

R. L. Maze
1965

Journal

Pago Pago, American Samoa

Oct 11 0900. Set sail from harbor north to open Pacific. Seas relatively calm. First watch for birds began 1000; I joined Woodward and Harrington on the bow. Although seas somewhat calm I soon became sick from the swaying motion and retired until 1430. My observations during first watch were nil. At 1430 returned to flying bridge where Kepler and Ustved were observing. Avian activity sparse; birds, except several white-tailed Tropicbirds and one Fairy Tern, remained some distance from the ship. Other species observed were ~~B~~ Red-footed Booby, Brown Booby, Wedge-tailed Shearwater, Common Noddy Tern. All observations entered in observation log. General behavior of birds aided greatly in identifying individuals, particularly those some distance from the ship — horizon 7 miles from flying bridge. Boobies, large birds, tended to circle at high elevations of ~~20~~ 100ft or so when occurring in feeding flocks. Individuals flew low to water, not more than 10ft above it, when feeding alone; flight linear ~~with~~ with slow dipping — somewhat like parrots fly. Shearwater tended to glide near the surface without ~~heavy~~ heavy flapping of wings. Their paths of flight were somewhat circling at elevations 20ft or less. Terns behaved much like shearwaters but their wing was more vigorous and ~~path~~ path more linear. The tropicbirds seemed to circle about the ship flying 50ft or so above the surface, wing-beat heavy but intermittent with gliding. At distances some of these birds were

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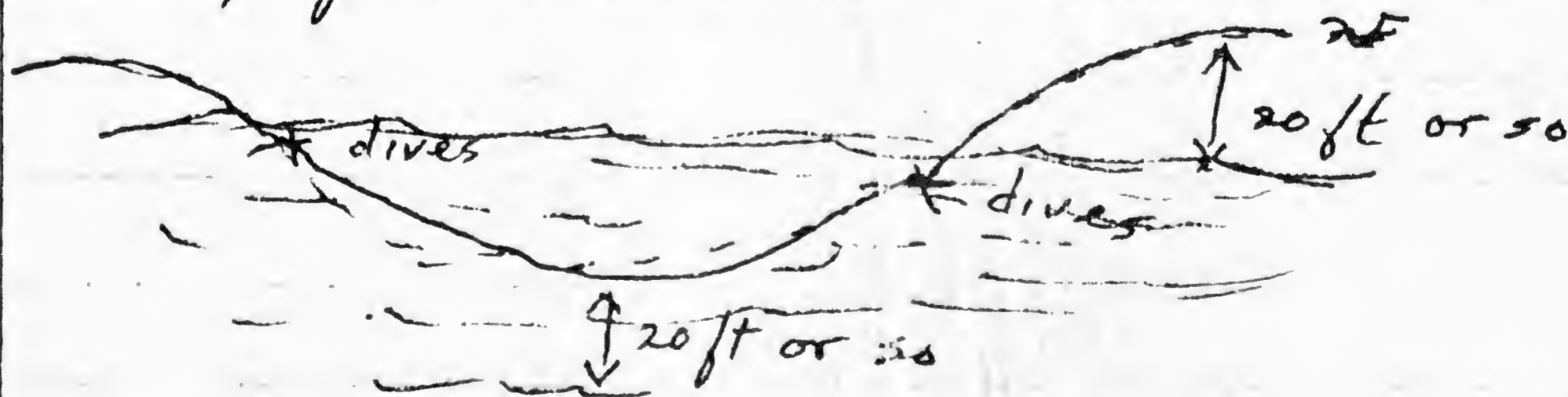
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Pago Pago, American Samoa

Oct 11 observed morphological and chromatic characteristics were useless as means of identification. Weather - partly cloudy with some intermittent showers, gusts of wind not exceeding 30 miles/hr, warm.

Oct 12 ^{2nd day} at sea, Pacific Ocean

0600 - 0800. Crossin and I drew first watch. Went aboard bow observed. No feeding flocks of any significant size observed. Several species of petrels were noted including two uncommon species - Mottled Petrel and Kermadec Petrel. Other petrels included Black-winged Petrel. Fairy Terns, Sooty Terns, White-footed Tropicbird, Wedge-tailed Shearwaters were other species observed. All accounts entered in observation log. Note - flight patterns of petrels seemed unique to those of terns in that petrels tended to fly low to water, 20ft or less, veering in semicircular paths, diving then repeating somewhat like a sine wave such that the belly of an individual can be seen in one



interval between dives and the dorsal surface during the next ~~diving~~ interval. Weather - same as that of Oct 11, 1965.

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3rd day at sea N American Samoa, Pacific Ocean

13 Oct 1000 to 1200 and ~~1000 to 1800~~ 1800 to 2000. Weather - partly cloudy, few squalls, wind moderate with gusts, medium swells. Most squalls distant from ship but rain occurred on deck 1945 hrs. Cruising 8 to 10 knots.

First watch aboard 1000 to 1200 with D. Husted. Sighted

following:

| | | |
|---------------------|----|---|
| Shear-Pet | 3 | W |
| Mottled Petrel | 7 | SW |
| Sooty Shearwater | 45 | SSW and SW |
| Wedge-tailed Shear. | 1 | S (dark phase) |
| Sooty Tern | 3 | NE |
| Storm Petrel sp. | 2 | W small broad wings with large white rump patch |

Second watch aboard 1800 to 2000 with J. Tordoff.

Sighted following:

C Wandering Tattler 1 collected J. Tordoff(?)

Sooty or Slender-billed shearwater 4 SW

FF Sooty Tern 28

Wedgetail Shearwater 4

Sooty Tern 4

Birds were not abundant and many difficult to see. Mottled Petrels flew in a circling manner much like other petrels. Conspicuous dark diagonal bars on underwings and grey-black upper wings aided in identification of this species. Their flight often close to water not exceeding 20ft in height. Sooty Shearwaters flew much like Wedge-tailed Shearwaters but sooty's are darker - black; some have silver bands beneath wings. Slender-billed Shearwater not distinguished from Sooty Shearwater. Sooty Terns had more rapid wing-beat than did shearwaters, plus they

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are slightly smaller than shearwaters. Flight of these terns may or may not have been linear. Circling about an area indicating foraging behavior although I did not note feeding. Storm-Petrel sp. appeared to be Leach's Petrel although others observing considered breadth of wing and size of white rump-patch too great to qualify individuals as members of this species. Flight was slightly higher above water but in the same manner as other petrels. Wandering Tattler - shorebird flight of heavy, rapid wingbeat and linear direction with slow, or rapid, bank turns. was noted. Bird collected. Tordoff fired 4 volleys of shot missing when bird returned on starboard side I shot as it approached me straight-on. Tordoff fired at the same time; the bird went down; Tordoff claimed the specimen. Bird medium slender bill gray above, washed brown below. Size slightly larger than a Rudy Turnstone.

14 Oct. 4th day at sea N. American Samoa, Pacific Ocean

On watch at 0800 to 1000 and 1600 to 1800. Activity of birds ~~spare~~ reduced. Flocks small and few generally either shearwater or tern flocks. Most birds seen were solitary. One Rudy Turnstone collected by R. Crossin. (Both watch periods were accompanied by Crossin.) Between 1600 to 1800 rain and westerly winds up to 30 knots occurred. Watch taken from bridge of ship during rain. Brown Booby and Sooty/Slender-billed Shearwater seen.

15 Oct 5th day at sea N of Am. Samoa, Pacific Ocean

On watch from 0800 to 1000 with P. Woodward. Both Sooty/Sl-B Shearwater ~~seen~~ and dark phase Wedge-tailed Shearwaters seen. Mottled Petrels also seen.

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Howland Island, 004 N-1763, Pacific Ocean

15 Oct 1830. Arrived island from Shearwater via rubber raft with outboard motor. After landing equipment party returned to ship except island party, Maze and Fleet. At 2030 after radio contact Fleet and I departed campsite to band Blue-faced Boobies but an approaching heavy squall forced us to return to

16 Oct. camp. It rained all that night and the following day until about 1630. At night we banded, repainted banded birds, and streamerred all caught birds not possessing streamers. Accounts of bands banded and return birds were recorded in notebooks for future use. Fifty-four returns of the Blue-faced Booby were recorded by us. Fifteen Blue-faced Boobies were banded — 3 nestlings, 5 immatures, 2 adult females, and 5 adult males.

No series for birds banded were 587-83601 to 615.

17 Oct Following camp activities a shorebird count was conducted along littoral areas of the island. The following species and numbers were tabulated: Golden Plover 46, Rudy Turnstone 7, Wandering Tattler 8.

~~8~~ At 2030 ~~banding~~ ^{we} commenced banding.

Forty-~~four~~^{six} returns were ~~collected~~ recorded. Six Brown Boobies were banded — 1 immature, 1 subadult, 3 adult females, and 1 adult male. Two Blue-faced Boobies were banded — 1 immature and 1 adult. Series for all birds banded included 587-83616 to 623.

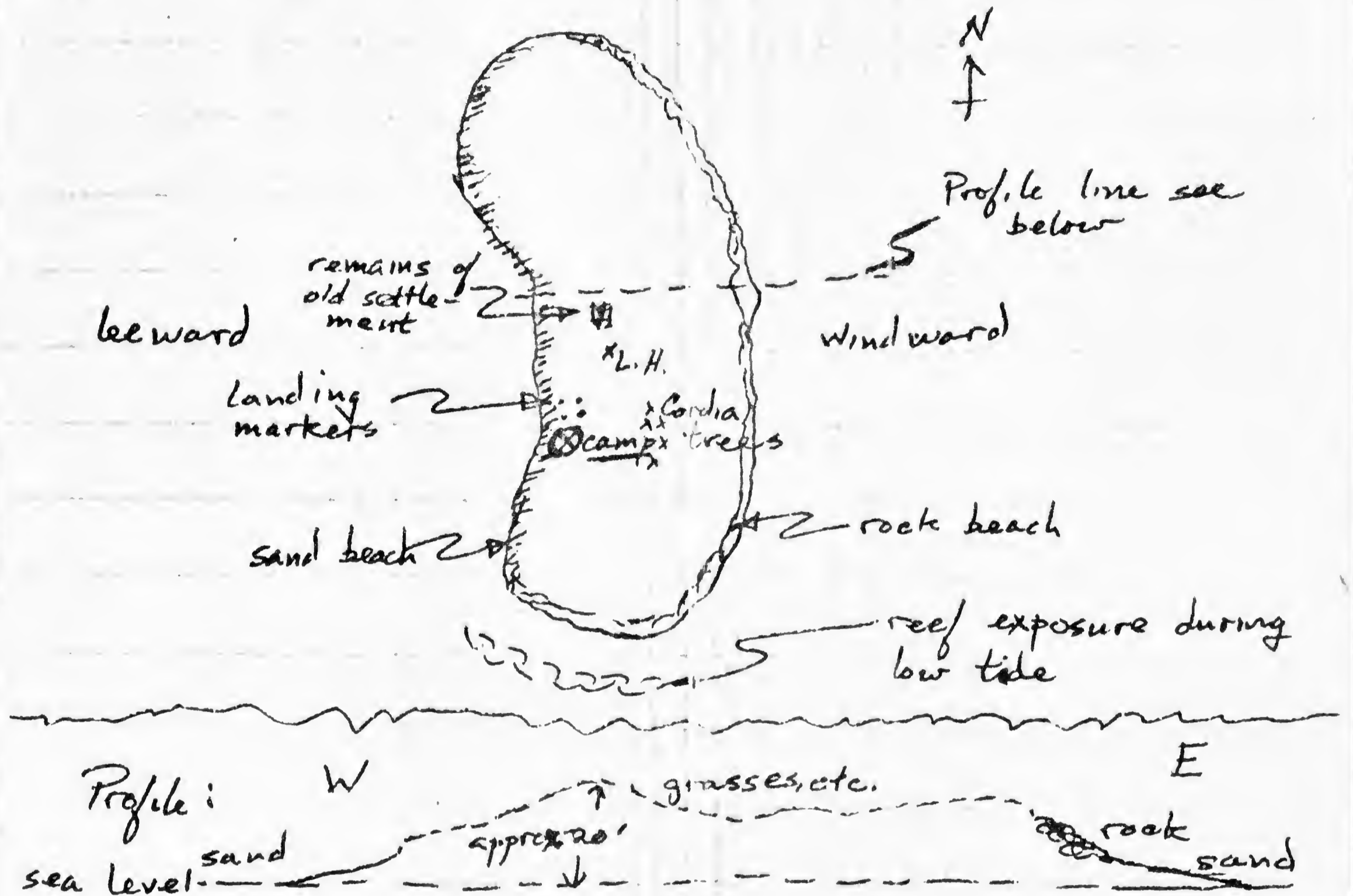
Other birds handled were either repainted or streamerred and painted. Rains commenced at 0030; party retired.

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Howland Island, 004N-1763, Pacific Ocean

17 Oct. Description of Howland Island: The island is kidney-shaped according to map and location of ~~our~~ our camp is as follows:



As one approaches from the sea the first view of the island is one of a surface barely above sea level, green, bordered with white sand beaches. (We approached from the leeward side.) Moving from the west shore eastward, one finds first a white sand beach with scattered coral rock and shells, landward clumps of ~~begin~~ begin to appear within 30 ft the blend with other vegetation ~~to~~ forming a complete cover over the island. With the exception of the 60 ft, or so, of beach described above, the only other portion denude of vegetation is the opposite windward beach where vegetation cover ~~is~~ ceases along the rocky upper portions of the beach. The windward beach is about $\frac{1}{3}$ rock and $\frac{2}{3}$ sand, depending on the

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Howland Island, 004N-1763, Pacific Ocean

17 Oct. tide. Vegetation composing the cover seemed to be composed of 4 species — 2 grasses and Digitarius pacificus, and 2 low succulents

with exception of one live Cordia tree () near the center but slightly south of the midpoint of the island. About one dozen dead Cordia trees stand along the central axis south of the live tree. It appeared that Digitarius pacificus grows more central on the island in large patches while grows in clumps, and in ~~part~~ patches toward the interior, about the periphery of the island. The succulents seemed to cover everywhere the grasses did not, except on the beaches; although by origin the reverse case may be true, i.e., grasses grow where do not. Fauna observed can be ~~categorized~~ conveniently categorized as follows:

Invertebrates

A. Crustaceans

1. Hermit crabs

a. Large orange species about island but mainly on beaches

b. Small white species only on beaches

B. Insects

1. Flies (perhaps several species)

2. Dermestid beetles about remains of ~~the~~ dead birds and ~~near~~ ^{about} camp

3. Water striders on beach (leeward) only

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Howland Island, 004N-1763, Pacific Ocean

17 Oct.

Vertebrates

A. Pices, eels, etc.

1. Black-tailed sharks in reef waters at low tide often a few feet from the beach
2. Moray eels among reef rock at low tide
3. Numerous small reef fishes
4. Mullet seen only at night along beaches

B. Reptiles

1. Small brown gecko common about camp and ~~near~~ lighthouse
2. Small skinks, perhaps 3 inches in length, common about the lighthouse and in the vegetation

C. Aves

1. Great Frigatebird flying (gliding) at high altitudes over the island at day and a few roosting in the dead Cordia trees at night
2. Lesser Frigatebird common, flying (gliding) at high altitudes at day, roosting in dead Cordia trees at night (at least 25 or so), and a nesting colony (36 nestling) near the SE corner of the island.
3. Blue-faced Booby common resident and visitant stationed on ground mainly at night in "clubs" or nesting pairs about the periphery of the island a margin of 75 yds from the edge of the vegetation unwooded, perhaps 1000 indiv.
4. Brown Booby nesting and roosting at night, along the edge of cover in the SW corner

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Howland Island, 004N-1763, Pacific Ocean

17 Oct.

4. (continued Brown Booby) and S end of the island, perhaps 50 or more indiv.
5. Red-footed Booby restricted to roosting and nesting in dead Cordia trees in S central area of island, perhaps 100 to 150 indiv.
6. Rudy Turnstone along beach at day
7. Golden Plover mainly along beaches but also near beaches in vegetation at day 40 indiv. or so
8. Wandering Tattler along beaches at day, perhaps 10 indiv.
9. Incidentals -- one White-tailed Tropicbird (they maintain nesting colony at other times of the year)

D. Mammals

1. Domestic cats 5 indiv. seen about island inc. S beach

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Howland Island, 004N-1163, Pacific Ocean

18 Oct. Rains continued intermittently until approx. 1800. Following camp activities (meal) radio contact was made with USNS Shearwater. At 2100 party (Fleet and Mize) commenced banding activity. Fourteen birds were banded of six were Brown Booby - 1 subadult, 1 adult female, 4 adult male (2 males ~~on~~ on eggs); eight were Blue-faced Booby - 1 immature, 1 subadult, and six adult males. Series of bands used included 587-83624 to 637. Fifty-three returns were noted; of these 18 were Brown Booby and 35 were Blue-faced Booby (some in clubs). Other boobies caught were repainted or painted and streamerred. Two cats seen on Sand.

19 Oct. During the morning, 10930 on, nest count for one-half of the island was conducted. Twelve Brown Booby nests were found mainly along bordering vegetation ridge adjacent to the S+SW beach; of these 8 had no eggs, 3 had 1 egg, and 1 had 1 egg, 1 nestling and one ♀ adult. Fourteen Blue-faced Booby nest were found - 13 with lone nestlings and 1 nest with 2 eggs. Nest count survey was conducted from beach sand to about 50 yds inland about the periphery of 1/2 the island. At 2030 banding was started. One cat was seen a short distance from camp 50 yds N of lighthouse. Five Blue-faced Boobies were banded - 2 immatures, 2 adult females, and 1 adult male. Thirty-seven returns were taken on Blue-faced Booby; no Brown Booby were ~~seen~~ encountered. Work was conducted N along leeward side of the

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Howland Island, 004N-1763, Pacific Ocean

- 19 Oct island to just pass the point and several hundred yards southward on the windward side. Most birds composing two clubs were near the point. Many boobies had been worked; the remaining birds were banded, streamerised and painted, or repainted.
- 20 Oct At 0315 and for nearly an hour thereafter, a rain with a steady wind of about 40 miles/hr harassed us. Occasional gusts may have reached 50 miles/hr. At 0930 completion of west census was carried out by moving N of camp (in the opposite direction from yesterday's census) and skirted the periphery of the island until we met the end of yesterday's census on the E side of the island. Twenty Blue-faced Booby nests were found - one nest contained 2 eggs the remainder were single nestlings. Blood samples were taken from Red-footed Booby - 10 samples, 10cc blood per sample were taken at 2030. Ten Red-footed Boobies were banded. All these boobies were caught by hand from low roosting ~~perches~~ perches of dead Cordia trees in the center of the island. Many of these boobies flew when approached; out some 100 individuals only 25 were caught, banded and streamerised, or sampled for blood, or both.
- 21 Oct. Heavy rains fell early morning accompanied with strong winds up to 50 miles/hr. The canvas tore on the south, windward side even after we had secured each pole with 2 to 3 additional ropes. The tent blew down and all belongings and

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Howland Island, 004W-1763, Pacific Ocean

2/ Oct. occupants were thoroughly drenched. The rains stopped at daybreak but the wind continued out of the S and E all day from 15 to 20 miles/hr. At 0930 nest litter (her base) samples were ~~collected~~ collected. Fleet collected from 1 Red-footed Booby and 1 Greater Frigatebird nest. I collected from 2 Brown Booby nests; one contained one egg, the other was newly built. After returning to camp we organized materials and broke camp. Landing party of three (Mannis, Poly and Aston) arrived by rubber raft (motor driven) on leeward side at 2130. Cargo was secured and we headed out against heavy, wind driven surf. A series of 3 four to five foot waves caused us to capsize. One man ahead of me on port side was thrown overboard prior to the raft's capsizing. Apparently his weight in the water caused the raft to be dragged bow to the port side causing the 3rd wave to ~~roll~~ throw the raft over. Most of the contents and all occupants made it to shore (the radio was retrieved from the water at about 2130). We lost one shovel, one cot, one pair of glasses (Fleet's), ^{the tent poles} and a portion of the radio antennae. None of the occupants were injured although there was a great chance of it. When we capsized I was thrown beneath the raft and raft, loose cargo, etc. floated over my head. When I surfaced I was entangled in tow line rope along with Fleet and Mr. Aston. Fortunately the surf did not catch the raft or some of us could have been strangled or drowned.

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Howland Island, 004N-1763, Pacific Ocean

21 Oct in the snaring rope. It had been intended that another raft with outboard motor, 4 oarsmen and 5 additional occupants for weight would tow us with a 600ft lead of rope. The weight of raft ~~and~~ being turned back by the surf pulled the leading raft backwards even while all 4 rowed and the motor pulling at top speed until the rope broke when we capsized. Gear was fetched from the water and raft was retrieved. The tent was set up over one of the landing ~~marker~~ marker poles and was held up by rope ~~to~~ tied to another marker pole. We ate what few cans of food we had left (brown bread, peanut butter, and ~~fruit~~ candies). With only one cot the other four of us slept on the ground, ~~on~~ cushioned by our life jackets. It rained all afternoon and again that night with strong wind.

22 Oct At 0530 we had hope the surf would be down and the tide out. The tide was going out but the continuous wind maintained a strong surf. We loaded the raft and waded it south in shallow water south to get to the windward side that at this time had a low surf due to the westerly ~~and~~ winds we had recently. First we tried pulling the raft with 200ft lead of rope by 2 men on the ~~beach~~ beach 3 in the water holding the raft. This did not work so we all waded the raft until harassing sharks and a colony bed of spiny sea urchins forced us aboard. Just beyond the south point of the island on the

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Howland Island, 004°N-176°3', Pacific Ocean

22 Oct windward side of the island there was a small channel in the reef and a low surf. The other 4 rowed vigorously and we made it to the ocean beyond the surf. Apparently the ship did not see us and moved all the way around the island before picking us up. We were out of the surf at 0910 and picked up at about 1015. No injuries were noted except Mr. Aston stepped on a sea urchin and drove a spine through his shoe into his foot, and ~~Mr~~ Fleet and ~~I~~ ~~got~~ were somewhat sunburned while we were drifting at sea waiting to be picked up.

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Christmas Island, 015 N-1573, Pacific Ocean

28 Oct. On watch with Harrington aboard USNS Shearwater. Observed ~~more~~ increased number of birds as we ~~at~~ approached ~~the~~ Christmas Is.; among them Harrington and I saw Christmas Island Shearwaters, Phoenix Island Petrel, Fairy Tern (more ~~number~~ numerous than at sea), and other species seen along voyage from Howland Island. Watch was discontinued before 1200, when ship anchored off island. Landing party of 2 rafts brought 9 S.I. personnel (Fleet, Crossin, Kepler, Woodward, Harrington, Amerman, Toddoff, Husted and Maze) and S.I. landing cargo ashore at about 1200. Residence of S.I. personnel was established in vacated Officers' Barracks by permission of the District Commission, Mr. Wardell (spelling?) of the Gov't of Great Britain. The D.C. also furnished use of one landrover (3 of 4 cylinders working but best that could be offered) for our personal use. At 1400 to 1600 approx. S.I. personnel surveyed Christmas Is. along main road for Sooty Tern colonies. About 6 swarms were seen plus 3 colonies were seen. We stopped at the 3 colonies which were located as follows; (1) adjacent (N of) vacated barracks of old Pacific Missile Range (2) at Isle lagoon turn-off, and (3) about 7 miles farther out on single lane main road. At 1630 to 1830 approx. Husted, Fleet, Kepler, Amerman, Woodward and I took raft to Cook Is. and collected blood ~~see~~ samples from 2 Phoenix Is. Petrels, 3 Red-tailed Tropicbird, Sooty Tern, Christmas Is. Shearwater. Terns airborne others ^{not} ~~by~~ Woodward also banded some Fairy Terns by net catching. ~~to~~ Upon returning to

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Christmas Island, 015°N-157°W, Pacific Ocean

Christmas Is. ~~banding~~ skinning was insured. Specimens were collected by R. Crossin, J. Tordoff, and B. Harrington. Species included 2 specimens of species of Laysanbeets, Crested Tern, Golden Plover,

After skinning further blood sampling of Sooty Terns along banding was attempted but only 3 or 4 adult birds were seen at colony sites located earlier in the ~~the~~ day. The Landrover ran out of petrol 17 miles out which further hampered activities such that the remainder of time spent in field was getting back to camp. Much thanks to Gilbertese fisherman, who came along in a truck, for ~~bringing~~ ^{giving} us 5 gal. of gas!

29 Oct.

Husted and I returned to USNS Shearwater to spin blood down from yesterday's blood samples, collect water, food and miscellaneous gear. The rest of S. I. personnel left about 12/15 to survey island. Four birds were collected — 1 Blue-faced Booby, 1 Red-tailed Tropicbird, and 2 Shoveler (ducks). Specimens marked and put on ice. At 1850 party split; Fleet, Woodward, Husted and Tordoff went to Motu Upua, the rest of us travelled by Landrover to Isles Lagoon on Christmas Is. Sooty Tern colonies located the day before remained in air — moon set at 2330. Along lagoon ~~was~~ small nesting colony of Wedge-tailed Shearwater. Twelve blood samples from 12 adults taken. Farther along road following blood samples were taken and birds banded: 40 RFB, 9 BFB, ~~12 ST~~ 2 GF and 7 cats (cats collected enroute to and from and 2 ~~in~~ in ST colony). Red-footed Booby colony where samples ~~was~~ were taken had at least one nest with small chick. The other birds, BFB, GF, apparently were not

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Christmas Island, 015N-1573, Pacific Ocean
nesting at this location. Nesting colony of GF was observed on a small island in lagoon. Crossin swam to island and observed — GF adults and chicks, Phoenix Is. Petrel, Blue-gray Noddy Tern (one), Common Noddy Tern, BFB, and some Storm Petrel. Those who went to Motu Upua^{island} collected blood samples from Phoenix Is. Petrel and Christmas Is. Shearwater (1000's), Wedge-tailed Shearwater, Fairy Terns,

30 Oct

After returning from night before at 0430 activities were not resumed until about 1030 at which time Crossin, Kepler, Amerman, Harrington, Woodward and I surveyed enroute to, and on, several islands in the major lagoon. One Shoveler was collected by Crossin and one Laysan Duck (2 others collected by Crossin on 29 Oct.) was seen flying parrot-like flight along major road. I took several habitat photo slides on Christmas Is. At about 1730 we ~~later~~ broke into 2 parties — first, Woodward, Crossin, Amerman and second, Kepler, Harrington, and I and surveyed small islands in lagoon (Jole lagoon) for nesting. Harrington, Kepler, and I surveyed 4 small islands, previously named by SI personnel on an earlier SIC trip, named Dot, Lost Far, and Rat (so named because one small rat was seen by us). The following flora and fauna was observed:

| | | |
|----------|-------------------------|-----------------------|
| Dot Is. | CNT nest | 1 e |
| Lost Is. | BB " | 2 e |
| | RFB " | 1 large N also 2 imm. |
| | RTTB | 3 large N |
| | | 6 Ad <u>w</u> e |
| Far Is. | BB nestling and CNT egg | |

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Motu Upua, Christmas Island, Pacific Ocean

30 Oct At 2030 party split — Fleet, Crossin, Husted, Harrington, Kepler and I went to Motu Upua to collect blood samples and band. Woodward, Toddoff and Amerman took landrover and went along main road to collect blood samples. Those of us on Motu Upua island collected blood samples from dark phase WTS, CIS, PIP; all these species were banded as well. Total bands used ~~to~~ were less than 1,000. Population estimates (my estimates) for birds on the island were as follows: WTS 500 ± 200 ; CIS $10,000 \pm 3,000$; PIP $15,000 \pm 3,000$. All these species were collected from the ground beneath scrub vegetation or from open areas (particularly WTS). ~~All~~ WTS ~~was~~ banded were nearly all immature birds. Party retired at about 0130 hrs. ~~Three~~ quarter moon ~~caused~~ birds to be a little edgy until about 1230 hrs when moon set.

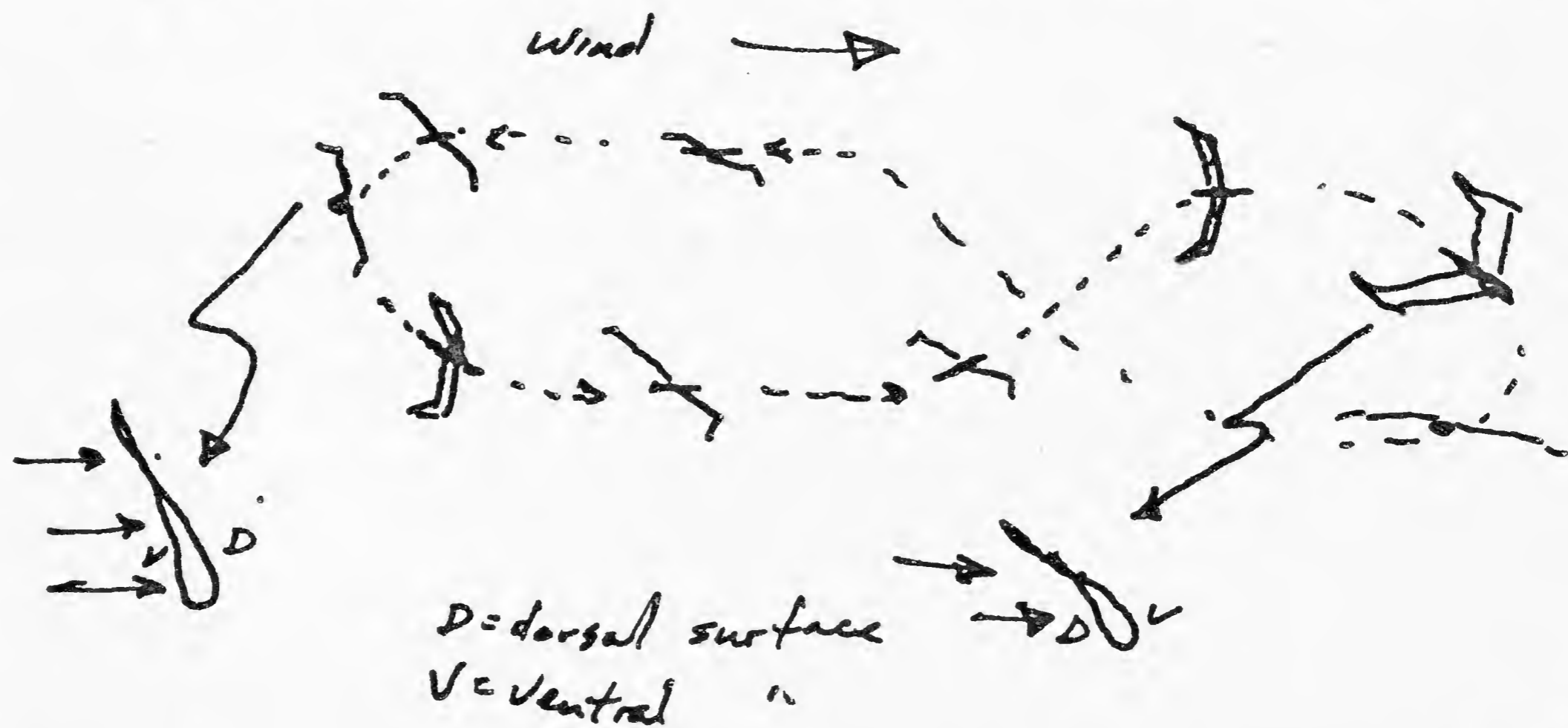
31 Oct At 0800 SI personnel boarded USNS Shearwater and completed day with at-sea duties.

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Black-footed Albatross
(Diomedea nigripes)

1st day S Honolulu, Hawaii, Pacific Ocean

26 Feb. Forty-six adult birds constitutes maximum number seen during diurnal hours. These masters of aerodynamics are efficient gliders even near the water. They glide in figure eight patterns with one oval usually windward, the other lee ward. Usually when approaching windward end of oval they gain some altitude, up to 50 ft_a above water; then upon ~~beginning~~ turning with wings out stretched, apparently to gain maximum momentum from wind force, they glide with the wind, descending slowly. On the lee ward turn they begin with the wind pushing so that when they complete the turn they are again facing into the wind. This maneuver is efficiently executed by tilting the wings; the wind drives the bird into the turn.



These albatrosses descended when wings were drooped and slightly bent down. When wings were straightened out and extended birds ascended.

01 Mar. One individual was still following the ship at sunset but the others have left; most of them left the night of 28 Feb. Apparently these birds follow a ship to sea for a number of days then return to the Hawaiian Islands.

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Hermit Crabs

Campsite, 200 yds E lighthouse, Howland Is, Pacific Ocean

- 16 Oct Many hermit crabs, orange-red in appearance, have been noted on the island about camp. Last night ten, or so, individuals invaded our tent (Fleet and Maze). These crabs range in size from $\frac{3}{8}$ to $\frac{5}{8}$ inches in length, including soft parts of abdomen. Forty individuals were marked in an area between the plane wreckage, $\frac{S}{N}$ of campsite, on beach approx. 50 ft wide $\frac{E}{W}$ to $\frac{S}{N}$. Individuals marked were painted on right legs with blue paint from an aerosol spray can. Eighteen such marked individuals were collected and returned beneath a coral rock 40 ft, or so, W of plane wreckage; other were painted and return to residences in the surrounding area. Later checks should show movement of all 40 individuals — whether they remain in the vicinity or move elsewhere and whether all of the 18 under the coral rock remain? Some other individuals were noted returning to the island from the ocean.
- 17 Oct Two color phases of this species noted — one a ~~lighter~~ lighter orange, the other a darker red, orange. No individuals of the 18 marked ones beneath rock ~~was~~ were noted at 1700.
- 18 Oct No individuals of 18 marked beneath rock noted at 1730. Several photographs taken of other individuals of both color phases. Congregations of these crabs were noted about the garbage pit near camp and about decaying, fallen coconut trees. Their activity appears most intense at night.

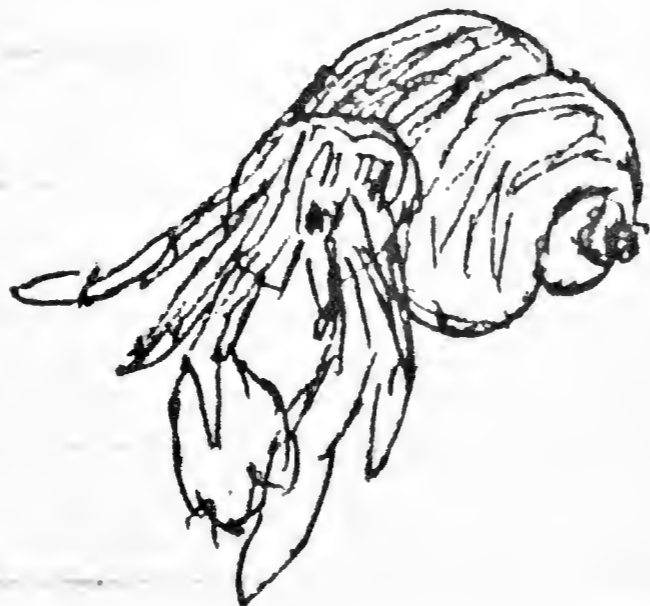
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Hermit Crab

Campsite, Howland Island, 004N-1763, Pacific Ocean

20 Oct. 2300 hrs. Yesterday old sandwiches and bread was thrown into garbage pit along with tin can and bit of C rations. Better than 50 of these crabs gathered within 10 ft radius of the garbage, many others were about the vicinity. I examined 50 individuals both dark red and light orange — six dark red individuals possessed egg masses and six orange individuals possessed egg masses. I also noted that ~~so~~ color phases are not strictly limited to dark red and orange. Of the 50 individuals examined color ranged from light orange, with blended areas of white, to one almost a black-red. Factors other than sex determine color phase, ~~and~~ perhaps

21 Oct. age. Individuals examined beneath coral rock; of the 18 marked one was seen along with 7 other crabs. ~~Another~~ Another species has been noticed which is much smaller, uses a smaller more flattened white shell, and folds within its borrowed shell. The crab studied here uses a larger spiral shell. Including the 50 marked individuals almost all individuals use the same "type" of shell as follows:



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Hermit Crab

Christmas Island, 015N-1573, Pacific Ocean

28 Oct Individuals of large orange species seen on Howland present on major island. Seen along road at night. Population did, ^{not} appear as concentrated as it did on Howland Is.

Cook Is., Christmas Is., Pacific Ocean

Individuals seen beneath large holothrop (spelling?) bushes.

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Wedge-tailed Shearwater
(Puffinus pacificus)

Manana Island, 1 mi. E. Kaula Beach Park, Oahu, Hawaii

30 Sept. large nesting colony established there. After sunset approx. 100,000 individuals settled on the island off and on during the night; at sunrise they departed to the seas. When they were on the island most roost on the ground. Many weird noises were uttered — groaning, wheezing, honking noises — some almost human-like. Individuals roosting were easily approached by shining bright light in their eyes. Adults tended to nest everywhere but on rock outcrop and beach; they maintained nesting colonies in loose soil slopes on west side of extinct island crater and in loose soil on crater floor. Nesting burrows, by the thousands, were only about 20% active; ~~containing~~ they usually contained chicks with thick, long, grey down, some with developing primaries. Nesting apparently ^{was} in advanced stages. Nestlings hid in burrows, ranging in depth from 2 to 4 ft and in width 6 to 10 inches, during day advancing to openings near sunset and throughout night until day-break. Parental adults fed chicks by inserting beak into esophagus of chicks and regurgitating fish. During feeding calls of chicks and adult appeared to reach a crescendo. Most adults had grey-white bellies, grey-black upper wings, back, and head and tail, elongated

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Wedge-tailed Shearwater
(Puffinus pacificus)

Motu Upua, Christmas Is., Pacific Ocean

30 Oct Dark phase individuals seen at sea throughout voyage from Am. Samoa via Howland Is. to Christmas Is.

Birds much the same as light phase birds seen on Manana Is. but dark gray-brown throughout with pink feet. Immatures were banded on this island (Motu Upua). Not as common as CIS or PIP.

Calls not as elaborate as light phased birds on Manana Is. Estimated population was 500 ± 200 .

3 Nov 4th day at sea N. of Christmas Is., Pacific Ocean.

Dark phase individuals predominantly seen since Christmas Is. but light phase individuals seen over water.

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Sooty Shearwater
(Puffinus griseus)

3rd day at sea N. of Am. Samoa, Pacific Ocean

13 Oct Forty-five individuals seen during day. Claimed not to be distinguishable from Slender-billed Shearwater in the field. Some birds seen had silver underwings others not.

Close in appearance to Wedge-tailed Shearwaters but blacker slightly smaller body in proportion to wing size and often fly close to water, 20ft or less.

15 Oct Arrival Howland Is., 004N-1763, Pacific Ocean

Individuals seen at sea throughout trip from Am. Samoa. Tend to shy away from ship thus difficult to collect.

R.L. Mize
1965

Christmas Island Shearwater
(Puffinus nativitatis)

Christmas Island, 015N-1573, Pacific Ocean

28 Oct First individuals seen at sea before 1200 hrs. within 10 miles of island. Birds much like Sooty/Slender-billed Shearwater except wings not proportionately as large in relation to body size. Flight unique to other shearwaters seen to date; flight linear (somewhat so) ^{with} conspicuous wingbeat rhythm of 3 or 4 vigorous wingbeats glide, 3 or 4 vigorous wingbeats glide, repeated throughout flight.

28 Oct Cook Island, 015N-1572, Pacific Ocean

Five individuals seen beneath 3 different Heliotrop (sp?) bushes. All remained secluded when approached generally moving on foot to opposite side of bush. All adults black throughout, black feet, slightly smaller than Wedge-tail Shearwater but uttering call notes quite similar. All ~~roosted~~ roosted on ground beneath bushes.

30 Oct. Motu Upua, Christmas Island, Pacific Ocean

Large colony ~~present~~ $10,000 \pm 3,000$ birds roosting on ground about and beneath low ~~shrub~~ shrub vegetation. Members interspersed with Phoenix Is. Petrels and fewer Wedge-tailed Shearwaters.

R. L. Magee
1965

Mottled Petrel
(*Pterodroma ~~hypoleuca~~*
inexpectata)

2nd day at sea N of Am Samoa, Pacific Ocean

12 Oct Individuals seen at sea throughout late morning and afternoon. Arcing flight of this bird characteristic of petrels (so Sam told) and unique to shearwaters and terns. Flight low to water much as follows:



Individuals observed bank 45° or so when arcing in alternating fashion such that the dorsal surface can be seen in one arc and ventral surface in the next.

Dorsal surface light gray-brown about back and upper wings; ventral surface washed white on ~~belly~~^{chest}, throat, under tail and underwings, except conspicuous black border ~~top~~ tapering to diagonal bar on under wings black patch on inferior (posterior portions) of belly.

13 Oct. 3rd day at sea N of Am. Samoa, Pacific Ocean

Two individuals seen at sea. Much the same as described above.

15 Oct. 5th day at sea N of Am. Samoa, Pacific Ocean

Individuals seen at sea.

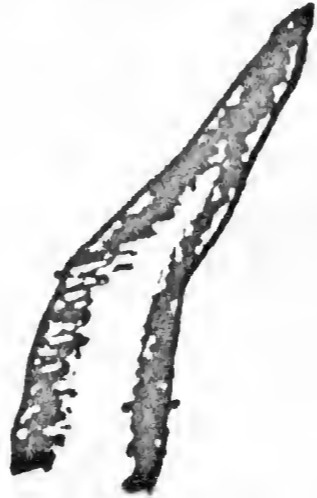
28 Oct Arrival at Christmas Is., 015N-1573, Pacific Ocean

Individuals seen throughout voyage from Howland Is. on the 22 Oct.

Mottled Petrel

Johnston Atoll Grid to American Samoa

09 Mar. One individual off port on S direction of ship flying
along side toward stern. Flight with considerable
yaw in which ventral surface of wing was exposed,
appearing thusly:



dorsal surface of wing
with black border

R.L. Mage
1965

Blue-Faced Booby
(*Sula dactylatra*)

Howland Island, 004N-1763, Pacific Ocean

15 Oct 1830. Upon landing on this island and shortly before, while aboard ship, a number of large gliding birds were noted, among them the Blue-faced Booby. General appearance of adults is large bird, approx. 2ft from tip of bill to end of tail and approx. 3ft wingspan, somewhat plump, white body, yellow cere, hooked bill with darkened skin about lores and eyes (blending from the yellow bill and forming a mask about the anterior portion of the head), black wings above grey below, ~~and~~ black tail, and slightly green dark (all 4 toes webbed) feet. Flight from land to sea was a linear take off involving vigorous flapping of wings while running. Flight at sea was usually of two types (1) vigorous and linear low to water or (2) casual easy circling flight.

16 Oct Large numbers of these boobies tend to congregate in groups, "clubs", except pairs nursing nestlings. Approaching clubs requires some caution because birds nearest may begin skawking and wheezing, thus causing others to become alarmed, and resulting in the whole club moving out to sea. We (Fleet and Mage) observed this to happen several times. At other times adults remained asleep on ground, ~~and~~ standing with head tucked back beneath wings. Such birds were easily approached because they would "blindly" stare into the light as one of us approached. Sexes of adults,

R.L. Maize
1965

Blue-Faced Booby
(Sula dactylatra)

Howland Island, 004N-1763, Pacific Ocean

16 Oct.

as reported by Fleet, can be determined by voice — females skwalk sounding something like frightened domestic ducks and males produce a high pitched wheezing honk noticeably different from females. We ~~also~~ heard such differences in voice from different adult boobies. Several chicks were seen. They possess white down over most of the body except in those areas that correspond to the black areas on adults, namely developing primaries and retrices which ~~are~~ were noted gray. Bills on chicks observed were almost black, ~~feet~~^{legs} larger in diameter than adults but roughly the same color. Clubs and pairs with nestlings were situated ~~about~~ mainly about the periphery of the island up to approx. 75 yds inland, but not on the beaches. Feeding chicks, adult birds regurgitated fish while they inserted their beaks into the throats of the chicks. One adult fed one chick at a time. It appeared that one pair maintained one chick. Chicks when approached ~~approached~~ skwalked vigorously but seldom moved far from "nests" (open areas on gravel).

R.L. Mize
1965

Brown Booby
(Sula leucogaster)

Howland Island, 004N-1763, Pacific Ocean

17 Oct.

I observed this species at hand for the first time. In flight I had seen several adults in flight on 16 Oct. They were distinguished from other boobies by greater portions of body dark-brown and by the conspicuous brown bib about $\frac{1}{2}$ down the belly with the remaining ~~the~~ posterior $\frac{1}{2}$ whitish. The night of 17 Oct about 12 individuals were seen on ground. Color patterns of adults were as follows: Bill-yellow distal, blue then pink proximal (female) or greenish-yellow proximal (male); head-dark brown; neck, upper wings, back and rectrices - dark brown; $\frac{1}{2}$ ~~bill~~ (anterior) belly - dark brown bib; remaining $\frac{1}{2}$ (posterior) belly - whitish; feet - greenish-yellow. All toes webbed and birds slightly smaller than Blue-faced Booby ^{were features} ~~were~~ observed. Nests were seen.

Nests built on ground about 1 ft in diameter, mat-like, and composed of succulent plant stems, grass and some sand. Maximum number of ^{and/or nestlings} eggs seen in any one nest was two; some nests possessed only one egg. Eggs oval-shaped, not conical, ~~dark~~ light chocolate brown with a few darker brown specks, placed in center of nest in slight depression. Eggs in appearance had thick shells in that longitudinal scratches were observed on the surfaces, not indicative of thin shelled eggs.

19 Oct.

Twelve ~~nests~~ Brown Booby nests found; ten located along edge of vegetation ~~in~~ SW corner of island, one along edge of vegetation S end of island, and one along edge of vegetation SE corner of island. Of these nests 8 had no eggs, 3 had 1 egg each, and 1 had 1 egg and ~~one~~ 1 nestling. Nests seemed to be built where they are inconspicuous and where adults can flee easily.

R.L. Mize
1965

Red-footed Booby
(Sula sula)

1st day at sea N of America Samoa, Pacific Ocean

11 Oct. Individual seen at sea flying low to water, within 2 ft of the surface, in a direct ~~to~~ linear path due S. Wing-beat heavy but slow. Bird white with black wings, head protruding straight out with bill jutting in line with longitudinal body axis. Beak characteristic of boobies—greater than length of head, conical but slightly flattened on lateral surfaces (verified in later observations).

20 Oct. Howland Island, 004N-1763, Pacific Ocean

About 100 individuals of various age groups, but mainly adult, were observed roosting in dead Cordia trees just S of midpoint of island (see description Howland Is.) Individuals roosted everywhere from 2 ft to top of Cordia trees, some 30 ft or so. In some of the 12⁺ dead trees present all available limb space was taken by these boobies; in other trees roosting was more sparse and/or roosts were shared with lesser Frigatebirds. Two ~~booby~~ booby nests were noted, one about 4 ft, another about 6 ft above ground in two separate trees. One nest contained a large ~~down~~ white down, black billed, blue-grey (?) footed chick. ~~Adults~~ Nest were ~~built~~ built of grass stacked about 6 inches deep and about 1 ft wide in supporting limb crotch. Adults ~~appeared~~ possessed light blue bills turning pink then black about proximal soft parts anterior to head feathers. Two color phases noted for adults: (1) body feathers and tail entirely white, wings, particularly upper surfaces black and (2) dark phase—mantle light brown extending over head upper and lower surfaces of wings, darkening there, and over portions of tail while belly much lighter. Feet in all adults conspicuously red.

R.L. Mize
1965

Red-footed Booby
(Sula sula)

Howland Island, 004N-1763, Pacific Ocean

(20 Oct. con 4.) Immature birds varying degrees of grey-brown throughout but soft parts as follows: ~~Subadult~~
Subadults - bills pink with blended black in traces on distal areas; feet pale orange; Immatures - bills black distal, slight ~~protruding~~ area of pink distal, feet grey-blue blended with pink.

28 Oct Arrival Christmas Is., 015N-1573, Pacific Ocean

Individuals seen at sea when leaving Howland Is. and again upon arriving here.

29 Oct. Isles Lagoon, Christmas Is., Pacific Ocean

Roosting colony of 150± individuals along lagoon just off road. Birds, adults, subadults, immatures, and one nestling in only nest seen, roosted in Messerschmidia trees much like Cordia trees on Howland Is.

30 Oct. Motu Upua, Christmas Island, Pacific Ocean

Adults heard in Messerschmidia trees along east side of island at about ~~2~~ 2100 hrs.

K. L. Page
1965
~~1966~~

Great Frigatebird
(Fregata minor)

Sand Island, Johnston Atoll, Pacific Ocean

- 18 Dec. Two groups of GF on this island utilizing two different areas; (1) GF roosting on guywires and pelings, etc., (2) GF maintaining a nesting colony along S shore of island on the littoral rocks and ground above the high tide level. Fifty-five GF birds roosted at-large at 1200 hrs and 125 in the nesting colony. At 1900 hrs. 169 GF counted at-large on and about the island (inc. guywires) and over 200 sitting in the nesting colony. Males in the nesting colony have inflated gular pouches; these swollen red sacs make it ~~so~~ easy to identify ♂'s.
- 22 Dec. At 0930 hrs. while banding roosting GF on the bunker of the islet adjacent to Sand Is. one GF nest with one large white, chicken-like, egg was found. The nest was built of Tribulus cistoides stems and cemented together with guano. It was situated on top of one of the bunker walls. When I ~~approached~~ approached the nest an adult ♀ rose from the nest and hung overhead until I left; she gave a continuous distressed call. Among other GF's roosting about the nest on the bunker were adult ♀'s, ♂'s and subadults.
- 24 Dec. Total census of Sand Is. showed the following: at 1200 hrs. 21 GF's at-large, 68 GF's in nesting colony on S rocks; at 1900 hrs. 256 GF's at large, 150+ in nesting colony.
- 28 Dec. One adult ♂ banded 737-44988 caught on guywire at 1030 hrs.
- 31 Dec. Seven GF's banded to finish string of bands which included 3 adult ♀'s, 3 adult ♂'s, and one subadult. These were taken from birds roosting at the west end of the nesting colony. Two GF's returned #737-44496 and 737-44354 were both Sand Is. birds.

R. L. Magee
1966

Great Frigatebird
(Fregata minor)

Sand Island, Johnston Atoll, Pacific Ocean

- 01 Jan. Guywire census of entire island showed the following: at 1200 hrs. 113 GF's at-large and 150⁺ in nesting colony; at 1900 hrs 185 GF's at-large and 200 in nesting colony.
- 05 Jan. GF nest on bunker (first noted 22 Dec, 1965) still active — one ~~adult~~ adult ♂ on egg. Another GF nest with one large white egg and occupied by an adult ♀ was built on a barge anchored off the condemned pier. Nest much like the one on the bunker — flat mat-like built of Tribulus stems.
- 10 Jan. GF adult ♂ attacked GF immature which was ~~immature~~ flying near guywire #23. The immature crashed to the water and drifted out toward Johnston Is. The adult fly on over by the nesting colony. Breeding behavior was view at 1100hrs. — adult ♂ hange in air just above adult ♀ on the ground in the nesting colony. Female and male nearly touched bills but she remained on ground and he stayed aloft. Such behavior noted in seven other instances, all cases lasting not more than several minutes. Concurrently four ♂'s all with inflated gular pouches seated in a semicircle with a ♀ aloft in their midst was noted. Apparently each ♂ was trying to win her favor by exposing his gular pouch. The ♀ would stay just overhead for 1 to 2 minutes then ascend, likely recuperating from the strenuous flight, then again descend to the same positions. This behavior lasted for about 10 min. until the ♀ flew off a short distance and landed in another part of the colony. Another peculiar form of behavior noted was when adult ~~males~~ ♂'s and ♀'s would all raise their wings and shudder in unison. Males involved also inflated their gular pouches. This shuddering behavior has been noted on numerous occasions.
- 14 Jan. Guywire census — at-large 125 GF, in nesting colony 200⁺ GF at 1200 hrs.; at 1900 hrs. 233 GF at-large; 200⁺ in nesting colony; At 1300 hrs. GF

R.L. Maza
1966

Great Frigatebird
(Fregata minor)

Sand Island, Johnston Atoll, Pacific Ocean

- adult ♂ knock another GF ♂ from NE guywire #1. Victim knocked to the water be recovered and flew off.
- 15 Jan. Nest count in the GF nesting colony gave the following number of nests: nest with one egg = 1; nest with no egg = 12; nest occupied by an adult such that eggs or young could not be determined = 28. Over 50% of the nests were incubated by adult ♂'s at 1030 hrs.
- 16 Jan. One GF adult ♀ collected - it struck a guywire while flying and away from me.
- 17 Jan. Fifty-eight live adult GF caught at 2030 hrs. to 2400 hrs. Birds taken from the nesting colony.

R. L. Moore
1965

Lesser Frigatebird
(Fregata aerialis)

17 Oct. Breeding colony on Howland Is. Thirty ~~two~~^{six} nestlings
out of estimated 1800 eggs remain. These nestlings
are fully feathered but are not yet flying.

R.L. Maza
1966

Spinning Porpoise

Johnston Grid to American Samoa

12 Mar. Sixty-five plus spinning porpoise leaping clear of the water spotted in two groups heading E off the port side. Individuals from 3-5 ft in length, blackish-grey in appearance were seen. Some when leaping from the water spun or rolled completely over in the air. Long ~~snouts~~ snouts and lateral fins were also noticed features of these mammals. Apparently there was surface food in the area; soon a feeding flock of 7 birds were ~~observed~~ the porpoise, they being 1 FT, 3 ST, 1 BFB and 2 WTSP.

R.L. Maze
1965

Domestic Cat
(Felis domesticus)

Howland Island, 004N-1763, Pacific Ocean

16 Oct 2030. One cat seen sulking in grass some 20 yds from us (Fleet and Maze). Headlights worn by the party apparently attracted the cat's attention so that his eyes were quite visible at this distance. Later an adult Blue-faced Booby was discovered having an open wound posterior to the right wing but evidence of broken ribs were not noted; this wound may have been caused by cats.

18 Oct One adult cat was seen on the beach off the ~~west~~ ^{southeast} point of the island. It moved cautiously passed us then broke into a run. It was dark gray, nearly black, ^{having white socks on hind feet} somewhat degenerate in appearance, and ~~having~~ had relatively short legs. Another cat was seen earlier some 100 yards south of the campsite; ~~but~~ it quickly disappeared in the grass. Both these cats were seen after 2030 hrs.

19 Oct One adult seen N of lighthouse. It glared at our lights (Fleet and Maze) for over 2 min. before disappearing. It apparently was sitting on an old stone wall ~~for~~ of one of the old settlements.

28 Oct Christmas Island, 015N-1573, Pacific Ocean

Two cats seen along major road; one seen at old Pacific Missile Range and the other in ditch along the road.

28 Oct Cook Island, 015N-1572, Pacific Ocean

No evidence of cats noted on this island.

29 Oct Christmas Island, 015N-1573, Pacific Ocean

Three cats killed by SI personnel along main road during afternoon

R.L. Maze
1965

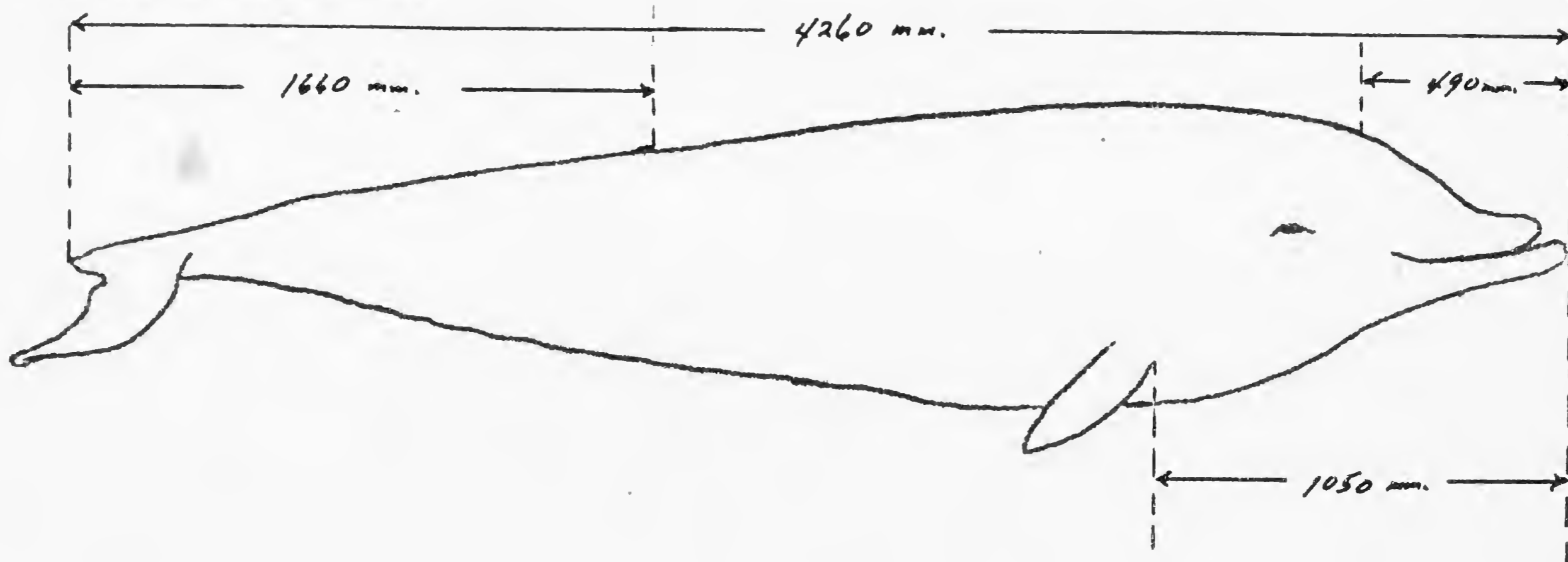
Domestic Cat
(Felis domesticus)

Christmas Island, 015N-1573, Pacific Ocean

29 Oct. Between the hours 1850 to 0430 following day seven cats killed and blood sampled with an additional 2 killed but insufficient blood was taken to make complete sample.

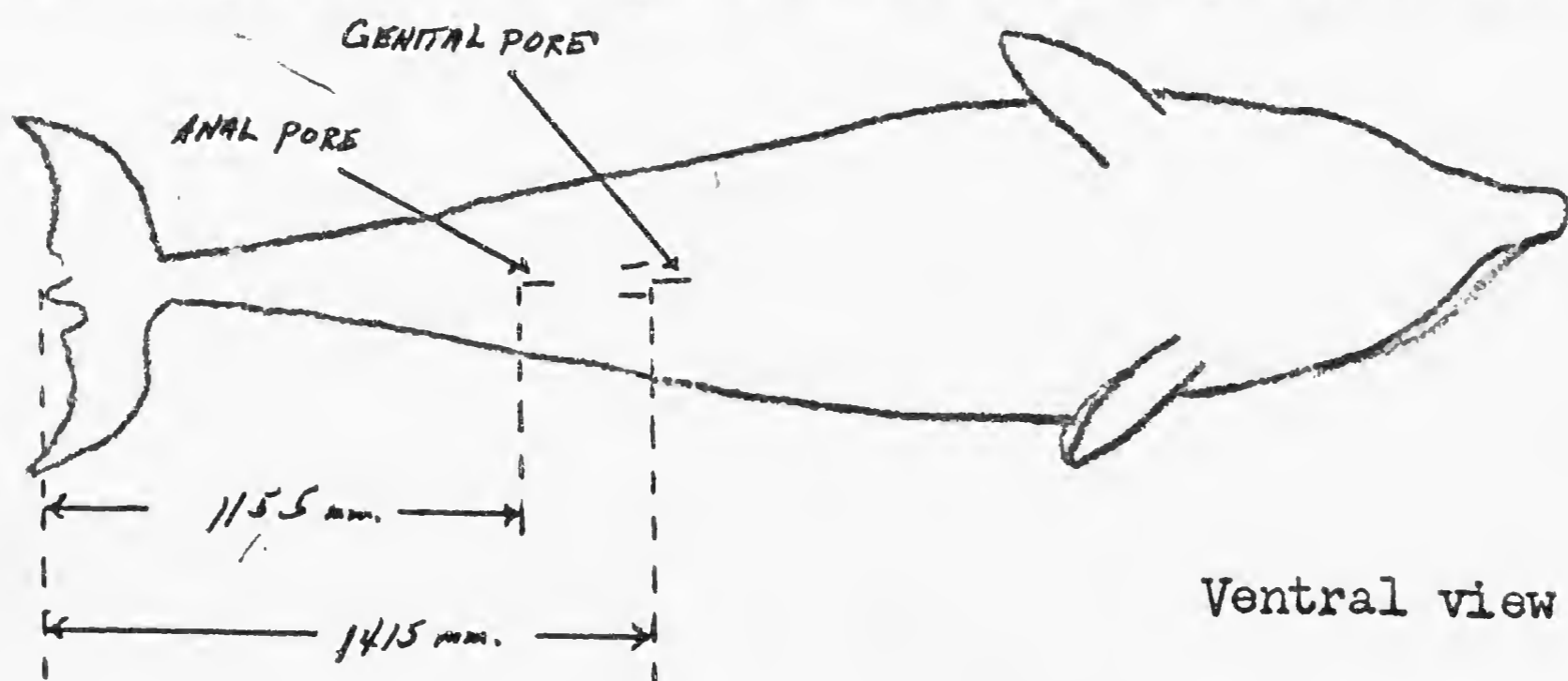
On 25 July, 1966, a cetaceous mammal (porpoise or porpoise-like whale) washed ashore on the Northwest Beach, Green Island, Kure Atoll. It was found by U.S. Coast Guard personnel at about 1300 hrs. Description is as follows:

GROSS MEASUREMENTS



Lateral view

- TOTAL LENGTH = 4260 mm.
- length of gape = 230 mm.
- distance blow hole from anterior point of upper mandible = 490 mm.
- distance eye (ant. edge) from anterior pt. of upper mandible = 550 mm.
- distance ant. edge of pectoral fin (base) from ant. pt. of lower mandible = 1050 mm.
- distance ant. edge (base) of dorsal fin to posterior end of vertebrae = 1660 mm.
- distance post. end of genital pore to post. end of vertebrae = 1415 mm.
- distance post. end of anal pore (anus) to post. end of vertebrae = 1155 mm.



Ventral view

MEASUREMENTS

length of pectoral fin = 435 mm.
width of pectoral fin = 137 mm.
width of blow hole (transversially oriented) = 110 mm.
length of genital pore = 170 mm.
length of anal pore = 100 mm.
length of lateral, posterior pores (one each side of the genital pore)
= 35 mm. (each)
length of fluke (tail from center of spine to distal pt.) = 520 mm.
width of fluke (tail) at widest pt. = 265 mm.
greatest circumference = 2480 mm.

BODY COLOR

dull grayish white (photographed in color)

CONDITION OF BODY

~~approximately~~ ^{approximately} dead for 24 hrs. or more with large chunks of flesh
missing (shark bites) on half the tail and on the head with most all
of the dorsal fin missing

^{and data}
MATERIAL TAKEN

measurements
photographs (color)
stomach sample (frozen)
skull

Data collected by R. Maze and T.J. Lewis.

Maze

R.L. Mager
1966

Spinning Porpoise

Johnston Grid to American Samoa

12/Mar. Sixty-five plus spinning porpoise leaping clear of the water spotted in two groups heading E off the port side. Individuals from 3-5 ft in length, blackish-grey in appearance were seen. Some when leaping from the water spun or rolled completely over in the air. Long snouts and lateral fins were also noticed features of these mammals. Apparently there was surface food in the area; soon a feeding flock of 7 birds were ~~around~~ the porpoise, they being 1 FT, 3 ST, 1 BFB and 2 WTSP.