

6 June 1983

Dear George:

Greetings from Lisianski. I haven't relayed any messages to you because there has not been a whole lot of new turtle information gathered. I have been using two days a week as 'turtle' days to opportunistically sample basking turtles and capture juveniles along the nearshore waters. As it turns out, our Seal Census days (every other day) seem to bring us (TCJ and I) into contact w/ more basking turtles than on my own 'Turtle' day. And so for the most part, I have been leaving the turtles alone, except for marking them w/ the Dupont spray paint; white, when we are doing censuses.

Since the Seal Census days are more consistent (for timed observations between 1300-1530) I shall try to describe for you some of my findings to date. We got to Lisianski on 26 April, the first census was on 27 April and the following figures reflect information gathered on 15 seal censuses between 4/27-5/25/83. BASKING: An average of three turtles are seen basking during census (range 0-6) occurring usually in Sector 27, 20 and 11. On the map enclosed are drawn in red the 'basking' beaches that are utilized by turtles during census times and on my own surveys. As like last year, 1982, the turtles are still using the same beaches and pretty much the same spots (within 30') as I saw them. Numbers are very similar. Also due to your suggestion in regards to human disturbance, I have kept from approaching

2

the basking turtle and trying to read their tags during Seal Censuses. In that respect, the animal is allowed to use its environment and ~~to~~ <sup>to</sup> 'sleep' uninterrupted by me.

SWIMMING: I sometimes feel that I am seeing more swimming turtles than last year, perhaps that is just an artifact of being on a walk around the island every day. On Seal Censuses, an average of ten swimming animals are observed (range 3-26) and these are especially noted in sectors 43-45, 18-20, 21-23 and 25-27. I am surprised to note that my last years area for net surveys have not shown numbers of juvenile turtles in nearshore waters. In Sector 10, where I consistently saw 3-6 turtles last year in July-September, there ~~has~~ <sup>has</sup> been only 1 in April-May 1983. But, I found some new hotspots for feeding turtles.

They are in Sectors 20-24, and especially the Sector 23 where all size categories seem to feed in. I did a short underwater snorkel survey and found lots of caulerpa racemosa growing on the flat plate rocks of the reef, in cracks and ledges, growing entwined w/ the Halimeda - a virtual field of turtle food. During my snorkel I saw an adult<sup>♀</sup> feeding 10' away from me, upended and munching away.

Turtles are still coming up in Sector 25 to bask on the "OFFSHORE ROCKS" and I have more photographs of this event and have also tagged subadults as they lay on the rocks.

One problem that arises, is that wet piers makes it very hard to get a tight crimp on the tag, they tend to slip. I will try to remedy that i.e. swim to the rocks in the future. Another interesting spot is in Sector 20 when during low tide, turtles (1-3) will sorta prop themselves, half in and half out of the water on the reef at back. Most of the time, at least 4/5 of the carapace is free of the water.

On 19 May, on Seal Census #12, at 1458 in Sector 29 three juvenile turtles temporarily beached themselves to get away from a ~10' tiger shark. The shark also beached itself trying to get a turtle and thrashed around in the wave wash and finally made it back to deeper water.

Very impressed w/ the tall dorsal fin and the stripes of a live T.S. The turtles reentered the water but stayed in the shallows ~5' from shore as the T.S. swam into deeper water, don't know if it got a turtle-nobbed or remains on beach. Also on 22 May in Sector 41, a monk seal got munched by two tiger sharks in the afternoon TCJ and I had been photographing 5 male cruisers mounting a dead animal (dead because it never came up to breathe) and as the tide rose and the event drifted into deeper water, the sharks were able to attack the dead animal or a live male cruiser victim. Lots of blood and thrashing around. Good thing I didn't go out to retrieve the dead animal. I hope the photographs come out okay, because again, like on Laysan we were shooting into the glare.

TURTLE DATA: So far, I have only been able to identify 31 individuals. Thirteen juveniles, five subadults, six males and seven adult females. Of these numbers, thirteen are newly tagged individuals and only two are new-unrecorded tag recoveries. Juveniles tag # **2851** and # **2844**. The other animals are part of my identified ~~populations~~ <sup>population</sup> from 1982. This is a brief rundown of my data:

<u>Juveniles</u>	<u>Subadults</u>	<u>Males</u>
2851 complete moult	6289 no moult	430, <u>6752</u>
2844 (C) 59.0 x 51.4	5854, 6325 (C) 64.6 x 57.7	T259
5828, (C) measure	<u>6755</u> no moult	<u>6754</u>
5829, <u>6753</u> (C) 51.0 x 45.7	<u>6756</u> , <u>6757</u> , <u>6758</u> no (C) moult	<u>6763</u>
<u>6760</u> , <u>6761</u> complete	<u>6754</u> no moult	<u>6765</u> , RFL 41, LFL 21
6281, 6282 complete		<u>6768</u> , RFL
2857, 2858 (C) 60.1 x 53.7		
5854, 6325 complete		
<u>6766</u> , <u>6769</u> (C) 51		<u>6751</u>
<u>6772</u> , <u>6773</u> complete moult		6291, 6328
<u>6776</u> , <u>6777</u> complete moult		5832, 6489, <u>6767</u>
5833, <u>6759</u> complete		<u>6762</u>
		1299
		T211, 6303, 6304
		<u>6774</u> , <u>6775</u>

There are still quite a number of tagged turtles w/ my spray paint letter designation on them w/out their tags read, so I will work on that.

TURTLE NESTING, So far only 2 excavated pits in sectors 45 and 42 on 5/31/83.

Well, I'm getting to know a lot, much more than I had expected about monk seals. I'm spending quite a lot of time on census, bleeding newly molted animals and looking at scars and wounded animals. Also it seems that the censuses fall during the hottest part of the day when the wind is at its least force, flies are out in force and the heat is torrid. It's also kinda fun working w/ another animal - trying to learn its behavior and life history. One thing I find disgusting is working on seal scats. It's smelly, dirty, filthy, unappealing and totally unappetizing - but it gets done. Boy, do the flies like coming out to a scat processing day. One advantage is that the ocean is very close at hand, so I am able to wash off quite often.

Then, or TCI has been a good influence on me. I find here life much more enjoyable and acceptable because of her attitudes and beliefs. We have been getting along very well, except for a few minor problems that have been remedied or compromised. Camp life is better organized this year, than last year. We have enough of everything to do a good job out here and still find time to enjoy ourselves. Well, I'm ~~in~~ slowing down finding things to write about, you probably don't want to know about the hot weather, flies or Butterfinger candy bars so will say bye for now.

I hope you have a productive time at FFS and are able to complete your goals. Please give my <sup>over</sup>

I best to Linda and Christian for me, say "Hi!!"  
to to Gail, Sue, Dave and John for me. Also could  
you perhaps phone my parents and tell them all is  
well with me, more probably would like some word  
from me.

Thanks for all your help etc to  
- I have written for a while about what I find  
difficult to learn it's behavior and the history  
of things. I find it difficult to read and I  
find it difficult to write.

~~It's a bit of a mess but I think it's  
better than nothing. I hope you like it.~~

P.S. Thanks again for going out of your way  
for my glasses. Give me something to read  
on night surveys rather than squinting eyes.

I hope you have a productive time at the  
conference. I will see you soon.



• excavated pits

**▨** basking bands

**- - -** feeding aggregations of 30+ individuals

• basking 'offshore rocks' Section 25 and Section 20 on reef during low tide

TOTAL NUMBER OF GREEN TURTLES OBSERVED ON LISIANSKI ISLAND  
25 APRIL - 9 AUGUST 1983

TURTLE/SEAL CENSUS

⊙ every second day

⊙ 1300 - 1500 (Hono. time)

Total Animals observed during Census

Census No.

1	4	45	3				
2	6	46	3				
3	5	47	11				
4	11	48	6				
5	11	49	9				
6	13	50	6				
7	3	51	6				
8	16	52	7				
9	10						
10	5						
11	5						
12	13						
13	11						
14	10						
15	26						
16	12						
17	10						
18	11						
19	6						
20	9						
21	11						
22	7						
23	9						
24	8						
25	16						
26	11						
27	6						
28	8						
29	5						
30	7						
31	21						
32	2						
33	10						
34	5						
35	9						
36	8						
37	8						
38	6						
39	11						
40	10						
41	8						
42	6						
43	7						
44	3						

RANGE 2 - 26  
MEAN ~~8.62~~ 8.65  
SD ~~4.22~~ 4.37

BASKING ANIMALS

April / etc	June	July	August		
1	4 <sub>21</sub>	0 <sub>22</sub>	0 <sub>23</sub>	2	
2	4 <sub>24</sub>	0 <sub>25</sub>	0 <sub>26</sub>	1	RANGE 0-7
3	3 <sub>27</sub>	2 <sub>28</sub>	0 <sub>29</sub>	0	MEAN 1.65
4	6 <sub>30</sub>	2 <sub>31</sub>	1 <sub>32</sub>	4	SD 1.84
5	7 <sub>33</sub>	1 <sub>34</sub>	1		
6	0 <sub>35</sub>	1 <sub>36</sub>	1		
7	0 <sub>37</sub>	2 <sub>38</sub>	0		
8	2 <sub>39</sub>	0 <sub>40</sub>	0		
9	1 <sub>41</sub>	0 <sub>42</sub>	1		
10	0 <sub>43</sub>	0 <sub>44</sub>	1		
11	1 <sub>45</sub>	1 <sub>46</sub>	1		
12	3 <sub>47</sub>	1 <sub>48</sub>	0		
13	3 <sub>49</sub>	2 <sub>50</sub>	1		
14	6 <sub>51</sub>	1 <sub>52</sub>	2		
15	4 <sub>53</sub>	0 <sub>54</sub>	1		
16	3				
17	7				
18	2				

A. KAM



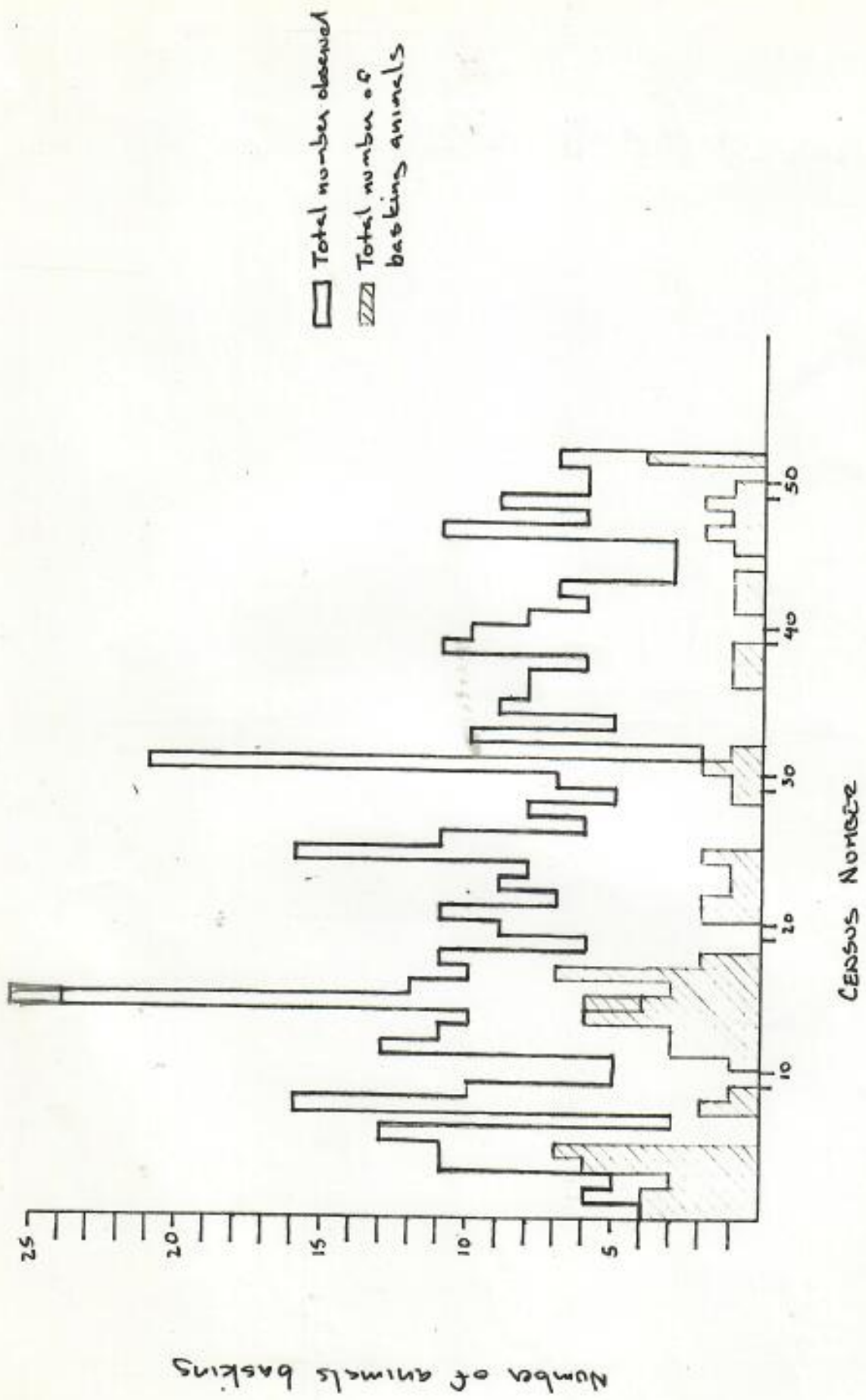


Figure — . Number of green turtles observed during censuses on Lisianski Island, 25 April - 9 August 1983.

preliminary data

Census counts of green turtles by month on Lisianski Island 25 April - 9 August 1983

DATE	SWIMMING			BASKING			TOTAL observed		
	Juvenile	Subadult	Adult	Juvenile	Subadult	Adult			
<b>APRIL</b>									
27	0			1	3		4		
29	2			1	2	1	6		
	1.0	0	0	1.0	2.5	0.5	5.0	$\bar{SD} = 1.0$	
<b>RANGE</b>	(0-2)	0	0	(1-1)	(2-3)	(0-1)	(4-6)		
<b>MAY</b>									
1	2			1	2		5		
3	4	1			3	3	11		
5	3	1			2	5	11		
7	6	3	4				13		
9	1		2				3		
11	9	1	4	1	1		16		
13	5	3	1		1		10		
15	4	1					5		
17	1	2	1			1	4		
19	5	2	3	1	1	1	13		
21	4		4		1	2	11		
23	0	1	3	1	2	3	10		
25	11	6	3	2		4	26		
27	6	2	1	2		1	12		
29	2	1		1		6	10		
31	5	4		1	1		11		
<small>Average number of animals</small>	4.3	1.8	1.6	0.6	0.9	1.6	10.7	$\bar{SD} = 5.3$	
<b>RANGE</b>	(0-11)	(0-6)	(0-4)	(0-2)	(0-3)	(0-6)	(3-26)		
<b>JUNE</b>									
2	2	3	1				6		
4	8	1					9		
6	9				1	1	11		
8	4		1		1	1	7		
10	7		1			1	9		
12	4	1	2			1	8		
14	10	3	1			2	16		
16	8		3				11		
18	6						6		
20	6	1	1				8		
22	3	1				1	5		
24	4	1	1			1	7		
26	12	6	1			2	21		
28	1					1	2		
30	7	1	2				10		
<small>Average number of animals</small>	6.1	1.1	0.9	0	0.1	0.7	9.1	$\bar{SD} = 4.4$	
<b>RANGE</b>	(1-12)	(0-6)	(0-3)	0	(0-1)	(0-2)	(2-21)		

A. KAM

Census counts of green turtles by month on Lisianski Island, 25 April - 9 August 1983.

DATE	SWIMMING			BASKING			TOTAL observed		
	Juvenile	Subadult	Adult	Juvenile	Subadult	Adult			
<b>JULY</b>									
2	3	2					5		
4	6	2	1				9		
6	5		3				8		
8	4		3			1	8		
10	4		1		1		6		
12	7	3			1		11		
14	7	2	1				10		
16	4	1	3				8		
18	4		1		1		6		
20	5	1				1	7		
22	2					1	3		
24	2	1					3		
26	1	1				1	3		
28	5	3	1	1		1	11		
30	3	1	1			1	6		
Meaning no turtles observed	4.1	1.1	1.0	0.1	0.2	0.4	6.9		SD = 2.6
RANGE	(1-7)	(0-3)	(0-3)	(0-1)	(0-1)	(0-1)	(3-11)		
<b>AUGUST</b>									
1	4	3		1		1	9		
3	3		2	1			6		
6	4	2					6		
7	3			1	2	1	7		
Meaning no turtles observed	3.5	1.3	0.5	0.8	0.5	0.5	7.0		SD = 1.2
RANGE	(3-4)	(0-3)	(0-2)	(0-1)	(0-2)	(0-1)	(6-9)		

--- pencil, observations swimming / basking patrol  
 — pen, observations during census swimming / basking

RAW DATA

DATE		SWIMMING			BASKING			TOTAL OBSERVED	TOTAL during census	TOTALS
		Juvenile	Subadult	Adult	Juvenile	Subadult	Adult			
25 April	Arrive Lisianski									
26		2					2			
27				1	1	13	14			4
28	-								0	
29		1/2			1/1	1/2	1/1	2/4		6
30	-								0	
1 May		1/2	1	1	1/1	1/2	3/2/3		3	5
2	-								0	
3		1/4	1/1		1	2/13	2/13	2/5/6	7	11
4		5	3		1	2	8/3		11	
5		5/3	1/1			1/2	3+4/5	7/2/4/7	15	11
6	net survey / ulu	3/2	4/3	1/1		1/2	1/2	8/0/6/4	8-10	
7		1/6	2/3	7/4		2	1	9/3/13/0	12	13
8							1	1	1	
9		1/1	3	1/2	1		1	4/2/3/0	6	3
10		15	4	5	4	2	3	24/9	33	
11		3/9	1/1	1/4	1/1	1/1		5/0/4/2	5	16
12		5	1	7			4	13/4	17	
	night survey			1	1			1/1	2	
13		2+6/5	1/3	3/1	1	1/1	1	11/29/1	13	10
14	Photo session								0	
15		5/4	1/1	2		1		8/15/0	9	5
16		6	2	5		1		13/1	14	
17		1/1	1/2	1/1		1	1/1	0/1/4/1	1	5
18		9	3	2		2	1	4/1	5	
19		1/5	1/2	1/3	1/1	3/1	1/1	1/4/10/3	5	13
20	101 pup mortality [28]								0	
21		1/4	5	1/4		1/1	1/2	6/2/8/3	8	11
22	Shark attack on sea [41]								0	
23		2	3/1	1/3	1/1	2/2	1/3	5/3/4/6	8	10
	night survey			1			2	1/2	3	
24		11	3	1	1		2	15/3	18	
25		2/11	1/6	1/3	1/2		3/4	4/4/20/6	8	24 26
26		8	3	2		2		13/2	15	
27		1/6	1/2	1/1	1/2		1/1	1/9/9/3	1	12
28		8	1	5				14/0	14	
29		4/2	1/1		1/1		1/6	4/1/3/7	5	10
30		6	5	3	1		5	14/6	20	
31		1/5	1/4		1/1	1/1	2	1/2/9/2	3	11

swimming / basking

TOTALS

RAW DATA

DATE	Swimming			Basking			D	Total downy patrol	Total basking animal swimming
	Juvenile	Subadult	Adult	Juvenile	Subadult	Adult			
June 1	10	4		1	3	4	14/8	22	
2	2 / 2	1 / 3	1 / 1		1		3/1 6/0	4	6
3	13	1	1		1	1	15/2	17	
4	5 / 8	1 / 1					6/0 9/0	6	9
5			2				2/0	2	
6	3 / 9				1	1 / 1	3/1 9/2	4	11
7	4	2	1				2/0	7	
8	2 / 4	1	2 / 1		1	1	5/0 5/2	5	7
9	5	3	3			1	11/1	12	
10	3 / 7	1	1 / 1			1 / 1	5/1 8/1	6	9
11	6			1			6/2	8	
12	14	1	12			3 / 1	0/3 7/1	3	8
13	3	2	2			2	7/2	7	
14	1 / 10	13	11			12	1/0 14/2	1	16
15	11	2	3	1		2	16/3	19	
16	1 / 8		13			1	11/1 11/0	2	11
17	1 = 1	1				1	3/1	4	
18	16						6/0	6	
19	11	2					13/0	13	
20	2 / 6	1	11				2/0 8/0	2	8
21	Holiday								
22	1 / 3	2 / 1				1	3/0 4/1	3	5
23	7	2			1	1	9/2	11	
24	1 / 4	1	1			1	1/0 6/1	1	7
25	Photo Session	1					1/0	1	
26	1 / 2	16	1			1 / 2	0/1 19/2	1	21
27	3					1	3/1	4	
28	1					1 / 1	0/1 1/1	1	2
29	5	2	1				8/1	9	
30	4 / 7	1	13				4/1 10/0	5	10

RAW DATA

[\*] night survey

Counts & Surveys  
Starting

DATE	Swimming			Basking			Total during patrol	TOTAL
	Juvenile	Subadult	Adult	Juvenile	Subadult	Adult		
July 1	2		2				4/0	4
2	1	13	12				1/0 5/0	1 5
3	1					2	1/2	3
4	1	16	12	1	1		1/2 9/0	3 9
5	2		1	1			4/0	4
6	2	15			13		2/0 8/0	2 8
7	4	1	1			1	6/1	7
8		14		1	13		1/0 7/1	1 8
9	6	1		1		1	7/2	9
10	2	14	1		11		3/0 5/1	3 6
11	11	2	1				14/0	14
12	2	17	13	3		11	5/0 10/1	5 11
13	4	1	5				10/0	10
14	1	17	12	2	11		3/0 10/0	3 10
15	5	2	1				8/0	8
16	4	14	11		13		4/0 8/0	4 8
17	1					1	1/1	2
18	3	14		1	11	1	4/1 5/1	5 6
19	12	1	2				15/0	15
20	1	15	11			1	1/0 6/1	1 7
21	7	2			[2]		[1] 9/0	9
22		12				1	2/1	3
23	Day off							
24		12	11				3/0	3
25	SICK LEASE							
26		4	11	11		1	4/1 2/1	5 3
27		6	1			1	7/1	8
28		1	15	2	13	11	3/1 9/2	4 11
29	Nothing observed							
30		2	13	11	11	1	2/0 5/1	2 6
31					1	1	0/2	2

RAW DATA

DATE	Swimming			Basking				Total during patrol	Total of basking + swimming animals
	Juvenile	Subadult	Adult	Juvenile	Subadult	Adult			
August									
1	/4	/3		1 /1		1 /1	0/2 7/2	2	9
2	1						1/0	1	
3	1 /3		/2	/1	2		1/2 5/1	3	6
4	2	2					4/0	4	
5	RAIN STORM								
6	5 /4	1 /2		1			6/1 6/0	7	6
7	2 /3		1	/1	/2	2 /1	3/2 3/4	5	7
8	2			1			2/1	3	
9	BREAK CAMP ON LISIANSKI								

ENVIRONMENTAL

AIR

TEMPERATURE DURING

CENSUS

@ taken at  
beginning

CLOUD COVER

/ WIND DIRECTION

at  
beginning

	°C				CLOUD COVER		
1	31	43	35		1 4·NE		4·EE
2	25	42	34		2 10·NE		6·NE
3	31	42	35		3 10·SE		6·EE
4	26	42	36		4 5·SE		7·EE
5	30	44	32		5 8·NE		4·SE
6	30	50	35		6 1·SE		3·EE
7	27	51	33		7 10·NE		6·EE
8	33	52	33		8 6·SE		2·EE
9	30				9 3·NW		
10	31				10 2·SE		
11	29				11 6·NW		
12	31				12 7·NE		
13	29				13 9·NE		
14	31				14 5·EE		
15	30	RANGE: 25-37°C			15 1·NE		
16	29				16 7·NE		
17	30				17 5·NE		
18	29				18 8·SE		
19	28				19 4·SS		
20	32				20 8·NN		
21	31				21 5·SS		
22	33				22 3·SE		
23	35				23 0·NE		
24	35				24 3·NE		
25	34				25 5·NE		
26	35				26 1·NE		
27	35				27 0·EE		
28	35				28 0·EE		
29	30				29 7·SE		
30	32				30 7·EE		
31	35				31 1·NE		
32	32				32 5·EE		
33	35				33 3·EE		
34	35				34 5·EE		
35	30				35 5·EE		
36	34				36 4·EE		
37	37				37 3·EE		
38	30				38 8·EE		
39	35				39 7·EE		
40	33				40 4·SS		
41	36				41 3·EE		
42	35				42 2·EE		
43	35				43 6·EE		
44	36				44 3·EE		

A.K.A.M



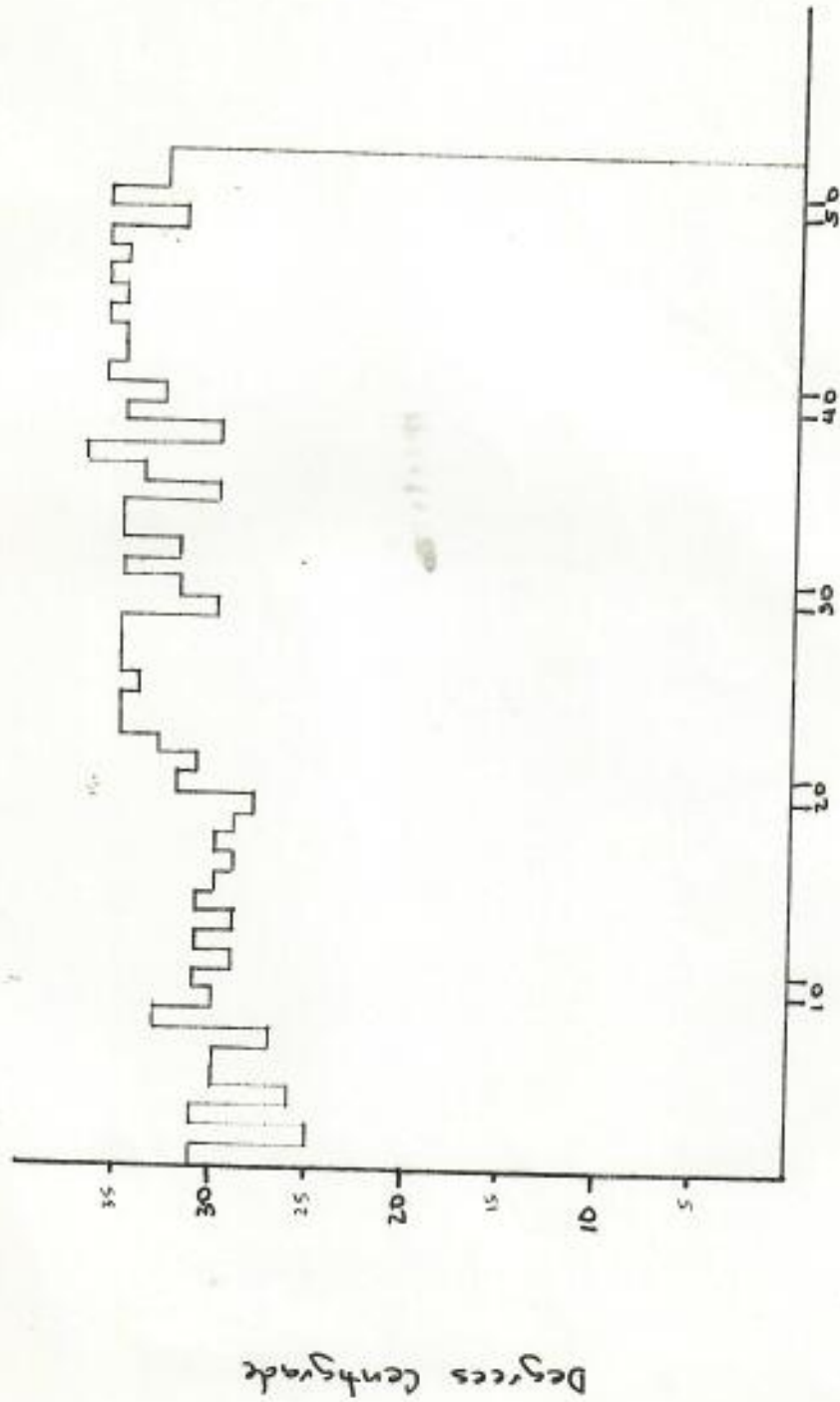


Figure — Air Temperature profile (°C) for Lisianski Island 25 April - 9 August 1983.

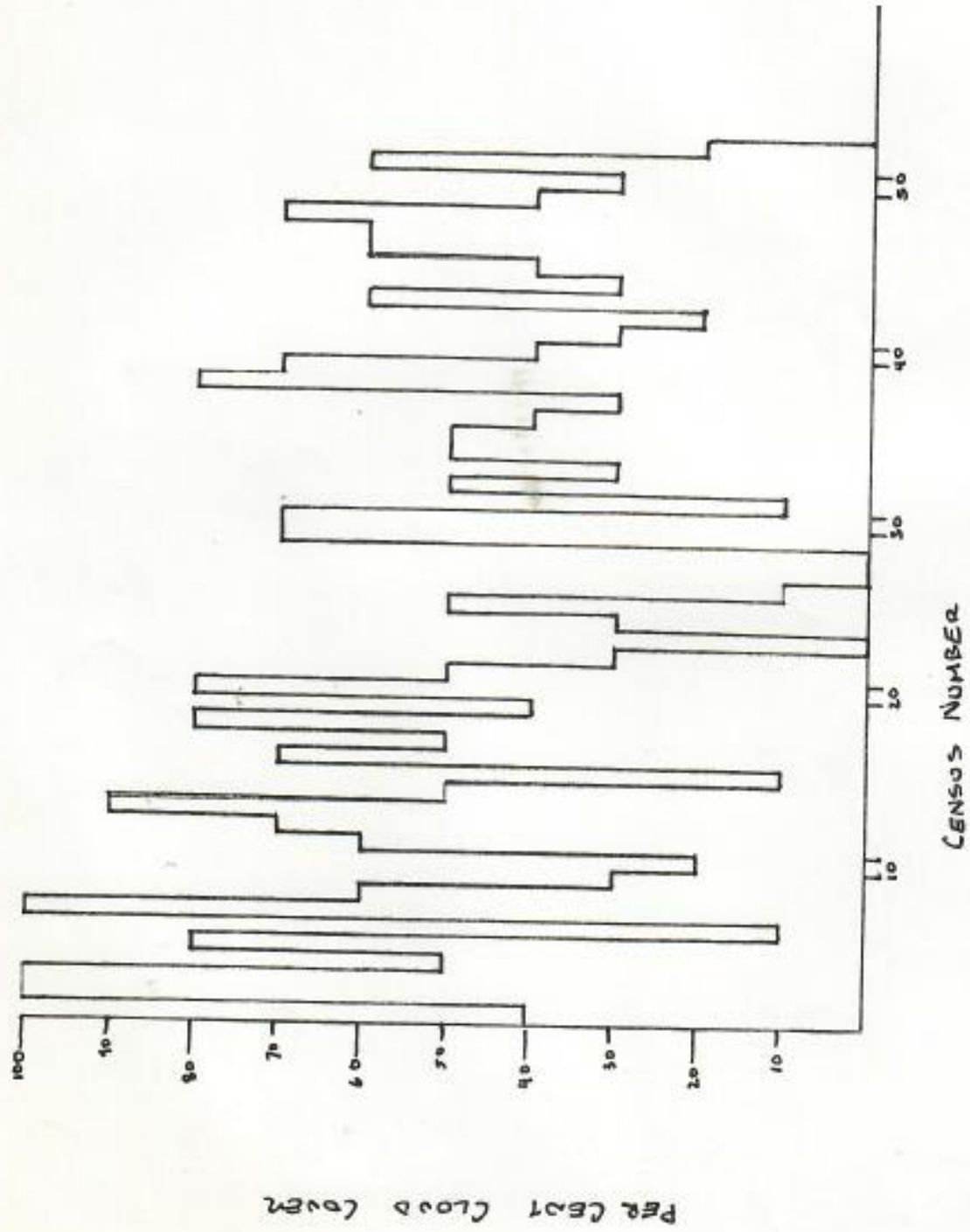


Figure: — Cloud cover profile for Lisianski Island, 25 April - 9 August 1983.

DORIS +  
 THE NUMBERS FOR  
 LISIANSKI ARE "CONFUSED"  
 IN THIS NARRATIVE. CALL  
 ME PLEASE.

George

LISIANSKI 1985  
 A TOTAL OF 29 INDIVIDUAL  
 TURTLES WERE IDENTIFIED;  
 OF THE 29:

10 = HAD TAGS (WE COULD READ)  
 FROM PREVIOUS STUDIES  
 1 = HAD TAG (BUT WE ONLY  
 READ PART OF THE NO.)  
 6 = WERE NEWLY TAGGED (ie, in  
 1985).

10 = IDENTIFIED BY 1985  
 TEMP. PAINT OR OTHER MEANS.  
 2 = IDD BY PAINT, +  
 TAG APPLIED, BUT TAG LATER  
 NOT SEEN ON TURTLE

DORIS

Hermes Reef. These are reviewed below:

On East Island, French Frigate Shoals, NMFS biologists conducted surveys of the turtle nesting population from June 11 to 29. During 18 nights of observations 131 turtles were sighted. An estimated annual nesting population of 252 individuals resulted from these surveys. This is the highest nesting population estimate recorded in the 13 years of study and is similar to the estimate for 1984, which was 248.

The following table summarizes green sea turtle tagging at French Frigate Shoals during 1985:

Age/Sex	No. Newly Tagged	No. Tag Recoveries	Total No. Tagging Encounters
adult female	99	65	164
adult male	6	3	9
TOTAL	105	68	173

Only low levels of nesting were again documented at Pearl and Hermes Reef, Lisianski and Laysan Islands. Counts of nesting pits suggested that no more than 20 or 30 females in total were involved at these three locations.

On Lisianski Island, 29 turtles that had been previously tagged or marked with paint were identified. <sup>29</sup> Ten tagged turtles were recovered and six turtles were newly tagged. One turtle was observed laying and a few others digging pits. A total of 78 individual pits known to be from 1985 were identified and mapped. Growth rates of recaptured turtles reconfirmed the slow growth measured in previous years (<1 cm per year).

On Pearl and Hermes Reef, 33 turtles that had been tagged or marked were identified. Turtles were captured with a scoop net while foraging in shallow algal pastures. Fifteen tagged turtles were recovered and 17 turtles were newly tagged.

Green turtles identified on Lisianski Island, 25 April - 9 August 1983.

JUVENILES		SUBADULTS		Adult Males		
• 2844		• 6289		• 430	<del>6290</del> / <del>6752</del>	
• 2851		6755		• 7259	2958	
• 2857	2858	6756	<del>6757</del> / <del>6758</del>	6754		
• 5828		6764		6763		
• 5829	6753	• 2942	<del>2943</del> / <del>2961</del>	6765	RFL+1	LFL+1
• 5833	6759	• 6276	6277	6768	RFL	
• 5854	6325			• 6781	<del>6782</del>	<del>465</del> / <del>5940</del>
• 6281	6282					
6760	6761					
6766	6769					
6770	6771					
6772	6773					
6776	6777					
• 2859	2860					
6779	6780					
6782	6783					
• 6316	6317					
6784	6785					
6786	6787					
6788	6789					



Adult Females

• T211	<del>6303</del> / <del>6304</del>		
• 1298	1299		
• 5832	<del>6489</del> / <del>6767</del>		
• 6291	6328		
	6751		
	6774	6775	
	6778	RFL	LFL+1

Juveniles: 10 Tag recoveries  
10 Newly tagged animals  
Total 20 animals identified

Subadults: 3 Tag recoveries  
3 Newly tagged  
Total 6 animal ID.

Adult males: 3 Tag recoveries  
2 Newly tagged animals  
2 Tagged / but already had tags unread  
Total 7 Animals identified

Adult females: 4 Tag recoveries  
2 Newly tagged animals  
1 Tagged / but already had tags unread  
Total 7

40 animals identified on Lisianski 1983

# Juveniles

• Tag recoveries <sup>(2)</sup>

• Tag recoveries w/ measurements to compare

- 2844. 2843 <sup>remove</sup> 8/9 1640 [20] (C) 59.0 x 51.4
- 2851. 2852 5/6 [10] (S) 50.7 x 38.1 (C) 54.1 x 45.2  
PL = 41.4 Head = 7.7 Tail = 10.5 RFL width = 9.0
- 2857. 2858 5/29 1404 [14] (C) 60.1 x 53.7
- 5828 5/31 1410 [27] (C) 53.9 x 46.5
- 5829. 6753 5/10 1243 [11] (C) 51.0 x 45.7
- 5833 6759 (5/24 1600 [20] (S) 53.2 x 43.1 (C) 57.3 x 51.6  
CCL 67cm 7/11/91 451 346  
PL = 43.2 Head = 8.2 Tail = 10.6
- 5854. 6325 5/10 1520 [26] (C) 64.6 x 57.7  
5/30 1618 [27] (S) 59.4 x 49.4 (C) 64.9 x 57.9  
PL = 48.6 Head = 9.2 Tail = 12.5 RFL width = 9.8
- 6281. 6282 5/24 1735 [26] (S) 59.7 x 49.3 (C) 64.0 x 59.7  
PL = 49.4 Head = 8.8 Tail = 14.3
- 6760. 6761 5/24 1600 [20] (S) 48.6 x 39.5 (C) 51.9 x 46.8  
PL = 38.7 Head = 7.5 Tail = 9.8 RFL width = 8.2
- 6766. 6769 6/1 1720 [4] (C) 55.2 x 48.7 Tail = 9.5  
RFL width = 9.0 PL-curved 44.3 Head = 8.5 <sup>tape measure</sup>
- 6770. 6771 6/3 1240 [41] (S) 39.7 x 33.3 (C) 42.0 x 38.7  
PL = 31.9 Head = 6.8 Tail = 8.5
- 6772. 6773 6/3 1240 [41] (S) 38.4 x 33.8 (C) 40.6 x 38.7  
PL = 30.3 Head = 6.4 Tail = 6.3 RFL width = 6.9
- 6776. 6777 6/3 1720 [2] (S) 42.1 x 34.4 (C) 44.3 x 39.3  
PL = 33.8 Head = 7.0 Tail = 9.2 RFL width = 7.2
- 2859. 2860 6/9 1545 [10] (S) 42.3 x 36.2 (C) 44.6 x 41.7  
PL = 33.7 Head = 7.1 Tail = 7.5 RFL width = 7.8

- 6779 · 6780 6/15 1702 [27] (S) 46.3 x 38.2 (C) 49.0 x 45.2  
 PL = 38.3 Head = 7.3 Tail = 7.7
- 6782 · 6783 7/3 2010 [3] (S) 48.1 x 39.5 (C) 50.7 x 45.7  
 PL = 38.8 Head = 7.3 Tail = 8.7 RFL width = 8.2
- 6316 · 6317 7/4 1745 [5] (C) 53.2 x 49.8 6-27-85 <sup>RLW</sup> <sub>DJA</sub>
- 6784 · 6785 7/11 1640 [2] (S) 43.3 x 34.8 (C) 45.9 x 40.0  
 PL = 35.9 Head = 7.1 Tail = 8.2 RFL width = 7.1
- 6786 · 6787 7/21 2305 [4] (C) 42.5 x 39.4 Tail = 7.5  
 RFL width = 7.1 PL curved = 33.6
- 6788 · 6789 7/21 2330 [9] (C) 51.7 x 48.0 Tail = 9.0  
 RFL width = 9.3 PL curved = 41.7

## Subadults

- 5843 · 6288 · 6289 5/4/83 1523 [10]
- 6755 5/16 1644 [25] Δ OFFSHORE ROCKS
- 6756 · 6757 · 6758 5/18 1345 [26] (S) 77.3 x 64.9 6757R 7-12-84.  
 5-779 Accurately possible  
 PL = 63.0 Head = 11.3 Tail = 32.0 (S)
- 6764 6/1 1445 [25] Δ OFFSHORE ROCKS
- 2942 · 2943 2961 6/8 1452 [27] 7-16-85 Lisa DJA
- 6276 · 6277 8/3 1730 [30]

### Adult males

- 430 . 6752 . 6290 5/3/83 1640 [26]
- T259 . 2958 5/3 1706 [20]
- 6754 5/12 1610 [26]
- 6763 5/30 1815 [8] *big penis note: might be T259*
- 6765 <sup>unread</sup> RFL+1 LFL+1 6/1 1730 [5]
- 6768 LFL+1 <sup>lost</sup> 6/1 1720 [4]
- 465 . 5940 . 6327 . 6781 6/27 1755 [27] 6781L 7-28-84 Lisi sec 27 Alcorn & Fosytte

### Adult females

- T211 . 6303 . 6304 5/29/83 1312 [5]
- 1298 . 1299 5/27/83 1425 [33]
- 5832 . 6489 . 6767 5/25 1710 [6] 7-14-85 Lisi RLW  
7/17/91 WSC CCL 89cm 5/30 1840 [5] (S) 82.1 x 69.8
- 6291 . 6328 5/7 1618 [25]
- 6751 5/4 1415 [27] (S) 89.7 x 81.7
- 6774 . 6775 6/3 1635 [11]
- 6778 . RFL LFL+1 6/15 1646 [27] *show results of recent shrink attempt*  
 8/3 1712 [25]

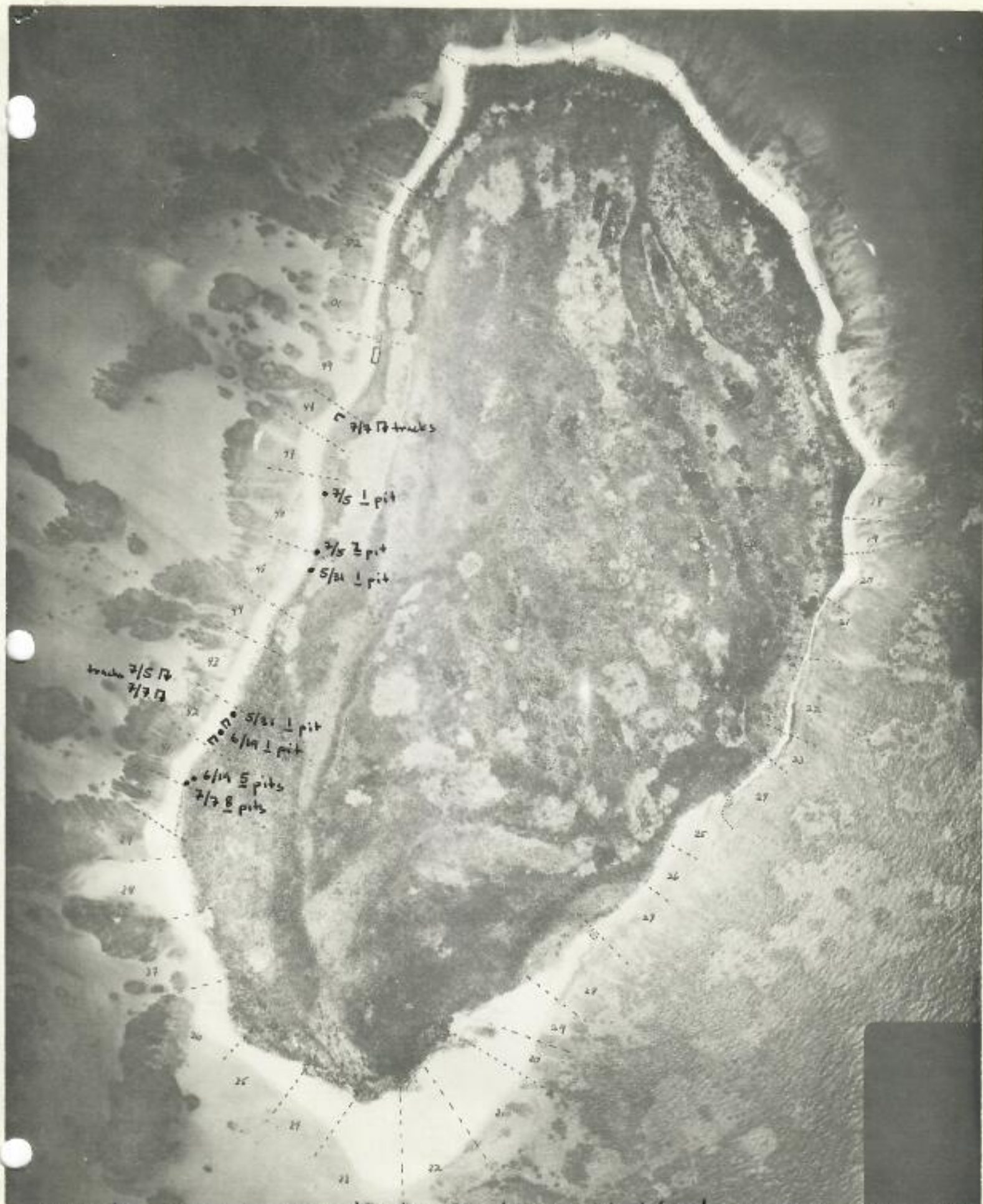
Tagged & recoveries

Notes - - 90 last year; 40 this year

Census will show no decrease  
 Rather fewer numbers this year are  
 due to greater alertness of the animals -  
 harder to handle.

Tag No.	Sex	Age	Recovery	Notes
1501	M	1/2	1501	
1502	M	1/2	1502	
1503	M	1/2	1503	
1504	M	1/2	1504	
1505	M	1/2	1505	
1506	M	1/2	1506	
1507	M	1/2	1507	
1508	M	1/2	1508	
1509	M	1/2	1509	
1510	M	1/2	1510	
1511	M	1/2	1511	
1512	M	1/2	1512	
1513	M	1/2	1513	
1514	M	1/2	1514	
1515	M	1/2	1515	
1516	M	1/2	1516	
1517	M	1/2	1517	
1518	M	1/2	1518	
1519	M	1/2	1519	
1520	M	1/2	1520	





Excavation sites by green bottles on Lisianski Island 25 April - 9 August 1982

A.KAM

#170  
#1

LISIANSKI COMPILATION  
From A.KAM 9-21-82

FEMALES ♀

REC = Recovery III

#160

(E) T 211 6303  
 (E) 170#6 T 256 6304  
 (E) 170#1/5 A 494 6299  
 (E) 644 6300  
 (E) 170#1 014 6301  
 (E) 160#147 1292 1293  
 (E) 160#391 1298 5090  
 (E) 170#1 2866 1299  
 (E) 170#1 2951  
 (E) 160#16 3554

LISIANSKI AREA 9/6/72 Lisianski  
 8/21/82 [26]  
 8/20 [26] (S) 82.2 x 66.5  
 3/21  
 8/21 [15] (S) 89.3 x 73.7 9/26/67 Lisianski  
 8/26 [5]  
 4/22 [2] (S) 91.7  
 4/1 [29]  
 3/27 [27]  
 5/23 [26] (S) 95.5  
 3/28  
 5/16 [3] (S) 81.5  
 6/27 [7] (S) 85.3  
 6/29 [10] (S) 92.9 x 71.1

5929  
5930

5936  
 5941 · 5942  
 5945  
 5931  
 5946  
 6278  
 6285 · 6286  
 6287  
 6291  
 6309 ~~xxx~~  
 6323  
 6324 ~~xxx~~

7/20 [26] (S) 87.6 x 69.1  
 7/21 [33] (S) 93.5 x 73.3  
 7/25 [10] (S) 85.2 x 66.5  
 7/28 [3] (S) 91.7 x 74.3  
 7/20 [25] (S) — x 65.9  
 7/30 [30] (S) 93.8 x 73.8  
 8/11 [27] (S) 90.8 x 68.3  
 8/14 [11] (S) 94.1 x 72.4  
 8/17 [23]  
 8/24 [13]  
 8/30 [26]  
 8/31 [25]  
 9/4 [27]  
 7/6 [30]  
 9/8 [20] 8/21/70 and 5/30/73 Lisianski

(E) 170#2 2950 Red  
 6329  
 (E) 399 Red 6330

#173

MALES ♂

15

(E) #1	#14430	6290	3/28	[ ]	(S) 85.2
(E) #173	78-465	5940-6329	6/6	[15]	(S) 84.0
(E)	<u>2664</u>	5839	6/6	[8]	(S) 82.4 6/13/78 EAST
	5835		6/5	[4]	(S) 84.1
	5837		6/5	[3]	(S) 88.9
	5838		6/5	[8]	(S) 86.5
	5840		6/6	[15]	(S) 84.0
	5846 · 5847		6/27	[11]	(S) 83 ± .5
	5851 · <del>5852</del>		6/29	[12]	(S) 85.1
	5943		7/27	[25]	
	6292		8/18	[25]	
	6302		8/21	[11]	
	5853		6/30	[27]	(S) 86.8
	6326		7/2	[32]	(S) 89.3
NO	585 <i>red.</i>	(NO)	7/17	[11]	observation es.

# Juveniles and Subadults

note:  
 dates refer to date of  
 animal first seen  
 not necessarily the  
 date animal measured

① #1 #3	T 259. 2958	5/21 [ ]	(S) 77.2 x 61.4
no	2837 · 2838	4/12 [20]	(S) 64.4 x 54.0
no	2857 · 2858	5/29 [3]	(S) 54.0 x 46.0
no	2859 · 2860	5/21 [9]	(S) 42.0 x 35.9
no	2939 2941	7/17 [26]	(S) 74.1 x 61.0
	2946 2947	7/8 [40]	(C) 48.7 x 42.7
170 #4	2959	8/17 [26]	(S) 79.2 x 63.3
① " "	2960	4/22 [26]	(S) 79.4 x 63.9
① 170 #6	2961	5/26 [26]	(S) 76.8 x 64.8
	2595 <sup>59</sup>		
	2942		
	2943		
	5826	4/8 [16]	(S) 42.9 x 36.8
	5827	4/10 [43]	(S) 46.5
	5828	4/12 [27]	(S) 51.5
	5829	4/18 [26]	(C) 50.0
	5830 5947	4/19 [20]	(S) 49.9 x 41.2
	5831	5/2 [49]	(S) 45.4
	5833	5/17 [20]	(S) 52.0
	5834	5/17 [20]	(S) 54.9
	5836	6/5 [4]	(S) 39.8
	5841	6/10 [3]	(S) 76.2
	5842 5944	6/17 [3]	(S) 61.4
	5843 6288	6/17 [4]	(S) 76.2 x 65.2
	5844 6289	6/26 [40]	(S) 43.6
	5845	6/27 [20]	(S) 44.0
	5852	6/30 [20]	(S) 69.9 ± .1
	5854	6/30 [27]	(S) 58.2 x 48.7

5931		7/20 [25] (S) — x 65.9
5932	5933	7/20 [6] (S) 43.4 x 35.0
5934	5935	7/21 [20] (S) 43.9 x 36.5
5937	5938	7/23 [38] (S) 41.8 x 34.5
5939		7/24 [25] (S) 77.3 x 65.4
5948		8/4 [13] (S) 77.2 x 60.5
5949		8/5 [26] (S) 44.2 x 35.3
5950		8/6 [27] (S) 73.8 x 61.2
6276	6277	8/11 [27] (S) 69.3 x 57.1
6279	6280	8/12 [45] (S) 45.6 x 36.1
6281	6282	8/13 [16] (S) 59.5 x 49.3
6283	6284	8/14 [25] (S) 43.5 x 35.5
6293	6294	8/20 [10] (S) 49.4 x 41.0
6295	6296	8/20 [10] (S) 41.3 x 34.5
6297	6298	8/20 [10] (S) 37.4 x 32.5
6305	6306	8/22 [10] (S) 45.4 x 38.1
6307	6308	8/23 [10] (S) 42.8 x 36.2
6310	6311	8/27 [10] (S) 44.8 x 36.7
6312	6313	8/27 [10] (S) 44.3 x 37.3
6314	6315	8/27 [10] (S) 49.1 x 39.9
6316	6317	8/28 [5] (S) 48.4 x 40.5
6319	6320	8/29 [2] (S) 39.1 x 32.5
6321	6322	8/30 [18] (S) 45.7 x 36.0
6331	6332	9/11 [Comp] (S) 49.9 x 40.3
6333	6334	9/11 [Comp] (S) 45.1 x 35.3
6335	6336	9/13 [4] (S) 43.0 x 34.7

Preliminary growth measurements of tag recoveries  
on Lisianski Island, 25 April - 9 August 1983

TAG number	Dates of measurement	Measure (cm.)	Ⓢ Preliminary growth measurements (cm)
2857 · 2858	8/7/82 (C)	56.5 x 52.6	
	5/29/83 (C)	60.1 x 53.7	(C) .05 cm/mo.
5828	4/12/82 (C)	53.0	
	5/31/83 (C)	53.9 x 46.5	(C) .07 cm/mo
5829 · 6753	4/18/82 (C)	50.0	
	5/10/83 (C)	51.0 x 45.7	(C) .08 cm/mo.
5833 · 6759	5/17/82 (S)	52.0	
	5/24/83 (S)	53.2 x 43.1	(S) .10 cm/mo.
5854 · 6325	7/13/82 (S)	58.2 x 48.7	
	5/30/83 (S)	59.4 x 49.4	(S) .11 cm/mo.
6281 · 6282	8/13/82 (S)	59.5 x 49.3	
	5/24/83 (S)	59.7 x 49.3	(C) .02 cm/mo
2859 · 2860	8/15/82 (S)	42.0 x 35.9	
	6/9/83 (S)	42.3 x 36.2	(S) .03 cm/mo
6316 · 6317	8/28/82 (C)	52.5 x 48.6	
	7/4/83 (C)	53.2 x 49.8	(C) .06 cm/mo
2844 · <span style="border: 1px solid red; padding: 2px;">2843</span>			
	8/9/83 (C)	59.0 x 51.4	
2851 · 2852			
	5/6/83 (S)	50.7 x 38.1 (C) 54.1 x 45.2	
		PL=41.4, Head=7.7 Tail=10.5 RFLwidth=9.0	

A. Kotze

26 AUGUST 1983<sup>①</sup>

## Preliminary trip report of green turtle research on Lisianski Island, 1983.

The Marine Mammal and Endangered Species Investigation Task Force of the National Marine Fisheries Service, SWFC, Honolulu Laboratory established a research field camp on Lisianski Island from 25 April to 9 August 1983. Primary goals involved census and bleach marking of Hawaiian monk seals to examine the population composition with secondary efforts directed toward observations and tagging of green turtles. The personnel of the field camp were T.C. Johnson and A.K.H. KAM. This short narrative will describe some of the results gathered on Lisianski Island, NWHI.

Transportation to Lisianski Island from Honolulu was aboard the fishing vessel Easy Rider with stops at Kawai; Nihoa; Necker; Tern Island, FFS; and Laysan. After establishing the field camp (protecting all supplies from the weather) seal censuses began on 27 April and continued until 7 August 1983 comprising 52 total island censuses. Seal censuses occurred every second day between the hours of 1300-1500 (Honolulu time). While one observer went north, the other would go south and end when they met. Figure 1. identifies the various sector boundary markers that define the census area. Information gathered during census involved counting seals,

identifying their sex, identification number, beach position and associations with other animals. Basic life history data was noted covering various aspects: a) scars and new wounds, b) pup production and nursing females, c) survival, d) net inventory and entanglement situations e) agonistic behavior, f) pup switching and molting duration.

Turtle surveys were conducted two days a week and involved observations, census of swimming and basking animals, tagging and capture of juveniles nearshore by hand and large scoop net. When feeding aggregations were encountered, special effort was made to conduct snorkel surveys of the algae growing on the benthos to obtain possible food forms turtles might be utilizing. Turtles were tagged w/ size 681 Inconel tags supplied by G.H. Balazs (NMFS). Dupont Lucite spray paint was used as a temporary mark to conspicuously identify an individual to lessen continued human disturbance when reading tags.

LISIANSKI ISLAND

Number of newly tagged animals	17
Number of tag recoveries	20
Number of individuals w/ tags but <u>unread</u>	<u>3</u>
Total number identified turtles	<span style="border: 1px solid black; padding: 2px;">40</span> animals



1983 Lisianski identified population

Juveniles	:	20	(50%)
Subadults	:	6	(15%)
Adult ♂	:	7	(18%)
Adult ♀	:	7	(18%)
total		40 animals	100%

All of the twenty animals observed as tag recoveries were seen on Lisianski in 1982. There were no new tag recoveries indicating inter-island movement, though a possibility does exist that three adult animals who had tags, but were unread could have been from other islands. Their physical characteristics (scars) did not match the existing files of previously identified animals on Lisianski. Table 1.<sup>2</sup> identifies the turtles observed in 1983.

Census counts for swimming and basking turtles were recorded every other day during regular Seal Censuses. Each observer noted the occurrence of turtles - swimming or basking, sex and age-size class, directional movement along the shore, any interactions and abnormal physical characteristics. Figure 2. presents a preliminary view of green turtle counts between 27 April - 7 August. An average of 8 turtles

were seen during census (Range 2-26,  $\bar{SD} = 4.4$ ). Basking animal counts averaged 2 per census (Range 0-7,  $\bar{SD} = 1.8$ ).

Nesting efforts by green turtles for the year began on 31 May 1983. Between 5/31 - 8/9, there were only seven instances of turtles coming ashore to excavate pits (19 individual excavated pits), and three instances of turtles moving from the water to the vegetation and returning to the ocean without excavating. Compared to observations last year (1982), there was a drastic decrease in nesting effort (~75% decrease). Night surveys were randomly scheduled to coincide with nesting. Figure 3 identifies the seven excavation sites and three nonegg-laying emergences on the western coast of Lisianski.

Figures 4 and 5 give preliminary diagrams of air temperature and cloud cover profiles taken at census (~1300).

The field camp was taken down on 9 August 1983 and transported to Midway Islands aboard the NOAA vessel Townsend Cromwell.

ALAN K. H. KAM  
Biological Technician  
Endangered Species Task Force



Figure 1. Sector markers on Lisianski Island, 1982-1983.



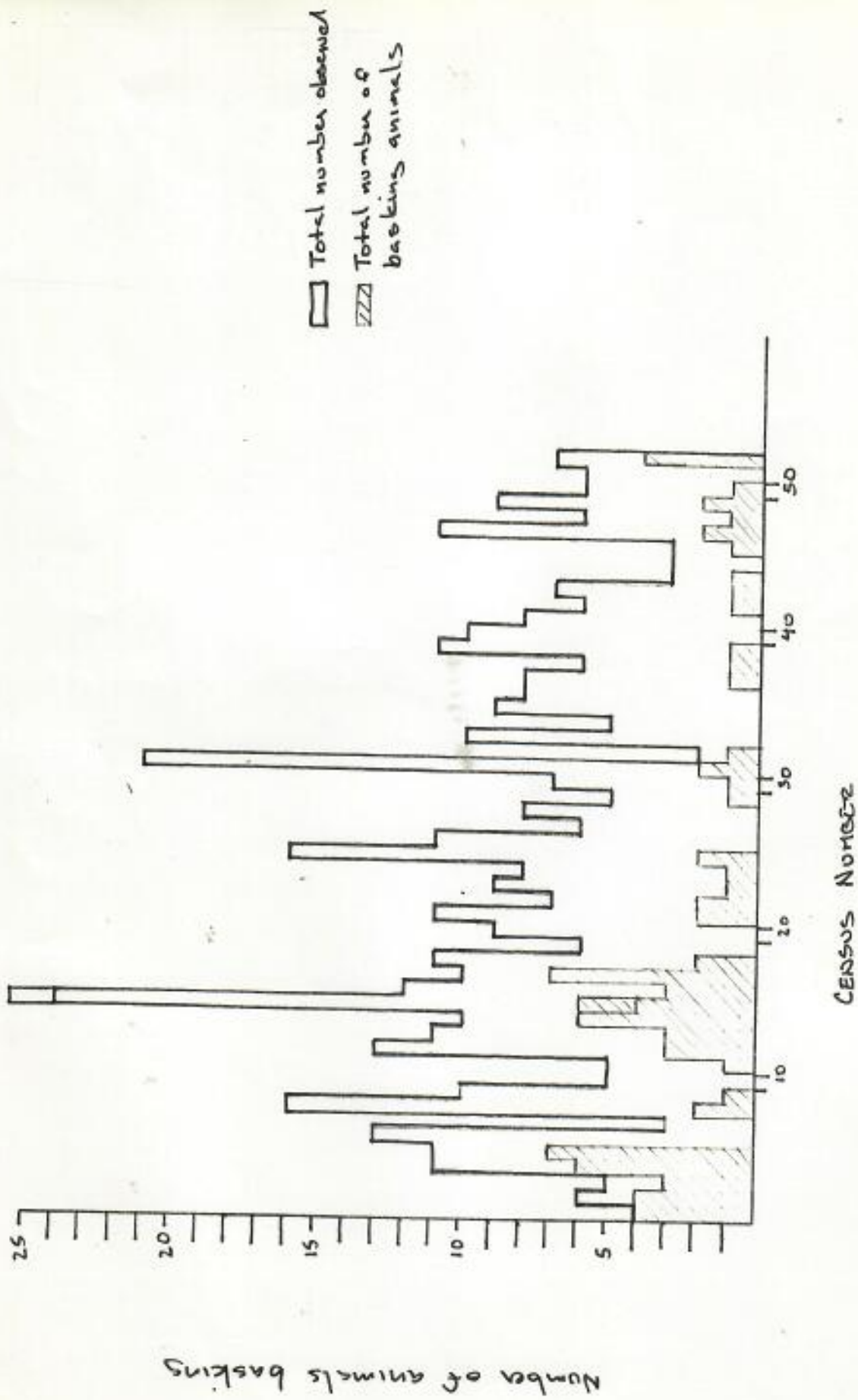


Figure 2. Number of green turtles observed during censuses on Lisianski Island, 25 April - 9 August 1983.



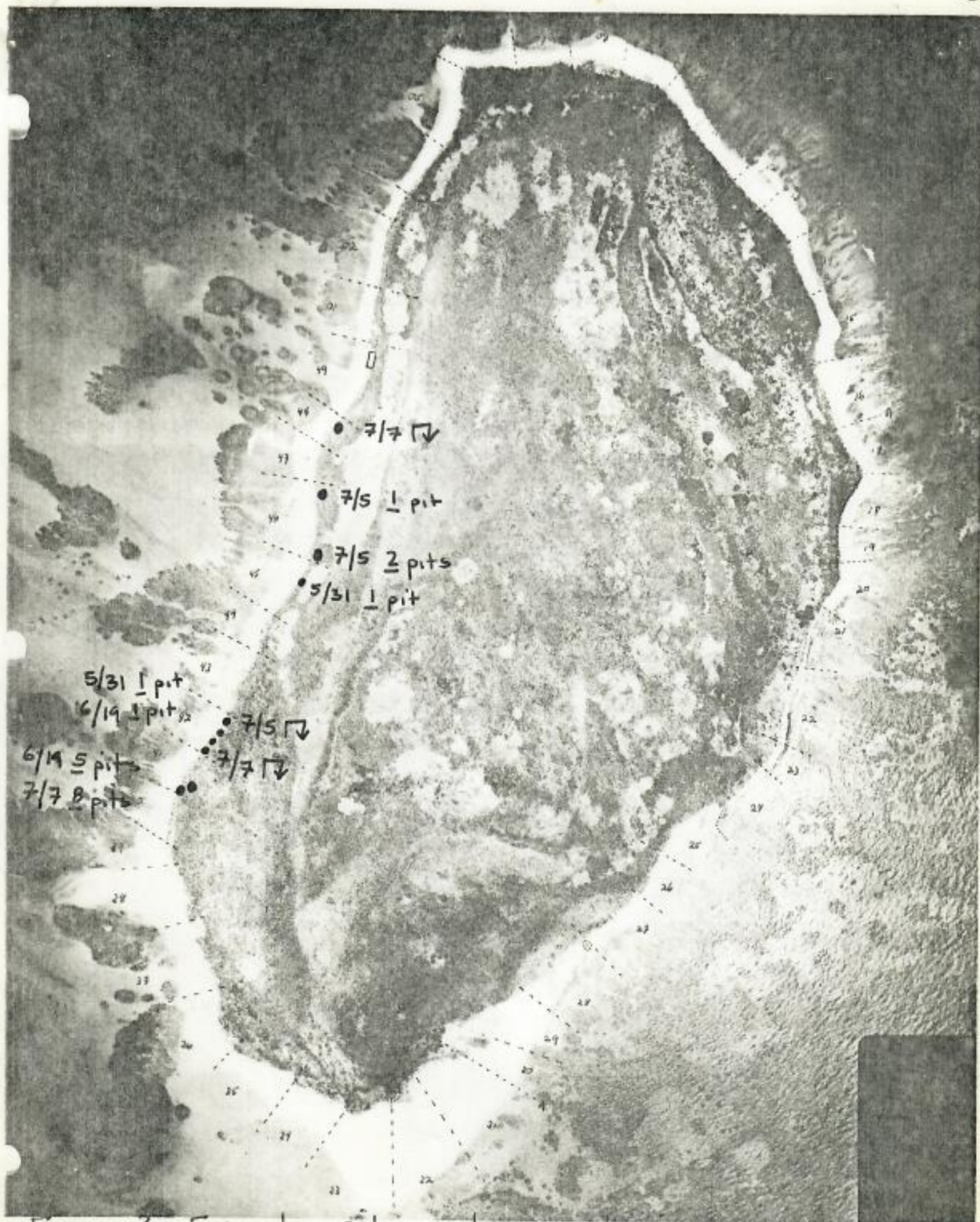


Figure 3. Excavation sites and nonegg-laying emergences Lisianski Island, 31 May - 8 August 1983.

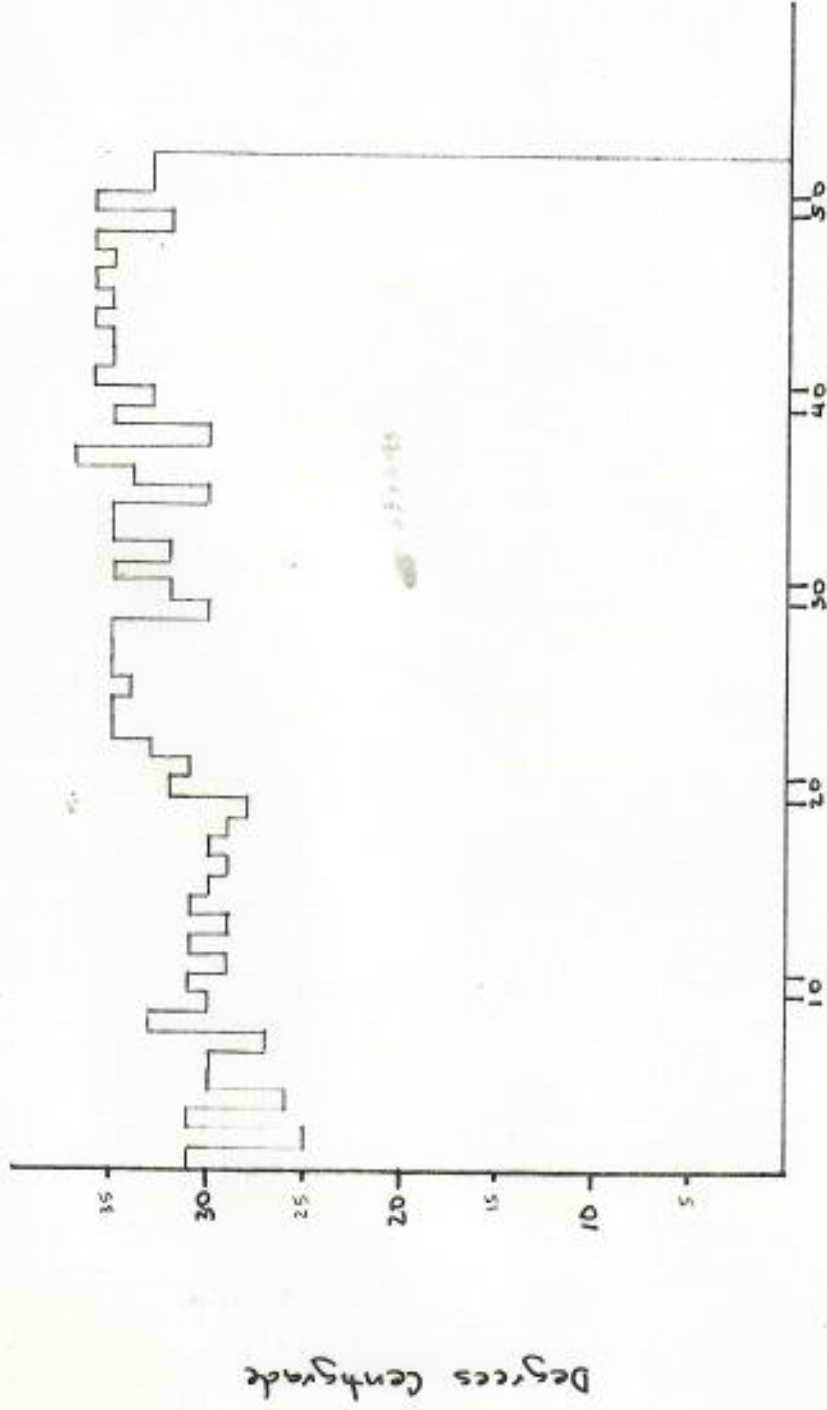


Figure 4. Air Temperature profile (°C) for Lisianski Island 25 April - 9 August 1983.



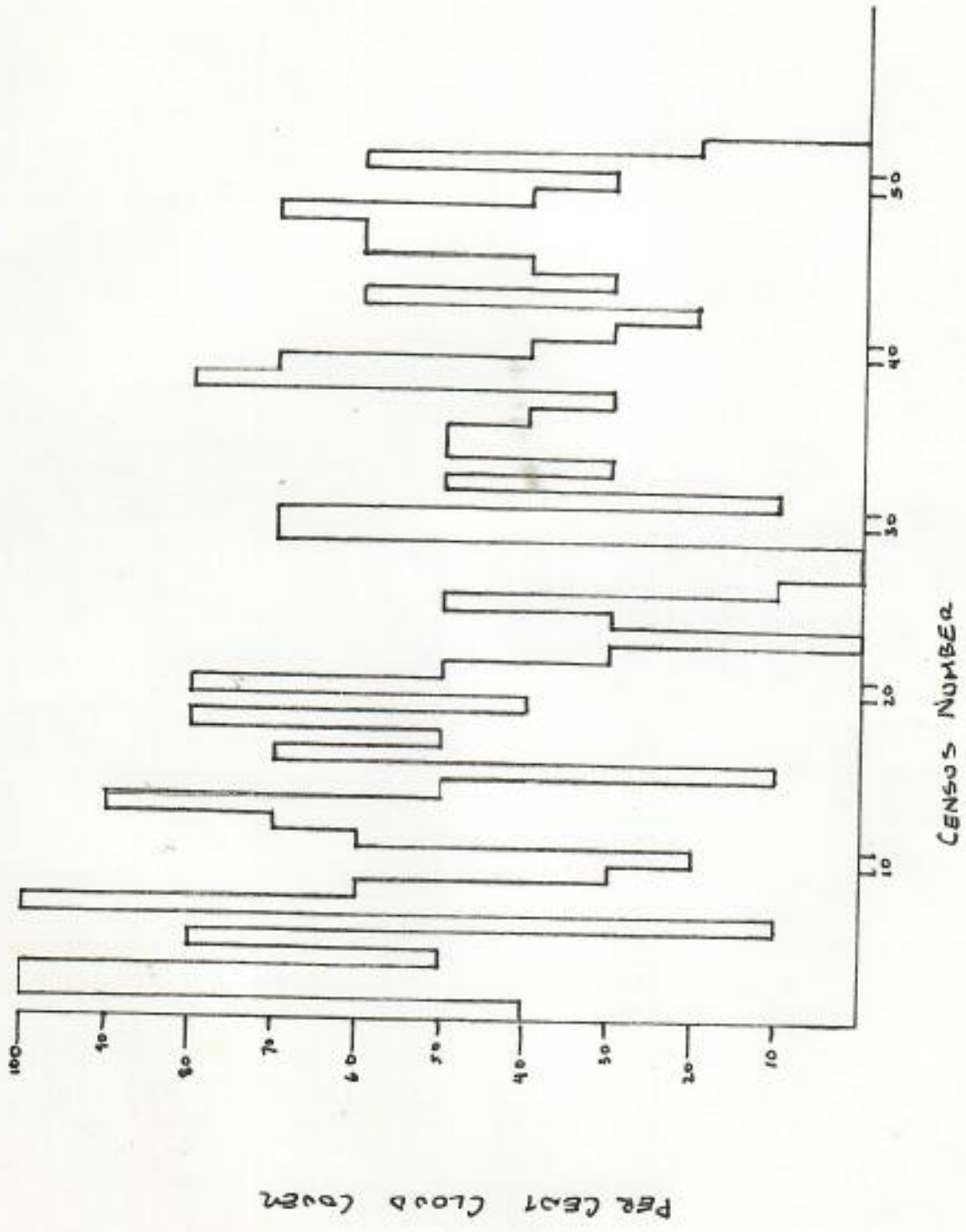


Figure: 5 Cloud cover profile for Lisianski Island, 25 April - 9 August 1983.

A.K.M

5 November 1982

Preliminary results of the green sea turtle population at Pearl and Hermes Reef, 27-31 Oct. 1982. ★

From 27-31 October data was collected which examined the green sea turtle population located at Pearl and Hermes Reef, Northwestern Hawaiian Islands, U.S. Life Refuge. A field camp was established on Southwest Island and most of the effort was devoted to that island, though visits were made on two different trips to a) Seal/Kittery Island, Grass Island, Small and Bird Island; and b) Little North Island and North Island. Weather conditions were marginal with constant gusty winds ~15-20 mph from the NE making the atoll's lagoon water choppy and surface air quite cool ( $\approx 70^{\circ}\text{F} \pm 4^{\circ}$ ).

Twenty-three 'new' (unidentified) green turtles were tagged using size 681 Inconel 625 alloy tags (highly resistant to corrosion). Tagging efforts will allow animals to be recaptured as particular individuals with future sightings answering basic life history questions - migration patterns and home ranges. The animals (tagged during this period): 17 Adults (8♀, 9♂) and 6 Subadults.

There were 13 green turtles (9♀, 4♂) that represent tag recoveries. Of these, 4 females had been tagged and measured in July 1982 at Pearl and Hermes Reef. Tagging dates for the

nine other turtles will be obtained in records kept in Honolulu.

On Southeast Island 35 nest pits were discovered along the southwestern vegetation zone. Of these, 10 nests or 'excavations' were examined. No evidence of actual nesting were found, though three live hatchlings (they later died) were discovered trapped in roots of a weedy grass on the surface. On Grass Island, turtles had attempted nest excavations at two sites, upon examination no evidence of nesting. On North Island, eight nest sites were found composed of 23 pits, due to time constraints no sites were examined. (See maps for nest sites.)

AZAO K. H. KAM

NATIONAL MARINE FISHERIES SER

HONOLULU LABORATORY

## PEARL and HERMES REEF

27 October - 31 October 1982

6346	10/27	♀	"Turtle Beach"	SE
6347	10/27	♂	" "	SE
6348	10/27	♀	" "	SE
6349	10/27	♀	" "	SE
6350	10/28	♀	" "	SE
6506	10/28	Sub (♀)	" "	SE 75.0 x 59.8
RM 6507 <sup>6/18/83 RM</sup> <sub>5 SE</sub>	10/28	Sub	" "	SE <sup>68.0</sup> 67.9 x <sup>54.0</sup> 52.9
6508	10/28	♀	" "	SE 99.3 x 80.1
RM 6509 <sup>7/8/83</sup> <sub>5 SE</sub>	10/28	♂	" "	SE 87.5 x 64.1
6510	10/28	Sub	" "	SE 70.6 x 58.8
RM 6511 <sup>7/4/83</sup> <sub>5 SE</sub>	10/28	♂	" "	SE 91.6 x 70.5
<del>6347</del>	<del>10/28</del>	<del>♂</del>	<del>" "</del>	<del>SE</del>
RM 6512 <sup>4/7/83</sup>	10/28	Sub	" "	SE (79.2)
RM 6513 <sup>6/1/83</sup>	10/28	♂	" "	SE (81.0)
6514	10/28	♀	" "	SE
<del>5560</del> · <del>1303</del>	10/28	♀	" "	SE
5861	10/28	♀	" "	SE <sup>target</sup> 7/2 84.3 x 64.4
5858	10/29	♀	" "	SE <sup>target</sup> 7/2 85.3 x 70.4
6515	10/29	♂	" "	SE
<del>5541</del> · <del>6516</del>	10/29	♂	Northeast Stretch	SE
<del>T 15</del>	10/29	♂	Turtle Beach	SE
<del>3671</del>	10/29	♀	" "	SE <sup>450</sup> 7/2 58
<del>5581</del>	10/29	♀	" "	SE
<del>5557</del>	10/29	♀	" "	SE

6517	10/29	♂	NE Beach Stretch, SE
<del>PM 6518</del> 6/1/83 SET	10/29	♀	" " " SE
6519	10/30	♂	NE side North Is
<del>3047</del>	10/30	♂	west side North Is
6520	10/30	♀	"Turtle Lagoon" North
<del>6156</del>	10/30	♀	" " North
<del>North</del> 5 x 78. <del>5870</del> TS	10/30	♀	" " North
6521	10/30	♂	" " North
<del>930</del>	10/30	♂	" " North
6522	10/30	♂	" " North
<del>5578</del>	10/30	♀	" " North
6523	10/30	sub (♀)	" " North
6524	10/30	sub (♀)	" " North

Pearl and Hermes Reef

◻ Swimming  
△ basking

27 October (Wednesday)

1352 Southeast Island "Turtle Beach"

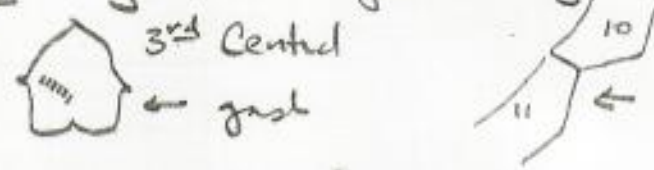
7 Turtles = 5♀, ♂, Subadult

1408 1 Juvenile ◻

1428 2 Adult ◻ ↘ Eastern beach - sand channel

1530 Survey of 'Turtle Beach'

① ♀ Tag RFL (algae on tag) swimming  
3rd Central notch between  
just ← 10-11 Rt  
marginally




② Subadult (probably ♀) dark carapace w/ white (? calcareous algae) outlining the carapace scutes

1551 ③ ♀ turtle has seen me now leaving the beach area ④ Fecal sample obtained from this animal. Codium

1608 ④ ♀ # 6346 LFL +1. (notags RFL)

1614 ⑤ ♂ # 6347 LFL +1. dark carapace

RFL 5mm distal ends of 4th digit missing



1617 3 female (♀) turtles and 1 subadult on the beach, close together and clustering

1728 ♀ # 6348 RFL +1. "Turtle Beach"  
tag did not lock, tag placement in area too thick tissue, some bleeding

♀ # 6349 RFL trl. [note] turtle already has a tag proximal to body RFL - not read

New turtle emerging from water, light color carapace, too alert so will not bother it

2100 Night circuit of Southeast Island walking east/north toward "Turtle Beach"

1 Adult Δ by Zodiac near camp.  
"Turtle Beach" animals basking Δ

29 Adults Δ all HWS clumped together  
2 Subadults Δ in cluster  
2 Adults □

⊙ Animals were not disturbed in any way.

2120 "Northeast beach stretch"

4 Adults Δ in wave wash and HWS (composed of pairs x x)

2123 "NE log Area"

1 Subadult Δ

2150 "Northside of SE Lagoon neck"

1 Adult □ ↻ feeding

28 October 1982 (Thursday)

0900 - 1230 Seal/Kittung Island - no turtle  
nests or basking turtles seen

1250 - 1500 Grass Island - 2 locations  
of turtle nesting activity a) 3 pits b) 2 pits  
No turtles seen basking or swimming  
Sand Island - no turtle observations  
Bird Island - " " " "

1720 - back to SE Island - Camp

1748 - Survey of "Turtle Beach"

1 ♂ ♀ # 6350 RFL

REPEAT on next page



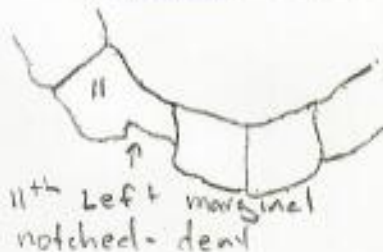
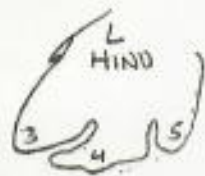
28 October (Thursday)

Southeast Island

1748 "Turtle Beach"

♀ # 6350 RFL (S) 92.8 x 73.8

1752 Subadult (probably ♀) # 6506 LFL +1.  
(S) 75.0 x 59.8



11th left marginal notched dent

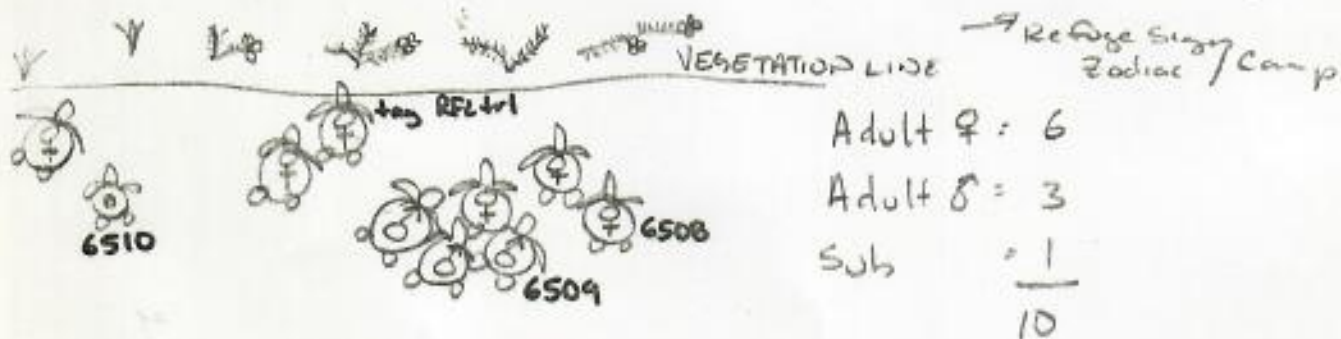
Subadult # 6507 RFL +1. (S) 67.9 x 52.9

red algae growing on hind flippers



tips missing distal ends of digits 2, 3, 4.

1800 → 10 other turtles Δ at "Turtle Beach" SE Is



Animals not tagged have left the beach when my presence became known to them. startled they began moving, scurrying other animals beginning a trend of motion away from me, turtles alerted seeking safety in the water. Once in the ocean they stayed in the

general vicinity.

- ① ♀ # 6508 LFL trl. (S) 99.3 x 80.1



distal ends of 2, 3 digits missing

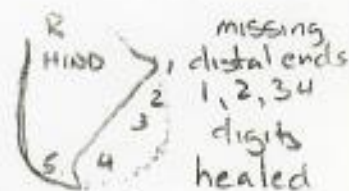
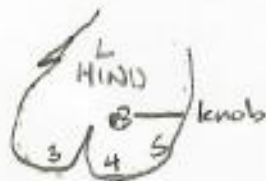
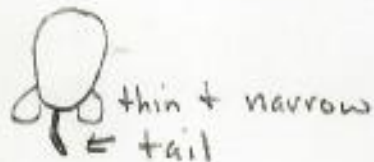


- ② ♂ # 6509 RFL trl. (S) 87.5 x 64.1  
light color carapace

- ③ Subadult # 6510 RFL trl. (S) 70.6 x 58.8  
(turtle previously seen 10/27 1530 "TB")  
red algae, skin barnacles on neck + pelvis  
dark carapace, pink coralline algae outlining  
the central plates - good for an ID.

[Add to 10 turtles (plus) 1 subadult - female? that  
began basking by the two seals time: 1830

- ④ ♂ # 6511 LFL trl. (S) 91.6 x 70.5



- ⑤ (ID seems to point at turtle # 5866 tagged  
4 July 1982 "Turtle Beach" at 1720)

- ⑤ ♂ # 6347 LFL trl. dark carapace  
long, narrow tail



Between 1800-1850 13 turtles seen on South  
east Island.

2015 "Turtle Beach"

- 18 Adult turtles  $\Delta$  HWS  
2 Juvenile turtles  $\Delta$  HWS  
1 Adult  $\square$

① note EB took 2 flash photos of turtles  
 $\Delta$  on beach, two turtles immediately  
 entered the water after the flash

2200 Night survey of "Turtle Beach"

① Subadult # 6512 RFL tvl. no measurements

② ♂ # 6513 LFL tvl.

③ ♂ Bureau Wildl. large tag RFL  
 leaving beach, tag unread

④⑤ 2 Subadults leaving beach

2210 ⑥ ♂ leaving beach, alerted

⑦ ♀ " " no tags felt

⑧ ♀ # 6514 LFL tvl. very big animal  
 no tags felt on LFL



⑨ ♀ # 5560 RFL # 1303 LFL tvl <sup>Univ. Hawaii?</sup>  
 Marine Lab. <sup>Kaunaloa</sup>  
 Large bridge-look tag

⑩ ♀ # 5861 RFL +1

2220 end of survey "Turtle Beach", just # 5861  
and # 5560 still on the beach

2224 ♂ # 6347 LFL +1. "NE stretch" still  
on the beach Δ from before

29 October (Friday)

Southeast Island

0730 - 2 turtles  $\Delta$  at "Turtle Beach" (1 Adult, 1 Subadult) still there at 0930, no observe tags

1215 - begin working on turtle pit areas SE Is.

35 pits identified as this year's turtle nesting effort all along the southwest shore area in vegetation of Tribolus and another (?) weedy grass

3 live hatchlings found on surface caught among the thin roots of that same weedy grass. Will take hatchlings back to camp to care for them and take back to Honolulu.

⊕ Six pit sites excavated to at least 2' deep no evidence of shells, eggs found.

1637 - Survey of turtles at "Turtle Beach"

1640 - ① ♀ # 5858 LFL trl. tag w/ letters up  $\Delta$  turtle strutted but still on beach

② ♀ turtle went back into water as I measured it, no tag (S) 81.7

③ ♂ "NE stretch" dark carapace, left beach before tagging

④ ♂ # 6515 LFL trl.

⑤ Subadult (prob ♀)  $\Delta$  by seal, now leaving beach

⑥ ♂ # 5541 RFL # 6516 RFL +tl.  
(S) 810



⑦ Subadult "eastern logs, NE stretch"  
animal just beginning to haul out, wet-alert

1707. back to camp Total 7 turtle out  
between 1637-1707.

2100. Night survey of "Turtle Beach"

① ♂ TIS RFL Bureau Wildlife, large tag

~18 turtles Δ on beach in 2 clusters

② ♀ 3671 RFL very big animal

③ Subadult left beach, alerted

④ ♂ large tag RFL, not read - left beach

⑤ ♀ left beach

⑥ ♀ 5581 RFL

⑦ ♀ 5557 RFL +tl.

⑧ ♀ ⑨ ♀ ⑩ ♀ ⑪ ♀ no tags

⑫ ♂ w/ large barnacle growing on carapace (3x)

⑬ ♀ # 6512 RFL

2118 - all, but one turtle have spooked and gone  
back to Δ in the nearshore shallow waters

2124. ♂ # 6517 LFL +tl. "NE Beach stretch"

2130. ♀ # 6518 LFL +tl. "NE Beach stretch" backing

25' from water, tag did not lock!

2140. back to camp.

30 October 1982 (Saturday)

Southeast Island

0630 - 2 Adult turtles  $\Delta$  "Turtle Beach"

0830 - begin motoring to North Island

0915 - NE Atoll "Shipwreck" - 1 subadult turtle basking atop slanted decking of wreckage - photos b/w

0940 - Little North Island

0956 1 set of turtle tracks up + down beach  $\uparrow \downarrow$

1000 1 juvenile swimming in nearshore cove pocket (?) feeding (no algae found) animal not grabbed because sand nearby

1100 - leave for North Island

1115 - 1 Adult turtle basking on sandy spit island

1140 - 1500 North Island.

1150 - 1 Adult turtle  $\Delta$  west side neck

6 Turtle  $\Delta$  (4 Adults, 2 sub) along "Turtle Lagoon"

1216 - 4 A  $\Delta$       4 Adults  $\square$

1 Sub  $\Delta$

1245 - NEST SITES

of north island.

? # 6519 RFL tr1

5 pits along northeastern portion





North Island walking westward

- Nest Sites
- A) 5 pits in vegetation - Tribulus / Solanum
  - B) 2 pits (one shallow)
  - C) 1 pit
  - D) 3 pits
  - E) 1 pit

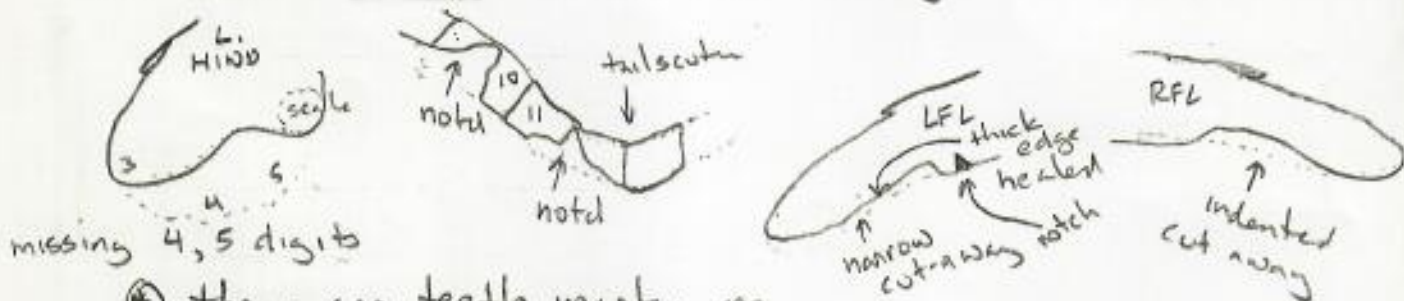
1315 - A set of turtle tracks up and down the beach by pit E ↘ up to HW 10'

- F) by July carapace, 3 pits, very deep lots of newly bare sand
- G) 3 pits by western boat landing site 10/30/82 (Zodion)

Total pits on NORTH IS. = 23 PITS

⊗ Note Codium washed up on beach

1329 ♂ 3047 RFL (turtle by itself western neck seen at 1150)



⊗ there are teeth marks on the carapace

1343 "Turtle Lagoon"

① ♀ # 6520 LFL Δ on southern extension toward spits

Total number turtles seen in this area now are

5 Adults Δ, 5 Subadults Δ, 1 Adult ♂  
 1 Adult Δ (3047) = 11 Δ 1 ♂



② ♀ 6156 LFL very big animal!

③ ♂ left beach

④ ♀ 5870 RFL +1.

1455 ⑤ Subadult (S) 67.4 tag tore out as turtle left

1500 ⑥ ♂ # 6521 LFL +1.

⑦ Subadult leaving the beach

⑧ ♂ 930 RFL large tag - USFWS on UH

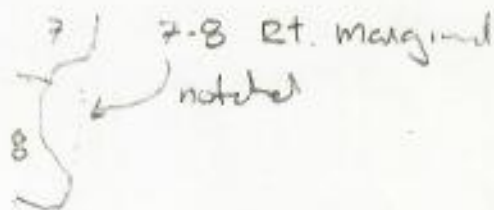
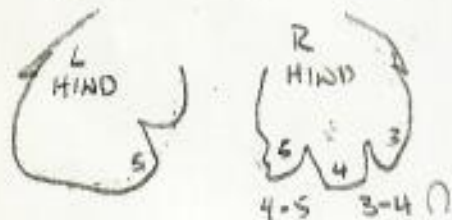
⑨ ♂ # 6522 LFL +1

1515 - only 5 turtles still on beach now  
(4 subadults and 1 ♀ (5578))

1518 ⑩ ♀ 5578 RFL in wave wash

⑪ Subadult (prob ♀) # 6523 LFL +1.

(S) 72.8 x 56.8



⑫⑬ 2 Subadults (prob ♀) leaving beach when I tried to measure one of them, very spooky

⑭ Subadult (prob ♀) # 6524 LFL +1.

(S) 68.0 x 56.3

1600 leave Nath Island for SE Is.

(turtle still Δ on small spit island seen at 1115)

1730 Southeast Island

1800 3 turtle basking "Turtle Beach" (2♀, 1♂)  
 ♂ # 6511 LFL +1.

2115 Night circuit going past "Turtle Beach"

2120 9 Adults (6511 LFL ♂)

5 Subadults

14 turtle Δ HWS

No reading of tags on animal, no disturbance

2215 back at camp

### 31 October (Sunday)

Southeast Island, morning

0335 Night survey.

① ♂ TIS RFL large tag - Bureau Wildlife, light color

② ♀ # 6512 RFL +1.

③ ♂ leaving beach

④ ♂ light colored animal - tag LFL +1  
 one that I recently tagged.

⑤ NOTE: tide is higher at this time with more water washing over the Δ turtles, animals alert & spooky - waves lapping at turtles' front flippers - lots of splash.

~ 19 turtle Δ in nearshore waters - water choppy & windy

1600 - back at tent at Camp.

31 October (Sunday)

Southeast Island

0730 - No turtles basking "Turtle Beach"

Weather deteriorating - windy, rough & cold

29 October hatchlings found Dead from exposure - Saved

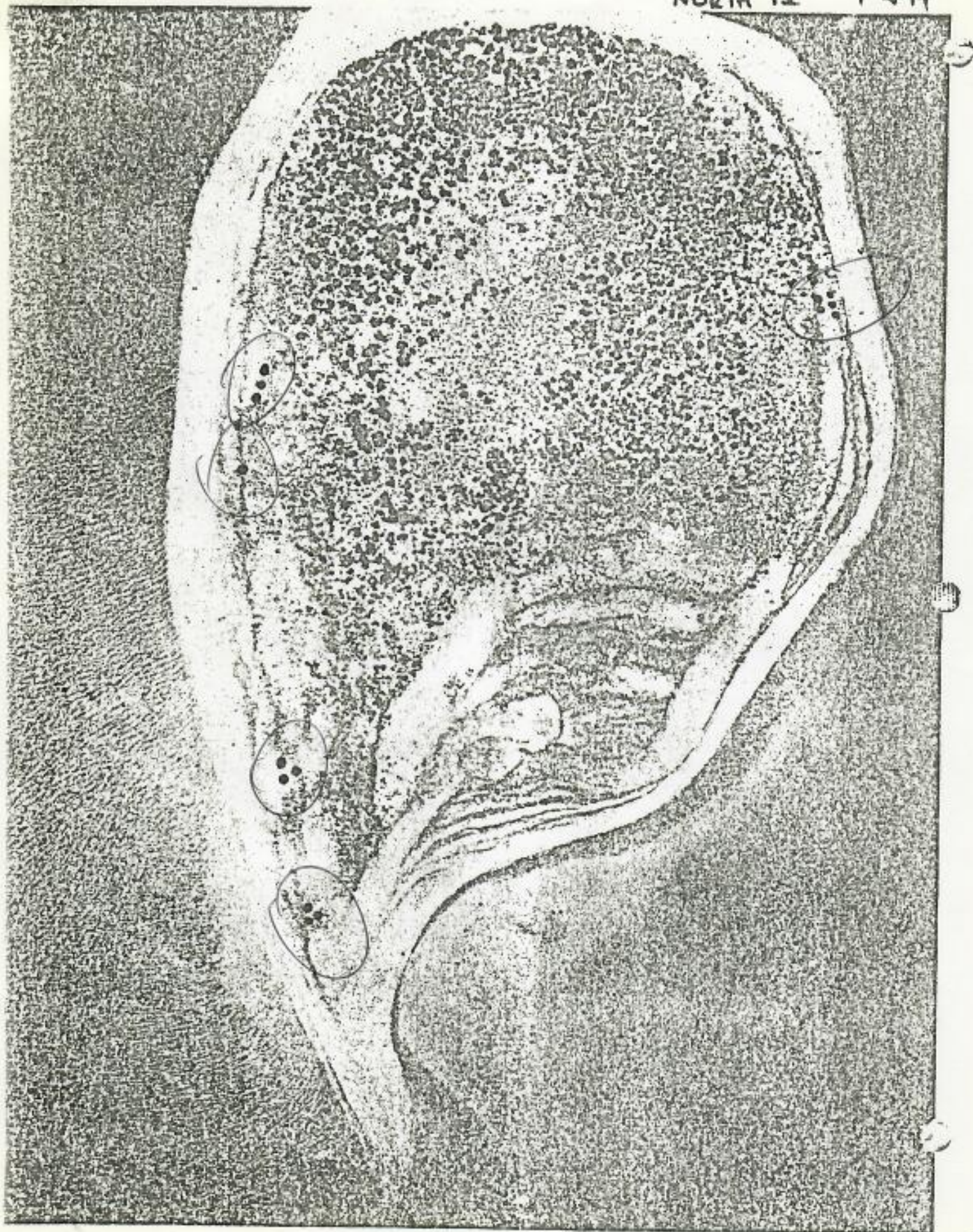
Total of 11 pits examined, no nesting found at all.

1400 - No turtles seen, leave SE Island for

Townsend Cromwell

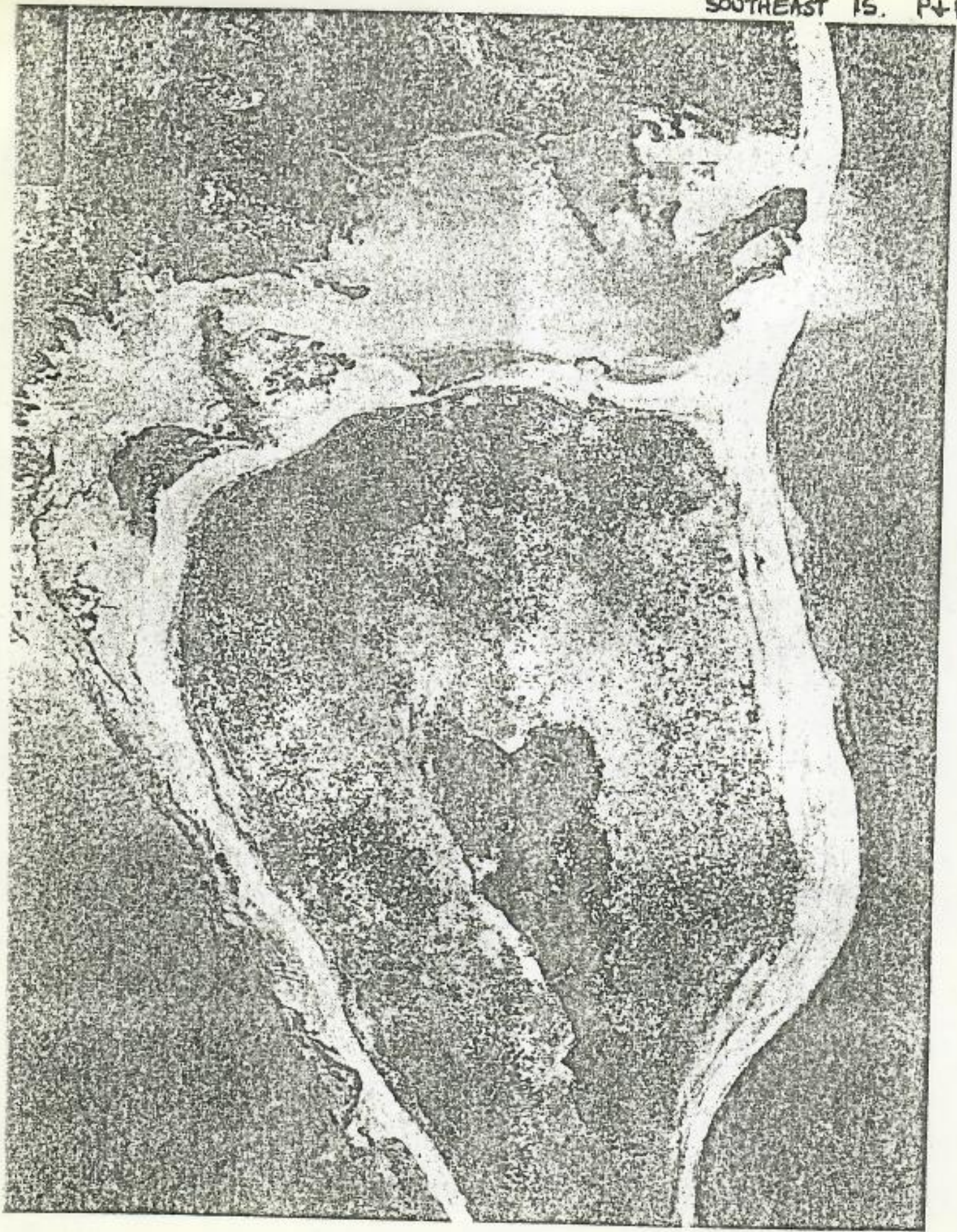
END OF PEAZL & HURMOO CAMP 1982

NORTH IS P & H

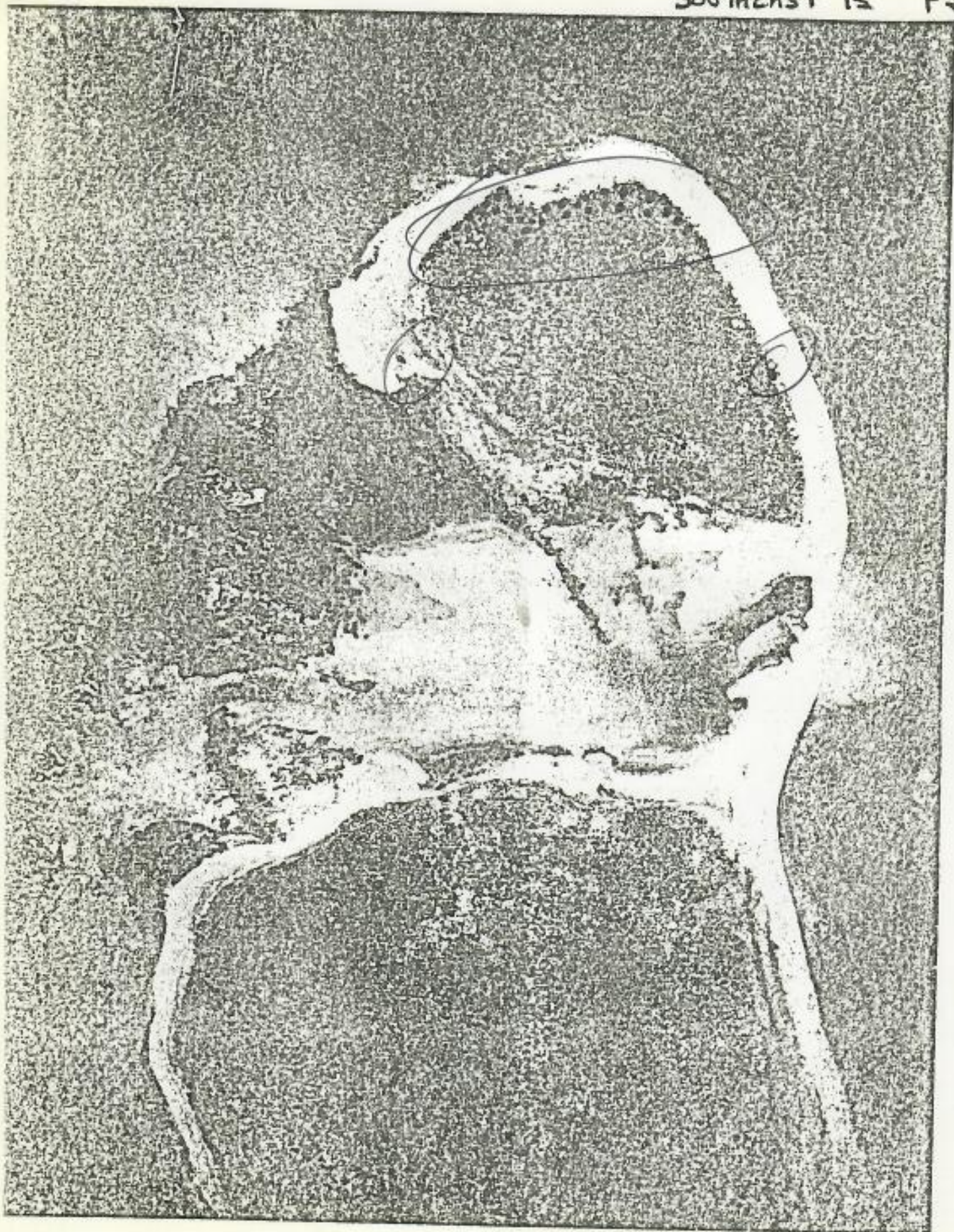


• Nest sites

SOUTHEAST IS. P+H.



SOUTHEAST IS P+H



• Nest sites

female green sea turtles tagged at Pearl and Hermes Reef, 2-6 July 1982.

Hermes Reef, 2-6 July 1982.

Tag numbers	Date first sighted	Island	Straight length (cm)	Straight width (cm)
① 5856 5857	7/2	SE	81.5	66.5
② 5858	7/2	SE	85.3	70.4
③ 5861	7/2	SE	84.3	64.4
④ 5862 323	7/2	SE	83.3	69.5
⑤ 5863	7/3	SE	93.0	77.1
⑥ 5864	7/3	SE	87.1	68.2
⑦ 5870 TS	7/5	North	93.5	78.5
⑧ 3671	7/2	SE	91.2	73.5
⑨ 5544	7/2	SE	82.3	66.7
⑩ 5599	7/4	SE	82.4	68.4
⑪ 5598	7/4	SE	85.9	70.5
⑫ 5587	7/5	North	90.2	76.1

N = 12

Range 81.5 - 93.5

Mean 86.7

SD 4.3

NOTE - These pages received from A.K. 11/82 include ALL TURTLES TAGGED 15 MARCH - 13 SEPTEMBER 1982

Male green sea turtles tagged at Pearl and Hermes  
Reef, 2-6 July 1982.

Tag number	Date first sighted	Island	Straight length (cm)	Straight width (cm)
① A1052 5855	7/2	SE	81.9	
② 5860	7/2	SE	89.6	69.7
③ 5866	7/4	SE	91.8	71.0
④ 5869	7/5	North	87.4	65.3
⑤ 5547 · 5567	7/2	SE	89.2	73.1

N = 5

Range 81.9 - 91.8

Mean 88.0

$\overline{SD}$  3.74



Juvenile and subadult turtles tagged at Pearl and Hermes Reef, 2-6 July 1982.

Tag number	Date first sighted	Island	Straight length (cm)	Straight width (cm)
① 5859 (♀)	7/2	SE	71.6	58.3
② 5865	7/4	SE	49.2	40.1
③ 5867	7/4	SE	63.8	52.8
④ 5868 (♀)	7/5	North	77.8	62.8
⑤ 5871 (♀)	7/5	North	74.2	60.6
⑥ 5872	7/5	North	74.8	58.4
⑦ 5873	7/5	North	65.5	52.4
⑧ 5874, 5875	7/5	SE	60.6	48.4
⑨ 5553 (♀)	7/3	SE	78.4	66.3
⑩ 5589 · 5590	7/5	North	no measurements	

N = 9

Range 49.2 - 77.8

Mean 68.4

SD 9.6

Tag recoveries of green sea turtles at Pearl & Hermes Reef 2-6 July 1982.

I	5547	7/2	SE Is.	(♂) (S)	89.2	x	73.1
	5567			(L)	94.5	x	90.4
II	3671	7/2	SE Is.	(♀) (S)	91.2	x	73.5
III	5544	7/2	SE Is.	(♀) (S)	82.3	x	66.7
IV	A1052	7/2	SE Is.	(♂) (S)	81.9	tag	swal
	5855						
V	323	7/2	SE Is.	(♀) (S)	83.3	x	69.5
	5862			(C)	90.2	x	84.5
VI	5553	7/3	SE Is.	" (♀) (S)	78.4	x	66.3
				(C)	84.4	x	80.3
VII	5599	7/4	SE Is.	(♀) (S)	82.4	x	68.4
				(C)	90.4	x	88.2
VIII	5598	7/4	SE Is.	(♀) (S)	85.9	x	70.5
				(C)	91.1	x	84.7
IX	5587	7/5	North Is	(♀) (S)	90.2	x	76.1
				(C)	97.3	x	94.4
X	5589	7/5	North Is				no measurements
	5590						
XI	TS	7/5	North Is	(♀) (S)	93.5	x	78.5
	5870			(C)	100.2	x	97.5

sex?

**PEARL + HERMES**

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Green Turtles Tagged at Pearl & Hermes Atoll  
2-6 July 1982.

- ① 5855 7/2 Southeast Island (♂) 81.9  
 A1052 RFL Bureau Wildlife Karuwa Hawaii (saved)
- ② 5856 7/2 Southeast Island (♀) (S) 81.5 x 66.5  
 5857 RFL x1 (C) 87.5 x 82.7
- ③ 5858 7/2 Southeast Island (♀) (S) 85.3 x 70.4
- ④ 5859 7/2 " " (♂) (S) 71.6 x 58.3 ♀ prob
- ⑤ 5860 7/2 " " (♂) (S) 89.6 x 69.7  
 (C) 95.5 x 86.3
- ⑥ 5861 7/2 " " (♀) (S) 84.3 x 64.4  
 (C) 91.7 x 90.6
- ⑦ 5862 7/2 " " (♀) (S) 83.3 x 69.5  
 323 RFL (C) 90.2 x 84.5
- ⑧ 5863 7/3 " " (♀) (S) 93.0 x 77.1
- ⑨ 5864 7/3 NE stretch, SE Is. (♀) (S) 87.1 x 68.2  
 (A) 93.5 x 88.6
- ⑩ 5865 7/4 NE stretch, SE Is. (~) (S) 49.2 x 40.1  
 (C) 51.6 x 46.2  
 PL 39.8 Skin beam  
 HEAD 7.4 Saved.  
 TAIL 8.0
- ⑪ 5866 7/4 Southeast Island (♂) (S) 91.8 x 71.0  
 (C) 97.7 x 92.5
- ⑫ 5867 7/4 " " (~) (S) 63.8 x 52.8  
 (C) 67.2 x 61.7
- ⑬ 5868 7/5 North Island (♂) (S) 77.8 x 62.8  
 (C) 84.0 x 77.0  
 prob ♀
- ⑭ 5869 7/5 North Island (♂) (S) 87.4 x 65.3  
 (C) 91.6 x 83.0
- ⑮ 5870 7/5 North Island (♀) (S) 93.5 x 78.5  
 T5 RFL Bureau Wildlife, K, H, C (C) 100.2 x 97.5

cont'd

Green Turtles Tagged at Pearl + Hermes Atoll,  
2-6 July 1982.

- |      |             |     |                           |         |      |   |      |
|------|-------------|-----|---------------------------|---------|------|---|------|
| (16) | 5871        | 7/5 | North Island              | 2(-)(S) | 74.2 | x | 60.6 |
| (17) | 5872        | 7/5 | North Island              | 2(-)(S) | 74.8 | x | 58.4 |
| (18) | <u>5873</u> | 7/5 | North Island              | (-)(S)  | 65.5 | x | 52.4 |
|      |             |     |                           | (C)     | 71.4 | x | 65.5 |
|      |             |     |                           | PL      | 51.3 |   |      |
|      |             |     |                           | HEAD    | 9.9  |   |      |
|      |             |     |                           | TAIL    | 13.0 |   |      |
| (19) | 5874        | 7/6 | NE stretch, GE Island (-) | (S)     | 60.6 | x | 48.4 |
|      | 5875        |     |                           | (C)     | 64.6 | x | 58.3 |
|      |             |     |                           | PL      | 48.2 |   |      |
|      |             |     |                           | HEAD    | 9.3  |   |      |
|      |             |     |                           | TAIL    | 14.5 |   |      |


5865 RFL NW Shedd 7/4  
 (S) 49.2 x 40.1  
 (C) 51.6 x 46.7  
 Head 7.4  
 Tail 8.0  
 PL 39.8

skin barnacles sampled from neck, pelvis, flippers (dorsal and ventral) No algae in mouth

5599 RFL (♀) NW Shedd  
 (S) 82.4 x 68.4 7/4  
 (C) 90.4 x 88.2

5866 RFL tail ♂ Turtle Beach 7/4  
 (S) 91.8 x 71.0  
 (C) 97.7 x 92.5

  
 notch ↑ between  
 4 digits of  
 Lt Hind

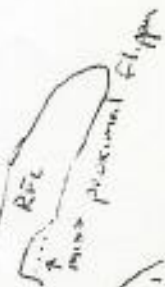
  
 missing 2,3,4  
 digits Rt. Hind

5867 RFL (↔) Turtle Beach  
 (S) 63.8 x 52.8 7/4  
 (C) 67.2 x 61.7

5553 RFL (♂ X) Turtle Beach  
 (S) 78.4 x 66.3 7/3  
 (C) 84.4 x 80.3

5863 RFL (♀) Turtle Beach  
 (S) 93.0 x 77.6 7/3

5864 RFL tail (♀) NE Shedd  
 (S) 87.1 x 68.2 Southeast Island  
 (C) 93.5 x 88.6



5847 LFL ♂ Turtle Beach Southeast Is.  
 5567 RFL  
 (S) 89.2 x 73.1 7/2  
 (C) 94.5 x 90.4

5855 RFL tail ♂ Turtle Beach  
 # A1052 RFL BUCARAO WINDWARD CALIWA ISLAND 7/2  
 OGE.  
 (S) 81.9

5856 RFL ♀ Turtle Beach 7/2  
 5857 RFL tail  
 (S) 81.5 x 66.5

5858 LFL tail ♀ Turtle Beach  
 (S) 85.3 x 70.4 7/2

5859 RFL ♀ Turtle Beach  
 (S) 71.6 x 58.2 7/2

5860 RFL tail ♂ Turtle Beach  
 (S) 89.6 x 69.7 7/2  
 (C) 95.5 x 86.3

5861 RFL tail ♀ Turtle Beach  
 (S) 84.3 x 64.4 7/3  
 (C) 91.7 x 90.6

5862 LFL tail ♀ Turtle Beach  
 # 323 RFL (upping) BUCARAO WINDWARD CALIWA ISLAND  
 (S) 83.3 x 69.5 7/3  
 (C) 90.2 x 84.5

3671 ♀ RFL Turtle Beach 7/3  
 (S) 91.2 x 73.5 (tail cut 3-4)

5544 RFL ♀ Turtle Beach  
 (S) 87.3 x 66.7 7/2

29 ♀ Female green sea turtles tagged at Cisianski Island  
 FEMALES ♀ 15 March - 13 Sept. 1982

①	2664	5839	6/6	[6]	(S)	82.4	
②	211	6303	8/21	[26]			
③	T 256	6304	8/20	[26]	(S)	82.2	x 66.5
④	A 494	6299	3/21				
⑤	644	6300	8/21	[15]	(S)	89.3	x 73.7
⑥	1014		8/26	[5]			
⑦	1292	1293	4/22	[2]	(S)	91.7	
⑧	1298	5090	4/1	[21]			
⑨	2866	1299	3/27	[27]			
⑩	2951	6278	5/23	[26]			(C) 95.5
⑪	3554		3/28				
⑫	5832	new 499	5/16	[3]	(S)	81.5	
⑬	5848	5849	6/27	[7]	(S)	85.3	
⑭	5850	5928	6/29	[10]	(S)	92.9	x 71.1
⑮	5929		7/20	[26]	(S)	87.6	x 69.1
⑯	5930		7/21	[33]	(S)	93.5	x 73.3
⑰	5936		7/25	[10]	(S)	85.2	x 66.5
⑱	5941	5942	7/28	[3]	(S)	91.7	x 74.3
⑲	5945	6318	7/20	[25]	(S)	—	x 65.9
⑳	5946		7/30	[30]	(S)	93.8	x 73.8
㉑	6278		8/11	[27]	(S)	90.8	x 68.3
㉒	6285	6286	8/14	[11]	(S)	94.1	x 72.4
㉓	6291	6287	8/17	[25]			
㉔	6309	6328	8/24	[13]			
㉕	6323		8/30	[26]			
㉖	6324		8/31	[25]			
㉗	2950		9/4	[27]			
㉘	6329		7/6	[30]			
㉙	399	6330	9/8	[20]			

15 ♂ Male green sea turtles tagged at Lisianski Island  
MALES 15 March - 13 Sept. 1982

①	430	6290	3/28	[ ]	(S) 85.2
②	465	5940	6/6	[15]	(S) 84.0
	<del>5835 5837 5838 5840 5846 5847 5851 5852</del>				
③	5835		6/5	[4]	(S) 84.1
④	5837		6/5	[3]	(S) 88.9
⑤	5838		6/5	[8]	(S) 86.5
⑥	5840		6/6	[15]	(S) 84.0
⑦	5846	5847	6/27	[11]	(S) 83 ± .5
⑧	5851	<del>5852</del>	6/29	[12]	(S) 85.1
⑨	5943		7/27	[25]	
⑩	6292		8/18	[25]	
⑪	6302		8/21	[11]	
⑫	5853		6/30	[27]	(S) 86.8
⑬	6326		7/2	[32]	(S) 89.3
⑭	585		7/17	[11]	observation es.
⑮	T259	2958	3/21	[ ]	77 2 x 61.4

Juvenile and Subadult Green Sea Turtles  
 Lisianski Is. 15 March - 13 Sept. 1982.

note:  $\text{♂}$  &  $\text{♀}$   
 dates refer to date  
 around first seen  
 next necessary the  
 date animal measured

Juveniles and Subadults

WEIGHT

RECOVERIES

GPAX  
 Book  
 #36

- ①
- ②
- ③
- ④
- ⑤
- ⑥
- ⑦
- ⑧
- ⑨
- ⑩
- ⑪
- ⑫
- ⑬
- ⑭
- ⑮
- ⑯
- ⑰
- ⑱
- ⑲
- ⑳
- ㉑
- ㉒
- ㉓

<del>2837</del>	<del>2838</del>			
2837	2838	4/12	[20]	(S) 64.4 x 54.0 ✓
2857	2858	3/29	[3]	(S) 54.0 x 46.0 ✓
2859	2860	3/21	[9]	(S) 42.0 x 35.9 ✓
2939	2941	7/17	[26]	(S) 74.1 x 61.0 ✓
2946	2947	7/8	[40] Ⓟ	(C) 48.7 x 42.7
2959	2960	6/17	[26]	(S) 79.2 x 63.3
<del>2961</del>	<del>2942</del>			
2961	2943	3/26	[26]	(S) 76.8 x 64.8

5826		4/8	[16]	(S) 42.9 x 36.8
5827		4/10	[43]	(S) 46.5
5828		4/12	[27]	(S) 51.5
5829		4/18	[26]	(C) 50.0
5830	5947	4/19	[20]	(S) 49.9 x 41.2
5831		5/2	[49]	(S) 45.4
5833		5/17	[20]	(S) 52.0
5834		5/17	[20]	(S) 54.9
5836		6/5	[4]	(S) 39.8
5841		6/10	[3]	(S) 76.2
5842	5944	6/17	[3]	(S) 61.4
5843	6288 6289	6/17	[4]	(S) 76.2 x 65.2
5844		6/26	[40]	(S) 43.6
5845		6/27	[20]	(S) 44.0
5852		6/30	[20]	(S) 69.9 ± .1
5854		6/30	[27]	(S) 58.2 x 48.7

FIX TAGS  
 condition?



23	5931	7/20 [25] (S) — x 65.9
23	5932 . 5933	7/20 [6] (S) 43.4 x 35.0
26	5934 5935	7/21 [20] (S) 43.9 x 36.5
27	5937 5938	7/23 [38] (S) 41.8 x 34.5
28	5939	7/24 [25] (S) 77.3 x 65.4
28	5948 <i>prob. ♀</i>	8/4 [13] (S) 77.2 x 60.5
30	5949	8/5 [26] (S) 44.2 x 35.3
31	5950	8/6 [27] (S) 73.8 x 61.2
32	6276 6277	8/11 [27] (S) 69.3 x 57.1
33	6279 6280	8/12 [45] (S) 45.6 x 36.1
34	6281 6282	8/13 [16] (S) 59.5 x 49.3
35	6283 6284	8/14 [25] (S) 43.5 x 35.5
36	6293 6294	8/20 [10] (S) 49.4 x 41.0
37	6295 6296	8/20 [10] (S) 41.3 x 34.5
38	6297 6298	8/20 [10] (S) 37.4 x 32.5
39	6305 6306	8/22 [10] (S) 45.4 x 38.1
40	6307 6308	8/23 [10] (S) 42.8 x 36.2
41	6310 6311	8/23 [10] (S) 44.6 x 36.7
42	6312 6313	8/27 [10] (S) 44.3 x 37.3
43	6314 6315	8/27 [10] (S) 49.1 x 39.9
44	6316 6317	8/28 [5] (S) 48.4 x 40.5
45	6319 6320	8/29 [2] (S) 39.1 x 32.5
46	6321 6322	8/30 [18] (S) 45.7 x 36.0
47	6331 6332	9/11 [Comp] (S) 49.9 x 40.3
48	6333 6334	9/11 [Comp] (S) 45.1 x 35.3
49	6335 6336	9/13 [4] (S) 43.0 x 34.7

Tagged Female turtles on Laysan Island 15 March to  
30 June 1982.

Tag number	Date first tagged in season	Straight length (cm)	Straight width (cm)
① 5888, 5889	3/21	92.4	72.9
② 5894	3/19	86.3	
③ 5899	4/7	84.5	
④ 5900 5917 5918	4/8	95.0	
⑤ 5904	4/29	82.8	
⑥ 5906	4/30	94.3	
⑦ 5908 5920 5921	5/6	92.0	72.5
⑧ 5909 5924	5/7	90.0	
⑨ 5913 <b>5363</b>	5/18	92.1	71.8
⑩ 5922 5925 5926 5927	6/18	91.6	72.3
⑪ 3580	3/20	91.4	73.9
⑫ 5096	4/3	89.0	
⑬ 986 · 115	4/22	no measurements	

Tagged male turtles on Laysan Island, 15 March to  
30 June 1982.

Tag number	Date first sighted	Straight length (cm)	Straight width (cm)
① 5878 5882 5883	3/17	89.1	69.3
② 5893 5923	3/27	86.2	
③ 5905	3/26	90.8	
④ 5907	4/14	84.3	
⑤ 5910	5/10	83.0	
⑥ 5914 5915	5/19	89.0	69.8
⑦ 5916 5919	3/28	84.2	

Tagged juvenile and subadult turtles on Laysan Island,  
15 March to 30 June 1982

Tag number	Date first sighted	Straight length (cm)	Straight width (cm)
① 5876 5877	3/16	44.2	37.3
② 5880 5881	3/19	64.1	51.8
③ 5884 5885	3/21	41.5	36.5
④ 5886 5887	3/21	61.5	50.0
⑤ 5890 5891	3/21	49.5	38.5
⑥ 5895 5896	3/28	48.2	40.2
⑦ 5897 5898	3/31	50.2	40.2
⑧ 5901 <b>T265</b>	4/8	77.3	
⑨ 5911 5912	5/17	67.2	54.3
⑩ <b>2633 2634</b>	4/4	56.1	45.0

Table 1. Tag resightings of *Chelonia mydas* green turtles at P&H 5/17/88 - 7/03/88  
 (dates)

Tag No. <sup>2</sup>		Date	Location		Status <sup>1</sup>	Spray #	Carapace length (cm)		Carapace width (cm)		OBSERVER
left	right		Island	Sector			Straight	Curved	Straight	Curved	
<p><i>female:</i></p> <p>(4631) 8969 5/26/88 Southeast/Sector 5</p> <p>plastron 67.5cm tail 22.5cm</p>											
	8354	6/10/88	East of North Id.	travelling		2	83.2	no notch	66		BRC/LMH
<p>Note: left flipper trailing edge toward tip had tag piece missing (1" x 1")</p>											
				basking			82		66		"

George the turtle  
 here, from  
 start of  
 7/24/88

<sup>1</sup> Basking, nesting, foraging, etc.

<sup>2</sup> ( ) indicates additional tag applied at the time of resighting.

## PEARL and HERMES REEF

27 October - 31 October 1982

6346	10/27	♀	"Turtle Beach"	SE
6347	10/27	♂	" "	SE
6348	10/27	♀	" "	SE
6349	10/27	♀	" "	SE
6350	10/28	♀	" "	SE
6506	10/28	Sub (♀)	" "	SE 75.0 x 59.8
6507	10/28	Sub	" "	SE 67.9 x 52.9
6508	10/28	♀	" "	SE 99.3 x 80.1
6509	10/28	♂	" "	SE 87.5 x 64.1
6510	10/28	Sub	" "	SE 70.6 x 58.8
6511	10/28	♂	" "	SE 91.6 x 70.5
<del>6347</del>	<del>10/28</del>	<del>♂</del>	<del>" "</del>	<del>SE</del>
6512	10/28	Sub	" "	SE
6513	10/28	♂	" "	SE
6514	10/28	♀	" "	SE
5560 · 1303	10/28	♀	ENTREED	SE 9 July 1976 seen basking - Trip PFS 8 Aug 1981 basking SE 15
5861	10/28	♀	ENTREED NO. 31	SE tagged 7/2/82 84.3 x 64.4
5858	10/29	♀	ENTREED NO. 20	SE tagged 7/2/82 85.3 x 70.4
6515	10/29	♂	" "	SE
5541 · 6516	10/29	♂	ENTREED NO. 17 8/7/81 SEIS.	Northeast Stretch SE
T 15	10/29	♂	ENTREED NO. 15	Turtle Beach SE orig tag East PFS nesting 29 June 1980
3671	10/29	♀	ENTREED	SE seen 7/2/82 58
5581	10/29	♀	ENTREED NO. 15 8/9/81 SEIS.	SE
5557	10/29	♀	ENTREED NO. 28 8/8/81 SEIS.	SE

6517	10/29	♂	NE Beach Stretch, SE
6518	10/29	♀	" " " SE
6519	10/30	♂	NE side North Is.
(3) 3047	10/30	♂	west side North Is.
6520	10/30	♀	"Turtle Lagoon" North
6156	10/30	♀	" " North
(4) 5870 TS	10/30	♀	" " North
6521	10/30	♂	North
(5) 930 FW	10/30	♂	North
6522	10/30	♂	" " North
5578	10/30	♀	North
6523	10/30	sub (♀)	" " North
6524	10/30	sub (♀)	" " North

(orig tag 4 May 1979 w/6 FFS-basking) observed GB at 146 FFS basking 7 June 1980

ENTERED

6/20/82 EAST-FFS ENTERED # 206

ENTERED # 21

(orig 13 March 1972 - SE P+H basking) observed AK 5 July 1982 basking North, P+H

(orig tag 14 Dec 1970, North, P+H-basking) also 6/10/80 + 3/28/81 North Is. P+H.

8/9/81 NIS basking

ENTERED # 29

Robert Forreath

Table 1. Tag resightings of adult green turtles at PEARL & HERMES SE. AUGUST 9 - 8/27, 1986.  
(DATE 1 of 2)

Tag No. <sup>2</sup>	Date	Location		Status <sup>1</sup>	Carapace length (cm)		Carapace width (cm)		OBSERVER
		Island	Sector		Straight	Curved	Straight	Curved	
Male ✓ 5581 <i>Same as following page</i>	8-17-86	SE	OS	BASKING					DJA
7021	8/23/86	SE	OS	"	80.9			6/1/83 SEI RM?	RGF
4/83 7022	8/23/86	SE	OS	"	81.0				RGF
GHB 5555	8/23/86	SE	8/8/81 GHB SEI OS	"	~87.6			orig. TAGGED BASKING SEI 8/8/81 by GHB	RGF
✓ 2971 937	8/23/86	SE	OS	"	82.1			ENT #6 ♂ GHB	RGF
5/83 6995	8/23/86	SE	OS	"	87.8			5/19/83 86.85L SEI RM?	RGF
4/83 6952	8/23/86	SE	OS	"	88.8			4/28/83 NI RM?	RGF
UNKNOWN:									
✓ 5553*	8-18-86	SE	OS	BASKING					DJA
4/83 7/83 6953	8/23/86	SE	OS	"	~83.3			ENT #24 ♀ GHB 4/30/83 7/4/83 SEI 79.25L RM?	RGF

\* LARGE IMMATURE OR SMALL ADULT.

1 Basking, nesting, foraging, etc.  
2.



Table 1.--Tag resightings of adult green turtles at Southeast I Pearl & Hermes 8/19/86 -- 8/27/86  
(PART 2 of 2) (dates)

Tag No. <sup>2</sup>	Date		Location Island / Sector	Status <sup>1</sup>	Carapace length (cm)		Carapace width (cm)		OBSERVER
	left	right			Straight	Curved	Straight	Curved	
5501		8/23	SE	Basking	88.7		82.7		RGF

female:  
 same as previous  
 5501

<sup>1</sup> Basking, nesting, foraging, etc.  
<sup>2</sup> . . . . .

Table 3. --Adult green turtles newly tagged at Southeast Is., P.H.

8/1/86 - 8/27/86  
(dates)

Tag No.	left	right	Date	Location		Status <sup>1</sup>	Carapace length (cm)		Carapace width (cm)		OBSERVER
				Island	Sector		Straight	Curved	Straight	Curved	
8961			8/23/86	SE	05	Basking	29.5				RGF
8966			8/23/86	SE	05	"	81.6				RGF
8971			8/23/86	SE	05	"	—				RGF
8975			8/23/86	SE	05	"	85.7				RGF
<b>FEMALE:</b>											
8959			8/23/86	S.E.	05	Basking	—				RGF
8960			8/23/86	S.E.	05	"	—				RGF
8964			8/23/86	S.E.	05	"	~82.7				RGF
8965			8/23/86	S.E.	05	"	~87.5				RGF
8970			8/23/86	SE	05	"	~83.1			Tail not real short + tail very skinny	RGF
8973			8/23/86	SE	05	"	—				RGF

<sup>1</sup> Basking, nesting, foraging, etc.

Table 4.--Immature green turtles newly tagged at Southeast Is., P.H.H. 8/9/86 — 8/27-86  
(dates)

Tag No.	Date		Location		Status <sup>1</sup>	Carapace length (cm)		Carapace width (cm)		OBSERVER
	left	right	Island	Sector		Straight	Curved	Straight	Curved	
8954		8/23/86	SE	05	Basking	~70.5				RGF
8955		8/23/86	SE	05	"	62.2				RGF
8956		8/23/86	SE	05	"	—				RGF
8957		8/23/86	SE	05	"	80.9				RGF
8958		8/23/86	SE	05	"	~65.3				RGF
8963		8/23/86	SE	05	"	~72.0				RGF
8967		8/23/86	SE	05	"	~65.0				RGF
8968		8/23/86	SE	05	"	—				RGF
8969		8/23/86	SE	05	"	~81.5				RGF
8972		8/23/86	SE	05	"	—				RGF
8974		8/23/86	SE	05	"	~77.0				RGF
8977	8976	8/24/86	SE	05	Swimming close to shore	43.0	45.2	35.0	41.6	RGF

<sup>1</sup> Basking, nesting, foraging, etc.

Table 4.---Immature green turtles newly tagged at Turtle Reef P3H 8/9/86 - 8/27/86

(dates)

Tag No.	left	right	Date	Location		Status <sup>1</sup>	Carapace length (cm)		Carapace width (cm)		OBSERVER
				Island	Sector		Straight	Curved	Straight	Curved	
8979		8978	8/26/86	Turtle Reef		Foraging	32.3		33.0		RGF

<sup>1</sup> Basking, nesting, foraging, etc.



+ 7/124 7/29/84  
NI  
SL 56.1

TABLE 2.

Tag resightings of immature green turtles at North I. Peil & Herms 8/9/86 - 8/26/86 (dates)

Tag No. left right	Date	Location		Status <sup>1</sup>	Carapace length (cm)		Carapace width (cm)		OBSERVER
		Island	Sector		Straight	Curved	Straight	Curved	
7111 RMBW 1986 8266 (left) / 6101 (right)	8/19/86	N.I.	1	Basking	Not taken	5/5, 5/31 & 7/6/83	NI RM?	5/5, 5/31 & 7/6/83	WAG? RGF
1963 6962 original tag applied 5/2/83	8/18/86	N.I.	1	Basking	" "	5/2, 5/24, 7/11/83	NI RM?	SL-64.5	RGF

1754

<sup>1</sup> Basking, nesting, foraging, etc.

<sup>2</sup> ( ) indicates additional tag applied at the time of resighting.



TABLE 2.

Tag resightings of immature green turtles at Turtle Reef P&H 8/4/86 - 8/27/86  
(dates)

Tag No. <sup>2</sup>	Date		Location		Status <sup>1</sup>	Carapace length (cm)		Carapace width (cm)		OBSERVER
	left	right	Island	Sector		Straight	Curved	Straight	Curved	
3204	8/26/86	8/20/86	Turtle Reef		foraging	46.5		31.8		RGF

orig. tagged 7/13/84 by AM&WG "in rear patch reefs, SW" SL 39.5

<sup>1</sup> Basking, nesting, foraging, etc.

<sup>2</sup> ( ) indicates additional tag applied at the time of resighting.



TURTLE  
TAG Recoveries P&H

From June 1986 by Tim G.

- | Tag  | Sex     | Tag #              | Location | Date   | Notes  |
|------|---------|--------------------|----------|--------|--|
| X T3 | Male    | 5547               | L        | 6/3/86 | SE, see CNT#9, 8/1/81                                      |
| X T2 | U IMM   | 5569               | R        | 6/4/86 | NI, 8/9/81, 4/29/83, 5/24/83, 6/29/83, 7/17/83, NI, GB, RM |
| X T2 | U IMM   | 5571               | R        | 6/4/86 | NI, 8/9/81, 5/24/83, 6/29/83, NI, NI GB, 7/17/83, RM       |
| X T3 | U ADULT | 7110               | L        | 6/4/86 | NI, NI 7/6/83, RM  |
| X T2 | U IMM   | 5867               | R        | 6/5/86 | 5/23/83 & SEI, SE, RM, 7/4/82, AK                          |
| X T2 | U IMM   | 827                | L        | 6/5/86 | SE, SEI, RM, 5/25 & 6/18/83, RM                            |
|      |         | Also tagged 7073 R |          |        |  |
|      |         | 7010 L             |          |        |  |
|      |         | <del>7010</del>    |          |        |  |
| X T3 | U Male  | 6515               | L        | 6/6/86 | SE, SEI, 10/29/82, AK                                      |

Tag recovery data for Pearl and Hermes Reef, 27-31  
October 1981 ~~1~~ 2

Tag number		Date observed		
5560 . 1303	♀	10/28 SE	P+H - basking orig. tag 20 Sept. 1966	observed Tring, FFS - B 9 July 1976 SE Is. P+H - B 8 Aug. 1981
5861	♀	10/28 SE	P+H - basking AK orig. tag 2 July 1982	
5858	♀	10/29 SE	P+H - basking AK orig. tag 2 July 1982	
5541	6516 ♂	10/29 SE	P+H, SE - basking GB orig. tag 7 Aug 1981	
T15	♂	10/29 SE	P+H, SE - basking orig. tag 15 March 1972	
3671	♀	10/29 SE	East, FFS - nesting orig. tag 29 June 1980	observed LIS - B 7/2/82 SE
5581	♀	10/29 SE	P+H, North - basking orig. tag 9 August 1981	
5557	♀	10/29 SE	P+H, SE Is. - basking orig. tag 8 August 1981	
3047	♂	10/30 North	Whale shark, FFS - basking orig. tag 4 May 1979	observed WS, FFS - B 6/9/80 by GB
6156	♀	10/30 North	East, FFS - nesting orig. tag 20 June 1982	
5870 . TS	♀	10/30 North	SE, P+H - basking orig. tag 13 March 1972	observed North, P+H basking 7/5/82 by AK
930 RW	♂	10/30	North, P+H - basking orig. tag 14 Dec 1970	observed North - B 6/18/80 3/28/81
5578	♀	10/30	North, P+H - basking orig. tag 9 August 1981	

**SIDE STAKES FOR CROSS-SECTIONING**  
 any Width. Side Slopes 1 1/2 to 1.  
 base "top of pile" and "under" "I read 11.6, the distance was  
 actually 11 under "cut or fill" and under "I read 16.7, the  
 distance cut from the side stake at right.



cut from Side or Shoulder Stake	0	1	2	3	4	5	6	7	8	9
0.5	0.6	0.8	0.9	1.1	1.1	1.2	1.2	1.2	1.2	1.4
2.0	2.1	2.3	2.4	2.6	2.7	2.7	2.7	2.7	2.7	2.9
3.5	3.6	3.8	3.9	4.1	4.2	4.2	4.2	4.2	4.2	4.4
5.0	5.1	5.3	5.4	5.6	5.7	5.7	5.7	5.7	5.7	5.9
6.5	6.6	6.8	6.9	7.1	7.2	7.2	7.2	7.2	7.2	7.4
8.0	8.1	8.3	8.4	8.6	8.7	8.7	8.7	8.7	8.7	8.9
9.5	9.6	9.8	9.9	10.1	10.2	10.2	10.2	10.2	10.2	10.4
11.0	11.1	11.3	11.4	11.6	11.7	11.7	11.7	11.7	11.7	11.9
12.5	12.6	12.8	12.9	13.1	13.2	13.2	13.2	13.2	13.2	13.4
14.0	14.1	14.3	14.4	14.6	14.7	14.7	14.7	14.7	14.7	14.9
15.5	15.6	15.8	15.9	16.1	16.2	16.2	16.2	16.2	16.2	16.4
17.0	17.1	17.3	17.4	17.6	17.7	17.7	17.7	17.7	17.7	17.9
18.5	18.6	18.8	18.9	19.1	19.2	19.2	19.2	19.2	19.2	19.4
20.0	20.1	20.3	20.4	20.6	20.7	20.7	20.7	20.7	20.7	20.9
21.5	21.6	21.8	21.9	22.1	22.2	22.2	22.2	22.2	22.2	22.4
23.0	23.1	23.3	23.4	23.6	23.7	23.7	23.7	23.7	23.7	23.9
24.5	24.6	24.8	24.9	25.1	25.2	25.2	25.2	25.2	25.2	25.4
26.0	26.1	26.3	26.4	26.6	26.7	26.7	26.7	26.7	26.7	26.9
27.5	27.6	27.8	27.9	28.1	28.2	28.2	28.2	28.2	28.2	28.4
29.0	29.1	29.3	29.4	29.6	29.7	29.7	29.7	29.7	29.7	29.9
30.5	30.6	30.8	30.9	31.1	31.2	31.2	31.2	31.2	31.2	31.4
32.0	32.1	32.3	32.4	32.6	32.7	32.7	32.7	32.7	32.7	32.9
33.5	33.6	33.8	33.9	34.1	34.2	34.2	34.2	34.2	34.2	34.4
35.0	35.1	35.3	35.4	35.6	35.7	35.7	35.7	35.7	35.7	35.9
36.5	36.6	36.8	36.9	37.1	37.2	37.2	37.2	37.2	37.2	37.4
38.0	38.1	38.3	38.4	38.6	38.7	38.7	38.7	38.7	38.7	38.9
39.5	39.6	39.8	39.9	40.1	40.2	40.2	40.2	40.2	40.2	40.4
41.0	41.1	41.3	41.4	41.6	41.7	41.7	41.7	41.7	41.7	41.9
42.5	42.6	42.8	42.9	43.1	43.2	43.2	43.2	43.2	43.2	43.4
44.0	44.1	44.3	44.4	44.6	44.7	44.7	44.7	44.7	44.7	44.9
45.5	45.6	45.8	45.9	46.1	46.2	46.2	46.2	46.2	46.2	46.4
47.0	47.1	47.3	47.4	47.6	47.7	47.7	47.7	47.7	47.7	47.9
48.5	48.6	48.8	48.9	49.1	49.2	49.2	49.2	49.2	49.2	49.4
50.0	50.1	50.3	50.4	50.6	50.7	50.7	50.7	50.7	50.7	50.9
51.5	51.6	51.8	51.9	52.1	52.2	52.2	52.2	52.2	52.2	52.4
53.0	53.1	53.3	53.4	53.6	53.7	53.7	53.7	53.7	53.7	53.9
54.5	54.6	54.8	54.9	55.1	55.2	55.2	55.2	55.2	55.2	55.4
56.0	56.1	56.3	56.4	56.6	56.7	56.7	56.7	56.7	56.7	56.9
57.5	57.6	57.8	57.9	58.1	58.2	58.2	58.2	58.2	58.2	58.4
59.0	59.1	59.3	59.4	59.6	59.7	59.7	59.7	59.7	59.7	59.9
60.5	60.6	60.8	60.9	61.1	61.2	61.2	61.2	61.2	61.2	61.4

DATE	Location	Apr/dix	R	L	OLD TAGS	NEW TAGS
8/20/26	04	1MM			7431 7432	7431 7432
8/20/01	05	A P / MM			7431 7432	7431 7432
8/20/02	05	A P / MM			7431 7432	7431 7432
8/20/05	05	A P			7431 7432	7431 7432

ENTRERED BOOBY MNS  
 "NECKM x JUN 1983  
 M 20

FEEDING OBSERVATIONS

Location	TIME	Animals	COMMENTS	DATE
SEC OLR	1344	4 A	Active feeding	0728
"	1530	6 A	Active feeding	"
SEC OLR	1600	2MM 3A	Feeding / Stapon	0725
06 ORF	1330	2A 1MM 1A?	Feeding	0730
"	1700	2A 1MM 1A?	Feeding / Stapon	0730
02	1630	2A?	Swimming	0730
05	1430	1A?	Swimming	0730
06R				0801
00R	1400	3A?	Feeding	0802
06R	1700	2A 1MM	Feeding	"
06R WEST	"	2A	"	"
Shack Bay	"	2A?	Swimming	"
*	1730	SPOT	Still at edge dock	
06R	1330	3A?	Feeding	0801
"	1200	8A?	"	0801
06R	1330	2A?	"	0803
05	1715	A?	SPOT "feeding	0804
		A?	SPOT feeding	"
			feeding far with skin	"
06R	1700	A? / A?	Feeding	0805
05R	0930	2 1MM	"	0806
"	"	1A?	"	"
"	"	1A?	"	"

Island Sightings

DATE	TIME	Location	Age/sex	Comments
830728	1330	05	A♀	Hauled out <u>Back</u>
830731	1530	02	IMM	Swimming
	1530	05	2A?	Hauled out
830801	1800	02	A?	Swimming
	04	04	IMM	Feeding
830802	1700	Shoal Bay	2A?	Swimming
830802	1130	05	A♀	Hauled out
"	1200	05	IMM (7425)	"
"	0930	02	Adult	Swimming
830803	0645	02	A?	" Cove
"	"	05	A?	Basking → <u>fast</u>
830803	1730	02	IMM	Swimming
"	1730	SHARK	A?	"
830804	1230	Shoal Bay	3A?	" 08 → 05
830806	1700	"	A?	Swimming
"	1500	05	A♀	Spot Hauled out
"	"	"	A♂	Hauled out
"	"	04	2A?	Feeding
830806	2200	05	A♀	Asleep

NOTES

830727 1MM Hatched on Rock had  
Mismatch Carapace posterior  
margins - appears cracked



← BENT VENTRALLY  
CRACKED

830801 A♀ (1MM)? w/ fleshy growths  
AT ANTERIOR CORNERS BOTH  
EYES - Mt eye w/ growth  
Upper lid v. Animal tagged  
X2 - appears Sloppy,  
but OK in H<sub>2</sub>O

830802 A♀ (1MM) seen on OT  
Basking spot - photo of eyes  
Layton 16 # 6-10 (Straper)

A♀ w/ fleshy tumors EFF, NUSE,  
VENTRAL LEE - photos  
(Spot)

WAVE/Under/Sea/conditions  
DURING the presence of  
the oil leaking SPOT - Seasonal  
conditions w/ respect to  
Soil IE E, SE, N will  
No doubt influence this  
behavior

w/ the higher surf, animals  
moves deeper & less, At. Surface  
shorter - Low Animal feeding?  
on floating algae NOT found  
near water -