168

DAILY TOTALS
NESTING GREEN TURTLES
FRENCH FRIGATE SHOALS, ~~1989~~ 90

Island: EAST ← new Turts ID - turts that you read tags on and is not previously on Turt ID form.

Date	# Turtles Up	# New Turtles IDed	# Nests	Invest.	Comments
05-06-90	1	0	0	qfw	Microfooled but unable to read tags Cloudy & rainy all night
05-07-90	2	1	0	qfw	low tide Clear, windy, full moon
5-08	1	0	1	qfw	FIRST NEST OBSERVED!! 2:30am-cloudier Yahoo!! Clear, full moon, low tide
5-09	3	1	1	qfw	other 2 turts engraved but no tags-read. full moon up at 2015. Bright! Cloudy at 3am but still bright.
5-10	5	2	0	qfw	1 unknown
5-11	2	0	0	qfw	1 unknown - had a pt, but couldn't read #. Clear night; moon up at 10:10pm.
5-12	NO TURTLE WORK ON EAST ISLAND				
5-13	1	0	0	qfw	Steep berm on SE side of island. Windy, cool weather
5-14	2	2	1	qfw	½ moon up at 1:00am; slight wind, few clouds.
5-15	2	1	0	qfw	
5-16	1	0	0	qfw	Windy; rain squall @ 3am
5-17	3	1	0	qfw	Very cool & windy (~20K) rain squalls periodically aft. 3am; Cloudy.
5-18	3	0	0	qfw	2 Turts Unknown
5-19	6	3	1	qfw	Nice night; only small rain squalls.
5-20	6	~~2~~ 2	1	RC	all turts seem to be skittish - no moon. (Jumpy) (1 Bask on Turt Sight)
5-21	9	4	2	RC	one rain squall
5-22	8	~~2~~ 2	4	RC	one rain squall (mostly clear)
5-23	13	3	2	RC	NO RAIN. (WINDY) mostly cloudy LOST TAG IVG21 2 TURTS. (UK)
5-24	5	2	2	RC	Cloudy - few showers - No moon - jumpy turtles * FOUND TAG W170 (NOT CLOSE) (NEW moon)
5-25	6	4	2 IN 1P	RC	one of them the nest is a "probably"
5-26	12	4	4N, 1P	qfw	Clear night
5-27	15	3	2	qfw	2 unknowns High tide early AM. Most of nite was ½ tide Clear; cloudy/rainy beg. 0500.
5-28	9	1	1	qfw	..., lotsa puraing and..., numerous FPits. Moon set @ 11?? Rain after 3:30am.
5-29	9	1	2N, 1M	qfw	Clear!! Slept @ 400
5-30	8	~~6~~ 6	0	RC	~½ moon till 0600 (Bright) Low tide (eventually)
5-31	11	6	6	RC	Bright night, till ~ 2:30 → 0300 Low tide one nested at daybreak - other after dawn.
6-1	~~7~~ 7	4	2	RC	
6-2	~~10~~ 10	~~2~~ 1	0	RC	1 NEW ID, ANOTHER ONLY NOTED.
6-3	13	6	5	qfw	Clear!! Cloudy for per. reno. 2:~~15~~ 2:30am ¾ moon set at ~0315
6-4	16	2	7 !!	qfw	Clear night!! No rain! Moon set @ 4:15.

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6-05-90	18	1	6	qlw	1 unknown turns jumpy! Clear AM night; full moon - set 0430.
6-06	14	3 *	1	qlw	* is # C-23 already acct for? Full moon, clear, warm; jumpy turtles... Ugh!
6-7	18 ~~18~~ 17	8	6	RC	full moon, clear, WARM ↳ Rise ~ 2000
6-8	22	4	5N/1P	RC	full moon, rose ~ 2100 - clear. -cool (Seem to be coming up earlier - P - looked very much like a nest (but all signs) before arrival
6-9	23	8	7	RC	MOON COMING UP LATER. TURTLES STILL COMING UP BEFORE SUNSET but then
6-10	14	3	3	RC	Turtles C-24, C-81, C-71 (all up at 0015 - I went to sleep - returned at 0030 - 24 all no nest. Return to Beach
6-11	11	2	7	qlw	clear night, low tide (Last night they did?) SLOW but plenty nesting
6-12	15	2	4	qlw	Ugh! Moon up @ 2330. Turtles taking time getting down to business!
6-13	18		3N	qlw	
6-14	17	5	2N, 1P	qlw	Rain squalls thru/o nite (lasting ~ 20" at most) windy
6-15	15	5	4N, 1M	RL	" " 4 " " " MOON 2SE ONLY - (½) M=10#
6-16	16	6	5	RC	Few Quick Showers - cloudy - Turtles Late, Moon coming up late, NOT AS bright.
6-17	18	~~Ø~~ 1	11N/1P	RL	Turtles Seem to congregate more to West other and in Dunes - most nests around 5 of 7-mile (few exceptions). A couple more nesting side by side. P = C-15
6-18	13	2	6N/[redacted]	RC	Turtles spread out nesting, took all night, too - heavy rain at 2345 → down out 0015 → up 35 - most of night long showers and few squalls (didn't turn up after 0000)
6-19	15	Ø	3N/2P/1M	RL	Slept from 0245→0410 and 0530→720 Most turtles probably nesting in this time. Extremely low tide in [redacted] 0030→0130 M=44/P=52,23 Showers off on on all night, cold, windy
6-20	13	Ø	4	qlw	New moon - dark; windy; few rain squalls.
6-21	12	1 Monitor only	0	qlw	No turtle walks betw. 0115-0430 - lightning (in clouds) and RAIN (huge squall fr. 0335-0415!!!)
6-22	16	1	2N, 1P Mon/Ra	qlw	Black out; fairly clear throughout night Real low tide at 0400
6-23	17	2 *	4N, 2P	qlw	Clear Night, ↓ tide early am.; Silver moon set at ~~0330~~ ~2130 * C-117 = C-52
6-24	19	2	10	RL	C-115 was not included - saw that a double crown / nest only on 20 from - forgot where started out all over. Night. This night time - not many noisy ones (sighting to the N)
6-25	15	3, (1 mistagged & removed Rain Gear)	7	RC	Soft Lighting to the S + E Hawaii Air Guard 225? ? C-121 a mistagged only. - Only ~ 5 turtles up past 0400 and 3 of them nesting. - Slow night, lightning to N + S no night.
6-26	14	1	1	RC	Extremely rainy night. Pitter up to 2200, then again from 0330→0730, few more on island - only 4 turtles up past 0200, turtles jumpy! →
6-27	22	2	10N/1P	RC	P = C-32. Moon came up tonight, mostly clear, few squalls, lightning to the W+S. Turtles arriving in all over, but in bunches after moon came, fairly late - past set ~ 2100. (½)
6-28	13	1	5	Rainy night; dynamism hot [illegible] coffee	Cloudy all night - no moon shine. Rain squalls throughout nite. Break am. 0200-0300.. WOW.
6-29	14	1 Hawks	6	I believe I did as up as much as poss	Moon/stars from @ 2000 - 2230. 2230 - Sunrise rain squalls, clouds, windy. (very windy). 1600 = Nite run Trackers
6-30	15	0	5	due to rain - mainly after the disturbance	Rain began at 1900 hrs and did not let up until 7 sunrise. Cloudy all night and winds steady 20-30K. No moon shine - pitch black. Real Wet!
07-01	18	12 Monitor	4N, 1P	night. Still [illegible] after most of	Rain began at 1900 hrs and ceased nonstop until 2130. Moon shine for ~3 hrs (2200-0100). Wind ~35K. Another rainy night.
7-2	17	3	7N, 1P	RC	P = C-11 Up until 0600 majority of turtles & C of T-mile. Heavy rain most of night between T+A and T-mile, + windy and windier. Late nesters (pretty clear)
7-3	15	3	7	RL	2 new ID's. 1 old [illegible] C-121	Clear, windy, windy, windier. - Rain at Slow nights. Beginning tides by 1st, later many turtles were found.
7-4	14	1	6N, 1P	RL	P = C-51. Almost full moon - bright all night. Turtles were coming up and getting down to it, not very jumpy - surprisingly. - not many nests up - moon + pitch in them.

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7-5-90	12	1	9	RC	WOW - 9 for 12, good %. Low tide 2 hours before to close to HQ - one on south, other at high flow mark. Light clouds a few T-ms [illegible] N. - turtles ARE there - few turtles but busy night!
7-6-90	12	0	1	gfw	Clear night w/ light winds, rain (lite) @ 0350 for ~5°. Full moon ~bright Very slow turtle night!! Low tide.
7-7-90	10 1 Union	0	3	gfw	Clear, full moon ~ very bright. Low tide all night until mid day following. Slow turtle night. Turtles NOT "jumpy"?!
7-8-90	20	1 Nest only	8	gfw	Moonrise @ 2055/sets at sunrise; clear night, bright, very low tide thruout night. Turtles up early (by 2400) ALL!!
7-9-90	16	0	7	gfw	Skies clouded with 2 short showers; fairly light air. Low tide.
7-10-90	18	1	8 RC	RC	2 TURTLES NESTED ON THE BEACH (WEST END) TURTLES ALL ON S. SIDE OF ISLE, NONE ON N. — SEEM TO BE STAGING IN AREAS E AND W, LEAVING ALL ALONE BY PARTLY CLOUDY - BRIGHT MOONRISE ~2130
7-11-90	16	2 2 nests	6	RC	MOON RISE ~2345, MOSTLY BRIGHT - FEW CLOUDS. TURTLES ON LOW PART OF CRAWLING - MANY ON WEST BUT NOT NESTING, TOO BRIGHT. GO OUT 1 HOUR PRIOR TO TRIPLE, WHEN MOST TURTLES ARE COMING ASHORE - ARE MORE ALONE
7-12-90	9	1	3N, 1P	RC	8 C-98, EXTREMELY SLOW NIGHT!!! TURTLES TIME MISSED DUE TO 8-99 ONLY - MOSTLY CLEAR - CLOUDY, LIGHTS AFTER 0300, ~NOT MANY TRACKS, NO TURTLES ON WEST END, HIGH TIDE ~ 2330, WORKING OUT OF 3RD RELAY.
7-13-90	17	2 1 nest 1 nest	7N, 1P.	RC.	TURTLES TENDING TO NEST TOGETHER, ONE TURTLE CRAWLED PAST W/ ANOTHER AND DROPPED A WHILE. 2 NIGHT GROUPS - 30, 7 TOTAL, 17 TOTAL, AT ABOUT 2030, 6 TURTLES CAME UP ON AT LOW S. OF TENT. (TRANSITION). STILL WIND
7-14-90	16	2*	7N, 2P	gfw	*1 from Needs List. Clear night
7-15-90	17	0	10N, 1P	gfw	Clear, little cloudy (light cover) but no rain. 2335 hr = 3 basker se weend Moonrise @ ~ 0030
7-16-90	8	0	3N, 1P	gfw	Very slow! 5 of 8 turtles below pier's tent on south side.
7-17-90	19	0	5N, 2P, 1M	gfw	Partly cloudy night w/ few light, quick sprinkles; windy (~15k) Very low tide at 0600!!
7-18-90	18	1	3N, 1P	RC	MOSTLY CLEAR NIGHT, WINDS CALM BELOW 15 ~ 10-15 K + GUSTS, LOTS OF TURTLES BUT NOT MANY NESTS. CONSIDERABLE CRAWLING AT NIGHT BUT NOT MANY TURTLES. SLAUGHTER TIMES OF THE 12 TURTLES CRAWLING AT 0100, 7 @ 0130, 3 @ 0230, 2 @ 0330, ONLY 1 NEST WERE FOUND. LOTS OF TRACKS UP NORTH SIDE
7-19-90	15	1	8N, 1P	RC	Clear but quick. No shots on N. side. Relocated 2 nests to ocean. C-93 crawled over but bright sun and not come up tonight. Some crawling in pairs
7-20-90	18	1	9N, 4P	RC	Slept from 0200 → 0800. 3 problems in that time. C-36, 53, 65. (TRACKS, NO NESTS). TURTLES SPREAD OUT ALL OVER. CLEAR, WARM, SHEARWATERS, TURTLES coming from both N+S, RARELY NEST ON SOUTH. 2 CONFRONTATIONS OF 2 TURTLES
7-21-90	12	Ø	5N, 2P, 1M	RC	CLEAR, WARM, NIGHT, WITH RAIN. SLEPT FROM 0230 TO 0610. TURTLES ALL OVER. C-58 CAME UP FROM W, 25' OF TENT NIGHT DIGGING. WORK ON W END OF M = C-91
7-22-90	14	Ø	5N	gfw	clear, little windy. C-58 nested to NE of tent and slept along fence for 3+ hours!!
7-23-90	16	Ø	6N, 3P	gfw	Mostly clear; small, short sprinkles, HUGE squall w/ ↑ wind from 0515-0536. Low tide early 2 am ~0300. Super moon set right after sunset.
7-24-90	15	Ø	1N, 2P	Lit/gfw	partly cloudy & windy; rain in a.m. - Shower walks for training, 6:47 slept through a.m. walk - only 3 walks for night.
7-25-90	10 1 union	Ø	2N, 2P	Lit/gfw	
7-26-90	12	1 toys only	4N	YH	Cloudy evening, clear morning, one short sprinkle. Low tide ~ 0230
7-27-90	13	Ø	7	RCL	GOOD NIGHT! Busy.
7-28-90	12	Ø	4N, 3P	RC	NOT MANY TRACKS UP. CLEAR, WINDY, NIGHT after a day of rain. TURTLES SPREAD OUT SOME. MOSTLY SOUTH SIDE. - VERY SLOW TURTLE NIGHT. [illegible] 7:15 1st P = C-19 VG 176
7-29-90	15	Ø	8	gfw	Clear nite; ½ moon set @ ~ 0080 Turtles [50/E of Tent] Tide low at 0040
7-30-90	12	1	3N, 1P	gfw	Clear nite; low tide all night Turtles [N+S/E of T] Slow turtle nite.
7-31-90	10	Ø	2N, 2P	gfw	Beautiful night Turtles up late; nests ~ 0430!!
8-1-90	11	1 (from needs list)	4	RC	2 acres known to match / warm night, beautiful moonset / west - below horn. (3rd time for C-114)
8-2-90	17	1 (from needs list)	7N, 1P, 2M	RC	Mild night, bright. M's C-97, C-116
8-3-90	13	1	4	RC	3 light showers before dark - mostly clear, cirrus clouds bright night. ~ 1 nest known, but turtles did NOT emerge →

1994 Spawn ~500 to 600,
Relocated 2 Screen nests to "nursery"

Trees mostly taken out to T-pole.

I could see them building underneath, but they never came out.
Trees mostly up after dikes / Relocated 1 nest from W. spit at End - 6-11-94. (62 eggs)

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FRENCH FRIGATE SHOALS, 1989

Island: EAST

Date	# Turtles Up	# New Turtles IDed	# Nests	Invest.	Comments
8-4-90	11	∅	3	RC	Clear, brisk NE/NE. Water
8-5-90	15	∅	4N, 1P	RC	Light rain @ 2145. Lots of turtles up early. High cirrus clouds all night but still bright. Turtles not very jumpy
8-6-90	13	∅	6N, 1P, 1M	RC	M: 11, Fair breaking-E 0130 - overcast. All day w/ some heavy showers, mostly cloudy night, windy w/ 15-25K. 3rd night in a row with 1P+1M + most up during first hour. All but 1 nest between Lion of T-Pole & 1 South as usual.
8-7-90	10	∅	6	RC	Few light squalls throughout night of mostly clear, bright. All but 1 nest in 4 of T-pole. Most of tracks came up at 0130, and some immediately returned to water.
8-8-90	12	∅	5	RC	Beautiful night - only one more to go - Boo Hoo!! Turtles not jumpy although bright night. A lot many tracks of Island turns to be pretty pretty deserted
8-9-90	15	∅	7	RC	My last night on East - Boo Hoo! But it was good. Lots of nests - most good, lots of trails of the few turtles throughout night but mostly bright. Most turtles up at dusk, 4 were hatched at least some with the last coming out a short while ago at 5. Radio, tide went up
8-10-90	10	∅	4N, 2P	GN JLM	SOME SQUALLS, CHILLY
8-11-90	10	∅	3P, 1M	GN JLM	LOTS OF SHOOTING STARS, SEAL PUPPY BORN BTWN 2330 - 0030; C-106, C-164 CRAWLED ALL NIGHT!
8-12-90	10	∅	6	glw	Clear night ½ moon up at ~0100 Add 3 turtles up before 0200.
8-13-90	8	∅	5N, 1P	glw	Clear, low tide throughout night. Lots of nests!!
8-14-90	5	1	4N !!	glw	Clear and cool; moon a sliver. Slow turtle night. New ID was taken #. 8/13
8-15-90	2 !!!	0	0	glw	WHEW ~ SLOW!! Another ebb... hopefully not for long; clear night.
8-16	8	2	2N, 1P	glw	clear night, breezy. 3 eggs collected from C-148 and C-149 ea.
8-17	7	0	2N, 2P	glw	clear & windy; one squall 3 eggs collected from C-114 and C-184 ea.
8-18	4 !!	0	1	glw	Dark ~ no moon, prob. new moon) clear w/ few squalls Eggs (3) collected from 20-C Tan Turtle!
8-19	13	1	5N, 2P	glw	clear w/ rain squalls, windy; low tide @ sunrise > hard rain in late eve. 3 eggs coll. = C-96, 91, 98, 150 ea.
8-20	7	0	3	glw	clear w/ lite showers 3 eggs coll. from C-56 & C-143 ea.
8-21	2	0	0	glw	squalls per. throughout night; huge one at 0516!! Yowza!!
8-22	6	∅	3N	JLM	BIG SQUALLS, LOTS OF WIND, FUZZY GIRLS
8-23	5	∅	3N	JLM	3 EGGS EA. COLLECTED FROM C-112 & C-133 CLEAR NIGHT, SQUALLS TO SOUTH
8-24	6	∅	2N, 1M, 1P	JLM	HUGE METEOR 0450 - LIT UP ENTIRE ISLAND; SKY WENT DOWN TO SOUTH FUZZY GIRLS...
8-25	6	0	3	GLN	¼ moon set ~2040 Clear but windy
8-26	7	0	2	GLN	2137 hr C-35 Basking @ E end
8-27	2	0	1M	GLN	C-110 definitely did not nest; turns seem to be just digging body pits - lots of front flipper action or just
8-28	1	0	0	GLN	def. did not nest 1730 hr C-35 and C-124 Scrapping ½ moon set @ ~0140 Basking @ NE end
8-29	2	0	1	gln	Heavy rain showers throughout night... 1930 sun set; C-35 B@NE end rain squalls throughout nite
8-30	3	0	2	gln	No turns til after 2250 Clear night!!
8-31	5	0	1N, 1M	gln	clear night; low tide throughout nite ¾ moon set @ 0330..

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Island: EAST

Date	# Turtles Up	# New Turtles IDed	# Nests	Invest.	Comments
09-01-90	4	0	0	KRN	Lots of Patrolling - no nesting - Bright night
09-02-90	2	0	2P	KRN	calm, windless, bright (almost Full moon) night
9-03-90	5	0	4	ajn	Full moon!!! Bright night. Low Tide throughout most of night
9-04	6	0	2	ajn	↓
9-05	1	0	1	ajn	↓
9-06	0	0	0	ajn	!!!
9-07	2	0	1	ajn	Moon up ~2030. Bright.
9-08	1	0	1	ajn	Moon up ~ 2145 almost ½) Clear, starry Night!
9-09	1	1	0	ajn	Wow 2 new turt!! VERY Jumpy (boing!) DID NOT untrave
9-10	1	0	0	JLM	WINDY NIGHT, VERY LOW TIDE MOON UP ~ 2430
9-11	0	0	0	ajn	
9-12	0	0	0	ajn	No tracks at all. Windy
9-13	0	0	0	ajn	No tracks, cool & Windy!! Huge rain squall 0120-0430 lightning to south
9-14	1	0	0	ajn	Dark; tide low @ 0500 storm/shower in am
9-15	1	0	0	AJN	Last nite; only 20-e, Windy & rainy throughout the night. Goodbye girls! And East Isl!! :^

GREEN TURTLE IDENTIFICATION FORM
FOR NESTING FEMALES,
FRENCH FRIGATE SHOALS, 1990

W575 ?

10/23 Entry qlw

Island	Date	1990 Paint ID	Color	Tag #	Tag Pos	New or Old	Carapace Length	Tumors	Tumor Position	Comments
TERN	5/16/90	[B	6-C	9740	R	O	99.0 (Gw)	Ø		Basking - by gas pad
				9742	L	O				
	5/17/90	—A	18-C	W562	R	N				Basking
	5/19/90	[C	3-C	W563	R	N	93.5cm (otherwise in light defect)			RRF Vemissing up & digging by barracks - ended up on runway next morning - helped back to sea
				W564	L	N				
	5/23/90	[D	1-C	W565	R	N	93.6	3	EI	ex-bi left eye
				W566	L	N				
	5/24/90	[E	8-C	6869	L	O	98.8	Ø		Nest 5/24 0700 Nest #2 Nest #17 Nest #27
				6870	R	O				
	5-26-90	[F	9-C	W567	L34	N	98.6	Ø		Piece missing on RT. Rear flipper AND RT. Rear Scutes scutes fut
				W568	R34	N	98.6	Ø		
	5-28-90	A	18-C	W569	L	N	104.0	Ø		
	5-31-90	G [		10364	L23	O	101.5	Ø		RFF w/ large scrape/bite on dorsal, prox. surface (outer epidermis peeling off). Also "bite marks" ? on LFF prox. dorsal surface and below neck. & barely able to move fairly recent. RFF
		G	7-C	10370	R23	O				
		G		W570	R	N				LFF w/ poss. tag tear (old). Old recovery tags not seen
		G [		W571	L	N				until one new tag already on...
	6-3-90	B —		9740	R	O	96.2	Ø		check 5-10-90 (different carapace length) Nest # 10 6-09-90 CL 96.2 qlw
duplic.	6-4-90	B [		9740	R	O		Ø		
				9742	L	O		Ø		
		H —		W573	R	N				crawl @ 1400 - was digging before.
		I [	17-C	9745	L	O	94.0	Ø		HAS OLD R. TAG BUT PUT IN UPSIDE DOWN + BURIED
				W572	R34	N	94.0	Ø		WITH IN S.R.N. - COULD NOT TURN IT AROUND TO READ DON'T THINK APPLIED PROPERLY
				~~9745~~	~~L~~	~~O~~				
	6-5-90	J [	4-C	W574	R23	N	96.2	Ø		* DO NOT KNOW WHEN TAG W575 IS.
				W576	L	N	96.2	Ø		NEST # 12
duplic	6-7-90	E		6870	R	O				digging near runway seems - dug 4 false pits then went back to ocean
		K		W577	L	N	95.2			
		K		W578	R	N				

GREEN TURTLE IDENTIFICATION FORM
FOR NESTING FEMALES,
FRENCH FRIGATE SHOALS, 1989

10/23 Entrd o/n

Island	Date	1989 Paint ID	Color	Tag #	Tag Pos	New or Old	Carapace Length	Tumors	Tumor Position	corrected 7/8 Lost W597 Comments
TERN	06-09-90	Y	(2-C)	~~W595~~ W580	L	N	96.3	Ø *	~~Sh~~ PART →	LOST TAG W580 - tag, rear RFL ;
	↓ *	C-60(Z)	East Isl							* *
"M"	06-11-90			W582	R	N				NEST # 20 PARTIAL (L) HIND FLIPPER
	↓			W583	L	N				
L	6-12-90	110-C		8107	L	O				NEST # 21
N	6-21-90			6271	R	O				NEST # 28
O	6-22-90	C-78	(East Isl)							NEST # 29
L	6-25-90	110-C		8106	R	O	109.0	Ø		* the last 1 in 110 looks like a }10-C
P	6-28-90	10-C		W584	R	N	93.5	Ø		MADE THIS ONE 10-C ALSO / HAVE TO CHANGE
	↓	See Comments		W585	L	N	93.5	Ø		WHEN SIGHTED AGAIN!!! - WDPT
Q		11-C		W586	R	N	95.2	Ø		LR fl.f 1/4 missing (picture file - may see a
	↓	11-C		W587	L	N	95.2	Ø		tube - not mush)
AA	7-03-90	C-7	EAST							
R	7-04-90	13-C	Ø	W588	R	N	94.6	Ø		LHF missing; Nest #41
	7-04-90	13-C	↓	W589	L	N	↓	↓		
S	7-04-90	14-C	*	W590 ~~W590~~	L	N	101 cm	Ø		NEST # 42 * tag on (L) lost by T-18
	7-04-90			W591	R	N				
duplic N	7-6-90	15-C		6271	R	O	101.1	Ø		
	7-6-90	15-C		W593	L	N	101.1	Ø		
Juven. *	7-8-90	BABY BASKER ON NE BEACH		W592	R	N	37.3	Ø		HAD SMALL "V" Left Rear Flipper -
	7-8-90	DON'T KNOW ♂ or ♀	LF	W594	L	N	37.3	Ø		DISTAL WEB BETWEEN 3,4 Falanges from tip.
T	7-9-90	21-C		W595	R	N				
	7-9-90	21-C		W596	L	N				
U	7.14.90	16-C		W598	L	N	95.5			} made 16-C upside-down
	7.14.90	16-C		W599	R12	N	95.5			
V	7-19-90	19-C		W581	L23	N	95.9	Ø		L1° tag location; narrow flap ; L23 position
	7-19-90	19-C		W597	R	N	95.9			L34 w/ no skin in between; R LFF

GREEN TURTLE IDENTIFICATION FORM
FOR NESTING FEMALES,
FRENCH FRIGATE SHOALS, 1989

10/23 Entd q/n

Island	Date	1989 Paint ID	Color	Tag #	Tag Pos	New or Old	Carapace Length	Tumors	Tumor Position	Comments
Tern W	7-20-90	20-C	Ø	W961	L	N	91.5	Ø		
	↓	20-C		W952	R	N	↓	↓		
T	7-26	21-C	Ø	—	—	—	95.2	Ø		Tags already recorded: W595R, W596L
BB	7-29-90	23-C		W953	R	N	91.8			
	" "			W954	L	N	91.8			
X	8-12-90	221-C	Ø	W956	L¾	N	93.4			LOST TAG W955 (FLIPPER TEAR L PRIMARY) hole in carapace L 4 SCUT ABOUT 5" DIAMETER OLD WOUND
				W957	R	N	1			
Juvenile	9-30-90	Crab Bch		W958	L	N	44.5	0		Juvenile Tagged on Crab Beach - IT was basking
	"			W959	R	N	↓			
Juvenile	10-15-90	@ Boat Dock		W960	RFL	N	44.5	Ø		>
				W961	LFL	N	↓	↓		
Juvenile	10-15-90	@ Boat dock		W962	LFL	N	44.5	Ø		>
				W963	RFL	N	↓	↓		
Juvenile	10-23-90	@ Boat dock		10588	LFL	0	47.6	Ø		
	↓			10589	RFL	0	↓	↓		
Juvenile	10-23-90	@ Boat Dock		W858	RFL	N	48.0	Ø		
	↓			W859	LFL	N	↓	↓		

GBE = Geo Balazs entry #

GREEN TURTLE IDENTIFICATION FORM FOR NESTING FEMALES, FRENCH FRIGATE SHOALS, ~~1989~~ 1990

Ent'd 6/1 gbw ✓

Island	Date	1989 Paint ID Nose/Back	Color	Tag #	Tag Pos	New or Old	Carapace Length	Tumors Size	Tumor Position	Comments
East	05-06-90	C-1	W							
	05-07-90	C-2	W	3633	R	O	101.3	0	—	½ RRF (GBE 185) ✓
	↓	C-2	↓	6135	R2	O	↓	↓	↓	
	↓	C-2	↓	3632	L	O	↓	↓	↓	
	↓	C-2	↓	6259	L2	O	↓	↓	↓	
	5-09-90	C-1	W	WG13	R34	N	91.0	0	—	RFF w/ tag hole; tags are applied well
	↓	C-1	↓	WG14	L	N	↓	↓	↓	
	5-10	C-4	W	3587	L	O	99.0	0	—	(GBE 184) ✓
	↓	C-4	W	3597	R	O	↓	↓	↓	
	↓	C-5	W	2787	L	O	104.0	0	—	(GBE 49) ✓
	↓	C-5	W	4255	L34	O	↓	↓	↓	
	↓	C-5	W	958	R	O	↓	↓	↓	R tag is old, large w/ big #s.
	5-14	C-7	W	8174	L	O	99.0	0	—	
	↓	C-7	W	8178	R	O	↓	↓	↓	
	↓	C-8	W	2234	R	O	101.4	0	—	No left tag recovered; poss. scar ?10144 #91 ✓
	↓	C-8	W	6123	R2	O	↓	↓	↓	
	5-15	C-9	W	313_	R	O	95.5	0	—	Couldn't read last digit
	↓	C-9	W	6138	L3	O	↓	↓	↓	LRF 2/3 gone; only stump left (healed) 168 ✓
	↓	C-9	W	3137	L	O	↓	↓	↓	
	5-17	C-10	W				101.5	0	—	
	↓	C-11	W				100.5	0	↓	
	↓	C-12	W	6073	L	O	101.0	0	—	LRF 2/3 msg (healed) 328 ✓
	↓	C-12	W	6074	R	O	↓	↓	↓	R2 tag present but completely covered by C2003
	5-19	C-11	W	WG15	R	N	100.0	0	↓	tag, appl. gd.
	↓	C-11	W	WG16	L	N	↓	↓	↓	
	↓	C-14	W	9376	R	O	97.5	0	↓	299 ✓
	↓	C-14	W	5060	L	O	↓	↓	↓	

GREEN TURTLE IDENTIFICATION FORM
FOR NESTING FEMALES,
FRENCH FRIGATE SHOALS, 1989 1990

Entd 6/1 glw

Island	Date	1989 Paint ID	Color	Tag #	Tag Pos	New or Old	Carapace Length	Tumors	Tumor Position	Comments
East	5-19 cont'd	C-15	W	8468	R	O	102.0	Ø	—	RRF ?
	↓	C-15	W	8470	L	O	↓	↓		
	↓	C-15	W	___9	R34	O	↓	↓		$CaCO_3$ - can't read
	5-20	C-16								
	↓	C-17	W	W617	R	N	95.5	Ø		ON THE C-17, THE 1 LOOK LIKE [redacted] C-17
		C-17	W	W618	L	N	↓	↓		THE CLOSED WELL BUT LOTS OF OVERHANG
		C-17	W	W619	L34	N	↓	↓		
		C-2								all O.K
		C-18	W	5319	R2	O	98.1	Ø		tag on 2nd scale #71 ✓
		C-18	W	3846	L2	O	↓	↓		tag upside down on 2nd scale
		C-15	W	8469	R34	Ø	102.0	Ø		
	↓	C-19	W							NEEDS DASH BETWEEN C AND 19
	5-21	C-16	W	2767	L	O	95.5			L tag not on 3rd Not clipped W625 L34 #123 ✓
		C-16	W	W625	L34	N	95.5			? 2976
		C-20	W	4264	L	O		1 (#2)	4	size was #2 #310 ✓
		C-20	W	4265	L34	O				
		C-20	W	W626	R	N				
		C-19	W	W627	L	N	101.0	Ø		4th scute on flipper missing - completely (L)
		C-19	W	W628	R	N	101.0	Ø		3rd + 4th scute on flipper missing (R)
		C-21	W	3411	R	O	101.4	Ø		?
		C-21	W	3422	L	O	101.4	Ø		

ONLY IF YOU HAVE INFO PUT ON THIS ONE

GREEN TURTLE IDENTIFICATION FORM
FOR NESTING FEMALES,
FRENCH FRIGATE SHOALS, 1989 1990

Entd 9/1 gw ✓

Island	Date	1989 Paint ID	Color	Tag #	Tag Pos	New or Old	Carapace Length	Tumors	Tumor Position	Comments
EAST	5-22	C-20	W				97.5			edit
	↓	C-16	W	5342	R2	O				TAG IN SIDEWAYS SO I PUT A NEW ONE IN (W622) #123 ✓
		C-16	W	W622	R	N				PUT IN PRIMARY POSITION
		C-22	W	W624	R	N	92.3	ø		
	↓	C-22	W	W623	L	N	92.3	ø		
	5-23	C-23	W	2232	L	O				RT TAG MISSING AND LOST W621 when Applying W66 NOT LOST #67 ✓ IS ON HERE
	↓	C-26	W	W620	R	N	98.0	ø		} TAGS ARE CORRECT.
		C-26	W	W629	L	N	98.0	ø		
		C-27	W	W630	R	N	101.7	ø		
	↓	C-27	W	W631	L	N	101.7	ø		
	5-24	C-28	W				(100.1) → REMEASURED ON 5/25 ~ DO NOT RECORD THIS			HAS TAGS BUT COULD NOT READ THEM BEFORE SHE WENT TO HER
	↓	C-29	W	W632	R	N	96.3	ø		
	↓	C-29	W	W633	L	N	96.3	ø		
	5-25	C-30	W	10087	R	O	92.0	ø		
	↓	C-30	W	10088	L	O	92.0	ø		
		C-28	W	6188	L	O	100.7	ø		USE the carapace length for 5-25 NOT 5-24 #123 ✓ CAR. LENGTH WAS TAKEN ON 5-24 while moving NESTS AT 5-25
		C-28	W	9309	R	O	100.7	ø		Tow eggs (3) scattered around nest when flipping sand
		C-25	W	5412	L	O	101.6	ø		} white SCAR TISSUE about 3" long on #109 ✓ NECK (@3 left)
		C-25	W	5145	R2	O	101.6	ø		
		C-25	W	3702	R	O	101.6	ø		
		C-31	W	W634	R12	N	98.5	ø		} THESE TWO ARE APPLIED WELL OUT TO CLOSE TO THE EDGE (MAY MOUNTAINS RIP OUT)
		C-31	W	W635	L23	N	98.5	ø		
		C-31	W	W636	R34	N	98.5	ø		} THESE TWO ARE APPLIED WELL
	↓	C-31	W	W637	L34	N	98.5	ø		* C-31 was missing (EC) below the beam

GREEN TURTLE IDENTIFICATION FORM
FOR NESTING FEMALES,
FRENCH FRIGATE SHOALS, 1989 1990

Entrd 4/1 gw

Island	Date	1989 Paint ID	Color	Tag #	Tag Pos	New or Old	Carapace Length	Tumors	Tumor Position	Comments
~~EAS~~	5-26-90	C-32	W	W638	R	N	94.3	Ø	—	LFF - distal end missing; tags gd.
	↓	C-32	W	W639	L	N	↓	↓		
		C-3	W	W640	R	N	94.5	Ø	—	anterior carapace w/ old kink/crack (fr. L→R)
		C-3	W	W641	L	N	↓	↓		
		C-33	W	6103	L	O	99.2	Ø	—	LRF slightly mangled; diff. to DEC. *1 barn on RRF ?
		C-33	W	6053	R	O	↓	↓		Barns on carapace C3, L4 Lat, R2 Lat.
		C-6	W	W642	R	N	97.4	Ø	—	
	↓	C-6	W	W643	L	N	↓	↓		
	5-27	C-37	W	5471	R	O	103.3	Ø	—	Barn. at very dorsal, ant. carapace #201 ✓
		C-37	W	5475	L	O	↓	↓		
		C-34	W	3366	L	O	97.6	Ø	—	RFF ½ missing ?
		~~C-37~~	~~W~~							
		C-38	W	6145	R	O	104.5	Ø	—	?
		C-38	W	6160	R3	O	↓	↓		
		C-38	W	6119	L	O	↓	↓		(or 6117L) L2 tag pres. (---9) but can't read
	5-28	C-24	W	~~6368~~	~~R~~	~~O~~	100.0	~~Ø~~	—	
		C-41	W	3368	R	O	100.2	Ø	—	?
		C-41	W	W644	L	N	↓	↓		
	5-29	C-42	W	5243	R	O	104.5	Ø		R1 w/ tag tear 19 ✓
	↓	C-42	W	5244	L1	O	↓	↓		
	↓	C-42	W	2692	L	O	↓	↓		

GREEN TURTLE IDENTIFICATION FORM
FOR NESTING FEMALES,
FRENCH FRIGATE SHOALS, 1989/1990

Entd 6/9 ✓

Island	Date	1989 Paint ID	Color	Tag #	Tag Pos	New or Old	Carapace Length	Tumors	Tumor Position	Comments
	5-30	C-44	W	W645	R	N	93.4			head side of 6 on flipper a growth ~3": DID NOT LOOK LIKE OTHER TUMORS. LOOKED LIKE IT WAS GROWING FROM WITHIN. (Deformation - protrubance)
		C-44	W	W646	L	N	93.4			
		C-45	W	3362	L	O	102.6	ø		Looked like RT. tag got RIPPED out of primary position so I added W647RN.
		C-45	W	W647	R34	N	102.6	ø		
		C-46	W	W648	R	N	96.8	ø		
		C-46	W	W649	L	N	96.8	ø		
		C-47	W	5339	R	O	102.8	ø		845
		C-47	W	3181	L	O	102.8	ø		
		C-48	W	W650	R	N	96.0	ø		
		C-48	W	W651	L	N	96.0	ø		
		C-49	W	W652	R	N	98.7	#2	UNDERSIDE OF 7	R2 scale is missing but flesh still there.
		C-49	W	W653	L	N	98.7			L2 scale is missing but flesh still there
	5-31	C-50	W	W655	R	N	99.5	ø		
		C-50	W	7963	L	O	99.5	ø		846
		C-10	W	W654	LR	N				has club foot (L Rear)
		C-10	W	3255	R	O				TAG UPSIDE DOWN ?
		C-51	W	W656	R12	N	103.5	ø		TAG NOT CLOSED COMPLETELY.
		C-51	W	W657	L	N	103.5	ø		
		C-51	W	W658	R34	N	103.5	ø		HAD TO CLOSE W/ PLIERS
		C-52	W	9333	R12	O	97.8	ø		895
		C-52	W	W659	L	N	97.8	ø		
		C-53	W	W660	R	N	101.2	ø		FAST DIGGER
		C-53	W	W661	L	N	101.2	ø		
		C-43	W	W662	R	N	101.5	ø		SMALL CUT IN R. Rear flipper
		C-43	W	W663	L	N	101.5	ø		
	6-1	C-54	W	9987	R	O	103.6	ø		UPSIDE DOWN and ½ closed by skin. - CLOSED W/PLIERS (Tag) ?
		C-54	W	W669	R23	N	103.6	ø		So I put a new tag on.
		C-54	W	W664	L	N	103.6	ø		

GREEN TURTLE IDENTIFICATION FORM
FOR NESTING FEMALES,
FRENCH FRIGATE SHOALS, 1989 1990

6/3 updated needs list Int'd 6/9 gw

Island	Date	1989 Paint ID	Color	Tag #	Tag Pos	New or Old	Carapace Length	Tumors	Tumor Position	Comments
	6-1(cont)	C-55	W	W665	L	N	94.9	ø		
		C-55	W	W666	R	N	94.9	ø		
		C-36	W	4258	R	O	105.0	ø		large cut in R. rear flipper LR cut 355
		C-36	W	4257	L	O	105.0	ø		
		C-56	W	W667	R	N	92.5	#1	#6	TUMOR OF SHELL → TUMORS
		C-56	W	W668	L	N	92.5	#1	#5	TUMOR OF NECK
	6-2	C-57	W	W670	L	N				
	6-03	C-59	W	W 672	L	N	101.2	ø		removed tag 9960 R – not closed
		C-59	W	W 673	R	N	↓	↓		
		C-60	W	9353	L	O	92.0	ø		RFF ½ missing; LRF "tattered" ?
		↓	W	9356	R	O	↓	↓		
		C-61	W	9327	L	O	94.5			?
		↓	W	9328	R	O				
		~~C-63~~ C-49	W	W 674	L34	N	98.0	ø		tags applied 4 2° location due to uneven
		C-63	W	W 675	R34	N	↓	↓		skin @ 1° location
		C-62	W	8244	L23	O	105.7			82
		↓	W	10095	R34	O	↓			
		C-62	W	3590	R	O	↓			
		C-64	W	7186	L	O	89.5			?
		C-15	W	8469	R34	O	—	—		needs list; verif. tag 8470L ?
	6-04	C-13	W				100.0			
		C-66	W	W676	R	N	103.0	ø		
		C-66	W	W677	L	N	↓	↓		
		C-68	W	W678	L	N	105.0	ø		
		C-68	W	W679	R	N	↓	↓		
		¢								

GREEN TURTLE IDENTIFICATION FORM
FOR NESTING FEMALES,
FRENCH FRIGATE SHOALS, 1989 1990

ent'd 6/9 gfw ✓

Island	Date	1989 Paint ID	Color	Tag #	Tag Pos	New or Old	Carapace Length	Tumors	Tumor Position	Comments
East	6-05	C-69	W				93.0			
		C-13	W	W680	L	N	100.2	Ø		
		C-13	W	W681	R	N	↓	↓		
	6-06	C-76	W	W682	L	N				
		C-76	W	W683	R	N				
		C-69	W	W684	L	N	92.9	Ø		
		C-69	W	W686	R	N	↓	↓		
	NEW?	C-23	W	2232	L	O	103.8	Ø		67
	NEW?	C-23	W	W621	R23	N	↓	↓		applied prev. '90; not closed; closed w/ pliers.
		C-77	W	3383	L	O	99.8	Ø		?
		C-77	W	3336	R	O	↓	↓		

* CANT FIND TAGS W701 → W725 ⇒ W25 not given to us by G.B.

GREEN TURTLE IDENTIFICATION FORM
FOR NESTING FEMALES,
FRENCH FRIGATE SHOALS, 1989 1990

Entd 6/19 gw ✓

Island	Date	1989 Paint ID	Color	Tag #	Tag Pos	New or Old	Carapace Length	Tumors	Tumor Position	Comments
	6-7-90	C-79	W	W688	R	N	99.5	∅		
		C-79	W	W687	L	N	99.5	∅		
		C-70	W	W690	R	N	94.5	∅		looks like R3 on front flipper grew upside down.
		C-70	W	W689	L	N	94.5	∅		½ size and deformed.
		C-74	W	W691	L	N	92.6	∅		
		C-74	W	W692	R23	N	92.6	∅		
		C-81	W	7?2??	R	O	96.4	∅		Has both tags but covered w/ CaCO3 - wait till next trip to read them - so I can scrape off CaCO3
		C-58	W	W694	R	N	102.9	#1	front #6	
		C-58	W	W695	L12	N	102.9			
		C-80	W	10164	R	O	90.8	∅		
		C-80	W	10163	L	O	90.8	∅		
		C-82	W	10207	R	O	98.9	∅		
		C-82	W	10543	L	O	98.9	∅		
		C-73	W	W693	L	N	97.0	—		
	6-8	C-84	W	W698	R	N	90.8	∅		only scute → R. R. flipper
		C-84	W	W699	L	N	90.8	∅		Chunk missing →
		C-71	W	W696	R	N	95.6	∅		
		C-71	W	W697	L	N	95.6	∅		
		C-85	W	W726	R12	N	95.3	∅		
		C-85	W	W727	L	N	95.3	∅		
		C-72	W	W760	L34	N			*	CANT FIND TAGS W701 → W725
	6-9	C-86	W	W728	L	N	102.9	∅		
		C-86	W	2585	R	O	102.9	∅		112
		C-87	W	W729	L12	N	98.4	#1	#5	2 small tumors against body.
		C-87	W	W730	R	N	98.4	#1	#6	1 " " " "
		C-88	W	5322	R	O	103.0	∅		} had splotches of CaCO3 all over carapace. 208
		C-88	W	5394	L	O	103.0	∅		}

GREEN TURTLE IDENTIFICATION FORM
FOR NESTING FEMALES,
FRENCH FRIGATE SHOALS, 1989 1990

entd 4/11 gw ✓

Island	Date	1989 Paint ID	Color	Tag #	Tag Pos	New or Old	Carapace Length	Tumors	Tumor Position	Comments
	6-9 (cont)	C-89	W	W731	L	N	94.5	Ø		
		C-89	W	W732	R	N	94.5	Ø		
		C-91	W	W733	L	N	94.3	Ø		
		C-91	W	W734	R	N	94.3	Ø		
		C-92	W	W735	L	N	94.7	Ø		} 2 big barnacles on R. (1,2) rim scutes
		C-92	W	W736	R	N	94.7	Ø		
		C-93	W	W737	L	N	93.0	Ø		} lots of Barnacles on L. Anterior side. - a couple on R. anterior side. (TOTAL ~20)
		C-93	W	W738	R	N	93.0	Ø		
		C-73	W	W739	R	N	—	Ø		4th left scute abrasion to bone. (extremely jumpy)
	6-10	C-90	W	W741	L	N	100.7	Ø		
		C-90	W	W742	R	N	100.7	Ø		
		C-34	W	W740	R	N	—	—		W740 needs to be recorded better
		C-94	W	9264	L	O	99.4	Ø		?
		C-94	W	W743	R3Y	N	99.4	Ø		W743 needs to be recorded 7/9 Tag missing ?
	6-11	C-95	W	W744	L	N	93.0	Ø		
		C-95	W	W745	R	N	↓	↓		
		C-96	W	W746	L	N	97.0	Ø		
		C-96	W	W747	R	N	↓	↓		
	6-12	C-35	W	8167	L	O	89.8	Ø		RRF w/ bite mark (healed) ?
		C-35	W	8168	R	O	↓	↓		
		C-98	W	~~W~~ W748	L	N	102.0	Ø		
		C-98	W	W749	R	N	↓	↓		
		~~C-99~~					~~111.0~~			
	6-13	C-97	~~W~~	W750	L	N	112.5	Ø		
		C-97		W751	R	N	↓	↓		
		C-100	W	3447	R	O				?
	6-14	C-103	◯	10193	L	O	101.5	Ø		?

GREEN TURTLE IDENTIFICATION FORM
FOR NESTING FEMALES,
FRENCH FRIGATE SHOALS, 1989 1990

End'd 6/20 gw ✓

Island	Date	1989 Paint ID	Color	Tag #	Tag Pos	New or Old	Carapace Length	Tumors	Tumor Position	Comments
EAST	6-14 cont'd	C-8	W	W752	L	N				(needs list)
		C-105	W	W754	L	N	100.1	ø		
		C-105	W	W755	R	N	↓	↓		
	6-15	C-107	W	W756	R	N	93.7	ø		
		C-107	W	W757	L	N	93.7	ø		
		C-104	W	W758	R	N	97.5	ø		
		C-104	W	W759	L	N	97.5	ø		
		C-64	W	W760	R23	N	—	ø		
		C-108	W	W761	L	N	98.5	ø		
		C-108	W	W764	R	N	98.5	ø		
		C-109	W	W762	R	N	94.4	ø		
		C-109	W	W763	L	N	94.4	#1	E1	TUMOR WAS BEH. NO LEFT EYE.
	6-16	C-40	W	W768	R	N	94.6	ø		TAG TEAR LEFT!
		C-106	W	W765	L	N	99.6	ø		
		C-106	W	W766	R	N	99.6	ø		
		C-103	W	10192	R34	O	—	—		
		C-103	W	10193	L	O	—	—		
	CORRECT!!! TAGS...	C-110	W	W767	R	N	96.4	ø		
		C-110	W	W769	L	N	96.4	ø		
		C-15	W	8471	[redacted]	O				TAG WAS FOUND ON LEFT REAR FLIPPER, APPEARS WELL! [redacted]
		C-111	W	5201	L1	O	102.5	ø		TAG UPSIDE DOWN #206
		C-111	W	5200	L3	O	102.5	ø		TAG UPSIDE DOWN
		C-111	W	3707	R	O	102.5	ø		
		C-111	W	3830	R2	O	102.5	ø		TAG UPSIDE DOWN.
	6-17	C-40	W	W770	L3	N	—	—		
	6-18	C-112	—				100.1	ø		TAGS HAVE CAUGHT ON TERN CURRENT READER → WON'T TELL NEXT TIME. NO PAINT DUE TO RAIN.
		C-113	W	W771	R	N	95.2	ø		
		C-113	W	W772	L	N	95.2	ø		

GREEN TURTLE IDENTIFICATION FORM
FOR NESTING FEMALES,
FRENCH FRIGATE SHOALS, 1989 1990

ent'd 6/27 gw

Island	Date	1989 Paint ID	Color	Tag #	Tag Pos	New or Old	Carapace Length	Tumors	Tumor Position	Comments
	6-19	NO	NEW	TURTLES	ID'ed.					
	6-20	NO NEW	TURT	ID'ed (only	1 M not tooled ~ 8 tags read)					
	6-21	NO NEW	ID'S							
	6-22	C-115	W	8238	R	O	96.6	0		✓ #387
	↓	C-115	W	9343	L	O	↓	↓		
	6-23	C-116	W	WT73	L	N	99.0	1	E1	
		C-116	↓	WT74	R	N	↓	↓		
		C-118	W	8171	R	O	95.0	2,3,3	E1, E2, N1	✓ #353
		C-118	↓	8163	L	O	↓	222	N1, N1, N1	

GREEN TURTLE IDENTIFICATION FORM
FOR NESTING FEMALES,
FRENCH FRIGATE SHOALS, 1989 1990

Entd 7/3 gpw

Island	Date	1989 Paint ID	Color	Tag #	Tag Pos	New or Old	Carapace Length	Tumors	Tumor Position	Comments
	6-24-90	C-114	W	W775	R	N	88.6	Ø		CARAPACE IS CURVED - DOUBLE CHECKED! — RT. REAR FLIP. ONLY HAS 1,2 SCUTES all others missing looks like they have been PEELED OFF (OLDER) →
		C-114	W	W776	L	N	88.6	Ø		
		C-115	W	9343	L	O				JUST A double check because (L) had CARAP #381
		C-115	W	8238	R	O				ON it - removed (R) (JUST MAP NOT ON NESTS) (NOT included on Daily NESTS SHEET)
		C-119	W	W777	L	N	97.4	Ø		
		C-119	W	W778	R	N	97.4	Ø		
	6-25	C-120	W	W780	L	N	98.0	Ø		~~[illegible] only (no paint)~~
		C-120	W	~~W779~~ [illegible]	R	N	98.0	Ø		
		C-121								MOTHER ONLY
		C-122	W	W781	L	N	98.3	Ø		
		C-122	W	W782	R	N	98.3	Ø		
	~~[illegible]~~	~~[illegible]~~	~~[illegible]~~	~~[illegible]~~	~~[illegible]~~					
	6-27	C-123	W	W785	L	N	97.4	Ø		
		C-123	W	W786	R	N	97.4	Ø		
	↑ ditto	C-124	W	W787	L	N	102.8	Ø		beautiful shell.
	↓	C-124	W	W788	R	N	102.8	Ø		
	6-26	C-24	W	W783	L	N	—	Ø		
		C-24	W	W784	R	N	—	Ø		
	6-28	C-125	W	9776	L	O	98.2	Ø		RRF ½ msg, LRF ⅓ msg Ø
		C-125	W	9777	R	O	↓	↓		carap. indent. cvrg dorsal 3-4 cat scute
	6-29	C-126	W	W789	L	N	102.0	Ø		
		C-126	W	W790	R	N	↓	↓		
		C-76					96.6			remeasure woren ✓tag
		C-101		W792	R	N	102.0	Ø		
		C-101		3263	L	O	↓	↓		Ø
	7-1	C-128	W	3622	L	O	95.0	Ø		#94
		C-128	W	W791	R	N	↓	↓		

C-114 → 3rd scale looks to be upside down.
SF looks like from 3→ distal part of RF. Bent flip
surrounding or someone has cut them off – even removed,
and kind of flashy coloured. (Nail finish.) had healed well.

GREEN TURTLE IDENTIFICATION FORM
FOR NESTING FEMALES,
FRENCH FRIGATE SHOALS, 1989 1990

Entd 7/11 dw

Island	Date	1989 Paint ID	Color	Tag #	Tag Pos	New or Old	Carapace Length	Tumors	Tumor Position	Comments
EAST	7-2-90	C-129	W	W793	L	N	91.2	#2	Other	FAIRLY LG. TUMOR IN SHAPE LIKE FINGERPRINT ON UNDERSIDE OF R-3 (ARMPIT) (~2.5 cm DIAM)
		C-129	W	W794	R	N	91.2	2 @ 1.5 1 @ 3	Other	1 - MEDIUM SIZE UNDER R of SHAPE OF R-1 1 - Small " " R-2 " " " 2 - MEDIUM " " IN SHAPE OF FINGERPRINT IN ARMPIT OF R-2
		C-130	W	W795	L	N	101.4	ø		
		C-130	W	W796	R	N	101.4	ø		
		C-131	W	W797	L12	N	92.0	ø		AT ON 1,2 BECAUSE SKIN IN PRIMARY WAS TOO THICK, THOUGHT TAG MIGHT CUT INTO/CUT IN AT A LATER DATE & I CHOSE L,R, 1,2 FOR TOP POSITIONS.
		C-131	W	W798	R12	N	92.0	ø		RIGHT REAR FLIP IS A STUB (~3" long.)
	7-3-90	C-121	W	W799	L	N				
	"	C-121	W	W900	R	N				
		C-132	W	W801	L	N	98.7	ø		
		C-132	W	W802	R	N	98.7	ø		TAG CLOSED BUT NOT SECURELY AT/NEAR BASE - TRY AGAIN TO FIX.
		C-133	W	W803	L	N	91.5	ø		
		C-133	W	W804	R	N	91.5	ø		
	7-4-90	C-134	W	W805	L	N	93.0	ø		
		C-134	W	W806	R	N	93.0	ø		
	7-5-90	C-135	W	W807	L12	N	97.5	ø		AT ON R12 + L12 BECAUSE SKIN WAS TOO THICK AT PRIMARY POSITION. 1,2 INCHES IS OUR BEST ESTIMATE FOR APPLICATION.
		C-135	W	W808	R12	N	97.5	ø		1-6 SCUTES ON RIGHT OF MIDLINE AT POSTERIOR END OF SHELL (Front)
	7-9-90	C-94		W809	R	N	—	—		*MISSING PREV. R12, Vent. Tag 9264L → W743R24 Lost (applied 6/10)

Daily Pots

	# Pots	New	Nests	Init.
7-5	12	1	9	RC
7-6	12	0	1	qlw
7-7	10 (junior)	0	3	
7-8	20	1	8	
7-9	14	0	7	

GREEN TURTLE IDENTIFICATION FORM
FOR NESTING FEMALES,
FRENCH FRIGATE SHOALS, 1989 1990

7/20 ERH & glw

Island	Date	1989 Paint ID	Color	Tag #	Tag Pos	New or Old	Carapace Length	Tumors	Tumor Position	Comments
EAST	7-10-90	C-137	W	W810	R	N	99.7	#2 (1)	E2	TAGS ARE CORRECT! TUMOR COVERING ½ of EYE - looks like wet SLAB. (R)
		C-137	W	W812	L	N	99.7	#2 (1)	E1	TUMOR COVERING ¾ of EYE - " " " " (L)
	7-11-90	C-83	W	W811	L	N	96.2	#? (2)	F1	TAGS ARE CORRECT! 2 tumors one under 2 scute, other under 3 scute. Both in thick-like-structure. (A pouch) surrounded by skin.
		C-83	W	W813	R	N	96.2			
		C-127	W	W814	R	N	96.6	#2 (1)	F3	Quarter size tumor on dorsal side of F3 Rt. 3+4 scute missing on front flipper
		C-127	W	W815	L	N	96.6			
	7-12-90	C-138	W	W816	R	N	95.7	ø		
		C-138	W	W817	L	N	95.7	ø		
	7-13-90	C-81	W	7951	L	O	-	-		
		C-81	W	7952	R	O	-	-		
		C-139	W	W818	R	N	97.9	ø		
		C-139	W	W819	L	N	97.9	ø		
	7-14-90	C-112		9779	L	O	99.4	—		Cacos removed so tags could be read
		C-112		9780	R	O	↓			
		C-140		W820	L	N	100.5	1,1,6-#1,5-#1,1,1		Numerous #1 size tumors.
		C-140		W821	R	N	↓	J1, E1, N1, N3, F2, F3		
	7-17-90	C-56		W822	R	N	—	—		*No R tag present on turt but not on recds list LOST TAG W666?

GREEN TURTLE IDENTIFICATION FORM
FOR NESTING FEMALES,
FRENCH FRIGATE SHOALS, ~~1989~~ 1990

8/3 cont'd gw

Island	Date	1989 Paint ID	Color	Tag #	Tag Pos	New or Old	Carapace Length	Tumors	Tumor Position	Comments
EAST	7-18-90	C-141	W	W823	R12	N	100.8	Ø		
		C-141	W	W824	L	N	100.8	Ø		
	7-19-90	C-142	W	W825	L	N	95.0	Ø		shell has 7x7½cm taken out of R. back end above tail. Flaking around missing part. - NO floss missing.
		C-142	W	W826	R	N	95.0	Ø		old wound
	7-20-90	C-143	W	7587	L	O	95.7	Ø		~~HAS 2 TAGS ON R. SIDE. ONE 34 other prong~~
		C-143	W	7588	L34	O	95.7	Ø		L Rear flip is ½ gone. - old wound
		C-143	W	7585	R	O	95.7	Ø		R. R-most tag is wide - dorm and tissue seems to [illegible] around it. Tag is very ragged. Ø
		C-143	W	7586	R34	O	95.7	Ø		R34 tag was buried within skin but could undo it out and read w/ ease.
	7-21-90	NO	NEW	ID'S						
	7-22-90	"	"	"						
	7-25-90	C-38	W	W830	R34	N	—	—		
	7-26-90	C—144	—	W832	LFL	N	99.1	~~Ø~~		Turtle w/ extremely high carapace CCW=98.6 SCL 84.0 SCW=69.2
		C—144	—	W833	RFL	N	↓	↓		NO MOTOTOOL
	7-30-90	C-145	O	W831	L	N	102.4	~~Ø~~		
		C-145	O	W834	R	N	↓	↓		

GREEN TURTLE IDENTIFICATION FORM
FOR NESTING FEMALES,
FRENCH FRIGATE SHOALS, 1989~~1990~~

8/23 Entd ✓

Island	Date	1989 Paint ID	Color	Tag #	Tag Pos	New or Old	Carapace Length	Tumors	Tumor Position	Comments
EAST	08-01-90	C-16	W	—	-	-	—	Ø		Right rear flip is a stump
	08-02-90	C-121	W				95.5	Ø		1985" V-notch in L. rear flip which extends into flip ~ ½ way.
	08-03-90	C-146	W	W835	R	N	103.0	Ø		
		C-146	W	W837	R34	N	103.0	Ø		
		C-146	W	W836	L	N	103.0	Ø		
	08-07-90	C-141	W	W823	R12	~	—	—	—	JUST CHECKED THE POSITIONS!
		C-141	W	W824	L	—	—	—	—	(FROM NEEDS LIST)
	8-14-90	C-147	Ø	WB38	R	N	104.5	Ø		
		C-147	Ø	WB39	L	N	104.5	Ø		
	8-16-90	C-148	Ø	WB40	L	N	98.3	Ø		
		C-148	Ø	WB41	R	N	98.3	Ø		
		C-149	Ø	WB42	L	N	95.9	Ø		
		C-149	Ø	WB43	R	N	95.9	Ø		
	8-18-90	20-C	TERN	WB44	R34	N	91.7	Ø		R34 tag applied b/c RFL tag w/ lrg overhang; loose
	8-19-90	C-150	Ø	WB45	L	N	98.9	Ø		
		C-150		WB46	R	N	98.9	Ø		

GREEN TURTLE IDENTIFICATION FORM
FOR NESTING FEMALES,
FRENCH FRIGATE SHOALS, ~~1989~~ 1990

10/1 Grid'd ✓

Island	Date	1989 Paint ID	Color	Tag #	Tag Pos	New or Old	Carapace Length	Tumors	Tumor Position	Comments
EAST	~~6-22-90~~									
	6-9-90	C-151	0	W848	R34	N	85.9	0		
				W849	L	N	↓	↓		

GREEN TURTLE IDENTIFICATION FORM
FOR NESTING FEMALES,
FRENCH FRIGATE SHOALS, 1989

10/23 Entd on Turtle DBF

Island	Date	1989 Paint ID	Color	Tag #	Tag Pos	New or Old	Carapace Length	Tumors	Tumor Position	Comments
WHALE	08-08-90	C-83	East							up 2102 X
SKATE		1	W	W851	RFL	N	95.4	∅		up 2110 C
		1	W	W852	LFL	N	95.4	∅		
		2	W	3398	LFL	O	98.3 ?			up 2124 C→H2O HRLat :.
		3	W	W853	R34	N	96.8	∅		up 0030 C
		3	W	W854	LFL	N	96.8			
		C-48	East							up 0030 Eggs@0335
		4	No pt	W855	LFL	N	103.5	∅		LHF stump up 0335 C→H2O
		4	"	W 856	RFL	N	103.5	∅		
		C-135								up 0038 Eggs@ 0355
		unkn.	∅							next to 9p X
		14-C	Tern	W857	LFL	N	—	—		Basking.

United States Department of the Interior

FISH AND WILDLIFE SERVICE

HAWAIIAN & PACIFIC ISLANDS NWR COMPLEX
P.O. BOX 50167
HONOLULU, HAWAII 96850
PHONE: (808) 541-1201 FAX: (808) 541-1216

FAX TRANSMISSION

TO: CRAIG ROWLAND 10 MAY 93

~~5 May 1993~~

~~TO: George Balazs~~

FROM: Craig Rowland
Assistant Refuge Manager

FAX: 943-1290

SUBJECT: Turtle Activity Update

NUMBER OF PAGES: 1

REMARKS:

Here is the turtle activity report from French Frigate Shoals for 5 May 1993.

Date	Island	Observation
8 April	Tern	Female on beach above bern on SE side.
26 April	Whaleskate	2 false pits, 1 possible nest
26 April	East	1 nest
27 April	Trig	1 nest
28 April	Gin	* 1 dead adult male, tracks but no diggings
29 April	East	34 baskers, 1 pair copulating, tracks and false pits
29 April	Whaleskate	24 baskers, 3 pair copulating, tracks and false pits
29 April	Trig	2 baskers
3 May	Trig	10 baskers
3 May	Whaleskate	2 possible nests

MEASURE CARAPACE LENGTH

CRAIG - WOULD BE √ALUABLE TO GET BOTH HUMERI, AND IF POSSIBLE STOMACH SAMPLE.

NOTE- Suggest IT BE DRAGGED INLAND AND LET TO RECOVER CATER WHEN DECOMPOSED APART — BEST George

Aloha,

Craig

Wild Side *(cont.)*

rious to forest growth or agriculture, or that constitute a nuisance or health hazard." Although one could argue the efficacy and humaneness of methods chosen to "take" feral pigs, the justification and authority to establish those methods is clear in the law. A peculiar provision of this law states that the Department of Land and Natural Resources shall "Distribute, free of charge, . . . game [e.g. feral pigs] for the purpose of increasing the food supply of the State. . ."

Section 195, HRS establishes a statewide "Natural Area Reserve System" (NARS) to preserve in perpetuity land and water areas which support relatively unmodified communities of natural flora and fauna in Hawaii. The law gives broad powers to the Board and the Natural Area Reserve Commission to "preserve, manage and protect the reserve system." As the majority of reserves are forested areas attractive to feral pigs, control of these herbivorous mammals is paramount. Currently, hunting is permitted in NARS areas under administrative rules authorized under Section 183D.

Section 195D, HRS (Hawaii's "Endangered Species Act") authorizes the BLNR to ". . . carry out programs for the conservation, management and protection of such (indigenous, threatened and endangered) species and associated ecosystems." Given that feral pigs are a major component of these native communities, this mandate includes assessing and mitigating any deleterious impacts they may have.

Section 205, HRS (the Land Use law) establishes the "Conservation District" for protecting watersheds, water sources, indigenous or endemic plants, threatened and endangered wildlife and preventing floods and soil erosion. These are to be areas which are ". . . of value for recreational purposes . . . and other permitted uses not detrimental to a multiple use conservation concept." Reasonable and laudable ideals, but the crunch comes when managers try to manage areas for multiple uses including sustained yield feral pig hunting and protection of watersheds and native ecosystems.

Section 711-1100, HRS (Cruelty to Animals) defines cruelty as ". . . every act, omission, or neglect whereby unjustifiable physical pain, suffering, or death is caused or permitted." An offense is committed when a person "intentionally, knowingly or recklessly. . . mutilates, poisons, or kills without need any animal other than insects, vermin and other pests. . ." Some would argue that almost any method of "taking" wild pigs (other than live-trapping) would fit this definition. Others would point out the words "unjustifiable," "recklessly," and "without need" in the law as exceptions to it in the case of feral pigs which provide recreation and may do damage to vegetation (pests?). This law also explicitly states that nothing in it shall prohibit ". . . the use of dogs in hunting wildlife including game. . ."

Hunting rules follow the statutes with respect to pigs—fleshing out the law more precisely, and providing for fair, equitable, and humane use or control. On public hunting areas, Chapter 123 permits rifles, muskets, shotguns, spears and knives (with dogs), and bows and arrows; but prohibits explosive or poison arrows, tracer or full metal jacketed bullets, crossbows, blow guns, pellet guns, air guns, hand guns, traps, slingshots, poison, explosives, and snares.

Except for needing a hunting license, there are no restrictions on the taking of feral pigs on private lands. They may be taken at any time using any method and there are no bag limits. In lieu of hunting licenses, the BLNR may issue permits to anyone to control feral pigs

(continued on page 13)

Monitoring of Green Sea Turtle Nesting Activity at French Frigate Shoals

Craig Rowland, Assistant Refuge Manager
USFWS, Refuges & Wildlife Resources, Honolulu

The U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) are working cooperatively to monitor nesting activity of green sea turtles, *Chelonia mydas*, at East Island, French Frigate Shoals, in the Northwestern Hawaiian Islands.

Although various monitoring techniques have been used in the past, the present method involves tagging, measuring, and inspecting nesting females for tumors (fibropapilomas), as well as marking nests and monitoring hatching success throughout the nesting season. The data are being used to develop and refine a turtle population model. The population model makes it possible to estimate the total population nesting on East Island from shorter duration monitoring efforts, as well as predict when those monitoring efforts should be conducted to yield the most useful information.

Monitoring of the 1992 nesting season was recently completed, and this year saw the largest number of nesting turtles (387 on East Island) since monitoring efforts began, 19 years ago.

In conjunction with the nesting study this year, three nesting females were instrumented with satellite transmitters in order to follow their migration from French Frigate Shoals to their feeding grounds. Two of these turtles traveled to Kaneohe Bay on Oahu, and the third to Johnston Atoll, 400 miles to the south of French Frigate Shoals.

GREEN SEA TURTLE

HATCHING SUCCESS FORM

NON TUMOR/NON CONTROL NEST

Island: EAST

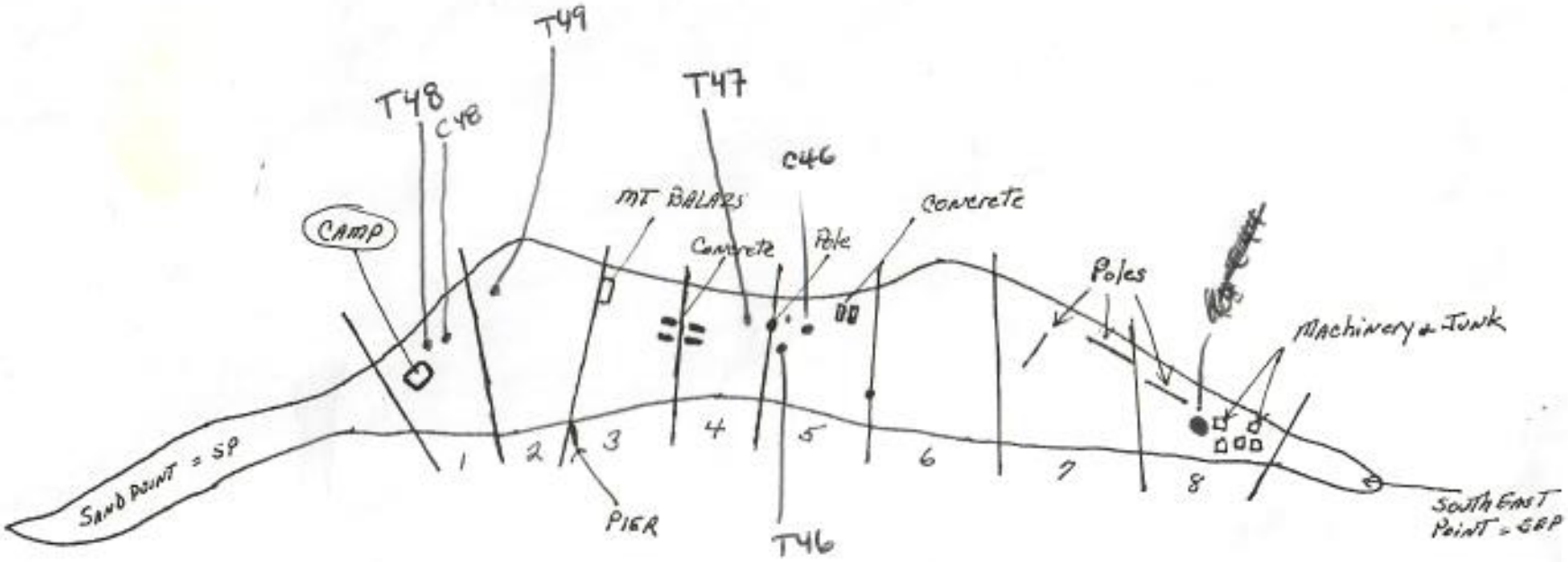
Year: 1991

	Nest #	Hatch date/Time	pre-hatch pit	Total Eggs	"Alive" Hatched	Alive: Escaped unassisted	Alive: Trapped OK	Alive: Trapped Yolk	Dead but developed: Full	Dead but developed: 3/4	Dead but developed: 1/2	Dead but developed: 1/4	Bad Eggs: Infert	Bad Eggs: Rotten	Comments	
8-23	AA	?	8-19-91	111	96	88	8	Ø	Ø	Ø	Ø	9	4	2	RELOCATED NEST	REC
8-24	BB	?	8-19-91	112	103	18	85	Ø	7	Ø	Ø	2	Ø	Ø		REC
8-28	CC	?	8-19-91	98	85	71	14	Ø	4	1	Ø	Ø	—	8		
8-28	DD	8-18-91	8-18	96	93	7	86	Ø	1	Ø	Ø	Ø	—	2	HATCHLINGS TRAPPED THROUGHOUT CHAMBER.	
8-30	EE	8-23-91	8-23	95	81	18	63	Ø	Ø	7	1	Ø	—	6		
8-30	FF	8-23-91	8-23	77	69	38	31		1	Ø	Ø	Ø	—	7		
8-30	GG	8-23-91	8-23	117	98	47	51	Ø	16	Ø	Ø	Ø	—	3	MOST HATCHLINGS WEAK.	
	HH															
	II															
	JJ															
	KK															
	LL															
	MM															
	NN															
	OO															
	PP															
	QQ															
	RR															
	SS															
	TT															
	UU															
	VV															
	WW															
	XX															
	YY															

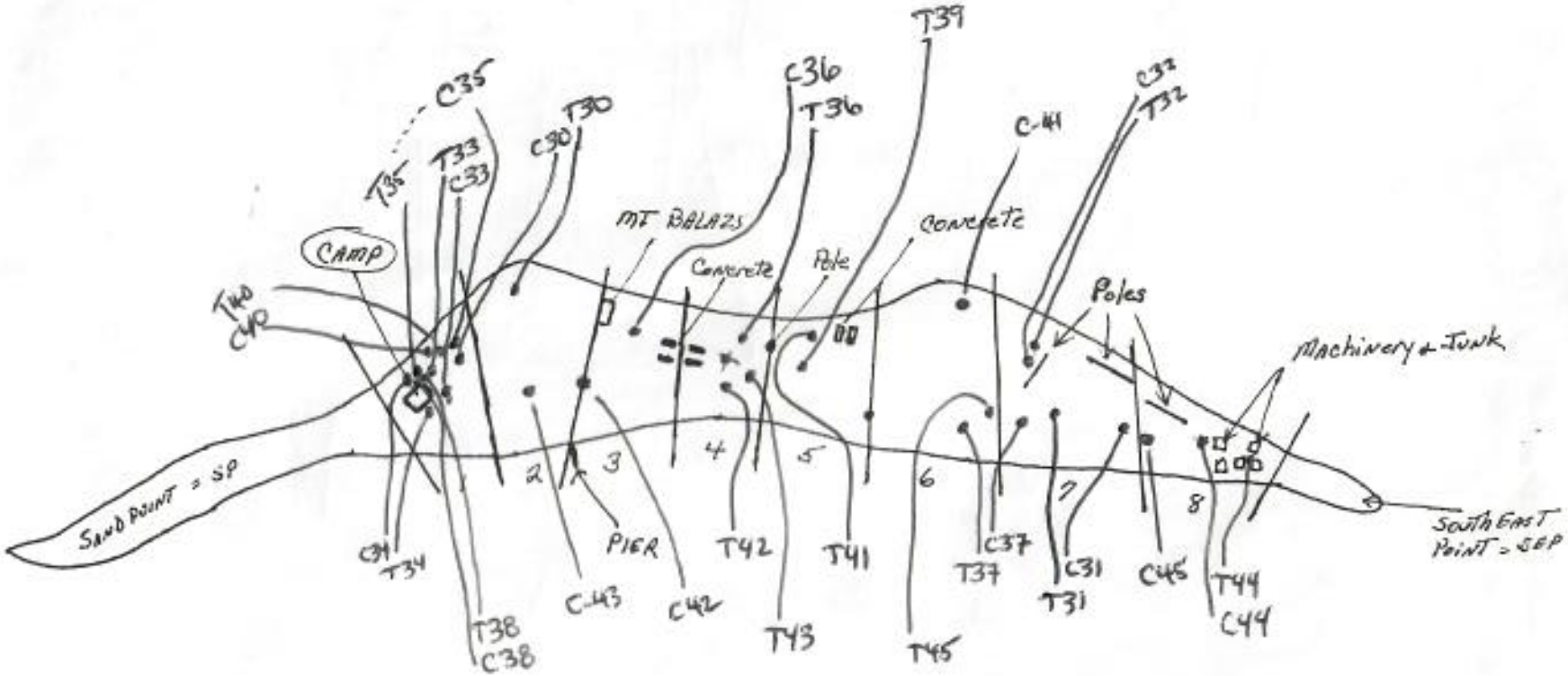
MISCELLANEOUS TUMORED TURTLE DATA 1991

Please send to George Balazs

TUMOR AND CONTROL NESTS T46-
(1991) EAST ISLAND.



TUMOR AND CONTROL NESTS 36 - 45
(1991) EAST ISLAND



GREEN SEA TURTLE

NEST FORM

FOR TUMOR/CONTROL NESTS

Island: East

Year: 1991

HATCH/TIME Prehatch Total "Alive" escaped Trapped Bad eggs
Hatchl. unassisted OK / Yolk full/3/4 1/2 1/4

Nest #	NEST END / Time	Location E-W	N-S	Turtle Tag #'s	Part #	# False Pits	Hatch date / time	# Incubation days	Stake Position	Comments	
C21				86	83	18	65 Ø	1 Ø	Ø Ø	1	JLM
T21											
C25				73	71	60	Ø	Ø 1	Ø Ø	1 Ø	NJK
T25				58	51	27	24	1 Ø	Ø Ø	6	CSA

HATCHING SUCCESS FORM

Island: EAST — FOR TUMOR/CONTROL NESTS — Year: 1991

T+C.	Nest #	Hatch date / Time	pre-hatch pit	Total Eggs	"Alive" Hatched	Alive: Escaped unassisted	Alive: Trapped OK	Alive: Trapped Yolk	Dead but part. developed: Full	3/4	1/2	1/4	Bad Eggs: Infert	Bad Eggs: Rotten	Comments	
7-28	T-1	~7-22-91	?	69	45	16	29	Ø	18	Ø	Ø	2	4	Ø		REC
7-28	C-1	~7-22-91	?	105	27	4	23	1	15	7	12	35	3	5	SMELLS ROTTEN	REC
8-6	T-2	?	8-2-91	86	81	15	64	Ø	2	3	Ø	Ø	2	Ø	NEST 145° FROM STAKE NOT DUE N. ?	REC
8-13	*C-2*	8-8-91	8-8-91	116	91	58	33	Ø	3	Ø	Ø	3	Ø	19	POSSIBLE. NEST LOCATED 2' N. OF STAKE.	REC
8-11	T-3	8-5-91	8-4-91	112	81	49	32	Ø	10	8	Ø	Ø	7	6	HATCHED @ 20:45 SEE NOTES ON BACK.	GCS
8-7	C-3	8-3-91	8-3-91	113	83	21	64	Ø	Ø	1	2	21	4	Ø		REC
8-11	T-4	8-6-91	8-6-91	91	66	53	13	Ø	2	9	3	Ø	8	3		GCS
8-16	C-4	8-12-91	8-11-91	112	60	53	7	Ø	Ø	14	9	3	5	21		REC
8-17	T-5	~8-12-91	8-12-91	113	93	23	70	Ø	3	Ø	Ø	3	Ø	14	~50 TRAPPED ∠8" BELOW SURFACE.	REC
8-23	C-5	?	8-A-91	118	91	79	14	3	Ø	Ø	2	1	9	10	3 ALIVE in egg shell	REC
8-13	T-6	8-9-91	8-9-91	45	43	7	36	Ø	1	Ø	Ø	Ø	1	Ø	@ LEAST 6 EGGS EXPAN. ON 7-17.	REC
8-13	C-6	8-9-91	8-9-91	130	116	62	54	Ø	Ø	1	2	5	2	4		REC
8-17	T-7	8-13-91	8-13-91	99	72	31	41	Ø	4	1	1	1	Ø	20	MOST TRAPPED @ BOTTOM.	GCS
	C-7	?	?	79	78	78	Ø	Ø	1	Ø	Ø	Ø	Ø	Ø		JLM
	T-8															
	C-8															
9-26	T-9														NO NEST FOUND	
8-26	C-9	?	8-20-91	143	123	67	56	0	5	6	1	2	3	3		REC
	T-10			93	93	93	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø		JLM
	C-10			77	71	71	Ø	Ø	4	2	Ø	Ø	Ø	Ø		NJK
	T-11			73	67	67	Ø	Ø	Ø	1	1	Ø		4		NJK
	C-11			No Egg found											No Nest found	NJK
9-26	T-12			89	82	82	Ø	Ø	4	Ø	Ø	Ø	Ø	3		NS
9-26	C-12			114	109	86	23	Ø	4	Ø	Ø	Ø	Ø	1		NS
	T12														Washed out	

T-3: ONE OF THE 3/4 DEVELOPED EMBRYOS HAD NOTICEABLY SWOLLEN NECK/GULAR REGION. COULD NOT DETERMINE IF FLUID FILLED OR NOT. OTHERS IN SAME STAGE OF DEVELOPMENT DID NOT HAVE THIS CONDITION.

LOCATIONS OF ALL TURTLE AND CONTROL NESTS

T1 ✓
C1 ✓
T2 ✓
C2 ✓
T3 ✓
C3 ✓
T4 ✓
C4 ✓
T5 ✓
C5 ✓
T6 ✓
C6 ✓
T7 ✓
C7 ✓
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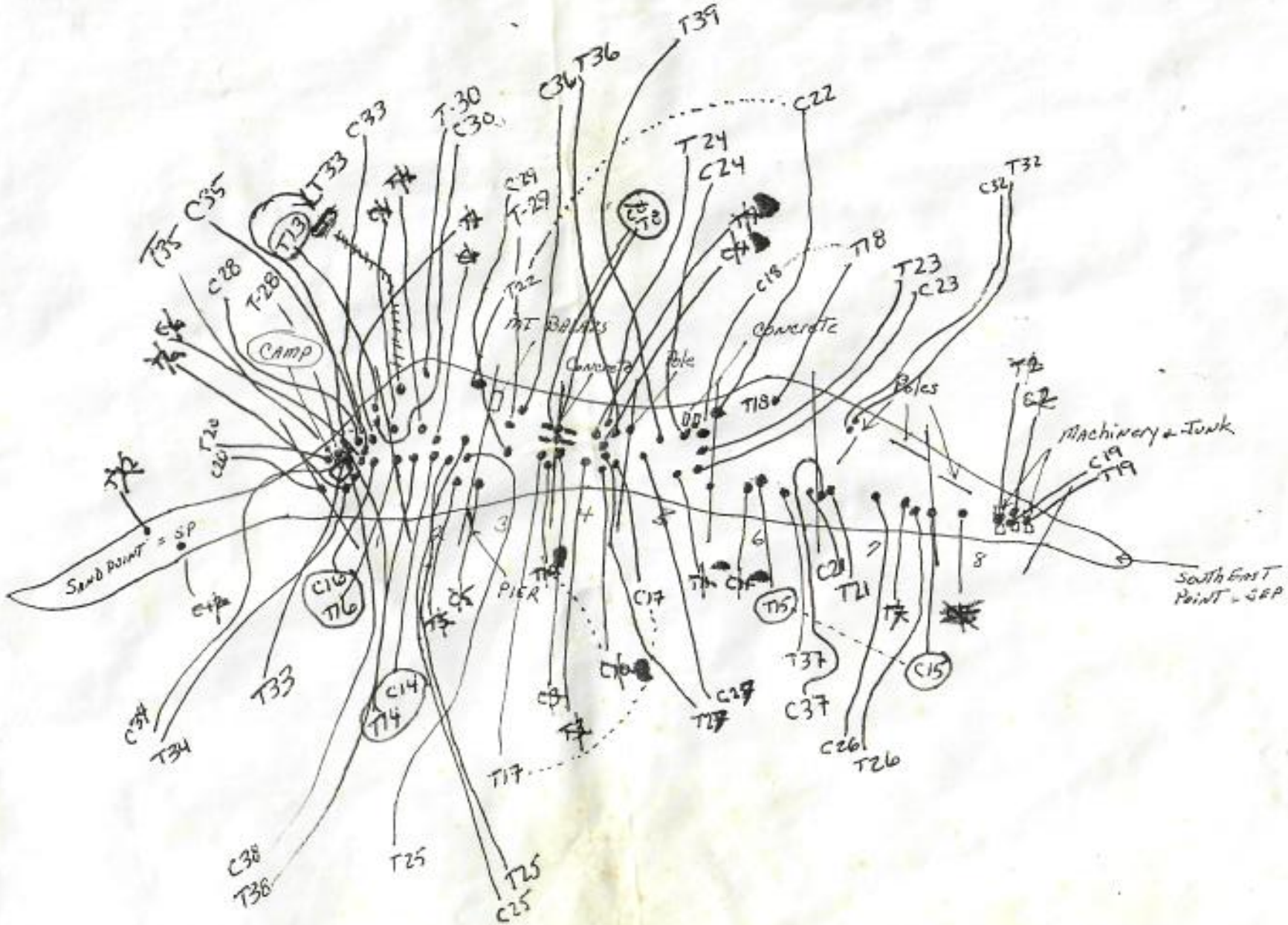
T15 ✓
C15 ✓
T16 ✓
C16 ✓
T17 ✓
C17 ✓
T18 ✓
C18 ✓

⊗ or X = done
O = do



LOCATIONS OF All TUMOR AND CONTROL NESTS

T1 ✓
C1 ✓
T2 ✓
C2 ✓
T3 ✓
C3 ✓
T4 ✓
C4 ✓
T5 ✓
C5 ✓
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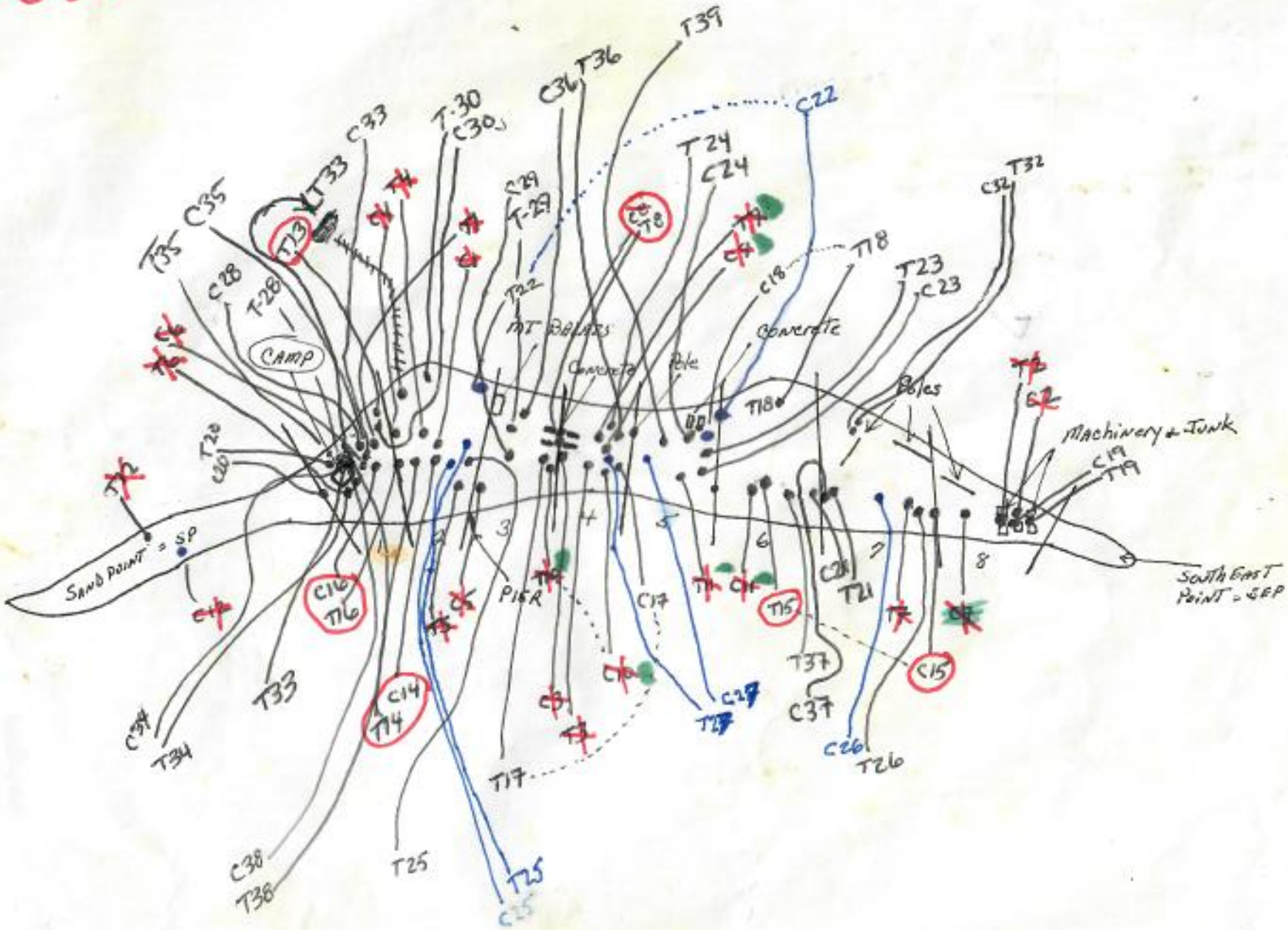
T18 ✓
C18 ☐

⊗ or X = done
O = do



GREEN SEA TURTLE

HATCHING SUCCESS FORM

FOR NON-TUMOR/CONTROL NESTS

Island: EAST Year: 1991

EXC.	Nest #	Hatch date/Time	pre-hatch pit	Total Eggs	"Alive" Hatched	Alive: Escaped UNASSISTED	Alive: Trapped OK	Alive: Trapped Yolk	Dead but developed: Full	Dead but developed: 3/4	Dead but developed: 1/2	Dead but developed: 1/4	Bad Eggs: Infert	Bad Eggs: Rotten	Comments	
8-6	A	8-2-91	8-2-91	94	36	21	15	Ø	Ø	7	3	Ø	48	Ø	EXCAVATED 8-6-91	REC
8-7	B	8-3-91	8-3-91	70	43	24	21	Ø	2	3	1	3	16	Ø	EXCAVATED 8-7-91	REC
8-7	C	8-4-91	8-3-91	89	71	26	40	Ø	8	1	Ø	6	8	Ø	EXCAV. 8-7-91	REC
8-7	D	8-3-91	8-3-91	92	75	64	7	Ø	2	3	3	0	13	Ø	EXCAV. 8-7-91	REC
	E	8-5-91	8-5-91	87	57	36	21	Ø	4	18	Ø	Ø	8	Ø		GCS
	F	8-5-91	8-5-91	70	36	19	17	Ø	1	Ø	Ø	1	32	Ø		GCS
	G	8-5-91	8-5-91	107	89	43	46	Ø	11	2	Ø	Ø	3	2		GCS
	H	8-6-91	8-6-91	117	66	44	22	Ø	13	7	Ø	0	5	32		GCS
8-13	I	8-7-91	8-6-91	105	101	35	66	Ø	2	Ø	Ø	Ø	2	Ø	MOST OF GG LOOKED EMACIATED.	REC
8-14	J	?	8-6-91	135	122	51	71	Ø	1	3	Ø	3	1	5	51 TRAPPED < 8" FROM SURFACE.	REC
8-14	K	?	8-6-91	97	46	21	25	Ø	1	1	4	7	1	37		REC
8-16	L	?	8-11-91	115	103	38	65	Ø	1	3	0	4	Ø	4		REC
8-16	M	8-11-91	8-8-91	115	68	19	49	Ø	10	4	4	7	7	15	NEST 1' DUE W. OF T-8.	REC
8-18	N	8-12-91	8-12-91	112	112	112	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	~1/3 OF OBS. SHELLS WERE OLD + PERFORATED.	GCS
8-18	O	8-12-91	8-12-91	64	36	20	16	Ø	2	5	2	Ø	10	9	OLD EGGS FROM LAST YEAR "NEXT DOOR".	GCS
8-19	P	8-14-91	8-14-91	88	75	36	39	Ø	1	1	Ø	Ø	9	2	HATCHLINGS ENERGETIC!	GCS
8-19	Q	8-14-91	8-14-91	55	48	2	46	Ø	3	2	Ø	Ø	Ø	2	LOTS OF OLD SHELLS, NOT COUNTED.	GCS
8-19	R	8-14-91	8-14-91	136	113	30	83	Ø	3	10	1	Ø	4	5		GCS
8-20	S	8-15-91	8-15-91	97	88	69	19	Ø	Ø	2	1	Ø	1	5		GCS
8-20	T	8-14-91	8-15-91	114	92	17	75	Ø	17	1	Ø	Ø	1	3		GCS
8-21	U	8-14-91	8-15-91	152	139	126	13	Ø	1	5	Ø	Ø	3	4	MOSTLY FINE ORGANICS, SAND, MIXED SM. CORAL RUBBLE	GCS
8-21	V	8-13-91	8-14-91	122	122	122	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	MOSTLY FINE ORGANICS, SAND MIXED SM. CORAL RUBBLE.	GES
8-23	W	?	8-19-91	146	95	60	35	Ø	27	Ø	6	14	Ø	4		NJK
8-23	X	?	8-19-91	114	95	26	69	Ø	1	6	6	Ø	Ø	6		NJK
8-24	Y	?	8-17-91	153	128	86	42	Ø	3	6	4	7	Ø	5		NJK

GREEN TURTLE IDENTIFICATION FORM FOR NESTING FEMALES
FRENCH FRIGATE SHOALS

1992

YEAR 1992 ISLAND East PAGE 1 OF __

DATE	MOTO ID	TAG NO.	NEW OR OLD	TAG POS	CARAPACE LENGTH (CURVED)	CARAPACE LENGTH (STRAIGHT)	TUMORS	TUMOR POS.	COMMENTS
5/1/92	U-30	9361	O	LFL	91.0 cm		None		Tag in but not much flesh holding it Notch in LeftRear flp aprx 2" deep
		A428	N	RFL					
		A429	N	LFL					A429 misapplied - still on turt, not closed
		A430	N	LFL					
	U-31	3552	O	RFL	91.6		None		RHFL is just a stump - looks deformed
		A431	N	LFL					LHFL Tag good application - easy to
		A432	N	LHFL					apply - no resistance
5/2	U-32	10068	O	RFL	93.5		None		
		A433	N	LFL					
		A434	N	LHFL					LHFL Good + easy application
	U-33	10034	O	LFL	100		None		
		10033	O	RFL					
5/3	U-34	A435	N	RFL			1 [redacted]	F2F3	Tumor exam not thoroughly done [redacted]
		A436	N	LFL					
05-05-92	U-35	6125	O	LFL	99.4		None		
		A437	N	RFL					
		A438	N	LHFL					Easy application - no Resistance.
	U-36	A439	N	LFL	99.8		1	F2	
		A440	N	RFL					
		A441	N	LHFL					Easy Application - no Resistance.
	U-37	6213	O	LFL	104.0		None		Tag tear in L2
		W-47	O	RFL					

GREEN TURTLE IDENTIFICATION FORM FOR NESTING FEMALES
FRENCH FRIGATE SHOALS

YEAR 1992 ISLAND East PAGE 2 OF __

DATE	MOTO ID	TAG NO.	NEW OR OLD	TAG POS	CARAPACE LENGTH (CURVED)	CARAPACE LENGTH (STRAIGHT)	TUMORS	TUMOR POS.	COMMENTS
5/5	Unk	2765	O	LFL					
	C-4								could only read old C-4 moto before going into water
	U-32	A442	N	RHFL					Easy application.
5/6	Unk								Has mark on 3rd R. scute like X
	U-38	3357	O	LFL	104.8		none		~~RFL~~ LHFL has cut from outside margin to mid flipper, 2" deep
		3389	O	RFL					RHFL has wedge cut from outside to inside margin 2" deep
		A 444	N	LHFL					LHFL easy application
	U-34	A-443	N	LHFL					Easy application
5/7	U-42	3587	O	LFL	97.7		None		old C-4 moto still legible. Still some paint in grooves
	(C-4)	3597	O	RFL					
		A-447	N	LHFL					LHFL Good application, easy
	U-39	10114	O	RFL	92.7		None		
		10115	O	LFL					
		A 445	N	LHFL					LHFL Good application
	U-40	8220	O	LFL	102.3		none		Counted 26 barnacles 1-4 cm
		8221	O	RFL					diameter on head (2) and
		A 446	N	LHFL					carapace (24). LHFL Good Application.
	Unk								No Tags
	U41	W 59	~~F~~O	LFL	95.7		None		
		W60	O	RFL					
	U-43	10036	O	RFL	99.2		None		LHFL Good App.
		10037	O	LFL					
		A448	N	LHFL					

GREEN TURTLE IDENTIFICATION FORM FOR NESTING
FRENCH FRIGATE SHOALS

YEAR 1992 ISLAND East PAGE 3

TURTLE I.D FORMS 5/1 – 5/18

send copies to george Balazs

DATE	MOTO ID	TAG NO.	NEW OR OLD	TAG POS	CARAPACE LENGTH (CURVED)	CARAPACE LENGTH (STRAIGHT)	TUMORS	TUMOR POS.	
5/6/92	U-44		[illegible]						
	U-45	A449	LFL	N	91.2		Ø		
		A450	RFL	N					
	U-46	W 462	LFL	O	94.9		Ø		
		W 145	RFL	O					
5/9/92	U-47	A451	RFL	N					
5/10/92	U-47	A452	N	LFL	95.0		Θ		misapplied A452
		A453	N	L12					
	U-48	2765	O	LFL	103.5		Θ		
		3434	O	RFL					
	U-49	6055	O	LFL	102.0		Θ		barnacles on top of head & 1st scute-each side
		6092	O	RFL					
5/11/92	U-50	A454	N	LFL	87.7		Θ		
		A455	N	RFL					misapplied
		A456	N	LHF					misapplied and took off the tut
		A457	N	R12					
	U51	8242	O	RFL	102.8		Θ		
		A458	N	LFL					
		A459	N	RHF					
	U52	A460	N	LFL	94.0		Θ		
		A461	N	RFL					maybe misapplied
	U53				97.4		Θ		

GREEN TURTLE IDENTIFICATION FORM FOR NESTING FEMALES
FRENCH FRIGATE SHOALS

YEAR 1992 ISLAND East PAGE 4 OF __

DATE	MOTO ID	TAG NO.	NEW OR OLD	TAG POS	CARAPACE LENGTH (CURVED)	CARAPACE LENGTH (STRAIGHT)	TUMORS	TUMOR POS.	COMMENTS
5/11/92	U 54	6142	O	LFL	94.0		~~O~~		
		6047	O	LFL					
		6096	O	RFL					
	~~[illegible]~~	~~Twice~~							
	U-41	A462	N	LHF					
	U55	A463	N	RFL	100.0		O		
		A464	N	LHF					tryed rear while she was running to H_2O - mangled
5-12-92	U-56	7229	O	LFL	101.3		None		1" cut where LHF will go
		7437	O	RFL					
	U-52	A465	N	RF-4					
		A466	N	RHF					
5-13-92	U-57								moto not complete - marked U-57
	U-58	10085	O	RFL	99.1		Ø		
		10210	O	LFL					
		A470	N	LHF					
	U-59	W252	O	RFL	88.3		Ø		1in x 1½ in wound on middle scute,
		A471	O	LHF					and back from head, looks like it got hit by a blunt object
	UK								notch in edge of shell, 1st marg.
									scute on left + side
	UK	W69	O	LFL					
		W70	O	RFL					

GREEN TURTLE IDENTIFICATION FORM FOR NESTING FEMALES
FRENCH FRIGATE SHOALS

YEAR 1992 ISLAND East PAGE 5 OF __

DATE	MOTO ID	TAG NO.	NEW OR OLD	TAG POS	CARAPACE LENGTH (CURVED)	CARAPACE LENGTH (STRAIGHT)	TUMORS	TUMOR POS.	COMMENTS
5/14/92	U-60	A473	N	LHF	94.2		Ø		RHF has ragged digital edge
	U-61	9381	O	LFL					
		9380	O	RFL					2 in gauge on 3rd scute back left side
		A475	N	LHF	92.2		Ø		
	U-62	5211	O	RFL	97.4				
		10170	O	LFI					
	U-63	A476	N	LHF	96.1		Ø		RFL + LFL Tiny
		A479	N	L34					
		A-480	N	R34					
	U-64	A-481	N	LFL	94.8		Ø		
		A482	N	LHF					
		A483	N	RFL					
	U-65	A484	LFL ↔ N		101.5		Ø		Ragged digital edge of LHF
		A485	N	RFL					
		A486	N	LHF					
5/15/92	U-66	W-377	O	RFL	92.7		Ø		
		W-376	O	LFL					
		A-487	N	LHF					
	U-67	W69	O	LFL	95.3		Ø		3cm tear on LHF
		W 70	O	RFL					
		A-488	N	LHF					
	UK								2cm mark, 3rd scale back left

GREEN TURTLE IDENTIFICATION FORM FOR NESTING FEMALES
FRENCH FRIGATE SHOALS

YEAR 1992 ISLAND East PAGE 6 OF __

DATE	MOTO ID	TAG NO.	NEW OR OLD	TAG POS	CARAPACE LENGTH (CURVED)	CARAPACE LENGTH (STRAIGHT)	TUMORS	TUMOR POS.	COMMENTS
5/15/92	V-68								
(cont)	V-69	A495	N	LHF	102.3		Ø		peeling left shoulder
		10041	O	LFL					
		10040	O	RFL					
	V-70	9714	O	RFL	93.5		Ø		gauge on 3rd scale back left
		9712	O	LFL					
		A496	N	LHF					
	V-71	9307	O	LFL	103.4		Ø		
		9308	O	RFL					
	V-72	9427	O	LFL	99.1		Ø		
		A498	N	RFL					
	VK								conduit get near it - close to seals
	VK	W87	O	RFL			Ø		Scar between 3rd & 4th scute
		W88	O	LFL					Right side

GREEN TURTLE IDENTIFICATION FORM FOR NESTING FEMALES
FRENCH FRIGATE SHOALS

YEAR 1992 ISLAND East PAGE 7 OF __

DATE	MOTO ID	TAG NO.	NEW OR OLD	TAG POS	CARAPACE LENGTH (CURVED)	CARAPACE LENGTH (STRAIGHT)	TUMORS	TUMOR POS.	COMMENTS
5-16-92	UK								next to mom's pup
	U-73	3173	O	RFL	99.7		Ø		
		A500	N	LHF					
	U-74	5451	O	LFL					Has old moto tool - can't read it except 1st # is "5"
		5218	O	RFL					
	U-75	A502	N	R34	95.8		Ø		RHF torn
		A506	N	LHF					
	U-76	A504	N	LHF	97.4				
		6111	O	RFL					
		6112	O	LFL					
	U-57	3365	O	LFL			Ø		chunk of CHF gone
	U-77	9313	O	LFL	103.8		Ø		Sm. Portion of 1st scute left side Keeling
		9314	O	RFL					
		A505	N	LHF					
	UK	9663	O	RFL	94.4		Ø		Sm. gouge on 3rd scute back Right
		9682	O	LFL					
		A507	N	LHF					
5-17-92	U-78	8247	O	RFL			Ø		
		8249	O	LFL					
	U-79	6113	O	LFL	101.3		Ø		
		6107	O	RFL					
		A508	N	LHF					

GREEN TURTLE IDENTIFICATION FORM FOR NESTING FEMALES
FRENCH FRIGATE SHOALS

YEAR 1992 ISLAND East PAGE 8 OF __

DATE	MOTO ID	TAG NO.	NEW OR OLD	TAG POS	CARAPACE LENGTH (CURVED)	CARAPACE LENGTH (STRAIGHT)	TUMORS	TUMOR POS.	COMMENTS
5-17-92	U-80	8287	O	RFL	92.7		Ø		Ragged Back scute
(Con't)		82?	O	LFL					
		A509	N	LHF					
	U-81	6021	O	LFL	96.8		Ø		Barnacle 3rd scute back middle
		A510	N	LHF					
	U-82	W262	O	LFL	95.8		Ø		LHF tag needs to be checked
		A513	N	LHF					
	UK								next to seals
	UK								next to seals
5-18-92	UK								next to seals, ragged 3rd scute back right
	U-83	A520	L34 ↔ N		102.1				
		A517	LHF ↔ N						
	U-74	A521	N	LHF	100.5		Ø		
	U-84	2240	O	LFL					touch up moto tool
	U-85	6058	O	LFL	103.4		3,3,3	F3,F3,N3	
		A523	N	LHF			1,1,1	N4,N4,E1,F2	
	UK	10179	O	L34	94.3		Ø		peeling carapice: ragged LFL
		[redacted]							
		4280	O	RFL					
		A524	N	LHF					

GREEN TURTLE IDENTIFICATION FORM FOR NESTING FEMALES
FRENCH FRIGATE SHOALS

YEAR 1992 ISLAND East PAGE 9 OF __

DATE	MOTO ID	TAG NO.	NEW OR OLD	TAG POS	CARAPACE LENGTH (CURVED)	CARAPACE LENGTH (STRAIGHT)	TUMORS	TUMOR POS.	COMMENTS
5-18-92	UK	W87	O	RFL	101.4		Ø		missing over ½ of RHF
Con't		W88	O	LFL					
		A525	N	LHF					
	UK	A526	N	LHF					

GENE KRIDLER

103 Huckleberry Court
Sequim, Wa. 98382
Dec. 3, 1985

Dear George:

Many thanks for all the literature on the green sea turtle. There's a lot to be digested.

I hear various things about Refuges there. Latest is they cannot find copies of my trip reports yet you say they informed you that they have them in their files. I guess it all depends on who is doing the looking.

A couple of years ago they got all the data re tagging, weighing and measuring. I wonder if they are making use of it. Being as how the majority of animals were already adults, there shouldn't have been much difference in measurements when retagged or recaptured. But I was trying to get the extremes and more important the average for Hawaiian animals. Thickness made some difference in weights.

However, we were but scratching the surface of research there. I'm glad that you have been able pero in on the turtle. Keep up the good work.

As for the March 31, 1973 report of basking turtles on the wreck, I had my rough field notes which I had kept. Whenever we had helicopter support from Midway, we would canvas the entire area, and the wreck was canvased along with other areas.

I never had the time to write up a lot of my observations, but they were left behind for others to use.

There is so much to learn about the refuge, terrestrial and marine.

Aloha

Gene

November 25, 1985 F/SWC2:GHB

Mr. Eugene Kridler
103 Huckleberry Crest
Sequim, WA 98382

Dear Gene,

I wanted to take this opportunity to thank you for the information you sent to me awhile back, and also to enclose for you an assortment of literature on the Hawaiian green turtle. I believe that you will be pleased to see that all of your "trip reports" are cited in one of these papers (NOAA-TM-NMFS-SWFC-7). Your trip reports contain a wealth of information and, wherever possible, I attempted to reference and include your findings.

After you told me about the observation of basking turtles on the shipwreck at Pearl and Hermes Reef, I tried to locate the March 31, 1973 report which included this information. I telephoned the local Fish and Wildlife Service office with my request. After some searching, I was informed that all of the reports you authored on trips to the Leewards are in their files, with the exception of the one from March 31, 1973. Nevertheless, I was pleased to learn that the vast majority of your documents are still intact and available for the benefit of others. There is no question that you are somewhat of a "pioneer" when it comes to research in the Leewards!

Again, many thanks and best regards.

Sincerely,

George H. Balazs
Zoologist

Enclosure

cc: Balazs
HL

Sept. 14, 1984

Dear George:

The tag you described is unfamiliar to me. Also, it is not of the type used on seabirds. Did Johnson use any tags on Laysan?

Tags I used were all stamped and were of monel metal. It is odd that I never got a return after 1972 of all those I put on seals and turtles. C'est la vie.

Keep up the good work on turtles. Are they still taking it illegally in Hawaii?

Regards
Gene

Mr. & Mrs. Gene Kridler
103 Huckleberry Crest
Sequim, WA 98382

United States Department of the Interior

FISH AND WILDLIFE SERVICE
300 ALA MOANA BOULEVARD
P. O. BOX 50167
HONOLULU, HAWAII 96850

IN REPLY REFER TO:

8/29/84

Dear George,

Thanks for the letter. I must apologize for sending you the wrong report. After receiving your letter yesterday, I immediately began searching through Kridler and Sincocks old files but was unsuccessful in finding that march 31, 1973 report. Naturally, it seems to be the only one missing. I'm sorry I couldn't help you any further with this but I'll keep my eyes open for it. I also informed Pete Stine that you are on the lookout for that particular report. If there any other way I can help, please let me know.

Sincerely,

Bruce

CONSERVE AMERICA'S ENERGY

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1965

Hawaiian Islands National Wildlife Refuge

Spring Trip March 19 - April 6, 1969

Field Trip Personnel

Eugene Kridler	Wildlife Administrator and Chief, Bureau of Sport Fisheries and Wildlife
David L. Olsen	Assistant Refuge Manager, Bureau of Sport Fisheries and Wildlife
John L. Sincock	Research biologist, Rare and Endangered Species Program, Bureau of Sport Fisheries and Wildlife
Karl W. Kenyon	Biologist, Marine Mammal Laboratory, Seattle, Bureau of Sport Fisheries and Wildlife
George Laycock	National Audubon Society, Cincinnati, Ohio

Support Vessel U. S. Coast Guard Cutter BUTTONWOOD, Captain Henry Haugan

Itinerary

March 19	Departed Honolulu Harbor 9:15 AM aboard BUTTONWOOD.
March 20	Arived Off Nihoa 9:00 AM. Unable to land due to heavy seas.
March 21	Landed on Nihoa 9:15 AM. Conducted biological investigations. Departed 5:15 PM enroute Necker Island.
March 22	Landed on Necker Island 9:00 AM. Conducted biological investigations and departed 5:40 PM enroute French Frigate Shoals.
March 23	Landed on Tern Island 10:00 AM. Worked on Tern Island. Seas were too rough to permit travel to the other islands. Returned to BUTTONWOOD while she remained anchored outside the reef.
March 24	Party remained on ship catching up on paperwork and plans for investigations on remaining islands. Still rough ocean.
March 25	Departed French Frigate area. Enroute to Laysan Island.
March 26	Arrived off Laysan 7:30 AM. Landed 9:30 AM. Conducted biological investigations. Overnight on Laysan.
March 27	Continued biological investigations on Laysan.
March 29	Departed Laysan 5:30 PM. Enroute to Lisianski.
March 30	Landed on Lisianski 9:15 AM and conducted biological investigations. Departed Lisianski 5:00 PM. Enroute Pearl and Hermes Reef.
March 31	Landed on Southeast Island 9:15 AM. Part of survey party visited North and Little North Island via Bureau Boston whaler to census and tag seals and turtles, and briefly survey other wildlife. Other members remained on Southeast to conduct other biological investigations there.

April 1 Continued biological investigations on Southeast Island.

April 2 Departed 4:10 PM. Enroute Midway.

April 3 Arrived Midway 10:00 AM. Party collected gear and departed from the ship.

April 4 Worked on Boston whaler and rubber boat.

April 5 Continued work on equipment and paperwork.

April 6 Continued work on reports and departed Midway via MAC Northwest leg flight 5:50 PM. Party arrived at Hickam AFB 6:25 PM. Departed Hickam AFB 9:00 PM and arrived Kailua 10:00 PM.

NIHOA ISLAND

General

We arrived off Nihoa about 8:30 AM on March 20, but seas were too rough to permit a landing. On the following day, surf conditions improved and the party was able to land on the ledge of East Palm Canyon without mishap. Finch and Millerbird transects were started but due to communication misunderstanding, the ship inadvertently called the shore party back to the landing site. Practicing their "man-overboard drill", the ships horn was sounded six times. The shore party took this to mean an emergency - time to get back to the ship. Slipping and sliding down the slopes of Nihoa the shore party finally made it to the landing site. In spite of their efforts to signal the ship by means of flares, the incident went unnoted by the crew. Upon our arrival back at the ship later that afternoon the incident was discussed with Captain Hougan. Since then all "man-overboard drills" have been held many miles off the islands.

No evidence was found which might have indicated that any recent visitation might have taken place on the island.

A reading on the maximum and minimum thermometer indicated that since September 1968, temperatures were 83° F and 55° F respectively.

Surf conditions roughened somewhat at the time of departure, but no serious mishaps occurred.

Wildlife Population Surveys

Each observer censused a portion of the island, and upon termination of the work wildlife population data were summarized (Table I).

Table I

Nihoa Wildlife Populations

Species	Population	Class Data	Comments
Black footed albatross			none observed, however, did not visit Miller Flat
Laysan albatross	7	B	head count but missed Miller Flat
Wedge tailed shearwater	875	C	estimated on basis of ground burrows; nesting was underway
Christmas Island shearwater	50	C	3 were found incubating eggs
Sooty storm petrel	2	D	2 individuals were banded First recorded nesting of this species on Nihoa

Table I Nihoa Wildlife Populations cont.

Species	Population	Class Data	Comments
Blue-faced booby	94 nests	C	young had hatched.
Brown booby	55 nests	C	eggs still being incubated
Red footed booby	522 nests	C	eggs still being incubated
Great Frigatebird	1,715 nests	C	most just starting to incubate
Grey-backed terns	350	C	
Sooty terns	6,800	C	most incubating, none hatched
Common Noddy terns	2,000	D	all stages of development, from egg to fledgling
Fairy tern		D	30 observed along Miller and Tanager cliffs
Blue-grey Noddy	85	D	
Nihoa Finch	See Table II		2 nests found, one with 2 young the other with a single egg
Nihoa Millerbird		D	seen by personnel during day
Golden plover	36	D	
Ruddy turnstone	82	C	

Wildlife Management Studies

1. Life History of the Nihoa Finch

Although we had hoped to conduct a complete census of the finches and millerbirds on Nihoa, the sound of the boat's horn disrupted our work and only 40 transects were completed. The insufficient number of samples showed tremendous variation and the resulting statistical analysis proved to be of little value. John Sincock analyzed the data and indicated that the total population was 2,993 finch plus or minus 36%. The population could be expected to range between 1,913 and 4,073 birds.

Two finch nests were observed, one had a single egg while the other had two chicks.

2. Life History of the Nihoa Millerbird

A total of 11 millerbirds were seen by observers during the day. Only one was seen on transect while the remainder were seen at other times. Using the single sighting of a millerbird on 40 transects, the population was estimated at 41, plus or minus 199%. The population could be expected to range between 0 and 123.

No nesting activity was observed.

Operations and Maintenance

Olsen inspected the West Palm Canyon landing near the refuge sign and cemented in a brass eyebolt which will help in the placing of a cable to facilitate future landings. Kridler and Hancock measured the platform which may eventually be used to erect a permanent shelter on the island. The platform measured 20 ft. by 30 ft.

Photo station pictures were taken. Sida was 95% in flower. Sycios was found in small patches over most of the island. Much of the island was cover typed, however, due to the interspersion of the different species the data will have to be refined during a future visit.

NECKER ISLAND

General

The HUNTSMOOD arrived off Necker at 7:00 AM on March 22. Although the surge was 8 to 10 feet at the time of the landing, no accidents occurred while personnel jumped for the ledge and threw their equipment between surges. As soon as all the gear was on the island, it was moved to a safer location about 45 feet above the surf line.

Immediately evident was the loss of the large Refuge recognition sign which had been erected during the visit last September. The sign which had been supported by 6 x 6 posts, and cemented into a rock ledge had been snapped off. Eye bolts which held 3/8 inch marine cable had been bent open, and one of the cables had been snapped. Apparently heavy seas had dashed against the island and carried away the sign, thus giving evidence of the height of waves winter storms generate. This is the second such sign lost to the tremendous winds and seas which buffet the island during the winter. The next will have to be placed well over 200 feet above the ocean. Also lost was a minimum maximum thermometer which had been wired into a ledge some 55 feet above the ocean.

Once on the island, wildlife populations were censused and beautiful weather prevailed throughout the day.

By the time for departure the seas had increased considerably, and John Sincock's description of the event clearly describes the occasion.

> "Viewing a 25 feet surge at the rock shelf, with frequent 3-4 feet deep waves crashing across the shelf I suddenly agreed wholeheartedly with Gene Kridler's recent memorandum to the Region that hazardous duty pay was justified, and that this was harier than any waterfowl count I had ever been on, despite the best efforts of a pilot to do me in. Kridler, Olsen and I had our share of being knocked off our feet, swept along the rock ledge and then being swept toward the edge when the sea dropped 20-25 feet. Kridler's extended hand prevented me from going over once, and I think I reciprocated 2 or 3 waves later. We kind of lost track of how many times we were knocked down, or which way was up. Olsen jumped to the boat in good shape and was taken to the life boat. Two knockdowns later the rubber boat returned for Gene and me, and I guess we both had decided a free dive into the rubber boat was preferable to another sluicing across the rocks. We waved off the bowline from the boat because of the hazard of becoming entangled. I jumped into space like a skydiver and felt like I had forgotten my parachute, for I didn't catch up with the boat until it was at the bottom of the surge. Kridler, with his usual grace dove next, spread-eagle on top of the coast guardsman in the bow. We later made sure the two gutsy boys in the rubber boat were rewarded with netter glass balls. Only one or two bags of equipment were lost and wounds were only superficial."

In summary, the departure from Necker was a day to remember. It was an experience to write about for Laycock.

Wildlife Population Surveys

Each observer was assigned several species of birds to census, and the party covered the island in a "mass sweep" moving from the northwest cape to the east end of the island. These data are summarized in Table II.

Table II

Necker Wildlife Populations

Species	Population	Class Data	Comments
Laysan albatross	510 chicks	A	little mortality, young about 3 months old
Black footed albatross	175 chicks	A	
Wedge tailed shearwater	2,000 pairs	B	well distributed throughout higher areas of the island; no sign of egg laying
Christmas Island shearwater	1	C	
Blue faced booby	230 nests	A	sample of 101 nests checked revealed: 6% no eggs, 5% w/1 egg, 58% w/2 eggs, 15% w/1 young, 16% w/1 1 egg 1 young
Brown booby	20 nests	A	all on eggs
Red footed booby	700 nests	A	checked 118 nests: 70% w/1 egg, 30% w/no eggs, nesting in Chenopodium
Red tailed tropicbirds	20 birds	B	
Great frigatebird	850 nests	B	sample of 112 nests were checked: 42% w/no eggs, 56% w/1 egg, 2% w/2 eggs. One almost full grown immature with just a trace of down on its head. Nest on top of Chenopodium and Sesbonia.
Grey backed terns	1,300	B	approx. 25% on eggs
Sooty terns	16,600	B	approx. 25% on eggs which appeared to be freshly laid; no young noted. Most of the nesting confined to slopes.

Table II Necker Wildlife Populations cont.

Species	Population	Class Lata	Comments
Noddy terns (common)	25	C	
Hawaiian tern	500	B	approx. 80% on eggs
Fairy terns	500	C	190 birds were actually counted. The figure of 500 was estimated on basis of representative cliff nesting areas which could not be censused.
Blue grey noddy	750	C	head count showed 575 birds. Total estimate based on other available nesting habitat.
Ruddy turnstones	2	A	

Wildlife Management Studies

1. Populations and Movements of the Hawaiian Monk Seal

Due to the rugged shoreline of Necker Island, the area has never supported high seal populations; however, during the past several years there appears to be an increase in the number of animals using this island. Twenty seals were observed at the junction of Northwest Cape and the mainland in Shark Bay. The sex-age breakdown of the animals observed was as follows: 7 adult males, 1 sub-adult male, 4 pregnant females, 2 sub-adult females, 6 unknown.
This was the highest seal count ever recorded on Necker Island. No pupping has been observed here, however.

2. Life History and Management Studies of the Green Sea Turtle

Four green sea turtles were observed in the same area where the seals were present. One was tagged No. 794; its weight was 155 lbs.

3. Habitat Studies of the islands of existing or potential value to rare and endangered wildlife of the Hawaiian Islands National Wildlife Refuge

Sincock and Kridler cover type mapped the island. Approximately 50% of the island is not vegetated due to the rocky terrain and lack of soil. Of the vegetation present approximately 95% was Chenopodium. Only five species of plants grow on Necker. No new ones were found on this trip.

Operations and Maintenance

As discussed in the general section on Necker Island, the Refuge recognition sign had been washed away. Blue goose sign was fastened to a rock ledge about 20 feet above the old sign. It would appear that if another sign is going to be placed on Necker it will have to be placed at least 100 feet above the water line to prevent another large wave from washing it away.

Recommendations

During the next trip to Necker, consideration should be given to trying to locate a better landing site. Shark Bay may have some possibilities.

A refuge recognition sign and another maximum minimum thermometer should be replaced on the island.

FRENCH FRIGATE SHOALS

General

The BUTTONWOOD arrived off Tern Island at 6:00 AM on March 23. Heavy seas were encountered even in the lee of the reef. Both ships' boats were launched and members of the Bureau party and several of the officers from the BUTTONWOOD visited Tern Island. While we conducted surveys on Tern Island, the Coast Guard delivered supplies to their LORAN station.

Due to the heavy seas and high winds we were unable to visit any of the other islands. The party spent approximately seven hours on Tern Island.

Wildlife Population Surveys

The following birds were head counted.

Table III

Species	Population	Class Data	Comments
Layean albatross			not counted. See Feb. 1969.
Fairy tern	2	A	both sitting on eggs
Red tailed tropicbird	10	A	7 birds banded, of those 5 were on eggs, another had no egg, and another had no nest. 2 unbanded birds were noted, one had a single egg, the other no egg.
			A single "unknown" bird was also seen
Ruddy turnstones	15	A	
Golden plovers	20	A	
Sanderling	5	A	

Wildlife Management Studies

1. Life History of the Nihoa Finch

A finch count was completed on Tern Island. Kenyon and Sincock counted 6 finch including 1 unbanded nesting female.

March 23, 1969

2. Populations and Movements of the Hawaiian Monk Seal

Although no seals were observed on Tern Island, discussion with CPO Laud revealed that personnel from the station visited some of the smaller islands on March 22 and reported seeing 2 pups on Whale Skate and 4 pups on East Island.

3. Populations and Movement of the Green Sea Turtle

While diving near the Shark Pier area, Olsen captured a turtle which was subsequently tagged and released.

Operation and Maintenance

The refuge recognition sign at Tern Island appears to be in good condition. There were no indications that personnel at the station had been molesting wildlife.

GARDNER PINNACLES

Because of the rough seas encountered it was decided not to even visit the vicinity of Gardner since it would be impossible to make a landing.

4 23 1969

LAYSAN ISLAND

General

The HITCHWOOD arrived off Laysan at 7:50 AM on March 26. The ships' boat and rubber boat were launched and via the Northwest passage we arrived on the island at 9:30 AM. Camp was established and biological investigations were carried out until the morning of March 29.

Although windy, weather was excellent during the time we were on the island.

The maximum and minimum thermometer placed on the island during September 1968 was reset. Temperatures of 92° F and 42° F were recorded since the last visit.

During our several trips around the lagoon it was noted that heavy winter storms had washed over the southeast end of the island into the lagoon. The water gauge on the east side of the lagoon read 2.3 ft. The water washed across the island in several places. This was graphically illustrated by the belts of dead vegetation which lay in the path of the sea water.

Heavy rains plus the addition of sea water raised the level of the lagoon and flooded a number of Laysan albatross nests. Over 2,500 eggs were windrowed against the west shore of the lagoon. Severe storms also may have affected the Laysan teal population.

Wildlife Population Surveys

Several specific population estimates were made. Seal and turtle counts were made on the afternoon of March 26. During the morning of March 27, Laysan teal and shorebird counts were made. Laysan finch transects were conducted on the same afternoon. In conjunction with the finch counts, population estimates of other nesting seabirds were also made. Each member of the party was assigned a sector of the island in which to conduct transect counts. Data were summarized at the end of each day. Table IV summarizes the wildlife populations observed on Laysan.

Table IV

Laysan Wildlife Populations

Species	Population	Class Data	Comments
*Laysan Albatross	77,287	B	Sampled population by transect method. See appendix.
*Black footed albatross	14,694	B	see appendix for method.
Emperor goose	1	A	first observation on Laysan, being reported Elsipo

Table IV Laysan Wildlife Populations cont.

Species	Population	Class Data	Comments
Pintail	3	A	observed on lagoon
Shoveller	14	A	" " "
Greenwing teal	3	A	" " "
*Laysan teal	125	A	see appendix for method
Bonin Island petrel	"thousands"	D	unable to estimate population; large downy chicks found
Sooty storm petrels			unable to estimate population; found 2 adults in nest
Wedgetailed shearwaters	"thousands"	D	unable to estimate population; adults digging burrows; no egg laying in evidence
Christmas Island shearwaters	7,500	C	appeared much more abundant than in previous trips; nesting in vegetation around the lagoon; found in Sycios, and Eragrostis.
Blue faced boobies	32 nests	B	
Brown boobies	none noted		
Red footed boobies	220 nests	B	
Great frigatebirds	1,142 nests	B	
Graybacked terns	2,000	C	scattered throughout higher portion of island under vegetation - eggs.
Sooty terns	50,000	D	no sign of nesting - swirling
Hawaiian noddy terns	700 nests	C	71% had eggs, 24% had young; 5% empty; scattered over island mostly in Scaevola and Causorina tree.
Common Noddy terns	100	C	several found incubating eggs
Fairy terns	250	C	all stages - eggs to chicks
*Laysan finch	11,882	B	see discussion in Finch section and appendix for method.
Golden plovers	990	A	loafing and feeding along lagoon

*See Laysan Appendix

Table IV Laysan Wildlife Populations cont.

Species	Population	Class Data	Comments
Ruddy turnstones	1,580	A	loafing and feeding along lagoon
Wandering tattler	135	A	" " " " "
Sharptailed sandpiper	1	A	" " " " "
Sanderling	1	A	" " " " "
Bristle thighed curlew	65	B	counted while conducting teal count
Red tailed tropicbirds	500	D	most incubating

We thoroughly checked shorebird flocks with the spotting scope several times, but did not see any unusual species.

Wildlife Management Studies

1. Census Data

On the afternoon of March 26 the party traveled around the shoreline of Laysan counting and tagging seals. The following table shows the population data obtained.

Table V

Laysan Island Seal Census

	Adults	Juveniles	Pups	Unknown	Total
Males	16	4	14		34
Females	36	8	15		59
Unknown	60	9	1	20	90
Total	112	21	30	20	183

2. Tagging Program

A total of 38 pups and yearlings were tagged. The usual monel metal cattle ear tag was attached to the right rear flipper as a control, while a combination of yellow nylon neck tag held on by an identically numbered monel tag was placed on the other flipper.

Cold branding was attempted on 6 pups and until the animals are again checked we will not know how effective the technique will be. Using small cans of Freon 22 with a spray adaptor fashioned by Dr. Kieth Farrell and a system of symbols suggested by Karl Kenyon (see illustration), the freeze spray was held on the animal for 10-12 seconds. Even with three people attempting

to restrain the animal while the spray was being applied, it was quickly evident that it is just about impossible to completely immobilize even the smallest of pups. The slightest movement broadens the line of spray which we believe will make the brand less effective. It was also noted that the heavy soft fur of the pups may have more of an insulating effect than the coarser, but thinner, hair on the older animals.

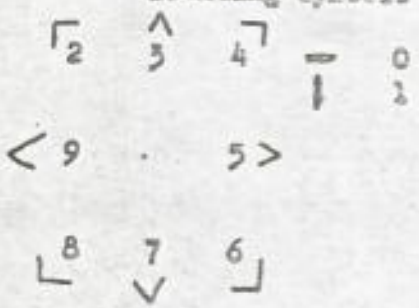
Another apparently limiting factor noted in the use of the Freon 22 for cold branding was that although the cans of the refrigerant are small and handy, no more than 2 animals can be branded with one can.

The cold brands were placed on the back of the pup, and on the right side of the animal. After the 12 seconds of application of the Freon 22 a thick coat of ice was evident on the fur, thus we were unable to determine if the skin proper had been frozen.

Efforts should be made to look for animals 802-807 during our next trip to Laysan.

Although we intended to hot brand pups with the same symbolic system, it was decided that such a brand might have an adverse affect on young animals. It was decided that the hot branding should be used on the yearlings or subadults, but time limitation on the island did not permit us to experiment with this technique.

Branding Symbols



Seals Tagged March 26, 1969, Laysan Island

Yellow Plastic	Metal Lap.	Other	Cold Brand	Sex	Age
A602	Same	802		F	B.P. 1 week
A603	"	803		M	B.P newborn
A604	"	804		M	B.P. 2 weeks
A605	"	805		M	B.P. newborn
A606	"	806		F	G.P. weaned, no mother
A607	"	807		F	" " " "
A608	"	808		M	B.P. newborn
A609	"	809		F	G.P. 6 weeks
A610	"	810		M	G.P. weaned, no mother
A611	"	811		M	B.P. newborn
A612	"	812		F	B.P. 3 weeks
A613	"	813		F	" " "
None	A614	814		F	B.P. newborn
A615	Same	815		F	G.P. weaned, no mother

Seals Terres March 26,1969, Layson Island cont.

Yellow Plastic	Metal Lip.	Other	Cold Brand	Sex	Age
A616	Same	816		F	G.P., weaned , no mother
A617	"	817		M	Yrl.
A618	"	818		F	"
A619	"	819		I	"
A620	"	820		F	B.P. newborn
A621	"	821		F	Yrl.
A622	"	824	None	M	Yrl.
A623	"	823	"	M	"
A624	"	822	"	F	"
A625	"	825	"	M	2 years
(1) A479	"	None	"	F	" "
A480	"	"	"	F	B.P. newborn
A481	"	"	"	M	" "
A482	"	"	"	F	" "
A483	"	"	"	M	" "
A484	"	"	"	M	B.P. ca 4 days
A485	"	"	"	M	B.P. " 2 weeks
A486	"	"	"	F	B.P. " 10 days
A487	"	"	"	M	B.P. " 2 days
A488	"	"	"	M	B.P. " 2 weeks
A489	"	"	"	M	B.P. " 2 days
A490	"	"	"	M	G.P. weaned, no mother
A491	"	"	"	M	B.P. ca 1 week
A492	"	"	"	F	B.P. " 5 weeks

(1) A478 lost in sand (metal tag)

Layson Island Seal Tag Returns

The following tag returns were observed on Layson Island, March 26, 1969.

Tag No.	Original Tagging Date	Age	Location	Comments
A43	3/19/67	pup	Layson	
A37	3/19/67	pup	"	
A58	3/19/67	pup	"	
A200	9/21/67	yearling	"	
A224	9/21/67	yearling	"	
A268	3/18/68	yearling	"	
A273	3/18/68	pup	"	yellow streamer now gone
*A376	9/ 5/68	pup	"	" " " "
				animal carried control band No. A466-, and yellow tag. All except metal tag apparently gone now
A379	Male, dead for a week or more			
A385	Female			
A393	Female			
A395	Male			

*See following page

"This is the first indication that the yellow nylon cattle tags, which we have used on some of the seals, are not holding. This particular animal was only noted to have a single metal tag. The yellow tag must have been torn from the animal during the past six months.

The Laysan Finch

Finch transects were conducted on March 27 and the total population was 11,822, as indicated in the appendix. ✓

Over 500 clumps of Aerostis were checked for nests, but none were found. From this plus other information we have obtained from previous March trips, it is evident that nesting on Laysan does not begin till later in the spring.

On several occasions during out stay at Laysan, finch were seen drinking from the lagoon. Birds were most abundant in the thick patches of Sycios in the interior of the island. Apparently food, in the form of seeds, flowers, or insects was the main attraction.

The Laysan Teal

The early morning shoreline counts technique initiated in September 1967 and used again in September 1968 was again tried on Laysan. Only 89 birds were counted, and it appeared that this may not be the best technique to use when water levels are high, or when the weather is windy. The birds apparently don't utilize the shoreline to any great extent when weather conditions are unfavorable. The entire west shore of the lagoon was covered with a wide belt of salty froth which effectively covered any brine fliew which may have been in the area. This, too, undoubtedly discouraged any use by teal.

In an effort to collect a more accurate estimate of the teal population, the "boatout" technique used during previous spring trips was used. Five men walked abreast in a line around the lagoon. An effort was made to keep each man about 50 feet from the next observer. It was believed that almost all birds within the belt were observed, and although there may have been a few birds missed, this technique could be a good indicator of trends. A total of 123 birds were observed using this technique.

The population is obviously down from the past several years and we can only speculate reasons for we can visit the island for only a few days, at best, twice a year. Winter storms may take a toll and the increased water level may have had some affect. We may have simply had a poor hatch during 1968, and last, predation by frigatebirds may have increased.

Habitat Studies

The Chenopodium plant established just south of the camping site seems to be thriving and producing seed. This plant is the sole result of a number of efforts during the last eight years to reestablish the species on the island.

A single large plant of Conchrus was found along the path from the landing site to the campsite. It was pulled and thrown into the ocean.

Photostation pictures were taken in Kodacolor.

The Green Sea Turtle

On the afternoon of March 26, the party traveled around the shoreline of Laysan counting and tagging the turtles they observed. Two were observed and tagged (No. 797 weighed 35 lbs., while No. 798 weighed 32 lbs.)

No tag returns were noted.

While diving with members of the Coast Guard party, Olsen observed a group of 6 turtles in water approximately 20 ft. off, near the cut in the reef. An observation such as this suggests that many more turtles are present in the water around these islands than ever show themselves hauling up on the beach.

Operations and Maintenance

The large resolution canvas tarpaulins placed on the north end of the island were observed and photographed. Heavy winds had pulled some of the shorter stakes up and it was predicted that after another severe storm, parts of the canvas will begin to tear up and scatter around the island.

These tarps were to be picked up by the military a few months after placement. To date no effort has been made to have the tarps removed. Practices such as these should make us more cautious about granting special use permits to military on Refuge islands.

LAYSAN APPENDIX

Laysan Island .

From cover type map - estimate of total vegetation 2,243,400 sq. yds.
Standard census transects are 300 ft. long, 16 ft. wide.
Standard area in the 120 transects is 66,000 sq. yds.

Laysan Teal

Transect method

Counted 14 teal on 120 transects

$$14 \times \frac{2,243,400}{66,000} = 476 \text{ - total birds}$$

This method is considered unreliable since the teal are found in the areas around the lagoon, and the transects cover the entire island.

Beat-out method

Five men walked around the lagoon. One man was on the waters' edge while the others were spaced approximately 50 ft. from each other. Most of the teal were observed within 200 ft. of the shoreline and only a few flushed beyond that distance.

A total of 123 teal were counted. There may have been some duplication by probably no more than 5% of the count.

Laysan Albatross Chicks

On the regular finch transects 1,321 chicks were counted.
On the 39 beach transects, 299 chicks were counted.
On the 159 transects, 1,620 chicks were counted.

$$\frac{1,620}{\text{total birds}} = \frac{\text{Area of transects}}{\text{total area less lagoon}}$$

$$\frac{1,620}{\text{total birds}} = \frac{1017 - 155 \text{ acres}}{159 \text{ transects} \times 16.5' \times 300'}$$

total Laysan chicks 77,287

LAYSAN ARRANDIA cont.

Laysan Albatross Chicks - Expansion Method II

39 beach transects - 299 Laysan chicks

Total birds = $\frac{\text{chicks x total area beach and rock acres x sq. yds./acre}}{\text{no. transects x sq. yds. in sample}}$

Total birds $\frac{299 \times 236.3 \times 4840}{39 \times 550}$

Total birds 15,942 Laysan chicks on beach

Plus 120 inland transects with 1,321 chicks on 625.9 acres

Total birds = $\frac{\text{chicks x total acreage less lagoon and beach}}{\text{no. transects x sq. yds. in sample}}$

Total birds inland $\frac{1321 \times 625.9 \times 4840}{120 \times 550}$

Total birds on beach 15,942
Total birds upland 60,633

Total birds 76,575

Black footed albatross chick count

Total area beach and rock 183.0 bare beach
149.5 beach outside Mana
3.8 rock
236.3 total acres

39 beach transects yielded 168 chicks

Total birds = $\frac{\text{chicks x acres x sq. yds/ acre}}{\text{transects x sq. yds.}}$

Total birds = $\frac{168 \times (236.3 \times 4840)}{39 \times 550}$ = 8957 chicks on beach

Plus 120 transects with 125 birds on 625.9 acres
1,017 Acres - 236.3 Acres - 154.8 Acres (lagoon) = 625.9 Acres

Total birds = $\frac{125 \times (625.9 \times 8480)}{120 \times 550}$ = 5737

Total birds on beach transect 8,957
Total birds on inland transect 5,737

Total birds 14,694

LAYSAN APPENDIX cont.

Black footed albatross chick count

Counted	120 on transects	125 chicks
	39 beach transects	168 chicks
Total	159 transects	293 chicks

$$\text{Total birds} = \frac{\text{birds counted} \times \text{total area less lagoon}}{\text{No. of transects} \times \text{area in transect}}$$

$$\text{Total birds} = \frac{293 \times 862 \times 484}{159 \times 550} = 15,978$$

Laysan finch count

No. observed = sq. yds. sampled
Total population = sq. yds. of vegetation

$$329 = \frac{120 \times 16.58 \times 300'}{X} = \frac{2,243,400}{} = 11,183 \text{ finch}$$

Method II Sincock ran an extra 34 transects. Using 154 transects and 449 finch and the above equation, the finch population is 11,822.

LISIANSKI ISLAND

General

The BUTTONWOOD arrived off Lisianski on the morning of March 30. Due to the presence of shallow water and reefs some distance from the shore, the ship unloaded the shore party approximately three miles from the island. It took approximately one hour for the shore party to make the landing.

A single day was spent on the island and most of the time was devoted to counting and tagging seals and turtles.

We cooperated with Dr. Harvey I. Fisher from Southern Illinois University by checking Laysan albatross for bands. Fisher has been studying the Laysan albatross for the past 10 years at Midway under an Office of Naval Research grant. In 1962, he transplanted about 2,000 half-grown chicks from Midway under the theory that when chicks returned for breeding they would return to the island where they were transplanted, rather than where they were hatched. A similar transplant was made to Kure Island.

We checked 784 birds, six of which were banded, around the shoreline. In addition, we ran two line transects across the island and counted 284 birds, eight of which carried bands. Records checked indicated that none of the birds were banded by Fisher. It was possible that the banded birds may have already left the island, thus in future trips we will again make an effort to check for banded birds.

Wildlife Population Surveys

Total population estimates were not made due to the shore time the party spent on the island. However, Kridler made an estimate of the bird population found within 100 ft. of the shoreline vegetation zone.

Table VI

Species	Population	Class Data	Comments
Blue faced boobies	96 nests	A	around shoreline; 4 nests w/0 eggs; 87 nests w/eggs; 4 nests w/chicks; 1 nest w/chick, egg
Red footed boobies	107 nests	A	around shoreline; 2 nests w/eggs; 6 nests w/0 eggs; 99 nests unknown
Fairy terns	13 nests	A	around shoreline; 32 nests w/eggs; 14 nests w/0 egg; 59 nests unknown
Hawaiian noddy terns	30 nests		60 Hawaiian tern nests (50% had yount), 120 in ironwood near coconut, 60 nests in Causerina, 20 nests in dead Causerina

Table VI Lisianski Wildlife Populations cont.

Species	Population	Class	Data	Comments
Frigatebirds	105 nests	A		around shoreline; 32 nests w/eggs; 14 nests w/O egg; 59 nests unknown.
Golden plovers	5 observed around shoreline			

Wildlife Management Studies

1. The Hawaiian Monk Seal

A total of 130 seals were counted on Lisianski Island. (Table VII)

Table VII

Seal Count Lisianski Island

	Adults	Juveniles	Pups	Unknown	Total
Males	47	6	8		61
Females	34	9	10		53
Unknown	10	2		4	16
Totals	91	17	18	4	130

Included in the above figures are 18 pups which were newly banded. Of interest was one extremely large grey pup. Using the turtle scale we weighed the animal and it tipped the scales at 185 lbs.

Table VIII

Lisianski Island Seal Tag Returns

Tag No.	Date Tagged	Location
A77	3/21/67	Lisianski
A85	3/21/68	"
A110	6/ 6/67	"
*A320	3/20/68	"

*This animal was originally tagged with a grey plastic streamer, however, it was no longer attached to the animal. As with former observations of plastic streamers, they cannot expect to last more than a few month's on the animal.

Seals Tagged March 30, 1969, Lisianski Island

Yellow Plastic	Metal Leg.	Other	Sex	Age
A626	Same	826	M	1-2 yr.
A627	"	827	F	B.P. ca. 3 weeks
A628	"	828	F	" " newborn, umb. present
A629	"	829	F	G.P. newly weaned, no mother
A630	"	830	M	" " with mother
A631	"	831	M	B.P. ca 1 week
A632	"	832	F	" " newborn
A633	"	833	F	" " "
A634	"	834	F	" " "
A635	"	835	M	" " "
A636	"	836	M	" " "
A637	"	837	F	G.P. near weaning ca 6 weeks weight 185 lbs.
None	638	838	F	G.P. weaned, no mother
A639	Same	839	M	B.P. ca 4-5 weeks
A641	"	841	M	Yrl.
800	A640	840	F	"
A642	Same	842	M	"
A643	"	843	F	B.P. newborn

2. The Green Sea Turtle

A total of nine turtles were tagged on Lisianski Island (Table IX). Six measurements, using calipers and steel tape were taken on each animal. The animals were also weighed. Only tag numbers and weights were listed in Table IX, since the other measurements taken have been recorded in the turtle banding card file.

Table IX

Turtle Tagging Lisianski Island March 26, 1969

Tag No.	Weight	Sex
A476	125	F
A493	80	F
A494	110	F
A495	47	F
799	160	M
876	180	M
877	140	F
878	185	M
601	34	F

Two tag returns were recorded.

Number 64D was originally tagged on Lisianski on 9/25/67 and at that time weighed 155 lbs. When weighed he tipped the scales at 145. The loss in weight should probably be attributed to an error in reading the scale. The carapace length and plastron width each grew .2 inch, while the animal's length (round) grew almost 6 inches.

The animal tagged number 644 was banded on Lisianski on 9/26/67; however, he was not weighed at the time of tagging. His carapace length (round) grew 2 inch, while the width of the carapace grew 1 inch.

The growth rate of these larger sized turtles is extremely slow.

3. Habitat Studies

Kodacolor photographs were taken at each photostation. Some station markers are becoming overgrown with Scaevola. At other stations, the bamboo poles placed as markers were down on the ground, presumably as a result of winds or collisions by birds.

A patch of Cenchurus was noted in the area approximately 100 yards south of the coconut trees. As the specimen was not collected, it could not be determined if this was the native species or of a species which might have been introduced.

One of the coconut trees had lost its top, probably during one of the winter storms. Thus, the remaining is a single coconut tree on Lisianski Island.

Of interest was the lack of Sycios anywhere, especially since it was so abundant on Laysan. Most of the interior is covered with Eragrostis, Ipomea and Scaevola. A check under the south Causerina tree revealed that the Chenopodium is thriving and slowly spreading. The patch now occupies all of the area under the tree canopy, a distance of roughly 25 ft. in diameter.

HAWAIIAN ISLANDS NATIONAL WILDLIFE REFUGE
Expedition Report
Pearl & Hermes Reef
March 11-18, 1973

Personnel

Eugene Kridler - Wildlife Administrator
David L. Olsen - Assistant Wildlife Administrator

Itinerary

March 11 - Depart Kailua 9:00 AM. Arrive Hickam AFB at 10:00 AM and depart for Midway via MAC chartered flight. Arrived at Midway 3:20 PM. Overnight Midway.

March 12 - On Midway, reviewed Wildlife Management Plan for the Base and discussed same with Captain Roemer, Commanding Officer.

March 13 - Depart Midway 9:30 via Navy Hu-46 helicopter. Arrived Southeast Island, Pearl and Hermes Reef at 10:00 AM. Via helicopter visited remainder of islets within the atoll. Overnight camp on Southeast Island.

March 14 - Continue biological investigations on Southeast Island - Overnight camp on Southeast Island.

March 15 - Navy helicopters arrived at 10:30 AM. Visited again other small islets within atoll and returned to Midway 4:00 PM. Overnight Midway.

March 16 - Compiled field notes and worked on trip report. Overnight Midway.

March 17 - Cleaned and repacked equipment and camp gear - Overnight Midway.

March 18 - Departed Midway via MAC chartered Capitol Airlines. Arrived Honolulu 6:30 PM and passed Customs. Via Govt vehicle arrived Kailua 7:50 PM.

General

The original plan for the trip was to visit and work not only Pearl & Hermes Reef, but also Lisianski Island. The HU-34 Helicopters formerly stationed at Midway were too limited in range to allow us to fly to any units other than Pearl and Hermes Reef. The HU-46 helicopters now used there have a significantly greater carrying capacity and longer

range. Extra internal fuel tanks and stocking fuel beforehand at Pearl and Hermes enables these helicopters to make a round trip to Lisianski. Due to a combination of bad weather and malfunctions in one of the escort aircraft, the planned flight to Lisianski was cancelled. However, a visit was made to Pearl and Hermes Reef, and a considerable amount of biological data were collected. Work was accomplished on the following Wildlife Management Studies:

a. Life History of the Hawaiian Monk Seal.

b. Life History of the Green Sea Turtle.

c. Life History of the Laysan Finch.

d. Studies involving vegetation changes on the Hawaiian Islands Refuge.

Heavy rains drenched the party shortly after landing on March 13, but by afternoon they stopped. By late afternoon the following day the front passed and fair weather prevailed during the rest of the stay. The maximum temperature recorded since the last visit in September, 1972 was 88° while the minimum had been 46°. At 6:00 PM on March 13 the temperature was 68. During this trip the maximum was 76° and the minimum was 62°.

General observations revealed that the isthmus connecting Seal Island and Kittery Island is now about 42 yards wide at its narrowest. Sizes and shapes of other islands had not changed materially since the September visit. Scattered along the beaches of Seal and Kittery Islands were walnut-sized globules of oil.

Cooperation

Following through on the cooperative wildlife agreement the Bureau has with the Midway Naval Station, the second draft of the wildlife management plan for the Station was carefully reviewed and discussed with the station commander, Captain Robert Roemer. This document will be a permanent station plan which will provide guidance for succeeding commanders with respect to the wildlife management program on Midway. As usual Captain Roemer and member of his command were very cooperative. The station administration officer, Cmdr. Andy Patrick camped with us and proved a willing and able field companion. Cmdr. Van Spradley, station air operations officer and Lt. Cmdr. Michael Rij, senior helicopter pilot for the base, piloted the helicopter.

Wildlife Populations

Each of the small islets within the atoll were visited twice during the operation on Pearl and Hermes Reef, and bird populations were estimated

for each islet. Some counts were considered Class A data, or head counts while others were "educated guesses" because of time limitations. Data class figures are included with discussion of each species.

Sooty Terns - (6,000 Class C)

Sooty terns had just recently arrived on Pearl and Hermes Reef. Daytime populations on Southeast Island were estimated at 1,500 birds while toward dusk, up to 6,000 were observed as those fishing at sea returned to roost for the night. A few birds were settled on their breeding areas; however, most kept flying constantly over the island. No eggs or nests were found.

Approximately 275 more were also observed on Seal Island, but none were noted elsewhere.

Grey-backed Tern (300 Class B)

On Southeast Island approximately 110 birds were observed during the daylight hours and 6 newly established nests with eggs were noted. Active courtship activities were also seen. At night the population increased to approximately 300 birds.

A small colony was noted on Seal Island, and 7 nests with eggs were noted.

Common Noddy Terns (60 Class B)

At Southeast Island the population varied between 20 and 50 birds. Seven adults on eggs were recorded. Three nests and approximately 100 ddults were observed on North Island.

Hawaiian Noddy Terns (50 Class B

On Southeast Island the population was estimated to be between 30 and 50 birds. Seven nests with eggs were observed in tops of the Eragrostis on the west side of the islet. There was no increase in nighttime populations.

Fairy Terns (1,000 Class C)

Hundreds of Fairy terns were noted resting on the exposed reef to the north and east of North Island. Approximately 20 were observed on North Island. Two nests and 11 adults were noted on Southeast Island, while 2 nests and 6 adults were seen on Kittery Island.

Sooty Storm Petrels (500 adults - 150 chicks - Class C)

A total of 41 adults and 17 chicks were banded (682-97143 thru 200) on Southeast Island. Most of the chicks found appeared to be approximately 2 weeks old and were covered with dark gray down. Other adults were just beginning to nest but no eggs were noted in the newly constructed

	Males				Females				Adults	Nests
	1 egg	2 eggs	Total	Day	1 egg	2 eggs	Total	Day		
Southeast	11	12	23	50					100	
Kittery	2	9	11	50						
Sand	9	3	12	50						
North	16	11	27	70						
Total	38	35	73	220						

burrows. A single chick and 2 dead adults were found on North Island. A single chick was found on Grass Island. Time did not permit us to investigate more than but a few burrows. Southeast Island may contain the largest nesting population of this species in the world.

Three previously banded petrels were recaptured. One (682-17560), was originally tagged during March 1972, while the other (662-05722) was originally banded on March 21, 1965. The number on the band of the second bird was almost completely worn away.

A bird carrying band number 262-20261 was also recaptured. This band was removed and band #682-97154 was placed on the bird.

Red-tailed Tropicbird (20 - Class B)

Four tropicbird nests with eggs were found on Southeast Island and 5 adults were noted on North Island. One limiting factor with respect to nesting success of this speci is the availability of suitable n nesting sites. In the past old barrels or boards were frequently selected by tropicbirds, however, most of this trash has either rusted away or been burned.

Blue-faced Booby (300-Class B)

Nesting Blue-faced boobies were noted on most islets. Most nests had either one or two eggs as shown below. None, however, were seen on Grass Island.

	Nests			ADULTS	
Islets	1 egg	2 eggs	Total	DAy	Night
Southeast	11	12	23	50	100
Kittery	2	9	11	50	
Seal	9	3	12	50	
North	16	11	27	70	
Total	38	35	73	220	

Red-footed Booby (160-B)

Red-footed boobies were only observed on Southeast Island, and the population varied from approximately 85 during the day to 130 adults and 30 immature at night. A total of 26 nests with eggs and 11 nests without eggs were observed. The old metal tower continued to serve as a preferred roosting site - about 65 were tallied there one night.

Black-footed Albatross (10,000 Class B)

Both species of albatrosses were found nesting on North, Southeast, Grass, Seal and Kittery Islands. A head count of black-footed chicks on Southeast Island turned up 1,658 on the East part of the island and 426 on the smaller western half, for a total of 2,084. As usual most were nesting along the perimeters of the islets, although a few were scattered about the interiors.

In an effort to determine the number of walkers per chick, a transect of 100 Laysan chicks was counted. This count revealed there were 62 sub-adults or walkers per 100 chicks. Assuming there were 2 parents per chick and 62 walkers per 100 chicks, and assuming the black-footed adult chick ratio is the same as Laysan, the estimated total of black-footed albatross population for Southeast Island was calculated to be 7,680 birds.

The estimated population for the other islets was 2,500 birds and the total atoll population was calculated to be 10,000.

Laysan Albatross (51,000 Class C)

Laysan albatross chicks were also head counted on Southeast Island. A total of 9,809 were recorded on the east portion of the islet and 1,189 on the western portion for a total of 11,098.

Again assuming 2 parents per chick and 62 walkers per 100 chicks the Laysan albatross population was calculated to be 39,176 birds, or rounded off, 39,200.

On Kittery Island 30 chicks and 35 adults were recorded.

Birds were not head counted on Grass, Seal or North Island, however, it was estimated that the population for the other islets was approximately 11,700 birds.

Wedge-tailed Shearwater (50 Class C)

Wedge-tails just recently arrived at Pearl and Hermes Reef. None were noted during the day and the nighttime population was estimated to be only 50 birds.

Christmas Island Shearwater (10 Class B)

Four pairs were observed on Southeast Island and two nests were seen, however, none contained eggs.

Bonin Island Petrels (200 Class C)

Bonin Island Petrels had just recently arrived at Pearl and Hermes Reef. A considerable amount of digging was observed but no nests with eggs were found. The estimated nighttime population was approximately 200.

Brant (1 Class A)

A Black brant was observed and photographed on Southeast Island. It was seen browsing on mustard and appeared to be in good health. This was the first record of a Black brant at Pearl & Hermes Reef and the second on the Hawaiian Islands Refuge. The other being collected at French Frigate Shoals in December 1970.

Sanderling (2 Class A)

Single birds were noted on Kittery and Southeast Islands.

Wandering Tattlers (2 Class A)

Two were seen on Seal Island.

Bristle Thighed Curlew (13 Class A)

Eleven were observed on Southeast Island and two on Seal Island.

Golden Plover 0

Usually this species is common at Pearl and Hermes Reef; however, none were observed on any of the islets during the trip.

Ruddy Turnstones (95 Class B)

Seventy turnstones were observed on Southeast Island, fifteen on North and ten on Seal.

WILDLIFE MANAGEMENT STUDIES

March 1973

Laysan Finch Study

One-hundred random finch transects were conducted on Southeast Island on March 14. Thirty were run on the western, smaller portion of the Island while 70 were conducted on the east of the island. Each transect was 100 ft. long by 16.5 feet wide and the data are shown in Table 1. Using the standard method of calculating the finch population, the total finch count was calculated to be 729.

$$\text{Total birds} = \frac{\text{Number counted} \times \text{total area}}{\text{Area sampled}}$$

$$\text{Total birds} = \frac{88 \times 31.37 \text{ acres} = 2{,}760.5}{\frac{16.5 \times 100 \times 100}{43{,}560}} = 729$$

March 14, 1973

The main factor which may have contributed to the higher finch population was that vegetation on the island was very low and it was much easier to see birds this time than in former counts. Boerhavia was just beginning to emerge and Sicyos was barely evident. Setaria was not much higher than one or two inches. Although some of the Brassica had reached heights of 18-24 inches, most plants were less than 2-3 inches tall. The two high counts, Table 1, were located in Scaevola (15) and high Brassica (9). Regardless, it was evident that the finch population continues to thrive.

A total of 12 finch were observed on Seal Island.

Two nests, each containing three eggs, being incubated were found in Eragrostis clumps on the southwest part of Southeast Island. Another containing 3 eggs, also being incubated, was found on Seal Island, but none was found on Grass Island.

On March 14 a Hawaiian noddy tern was flushed from its nest constructed on top one of the Eragrostis clumps. 10-15 finch were scattered about this general area. Within a few seconds, one had flown to the top of the grass clump and shortly afterwards lit on the nest and pecked a small hole in the egg; however, it soon lost interest and flew back down to the ground and hopped away. Within a few minutes the tern returned to incubating the egg.

Finch were noted biting soft stems of Brassica (for moisture?). Others were noted hunting for food on undersides of leaves of various species of plants or foraging on the ground for seeds or insects. A number of times they were observed trying to crack the hard (

A total of 15 previously banded finch were recaptured and the data are shown in Table 2.

Table 1
Finch Transects
Southeast Island
March 14, 1973

Transect No.	X	X^2	Transect No.	X	X^2	Transect No.	X	X^2
1	0		34	0		67	2	4
2	0		35	0		68	2	4
3	0		36	0		69	1	1
4	0		37	0		70	0	
5	0		38	0		71	1	1
6	1	1	39	0		72	1	1
7	0		40	0		73	0	
8	0		41	0		74	0	
9	0		42	0		75	0	
10	1	1	43	0		76	0	
11	0		44	0		77	0	
12	2	4	45	0		78	0	
13	5	25	46	1	1	79	0	
14	1	1	47	3	9	80	0	
15	0		48	0		81	9	81
16	0		49	3	9	82	3	9
17	0		50	0		83	0	
18	0		51	0		84	0	
19	0		52	0		85	0	
20	4	16	53	0		86	0	
21	0		54	0		87	1	1
22	2	4	55	6	36	88	0	
23	3	9	56	1	1	89	0	
24	0		57	0		90	0	
25	0		58	0		91	0	
26	0		59	15	225	92	0	
27	6	36	60	0		93	0	
28	0		61	4	16	94	0	
29	0		62	0		95	1	1
30	0		63	0		96	0	
31	0		64	4	16	97	1	1
32	0		65	0		98	0	
33	1	1	66	0		99	3	9
						100	0	
							88	524

1-30 west side
31-50 east side of larger portion of island
50-100 west side of larger portion of island

Table 2

Finch Recapture Data
Southeast Island
March 14, 1973

Band Number	Banded Date	Banded Island	Age	Sex	Elapsed time (Mos.)
61-171308	5/26/69	Southeast	L	M	46
310	"	"	L	M	46
311	"	"	HY	F	46
328	"	"	HY	F	46
337	"	"	A	M	46
411	2/11/69	"	A	F	49
437*	"	"	L	F	49
438	"	"	A	M	49
916	3/14/72	"	A	M	12
937	"	"	A	F	12
944	"	"	A	F	12
984	"	"	A	F	12
988	"	"	A	M	12
989	"	"	A	F	12
102-153712	6/27/72	"	A	M	9

*recaptured on 5/29/69

Hawaiian Monk Seal Studies

Seal census data were collected on both March 13 and 15 (Table 3). The count again indicated a declining seal population since this count was the lowest ever recorded for Pearl and Hermes Reef. Several of the high count censuses conducted during the earlier years were made during March (1964, 1965 and 1967) and some were incomplete. The cause for the very low count this year is unknown.

One female pup was tagged with number 1101 (Table 4). A total of 6 previously tagged animals were recorded (Table 4). Five of the 6 were originally tagged during 1967 and have not been observed since. This indicates that perhaps some animals may leave the area for several years. It also suggests that any given time there may be a significant number of animals at sea or away from the islands. However, it is also possible that due to the infrequency of our visits, we simply miss many tagged animals which are off in the water at the time.

One of the Navy pilots who periodically flies from Midway to Kure reported that there were 20 adults and 3 pups on the sand spit on Kure on March 16.

Table 3
Seal Census Data
Pearl and Hermes Reef
March 14, 1973

	Adults			Pup		Age	
	M	F	Unknown	M	F	Unknown	Total
North	-	-	-	-	1	8	9
Little North						2	2
Southeast						6	6
Bird						3	3
Sandspits						1	1
Grass	1						1
Kittery	3	2	3				8
Seal	2	1				1	4
Totals	6	3	3		1	21	34

Table 4

Seal Recapture Information
Pearl and Hermes Reef

Tag #	Original Location	Age	Date	No. Previous Returns
A 128*	North	A	7/3/67	0
137	Southeast	Y	7/6/67	5
170	Kittery	A	7/8/67	4
A 180	Seal	A	7/10/67	3
292	Seal	A	9/28/67	0
1067	Seal	P	6/27/72	1

*This animal had a newly born pup with her-Pup tagged #1101 F.

Studies of the Green Sea Turtle

A total of 11 turtles were turned during our stay at Pearl and Hermes Reef. Four were newly tagged and the remainder were animals that had been tagged previously (Table 5).

Studies Involving Vegetative Changes

The Eragrostis on Seal Island did not appear as lush or as abundant as formerly. Much of Southeast Island was covered with low mats of Tribulus in flower and much less so by Boerhavia. Setaria was very low and was almost absent at this time. Most of the Eragrostis has disappeared from the northeast part of the island, and this plant is now mainly limited to about 15-20 clumps on the southwest part. Most of the Brassica was very low in height, Sanchus was scattered about near the recognition sign. The general overall impression of the vegetation of the islands was that growth was retarded when compared to former years.

Table 5
Turtle Data
March 15, 1973
Tagging Data

Tag	Sex	Plastron Length	Carapace Straight Length	Carapace Straight Width	Carapace Curved Length	Carapace Curved Width	Thickness	Weight
1060	F	29 3/4	34 1/4	29 1/2	not taken		13.5	not taken
1053	F	31	37 1/4	28 1/4	39 1/4	36 1/2	14 1/8	275
1054	F	28 3/8	35 1/2	27 1/2	38 1/2	36	13 3/4	230
1055	M	27 3/4	34 7/8	27 3/8	36 3/4	34 1/2	12 3/8	210

TURTLE RECAPTURE DATA
March 15, 1973

	Tagging Data Date	Tag	Sex	Plastron Length	Carapace Straight Length	Carapace Straight Width	Carapace Curved Length	Carapace Curved Width	Thickness	Weight	Location
(1)	9/26/66	137	M				35	32 1/2			North
(2)	3/15/73	137	M	27 3/4	35	26	37 5/8	35	13 3/4	210	North
	9/22/66	139	F				28	26 1/2			North
	3/15/73	139	M	26 1/4	31 3/8	25 1/2	33 1/2	32	11 3/4	160	North
	3/15/73	T205	M	28 3/4	36.8	28 1/4	not taken		12.5		S/East
	4/71	988	F	27.0	32.9	25	36	32 1/2	12.2	180	S/E
	3/15/73	988	F	25 5/8	31 3/8	25 1/4	33 7/8	30 1/2	11 1/2	155	North
	3/15/73	1052	F	25 1/8	30 1/2	25 3/4	31 7/8	30 5/8	11 1/4	135	S/East
	9/16/64	1069*	F				25	23			S/East
	3/15/73	1069	F	22 1/4	28 1/4	25 5/8	30 1/2	n/t	10 1/2	95	S/East

* Hawaii Division of Fish & Game TAg
(1) First date is tagging data
(2) Second date is recovery data