EXCERPT

MARINE SKILL PROJECT REPORT SUBMITTED TO THE UNIVERSITY OF HAWAII MARINE OPTION PROGRAM

Investigation of Green Sea Turtles, *Chelonia mydas*, Occurring in the Nearshore Waters of Waikiki

DURATION

October 1, 1990-July 31, 1991

by

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REPORT DATE

August 1, 1991

ABSTRACT

The objectives of this study in the nearshore waters of Waikiki were to discover: (1) the physiography of the area in which green turtles are residing including where they rest underwater when not feeding; (2) the approximate number of turtles and their size-classes resident at this location; (3) their daily feeding patterns and diet; and (4) any adverse impacts to the turtles, either from humans or from natural factors. During this 10 month study fifteen sea turtles were captured, tagged and released. Only one species, the Hawaiian green sea turtle, *Chelonia mydas*, was seen and captured. Green turtles feed in the nearshore waters (within 100 meters of the shore) and can be seen there on any given day. Food sources being utilized consist of the benthic algae, Ulva fasciata, Ulva reticulata, Hypnea musciformis, and Pterocladia capillacea. Sizes of the turtles tagged ranged from 37.6 cm (straight carapace length) at 8 kg to 80.7 cm at 82 kg. Resting habitats for turtles were identified at Grace's Ledge at a depth of 8-10 feet, and at Canyons which has a depth of 30-35 feet. None of the turtles tagged and released had signs of fibropapilloma disease. The findings from this study conclude that the green turtle population is relatively large and apparently healthy in the nearshore waters of Waikiki. Efforts should be made to enhance the protection of these turtles and the habitats upon which they depend. The educational and tourism aspects of viewing the turtles in a benign fashion should be promoted wherever possible.

Table 5. Identification of stomach contents from two (2) green turtles found dead at Waikiki, Oahu.

Tag No.	Straight Carapace Length (cm)	Sample Contents	% (T trace)
Z227	42.5	Hypnea musciformis	30
Forestomach (crop)		Pterocladia capillacea	30
		Ulva reticulata	25
		Codium edule	15
		Acanthophora spicifera	T
Z227	42.5	Pterocladia capillacea	70
Secretory Stomach		Codium arabicum	10
		Hypnea musciformis	10
		Codium edule	5
		Ulva reticulata	5
		Amansia glomerata	T
		Gracilaria coronopifolia	T
		Sargassum echinocarpum	T
---	53.0	Ulva reticulata	90
Forestomach (crop)		Acanthophora spicifera	5
		Amansia glomerata	5
		Ceramuim sp.	T
		Champia parvula	T
		Gelidiella acerosa	T
		Gracilaria coronopifolia (?)	T
		Lyngbya majuscula	T

Table 6. Identification of other samples taken from green turtles at Waikiki, Oahu.

Tag No.	Straight Carpace Length (cm)	Identification	% (T = trace)
N691	49.9	One amphipod in stomach sample	--
N741	44.7	Algae scrapped from plastron	--
		Sphacelaria furcigera	90
		Achrochaetuim sp.	10
		Chaetomorpha gracilis	T
		Lyngbya sp.	T
		Round worm	
N744	69.3	(5) O. branchiatus (leeches) near front flipper	
N776	43.2	7 amphipods	
Y47	62.4	(1) O. branchiatus in corner of mouth	

Table 4. Identification of stomach contents sampled from four (4) turtles. Waikiki, Oahu.

Tag No.	Straight Carapace Length (cm)	Sample Contents	% T = trace
N691-Sheraton Waikiki	49.9	Spyridia filamentosa	30
		Gelidium pusillum	30
		Laurencia nidifica	20
		Dictyota friabilis	10
		Ulva fasciata	10
		Lyngbya sp.	T
		Ceramuim sp.	T
		Amphipods	5
N741-Sheraton Waikiki	44.7	Pterocladia capillacea	80
		Hypnea musciformis	15
		Acanthophora spicifera	5
		Ectocarpus indicus	T
		Sargassum sp.	T
		Sand grains	
N776-Grace's Ledge	43.2	Ulva fasciata	100
		Terrestrial plant material	T
		Amphipods	7
		Spine	1

Table 4. continued

N844-Sheraton Waikiki	42.0	Hypnea musciformis	40
		Sargassum sp.	30
		Ulva reticulata	15
		Paper	10
		Sand	5
		Ectocarpus indicus	T

Table 3. Biometrics of 15 green turtles sampled at Waikiki, Oahu

G=Grace's Ledge N=Natatorium

S=Sheraton Waikiki Hotel

Tag No.	Carapace Length		Carapace Width		Plastron Length	Tail Length	Head Width	Front Flipper Width	Weight
	Straight (cm)	Curved (cm)	Straight (cm)	Curved (cm)	(cm)	(cm)	(cm)	(cm)	(lbs)
N535(G)	42.5	45.5	34.1	41.5	34.5	7.3	6.4	7.4	27
Y47 (G)	61.2	65.0	47.7	58.0	49.9	12.5	8.8	11.3	78
N570(G)	49.5	53.0	40.8	48.5	40.7	9.8	7.5	9.0	45
N573(N)	43.7	47.0	33.9	41.0	34.7	6.7	7.3	7.9	30
N691(S)	49.9	53.3	36.7	46.0	39.7	11.0	7.8	8.7	47
N741(S)	44.7	47.0	36.0	43.0	35.3	9.5	7.8	8.6	33
N744(S)	69.3	74.0	55.4	71.0	56.1	17.5	10.8	0	113
N776(G)	43.2	46.5	35.7	42.0	33.7	8.0	7.1	7.9	28
N778(G)	48.9	53.0	40.6	49.0	40.2	9.0	7.9	9.6	36
N781(G)	60.1	63.5	46.5	57.0	47.1	13.0	8.8	10.2	63
N793(S)	61.3	65.2	49.3	60.5	49.5	14.5	9.4	11.1	72
N796(S)	80.7	86.2	64.3	81.1	64.4	31.5	11.8	14.1	180
N840(S)	37.6	39.5	30.9	37.0	31.2	7.0	6.2	6.9	17
N842(S)	42.9	46.0	33.9	40.0	33.8	9.0	7.0	7.5	24
N844(S)	42.0	45.0	34.8	41.0	33.5	9.0	6.9	7.9	24

Table 1. Result of turtle netting effort in waters fronting the Sheraton Waikiki Hotel.

Field Study Date	Duration in hours	Length of Nets (ft)	No. of Turtles Captured
11-8-90	2.0	100 X 5	0
2-15-91	3.75	100 X 5	0
3-1-91	3.5	100 X 8	1
3-15-91	3.0	100 X 8 & 100 X 5 (boundary net)	2
4-5-91	3.0	100 X 8 & 100 X 5 (boundary net)	2
4-26-91	3.0	100 X 8 & 100 X 5 (boundary net)	3
Total	**18.25**		**8**

Table 2. Results of hand-capture efforts. Waikiki, Oahu.

Field Study Date	Location	No. of Turtles Captured
11-15-90	Grace's Ledge	1
12-14-90	Grace's Ledge	2
12-20-90	Natatorium	1
3-28-91	Grace's Ledge	1
3-29-91	Grace's Ledge	2
4-4-91	Grace's Ledge	1 (recapture)
4-22-91	Grace's Ledge	0
Total No. of Turtles		7

Table 8. Growth rate for one green turtle recaptured at Waikiki, Oahu.

Tag No.	Date of Recapture	Carapace Length Straight	Carapace Length Curved	Recovery Interval	Growth Rate in (cm) Straight	Growth Rate in (cm) Curved
Y47	12-14-89	57.6	61.0	--	--	--
	12-14-90	61.2	65.0	1 year	3.6	4.0
	4-4-91	62.4	66.0	3.7 months	1.2	1.0

Table 7. Injuries and abnormalities found on eight (8) green turtles at Waikiki, Oahu.
G=Grace's Ledge
S=Sheraton Waikiki

Tag No.	Straight Carapace Length (cm)	Description
N535(G)	42.5	3 healed spear punctures from Hawaiian sling on top of head
Y47 (G)	61.2	Old gouge (scab) top of head near right eye
N570(G)	49.5	Seam between 8 & 9 marginal scutes has a healed notch
N573(Natatorium)	43.7	Small notch on scales 6 & 7 on right front flipper
N744(S)	69.3	3rd and 4th lateral right scute has deep scar that is healed
N778(G)	48.9	Abnormal scutes - 6 lateral left and 5 lateral right
N781(G)	60.1	Left eyelid slightly swollen
N840(S)	37.6	Superficial nick on 1st lateral left scute

Table 9. Submergence times of two (2) green turtles foraging in front of the Sheraton Waikiki Hotel.

Turtle #1		Turtle #2	
Date	Minutes/Seconds	Date	Minutes/Seconds
11-30-90	2:45	1-21-91	1:15
Time=2:15pm	1:40	Time=5:38pm	1:40
	2:00		2:00
	2:20		1:25
	1:50		1:05
	1:35		1:35
	1:35		4:45
	1:50		4:00
	--- moving slightly ---		1:10
	0:35		3:20
	1:25		2:05
	1:50		1:00
	2:30		3:30
	1:50		1:40
	2:05		
	1:30		x=2:11
	1:12		n=14
	1:38		
	1:40		
	x=1:46		
	n=18		