nights at the beginning of the season.

In addition, fewer data were collected this field season than in the past due to safety considerations and time restraints related to a need for pre-season training and preparation, as well as a difference in the level of experience of the turtle technician being used. The difference in data collection was the omission of the application of new passive integrated tags (PIT tag) and metal tags to previously untagged nesting turtles. However, because less intensive data collection methods were used, the data collected in the 2015 field season was done thoroughly for each nesting turtle.

Methods

Night surveys on East Island began on May 30, 2015 and were conducted weekly, primarily in sets of three consecutive nights per week, ending on July 22, 2015. In total, the technician monitored nesting turtles on 22 nights during the field season, with data collected on 10 partial, and 12 full nights. Dr. Jerry Wetherall (Pacific Islands Fisheries Science Center) will analyze the 2015 data against those collected in past seasons to estimate the total number of nesters at East Island for 2015.

At 20:00h every monitoring night, after checking in via radio with Tern Island, the technician conducted a preliminary walk around the island to map and note the placement of hauled out monk seals, and to cover any debris hazards and copper wire. Walks around the island to monitor for nesting turtles were conducted at 21:00, 23:00, 01:00, 03:00, and 05:00. Most data were collected the first time a turtle was recorded.

A straight carapace length measurement was recorded for most nesting turtles using 95cm metal calipers, generally at the time of first sighting. Exceptions included surveys made without carrying the 95 cm metal calipers when lightning was present. In those instances, straight carapace length (SCL) was not recorded until a subsequent sighting, if the turtle was seen again. The range of the straight carapace lengths recorded during the 2015 field season varied from 76.4 cm to 98.0 cm.

Each night's walks focused primarily on identifying and assigning a mototool number to newly sighted and unmarked nesting turtles. A number (1 through 492) was harmlessly engraved on the third right lateral scute of each newly observed turtle. The number 256 was mistakenly used twice, but was corrected by labelling the duplicate as 256D. Turtle number 292 initially was marked as number290, but was corrected by crossing out the 0 and adding a 2, making the mototool ID look like 29X2. However, the data log records this turtle simply as 292. After accounting for duplicates, 492 previously unmarked turtles were sighted and marked.

Once the mototool ID was engraved on the carapace, it was coated in a thin layer of white spray paint to make subsequent identification throughout the season easier. Each turtle was scanned for PIT tags in both hind flippers using an electronic tag reader and checked for metal tags.

Hatchlings

Hatchlings were first observed on East Island on July 20 at 21:39. This is later in the season than the first observation of hatchlings recorded during the 2014 nesting season. The 2015 field season ended after hatchlings had been observed on three nights.

Basking Turtles

Before the turtle camp at East Island was set up, the peak number of basking turtles observed was 304, an observation made on May 25, 2015. Basking turtle counts were conducted during the day (initially between 13:00 and 16:30) before the nights on which nesting turtles were monitored. Later in the season, counts were made later in the day, when higher numbers of turtles were basking. A low of 31 basking turtles were recorded on July 15, 2015, between 14:00 and 14:30.

Nests

Of the 492 nesting turtles recorded, 80 (16%) were observed laying eggs. Of the 80 turtles seen laying eggs, 6 (1%) were sighted laying eggs (recorded as N for nesting) more than once.

On several occasions nesting turtles digging, pattycaking, and backfilling were observed digging up previously laid nests. At times, when the technician arrived on East Island, perhaps a dozen previously laid nests over the course of the season were not entirely covered, leaving the eggs exposed to sunlight for long durations or allowing them to be eaten by crabs.

II. GPS

A Gray Garmin Etrex GPS unit was used to record waypoints every three to four meters around the perimeter of the East Island. Waypoints were recorded at the high tide line and saved as a continuous track on the GPS unit. This marked perimeter will serve as a tool to monitor the island's changing shape and surface area over time.

III. Tagging

Due primarily to safety considerations and limited training time before the start of the 2015 summer field season, new passive integrated PIT tags (PIT) and new metal tags were not administered to nesting turtles this field season. However, each turtle was scanned for PIT tags in both hind flippers using an electronic pit tag reader and checked for metal tags in the hind flippers by hand.

Of the 492 turtles sighted, 289 (59 %) had been tagged with PIT tags in at least one, or both hind flippers. These turtles all had been tagged prior to the 2015 field season.

Of the 492 turtles sighted 45 (9 %) had a metal tag in one or both hind flippers.

Of the 492 turtles sighted 29 (6%) had both PIT and metal tags.

A metal tag was found on East Beach of Tern Island in mid-July by HMSRP volunteer Keelan Barcina. The tag was collected and given to George Balazs in Honolulu.

IV. FP Tumors

Not all nesting turtles were checked thoroughly for tumor growths caused by fibropapillomatosis. However, small and smallish tumors classified as a size 1, likely were present, as has been reported in previous field seasons. Only one turtle, mototool number 141 was identified with a size classification number 2, medium-sized tumor. That tumor was located on the turtle's right eye (position code RE), and was the largest tumor reported throughout the season.

V. Data Loggers

No new data loggers were deployed during the 2015 field season. Only one data logger was located and retrieved on East Island; it was brought back to Honolulu.

VI. Injuries and Abnormalities

Summary

There were a total of 33 turtles recorded with injuries or abnormalities. These are grouped by location, as either flipper or carapace injuries or abnormalities.

Flipper Injuries and Abnormalities

A total of 19 turtles had flipper injuries or abnormalities. This group included turtles that were recorded with missing flippers, flippers that did not appear to be fully formed, or with holes, splits, and skin irregularities. None of the observed injuries looked new or fresh. This indicates that the injuries observed are healed, older, and have not greatly impacted the turtles' mobility. These 19 turtles observed as having flipper injuries or abnormalities were mototool numbers: 8, 16, 45, 80, 83, 100, 137, 157, 161, 182, 190, 234, 242, 271, 288, 307, 419, 473, and 479.

Carapace Injuries and Abnormalities

A total of 14 turtles had carapace injuries or abnormalities. This group included turtles that were recorded with missing marginal, lateral, or central scutes, cracks, deep scratches, or raised spots from previous injuries. Possible causes of injuries include ship or boat strikes, tiger shark attacks, entanglement, and/or irregular growth. Of the 16 injuries observed, only one (the nesting turtle with mototool number 15) looked new or fresh. The remainder were healed or older, and did not appear to have greatly impacted the turtles' mobility. Turtles with mototool numbers 8, 14, 15, 36, 42, 68, 100, 101, 120, 130, 201, 302, 414, 459, 466, and 476 were observed with carapace injuries and abnormalities.

Turtles with mototool numbers 8 and 100 were observed with old injuries or abnormalities to both their carapace and flippers, and were each sighted on seven nights at East Island throughout the season.

A photograph of the turtle with mototool number 68 is included at the end of this report due to her carapace abnormality, making her easily recognizable throughout the atoll. She was seen basking by the monk seal team camping on Trig Island, and observed on four nights attempting to nest on East Island.

Barnacles were prevalent on some turtles, but their presence was not recorded unless it was difficult to engrave a mototool number onto the fourth right carapace due to the abundance of barnacle growth. About 20% of the turtles sighted had barnacles on them.

Other Injuries and Abnormalities

On June 9, turtle mototool number 123 was first sighted with the remains of an old satellite tag. Upon further research using the recorded PIT tag number, this satellite tag was applied by George Balazs on March 1, 2012 and removed July 16, 2012 on the North Shore of Oahu. This turtle has been a regular basker at Laniakea, recorded as "L3" or Sapphire by the Honu Guardian volunteers. Turtle number 123 has been sighted on the North Shore of Oahu since 2003, and has a previous nesting history on East Island in 2008. A photograph is included at the end of the report to document the remains of the tag.

On July 1, an unmarked basking turtle was sighted at East Island with a carapace injury that could have resulted from a boat strike. It had a cracked carapace and algae growing out the injury. The injury did not appear to impact the turtle's ability to move, but it was never observed nesting or sighted again throughout the 2015 season. A photograph of the injury is included at the end of the report.

VII. Entanglements and Obstructions

Summary

Three turtles (0.6% of those observed) were found entangled in debris on East Island debris or in the remnants of the former operating station.

Throughout the field season marine debris and entanglement hazards (such as line, netting, copper wire) for both monk seals and turtles were collected and piled near the Weatherport set up at the turtle camp. After breaking down the turtle camp, subsequent visits were made to haul entanglement hazards to Tern Island to bring back to Honolulu on the monk seal pickup cruise in September.

Incidents

On June 23, nesting turtle 61 was found entrapped in copper wire protruding from one of the naupaka shrubs near the high water line of East Island. She was untangled and was re-sighted on July 8 with no apparent signs of injury.

One June 23, nesting turtle 294 was found on East Island with line protruding from the ground wrapped and knotted around her left hind flipper. The line was unknotted and removed from the ground allowing 294 to crawl out. Turtle 294 was subsequently seen on July 7 and July 21 with no apparent signs of injury.

On July 1, nesting turtle 355 buried herself with sand in a turtle pit. She was dug out, but did not move throughout the night past 01:00. After checking on her again at 07:00, she had left the turtle pit and returned to the water.

VIII. Other Islands at French Frigate Shoals

Mototooled turtles were observed basking at other islands within the atoll (at Trig, Little Gin, and Tern Islands). While not all sighted turtles were recorded, these observations indicate that turtles move around the atoll. Turtles with mototool numbers 44, 68, and 135 were seen basking on Tern Island during morning entrapment walks.

The monk seal team often reported sightings of mototooled turtles while conducting their atoll counts as well as unusual behavior or injuries.

In the future it would be interesting to explore turtle nesting habits throughout a season on multiple islands within the atoll, such as was done periodically in the past, to see if turtles nest exclusively nest on East Island.

IX. Special Thanks

Data collection during the 2015 field season could not have been accomplished without the enormous help, support, and muscle of the French Frigate Shoals monk seal team: Shawn Farry, Mike Burns, Koa Matsuoka, Keelan Barcina, and Louise Giuseffi. In addition to carrying out their monk seal duties, they assisted in the setup, maintenance, and breakdown of the East Island turtle camp. Additionally, the monk seal team provided boat shuttles to and from East, and monitored twice a day radio calls to check in with East Island. On Tern Island the monk seal team conducts a daily entrapment walk, and releases of any entrapped hatchlings found along the black pipe on the runway, and any adult turtles stuck in the catchment near the water towers. The monk seal team also provided a second satellite phone so that two were available at all time on East Island as a back-up means of communication with Tern Island and with George Balazs in Honolulu. The U.S. Fish and Wildlife is thanked for their approvals and coordination in making the 2015 turtle monitoring season possible. Thank you to Joe Spring for meeting with me before going out into the field, as well as providing me with his East Island Turtle Camp 2014 report. Thanks to Jeff Pawloski and Sea Life Park Hawaii for providing access to their Turtle Breeding Display to augment pre-season training.

Further thanks to George Balazs, Shandell Brunson, and Devon Francke for providing pre-season training, supplies, and much appreciated advice both in and out of the field.

Turtle 68, a frequent basker, was recorded on four nights throughout the season on East Island and had unknown markings on her carapace.

This unmarked basking turtle of unknown gender, sighted at East Island on July 1 2015, had a noticeable carapace injury.

Turtle 123 was sighted on East Island on June 16, 2015 with the remnants of a satellite tag on its carapace, applied in 2012 at Laniakea on the North Shore of Oahu.