Data summary for the June 1980 green turtle tagging study focused on East Island, French Frigate Shoals, Northwestern Hawaiian Islands

by

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This field research constituted the eighth consecutive season of monitoring and tagging at the Hawaiian green turtle breeding colony for the purpose of determining basic life history characteristics.

Tagging encounters by activity, island and sex

Activity/Island	Males		Females		Total Encounters
	new tag	tag recovery	new tag	tag recovery	
Nesting					
East	-	-	24	21	45
Whale-Skate	-	-	3	0	3
Basking					
East	5	4	3	1	13
Whale-Skate	9	12	7	6	34
Trig	1	1	5	5	12
Little Gin	0	0	1	0	1
Total encounters	15	17	43	33	108

Percent tagging encounters representing tag recoveries

Males -	53.1%
Females -	43.4%
Males and females -	47.2%
Females, East Island - Including 5 females with scars suggestive of tag loss -	44.8% 51.1%
Males, East Island -	44.4%

Island fidelity for 22 tagged females recovered on East Island--

Island of encounter during previous breeding season

East	Whale-Skate
21 turtles	1 turtle

Tag loss in 22 East Island females originally having two or more tags

No. years since tagged	No. tags lost	No. tags remaining	No. turtles
2	1	1	1
3	1	1	4
5	1	1	1
6	1	1	1
7	2	1	1
		Total -	8 (36.4%)

Apparent breeding cycles of previously tagged turtles encountered on East Island

Years	Females (%)	Males (%)
1	0	50.0
2	22.7	50.0
3	36.4	0
4	4.5	0
5	4.5	0
6	22.7	0
7	4.5	0
8	0	0
9	4.5	0

Tag recoveries representing long-distance migrations

Original tagging site	Date	Status	Recovery site	Date	Status
Lisianski	3-20-68	basking	East	6-13-80	nesting
Lisianski	3-20-68	basking	East	6-13-80	nesting
Pearl & Hermes	3-13-64	basking	East	6-23-80	nesting
Pearl & Hermes	3-22-68	basking	Tern	6-16-80	nesting
Laysan	9-17-66	basking	Whale-Skate	6-30-80	basking

Number of females nesting each night on East Island from June 10 - 30th

No. females ashore each night
mean - 4.8
range - 2-9

No. females nesting successfully each night
mean - 2.9 (61%)
range - 0-6

Internesting intervals of 19 females renesting on East Island
mean - 13.2 days
range - 12-15 days

Estimated number of females present at French Frigate Shoals for the 1980 breeding season

East - 69
Whale-Skate - 43
Trig - 6
Tern - 7
Gin - 1
Little Gin - 4
Total for French Frigate Shoals - 130

Straight carapace length of 42 females nesting on East Island
mean - 93.2 cm
range - 85.9 - 103.6 cm

Straight carapace length of 25 previously tagged females
mean - 93.9 cm
range - 85.9 - 103.6 cm

Straight carapace length of 17 newly tagged females (possibly new recruits)
mean - 92.3 cm
range - 88.5 - 96.9 cm

Growth rates of 6 tagged females recovered on East Island

Carapace length cm	Increase cm	Interval years-months	Growth rate cm/month
92.7	0.7	6-0	.010
93.2	0.8	3-0	.022
94.0	0.3	3-0	.008
94.4	0.4	3-0	.011
95.5	0.9	3-0	.025
96.1	1.6	9-1	.015
		Mean -	.015

13 other tagged females recovered after intervals of 2-7 years showed no measurable increase in carapace length.

Maximum number of turtles observed basking at one time

Whale-Skate - 31 turtles on June 8th
Trig - 20 turtles on June 8th
East - 29 turtles on June 20th

Sea surface temperature off East Island
mean - 27.4°C
range - 26.2 - 28.5°C

Other significant findings

1. Radio telemetry of four male and four female green turtles equipped with transmitters at Whale-Skate and Trig revealed that most marine habitat utilized was within 1 km of the island where tagged. One of the females tagged on Trig regularly traveled to Tern Island for nesting purposes. The mean dive time exhibited by the turtles was 20 minutes. The longest periods spent under water occurred at night and lasted approximately 2 hours.

2. An adult male green turtle with a freshly amputated front flipper was found dead washed up on the beach at East Island on June 29th. Internal examination revealed three lead slugs in the pectoral muscles, indicating that the turtle had been shot at some earlier date. The cause of death, however, appeared to be shark attack.

3. A 44 cm juvenile green turtle found basking on East Island that had been originally tagged in June of 1979 (at East Island) showed no measurable increase in carapace length.

4. Erosion from wave action continued to take place along the northeast shore of East Island, with the central vegetated segment having lost approximately 6 meters since 1975. This appears to be part of a long-term trend that has been underway since at least 1945. The gradual loss of this critical nesting habitat places importance on the need to remove man-made debris that obstructs nesting on East Island and, to the extent possible, enhance Tern Island's south-shore beach as a desirable nesting site.

5. Fewer than 50 sooty terns were present on East Island for either nesting or roosting purposes. The numbers of these birds have decreased dramatically over the past eight years. In 1973 an estimated 40,000 sooty terns used the island. Colonies of this magnitude probably cause a reduction in the turtles' efficiency in excavating nests and laying eggs. In addition, the turtles at times inflicted considerable damage to sooty tern eggs and chicks as the result of crawling over the island searching for nesting sites.