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May 27, 1963

I awoke this morning at 5:45 a.m. The alarm clock which had been set for 5 a.m. failed to go off. I then had to hurriedly dress and leave without eating. The bus which I wanted to catch had already gone so I caught a taxi straight to 12th and K Streets N. W. At 7:15 the bus to Dulles International Airport left D. C. and we arrived about 8 a.m. at Dulles. Since I had already checked in at 12th and K, I went directly to the departing gate. At 8:15 we left the terminal and headed to the plane by way of the mobile lounge. We took off at 8:45 headed for San Francisco aboard United flight 827. After a nonstop flight we arrived in San Francisco at 10:55 a.m. (P. D. T.). Since we had three hours to kill, Fred and I walked along the highway leading to the airport looking at the scenery. We saw several birds: Swallow, Killdeer, Fieldlark, and several other odds and ends. I lost my sunglasses and plane ticket out of my coat pocket, but fortunately found both. A car had run over the glasses and bent them though. We left San Francisco at 2:15 p.m. on Pan American flight 843. At 3:55 p.m. () we arrived in Honolulu. After getting our bags we rented a car and drove to the Skylane Inn near the airport where we obtained a room. After cleaning up we drove to McWayne Marine Supplies and saw Mr. Jim Head about our motor and the possibility of getting another. We then

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proceeded to Sears where I bought some socks. After eating we both were very tired and returned to the room where we went to bed (7:30 p.m.).

May 28, 1963- Honolulu, Oahu, Hawaiian Islands

We awoke this morning at 6 a.m. dressed and proceeded to the dining room which was not quite open. We got a paper and read it. By this time the dining room opened and we ate breakfast. A little after 8 a.m. Fred called Com. Dunlap. The connection was bad so he (Doyle the new Liaison officer) called back shortly. We learned the ship (U. S. S. Tawakoni--ATF 114) was expecting us. We made plans to meet with Com. Doyle aboard the ship between 8 and 10 a.m. on Wednesday (29th). We then rode downtown, called the ship (Lt. Gandy is the skipper) and told them we would arrive before noon. While in town we went by the Fish and Wildlife office and talked with Mr. Takata and Ray Kramer. We learned that Takata had never received the report from our first field trip. We discussed the islands we planned to visit and in general what we were to do. We made no mention of the permanent camp on Laysan. Mr. Takata seems to be very friendly and nice but he appreciates and wants reports on each trip, notification of each and would like for us to see him each time we come through Honolulu. He gave me a thermofax copy of a report by J. W. Beardsley on an entomological survey on Nihoa Necker, and Laysan Island, June, 1962. This five page report proved quite interesting and will be helpful on the coming trip. We returned to the Skylane Inn and checked out. We

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proceeded to Nimitz Gate and stood in line to get gate passes. We had to call Ctm. Larson, Base Security Officer, who in turn called the Pass officer and got us passes and a car sticker. At 11:45 we drove up to Sierra Pier 17 and went aboard the U. S. S. Tawakoni. We were met by Mr. Brown.

After chatting for awhile he showed us our quarters which were in the Chief's Quarters. But fortunately this ship was not crowded and there was only one Chief, Mr. Rosset. The bunks are also not as close as before. There is also ample storage space for personal items. Fred drove the car to the gangplank and we carried our gear aboard and stored it in our locker. We then met Capt. (Lt.) Gandy who in turn introduced us to the other officers. During lunch we briefly discussed a few items. Fred called Mr. Frye and talked to him about getting our stored equipment from Navy Supply. We went to his office and made definite arrangements. We then rode out to Pearl City to see Mr. Silva to show him exactly what items we wanted. Since we didn't desire the large freezer we opened the crate and removed the items stored inside. We were told the equipment would be placed aboard Wednesday (29th) morning between 8:30 and 9 a.m. We drove back to the ship and discussed items to be brought up before the skipper. At 4:30 we met with him and told him some of the things we would like the ship to do. He was very nice and said he would cooperate with us fully. After eating supper of weiners, etc. we went to the Aft Hold to look at the storage area. It is much larger than the Moctobi's as there is no separating

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walls. I called Dr. George Byers (K. U. Ent. Prof.) who is on sabbatical leave and made plans to have dinner with him tomorrow night. We then wrote field notes and went to bed.

May 29, 1963 - Honolulu, Pearl Harbor, Oahu

After eating breakfast Fred and I went to Building 474 to talk to Mr. Harry Seito about purchasing another motor, etc. and getting the supplies from Navy Supply which Bill Wirtz had already asked for. Since Fred had a meeting with Com. Doyle, and Lt. Gandy about the itinerary, etc., he left at 8:20 a.m. I finished getting the necessary forms from Mr. Seito and Mr. Young. I returned to the ship to find that the items stored at Pearl City were being unloaded onto the ship. Also the ammo boxes arrived. The meeting broke up soon after I returned 9:45 a.m. and I met Com. Doyle. Fred and I discussed the meeting and then Fred proceeded to call Washington to find out what had been done about the water drums, etc. I went with two sailors in the ship's jeep to buy and pick up another Johnston 10 hp outboard motor (and spare parts) and the old one. I returned by 12:30. Fred had returned and had directed the sailors in storing the trunks in the aft hold. After lunch I left to pick up the items ordered from Navy Supply (batteries, formalin salt). The alcohol was not obtained since I had to get one of the officers to sign for it. About 3 p.m. Fred and I went to town to find a Benzomatic dealer. We had no luck at Advanced Products Co. and no sporting goods store carried the line. At 6:30 we met Dr. Byer at his mother-in-law's home and proceeded downtown to have dinner.

May 30, 1963 - Pearl Harbor, Hawaii U. S. S. Tawakoni

Fred and I today took a trip up Round Top Mt. The view of Honolulu,

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Diamond Head, and Pearl Harbor was very impressive. We proceeded on up the mountain and hiked along the Tantalus trail. The vegetation was very lush (few blooms) and we saw many birds.

We got soaked due to the rain and very muddy. We found the view of the valley in which the Pali Highway runs very nice since we could see both sides of the island at once. Due to no trail markers we had to retrace our tracks. We got back to the ship about 2:30, changed clothes, and took our dirty clothes to the laundromat. After supper we started sorting our equipment, making check lists, and packed some gear (three trunks) which we would not need on the trip or on Laysan.

May 31, 1963 - Pearl Harbor, Hawaii -- U. S. S. Tawakoni

This morning we again went to see Mr. Seito about buying some items. Fred took care of getting requisitions for for nails, lumber, etc. while I talked with Mr. Smiga about water drums. He gave me a list of names and places to call but no one had any suitable drums. We also talked to storage and made arrangements to store three more trunks. At 10 a.m. Fred called D. C. to tell about the absence of water drums, etc. At 1:30 p.m. Com. Doyle again met with Fred and Lt. Gandy about the itinerary. Laysan was denied a permanent camp by the Navy due to not having the proper equipment and supplies on hand at the present time. During the meeting I went into town to purchase Propane gas cylinders but didn't due to not having the proper connections. I was able to buy spray paint, plastic wash basins, and electrical plugs and light bulbs for the Berlese funnels. At 7:30 we went a telegram to Dr. Humphrey saying we would call tomorrow at 10 a.m. (E. D. T.). We

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then returned to the ship to type up a letter giving details of the Laysan situation. Lists of equipment were also typed up by Fred.

June 1, 1963 - Pearl Harbor, Hawaii, U. S. S. Tawakoni

We were awakened at 3:30 a. m. as planned and called Dr. Humphrey at 4 a.m. (this was 10 a.m. E. D. T.). Dr. Humphrey said that he would look into the situation by calling DESERET. He suggested holding up the sailing date until Tuesday or Wednesday. Nothing was settled about disposition of the Laysan material. About 10 a.m. we discussed this with Capt. Gandy and Com. Doyle was called. Deseret had called his office and was again given a flat no to a permanent camp on Laysan at the end of June. A meeting was set up for 10 a.m. Monday morning. After lunch we went to town to pick up a dozen Benzomatic cylinder from Levers and Cooke (Pihoia St.) and some other items. After dinner field notes were written. The Mactobi came into port today and berthed next to us. We talked briefly with some of the officers and crew. They had just gotten back from towing barges to Johnston and Christmas Islands.

June 2, 1963 - Pearl Harbor, Hawaii, U. S. S. Tawakoni

We awoke this morning at 9 a.m., had breakfast, and went sight-seeing along the Pali highway. The Pali overlook was most impressive with sheer cliffs going straight down into the valley below. The view of the north coast was very nice. We proceeded on toward _____ and stopped when we spotted birds flying over two large offshore islands. We saw many Sooty Terns circling over the islands. Common Noddies

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were flying over the water and one Red-footed Booby was seen. It would be very interesting to get on these islands to see exactly what kinds of birds were present. We retraced our path back to the ship since lunch time was nearing. During the afternoon we wrote up our progress report and gave suggestions for clearing up some of the problems. I also taped a report by the Navy on a survey trip in the Leeward Islands. The photos were especially good.

June 3, 1963 - Pearl Harbor, Hawaii, U. S. S. Tawakoni

This morning Fred went to a meeting concerning our schedule and plans. In the meantime I called Dr. Humphrey to find out what to do with the Laysan equipment since we had had no instructions. He had not received the message that Doyle had again turned the Laysan trip down. Dr. Humphrey suggested that we leave the equipment on Laysan for future use if possible. After Fred returned the decision to store the material (at Pearl City) had been made and there was no way we could add Laysan to the schedule since the ruling that no islands could be added but only could be deleted. Fred then went to see Mr. Frye and the truck arrived very quickly (very fast service) to take the supplies for Laysan back to Pearl City for storage. The crew worked diligently in unloading the ship. The remaining trunks were lashed down and all gear secured. During the afternoon Fred called the Fish and Wildlife office and talked with Mr. Takata. We also did our laundry. At 5 p.m. we returned the car to the Avis agency at the airport and a jeep from the ship picked us up. During the afternoon a final report was also written.

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June 4, 1963 Pearl Harbor, Hawaii, U. S. S. Tawakoni

We awoke this morning ready to go. After breakfast I walked to the Sub post office and mailed several letters. We finished putting final items in rubber bags to go ashore. At 9 a.m. we left Sierra 17 pier and headed out through Pearl Harbor. At the entrance to the Harbor two Brown Boobies were seen sitting on one of the Boobies.

The sea was very calm and the weather was quite nice--only scattered clouds and a light breeze from the N. E. After leaving the harbor we set a course NW (299) and headed for the island of Nihoa. We soon discovered that the bird life was quite scarce as compared with February. Sooty Terns, Wedgetailed Shearwaters, Red-tailed Boobies, two White-tailed Tropicbirds were seen during the day and the time and number of each was recorded on the dictet. At approximately 5 p.m. we spotted Kauai in a shield of clouds and heavy haze. We expected a lot of birds to assemble offshore before night but this did not materialize. Only Wedge-tailed Shearwaters increased, but only slightly. We passed within 2 - 4 miles of the south coast of Kauai. During the day we saw no Albatross.

June 5, 1963 Nihoa Island, Leeward Chains,--U. S. S. Tawakoni

I awoke this morning at 5:30 a.m. (I thought it was 6:30 but we had lost an hour going West). Nihoa Island was already in view but was approximately 20 miles away. I made bird counts until we were very near the island. As we drew closer many Blue-gray Noddies appeared and a Petrel or Shearwater appeared which either was a Bulwer's Petrel or Christmas Island Shearwater. They might have been both, but at any rate were quite numerous. Many Sooty Terns, Gray-backed Terns,

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both common and Hawaiian Noddies, Fairy Terns, Frigates, all three Boobies and Tropicbirds (red-tailed) also appeared. We passed the island about 8:15 very close and anchored in the lee of the island (W). The steeply sloping hillsides are covered with green vegetation. The side on which we anchored (west side) is a sheer cliff--the highest peak being 892 feet high. Several caves () are located along the waters edge. Some of these appear to be quite large and deep. Many Fairy Terns (and a few Blue-grey Noddies) are either nesting or roosting in the center portion of this side on the small rock ledges. We anchored approximately yards from the island in fathoms of water. Immediately after stopping the skipper sent the 1st Lt., Chief Boson Mate, and another sailer to check out the landing site and see if the landing was safe. At our anchorage we cannot see the landing area. They returned landing area. They returned shortly to tell us that if it was any calmer we could land. In the meantime the crew began to catch sharks (15 - 20 lbs) right and left. The rubber boat again went to survey the landing site just before noon but the sea had grown worse. More fishing--more shark. During mid-afternoon the boat made another survey trip and still the surf was too rough. The skipper decided to try again early (5 a.m.) tomorrow morning (June 6) as the surf then is suppose to be quite calm. During the afternoon many more sharks were caught but all were about the same size. A few edible fish were also caught. During the afternoon a message came in concerning personnel schedules. I am to leave the ship at Midway, fly to Honolulu pick up an assistant (and equipment) and go to Sand Island (Johnston Island) to make a survey during the month of July. Fred and three assistants

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who will meet us at Midway will go with the ship to Canton pick up Bob, go to Enderbury for a study. The ship will then carry Bob and one assistant back to Canton and will proceed to Baker and Howland for study and on to Pearl Harbor by the end of July. At the end of July I am to return to Honolulu where I will meet Bill and probably some others and go to Laysan where a permanent camp is to be set up.

As darkness neared the Shearwater (probably Christmas Island ?) and Petrels (Bulwer's ?) became quite numerous offshore. After finishing supper I played a few hands of bridge with the officers. At 8:15 several of the officers spotted an Hawaiian Monk Seal beside the ship. He was under one of the ships large cargo light and was approximately 5 - 7 feet long. He quickly disappeared. Sooty Terns were also heard and seen by the use of the ship's spotlight.

June 6, 1963 Nihoa Island, Leeward Chain, U. S. S. Tawakoni

We were awoken this morning at 4:30 in anticipation of landing on Nihoa shortly after sunrise. The rubber boat again went in first to see the condition of the landing site. They returned shortly reporting rough waters. In the meantime the whale boat had been lowered to the edge of the ship and all of our gear had been loaded inside. It was decided to wait and survey the landing site again later. After eating breakfast Fred and I rode in with the survey group to observe the bird life on the cliffs and to see landing sites close up. The cliff appeared very tall from its base. From the rubber craft we could see the palm trees on the upper slopes. Many Red-footed Boobies were sitting around in the vegetation. The old ruins (walls, etc.) could also be

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seen. The landing site (middle cove.) was quite rough since one would have to step from the boat onto a rocky ledge. The Blue-grey Noddies were feeding off the Southern edge (about 200 ft. from shore). No seals were seen on the pebble "beach" although at a distance and due to the motion of the rubber craft they would have been hard to see. We returned to the ship and decided it was useless to keep waiting to go ashore. A bad weather report also came in. We then decided to collect some of the Blue-grey Noddies and Bulwer's Petrels since we may not find them again on the other islands to be visited. We did this by using the rubber craft again. We collected three Blue-grey Noddies, four Bulwer's Petrels and one Christmas Island Shearwater. One Fairy Tern which was probably learning to fly, flew onto the ship and was caught. This bird produced five hippoboscids. I had not collected any from this host before. At 8:15 this morning we saw our first Black-footed Albatross of the trip, but he did not stay with the ship. At 10:30 we left Nihoa board for French Frigate Shoals. At another Black-footed Albatross came by, but again passed up the ship. Birds were counted and observed through most of the rest of the day. At 4:30 a Laysan Albatross was sighted behind the ship but it too did not stay long. At approximately 10 p.m. Necker Island was spotted. We are to pass within five miles of it tonight (about 11 p.m.).

June 7, 1963 - French Frigate Shoals, East Island

Awoke this morning at 6:15, ate breakfast after going up on the bridge and seeing Tern Island in the distance. We approached from the

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East Island

N. E. Side and circled and came in from the S.W. side. The ship anchored about half way between La Perouse Pinnacle and East Island. By 9 a.m. we were anchored. The skipper had his men prepare to take us ashore. All of our gear and ourselves rode in the whaleboat with the rubber craft leading the way through the reef. By 10:30 we were ashore on the N. E. tip of East Island. We found one of the old quonset huts which had a good floor although dirty. We got busy (while the sailors brought our gear) and cleaned the place out. By noon we had both tents up (one inside on the floor) and were ready to eat. The radio was not working so the crew took it back to the ship to see what was wrong.

East Island is about 700 yards long by 90 yards wide and rains in an east-west direction. There are six old quonset huts in bad condition toward the west end of the island. The island is covered in low vegetation mainly puncture plant. One large is growing on the east point. The island is not over 10 - 15 feet high. Sooty Terns are nesting almost over the entire island. Common Noddies (approx.) are nesting in the vegetation (low) on the west point and a few are located on the old quonset huts, old boards, drums etc. (Fred counted sixty nests). Laysan Albatross also nested here and the chicks are almost ready to fly (a little bit of down left)---243 chicks were banded. Black-footed Albatross also nested and are mainly on the eastern central portion. Frigate birds are around but don't appear to have nests. Six Ruddy Turnstones, one golden Plover and a Wandering Tattler were seen on the beach. Approximately ten seals were seen on the beaches. Turtles are very (25 ±) numerous and appear to be laying eggs.

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During the afternoon Fred banded Red-footed Boobies (50) and Laysan Albatross chicks (243). I banded one hundred Black-footed Albatross chicks and collected insects and ectoparasites. Most of the larger birds appear to harbor Hippoboscidae. Many were collected from Red-footed Boobies, Laysan and Black-footed Albatross. Many sharks were seen off the north beach. Before supper an enormous shark swarm close into shore. He latched onto a line baited for him but even though the line was large, he quickly broke it. After supper we rested by writing up field notes. Fred banded Boobies and Frigate birds after dark. I banded fifty Common Noddies on the west end after dark. The colony became scared and were soon hard to catch. Fred said that the turtles were laying eggs on the South beach. Actually the egg sites were above the "sand" beach and up on the level grassy area. They had to climb up a bank to get to this area.

June 8, 1963 - French Frigate Shoals

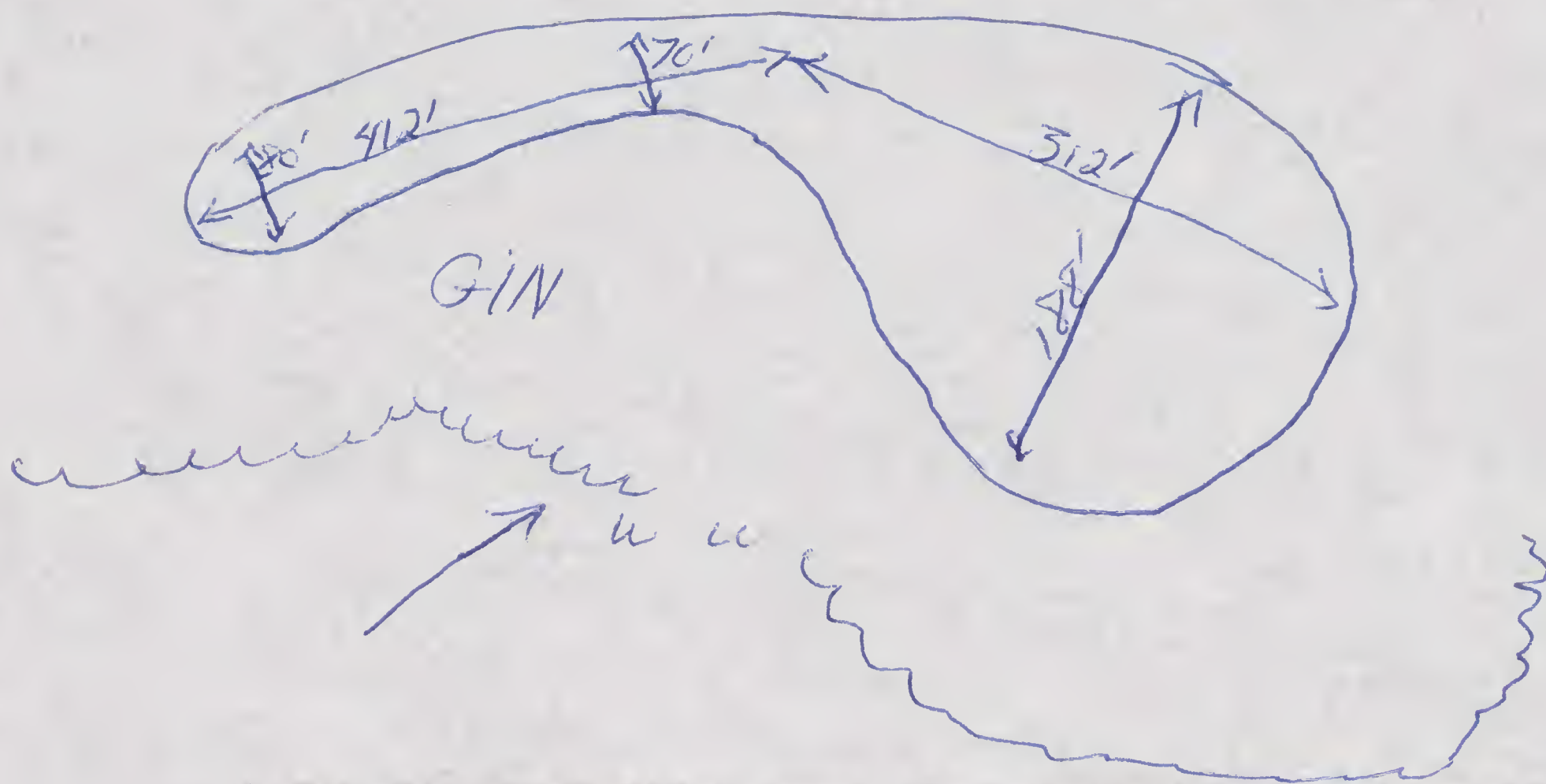
Awoke this morning at 5 a.m. to find it was beginning to rain. We hurriedly put everything in the rubber bags. Very heavy rains failed to materialize but a small shower did occur. Maybe this was enough to shrink our new tents. Fred began to band the Black-footed Albatross chicks and I once again collected insects (flies, spiders, earwigs, and crickets). I also made some polaroid pictures of various things on the islands. At approximately 9 a.m. the whaleboat arrived with Capt. Gandy and Mr. Browne (the exec.). After a short tour of the island, they returned to the ship. At noon (after eating) we left in the boat for Bare

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Island (nine seals) and Round Island. Round is now 180 x 150 feet and about 4 feet high. No vegetation occurs and only Masked Boobies are nesting (with eggs to large young). Seven seals were also on the beach (one pup). Mullet Island which was suppose to be NE of Round was no where to be found and undoubtedly been washed away. We returned by way of the ship to get some items.

June 9, 1963 - French Frigate Shoals

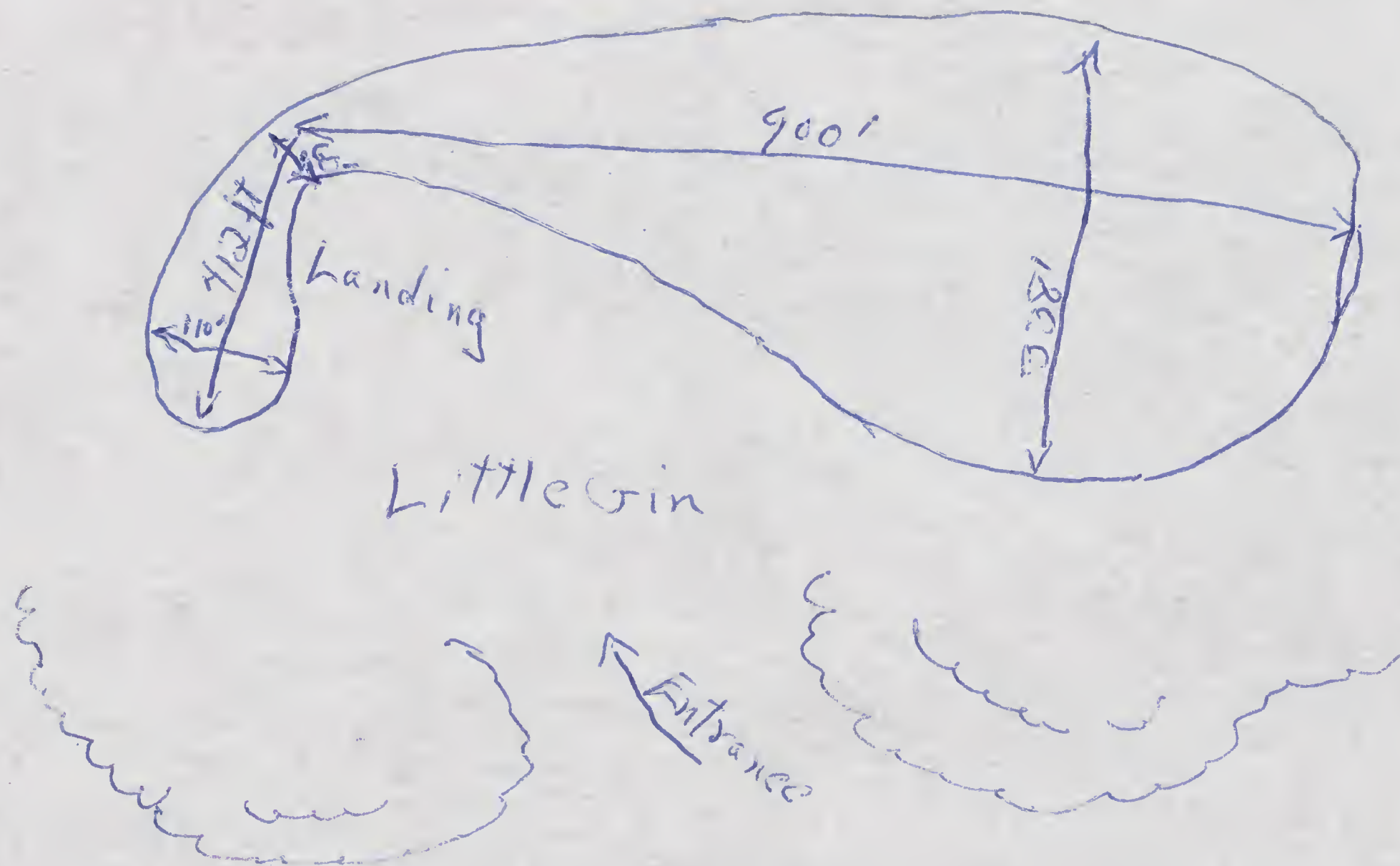
We planned to visit the islands in the southern part of the Atoll today. The radio was on the blink so we took it by the ship on our way. Gin Island is completely bare with Masked Boobies nesting on the high ground. (3(- 4 ft). Seals^(?) and turtles were also seen. The island is now shaped as drawn with approximate feet.



A few Common Noddies were also present but not nesting. Also one Ruddy Turnstone was seen.

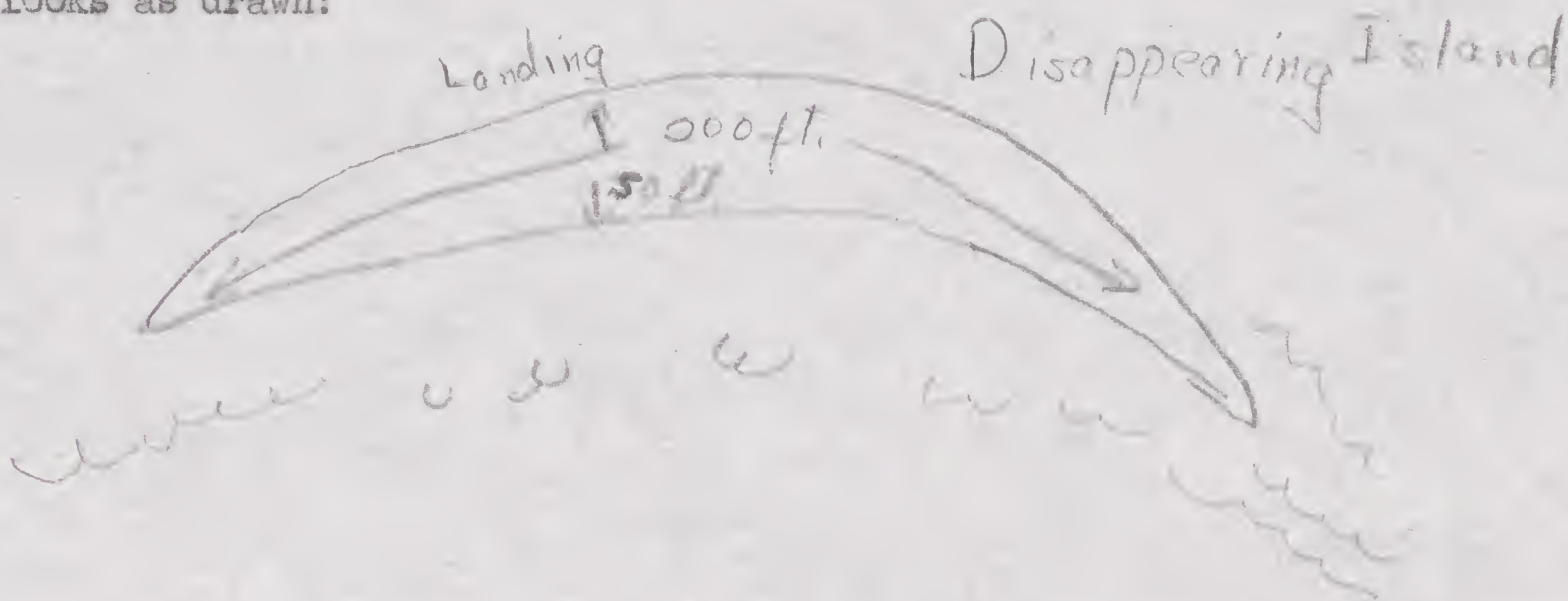
A small island just West of Gin is still present and only seals occur there. It is not very large. Little Gin Island is quite large 1312 ft. x 338 ft (app.) and is shaped as drawn: Elevation 6 - 7 feet)

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Several Masked Boobies were nesting on Little Gin and Glack-footed (sub-adult) Chicks wer banded. A few common Noddies were nesting. Seals and turtles 10 - 15 were present. The turtles were laying eggs. The island has no vegetation.

We then went South looking for Disappearing Island by following the reef. We soon saw it and had no difficulty getting ot it. Two Brown Boobies were sitting on the island as were also Masked Boobies. Seals and trutles were also present. The swells around the island were quite bad and the rubber boat had to be held constantly. The island looks as drawn:



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The elevation is about 3 feet and wave action was quite bad. We left after staying about 15 minutes 12:05 p.m. and arrived back at East Island at 2 p.m. During the afternoon and night more birds were banded. No insects were found on any of these islands.

June 10, 1963 - French Frigate Shoals

This morning we left East Island in the rubber craft and headed for La Perouse Pinnacle. We were going with the wind so didn't notice the large waves. We reached the "rock" and saw that Brown Boobies, Fairy Terns, Common Noddies, and Grey-backed Terns were nesting there. The first two were never seen over East Island. Due to the large swells breaking over the rocks and the shear cliffs we were unable to land. We headed back for the ship and got thoroughly soaking wet since we were headed directly into the wind and waves. After reaching the ship we obtained more blood sampling material and headed back to East Island. During the afternoon and night blood samples were taken from Sooty Terns (10), Common Noddy (11), Red-footed Boobies (10), Frigatebird (10), Laysan Albatross (chick) (10), and Wedge-tailed Shearwaters (10). Only eight of the seventy-one birds sampled died (three Sooties, three Noddies, one Laysan, and one Black-footed Albatross). During the night a light trap was run but only one hippoboscid was obtained--nothing else. No ticks have been seen on East Island. The blood samples were stored in the ice chest overnight.

June 11, 1963 - French Frigate Shoals

This morning we packed up our gear to leave East Island. The whaleboat came in about 7 a.m. and we transferred everything into it.

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By 8:15 everything was aboard ship. We unpacked some items and got replacements. After a most welcomed shower we began running the blood samples. The centrifuge, etc. was set up in the medics office. The samples were run while the ship was moved to a different anchorage. All of the samples appeared to be fine and we were through by 12 noon. In the meantime a whaleboat was sent to Tern Island to contact the Coast Guard Station who had not been reached by radio. They returned by noon and indicated it would be no problem to go to Whale Island area. About 1:30 we went to Tern Island to band the birds there---41 Laysan Albatross chicks and six Tropicbirds (R. T.). Seven Fairy Terns were seen flying around and perching in the Casurina trees in front of the mess shack. Many plants not common to the island were found: Sandspurs and chickweed. We returned to the ship around 5 p.m. and immediately got into the rubber boat for a trip to Shark island. As we approached we could see no birds nesting (no vegetation) and only two seals were on the beach. The seas were quite rough and due to coral all around the island we were unable to land. We returned to the ship and spent the night aboard. Reports and letters were written as mail was to be sent aboard a plane tomorrow at the C. G. station.

June 12, 1963 - French Frigate Shoals

This morning we packed our personal clothes and put them with the other equipment to be loaded aboard the whale-boat for the trip

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to the Whale Island area. We left at 7:40 with the rubber boat leading the way. Mail was first carried to Tern Island and we continued on. The whaleboat had to be lead through some areas due to small coral heads jutting up. We arrived at Whale-Skate Island about 10 a.m., walked around the island and decided on a camp site. The gear was then brought in by rubber boat and camp was set up (about middle of island). Only one island is now present and it appears the islands might have joined together. This island is now approximately 2785 feet long and 225 feet wide (widest point) and 5 feet high. A map will be on a separate page. The island is almost completely vegetated except for the beaches. Plants are similar to that of East Island except more mesoschmid and more Chenopodirm. There are no thistle-like plants. Three types of grass occur which cover most of the island. Our camp was made at the narrowest stretch with the best landing being at this point (even for a whaleboat). The island has many birds, mainly: Masked Boobies (nesting), Frigatebird (nesting), Common Noddies (nesting), Grey-backed Terns (nesting), Red-footed Boobies (nesting) (very few). The beaches are covered with seals and turtles. Just after lunch the front section of the rubber craft blew out and the boat had to return to fix it. During the afternoon I banded Black-footed Albatross chicks (almost ready to fly) and Fred banded Masked Boobies. During the night we banded adult and immature Common Noddies. Before going to bed we discovered we had banded exactly 900 birds today. One immature Booby (red-footed) was caught which had a band on it.

Whale-Skate Island length 2785' (app)



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This could prove very interesting. During the afternoon I observed seven small sea turtles just off the west side of the island. One was caught by the sailor and photographs were taken of it. It weighed about 25 lbs and its shell was about 16 inches long. They appeared to be feeding in the shallow water. Many large sharks were also seen off the west side of the island. While banding Noddies ticks were seen for the first time on the island. Two turtles were observed copulating (photo made) after dark in very shallow water.

June 13, 1963 - French Frigate Shoals

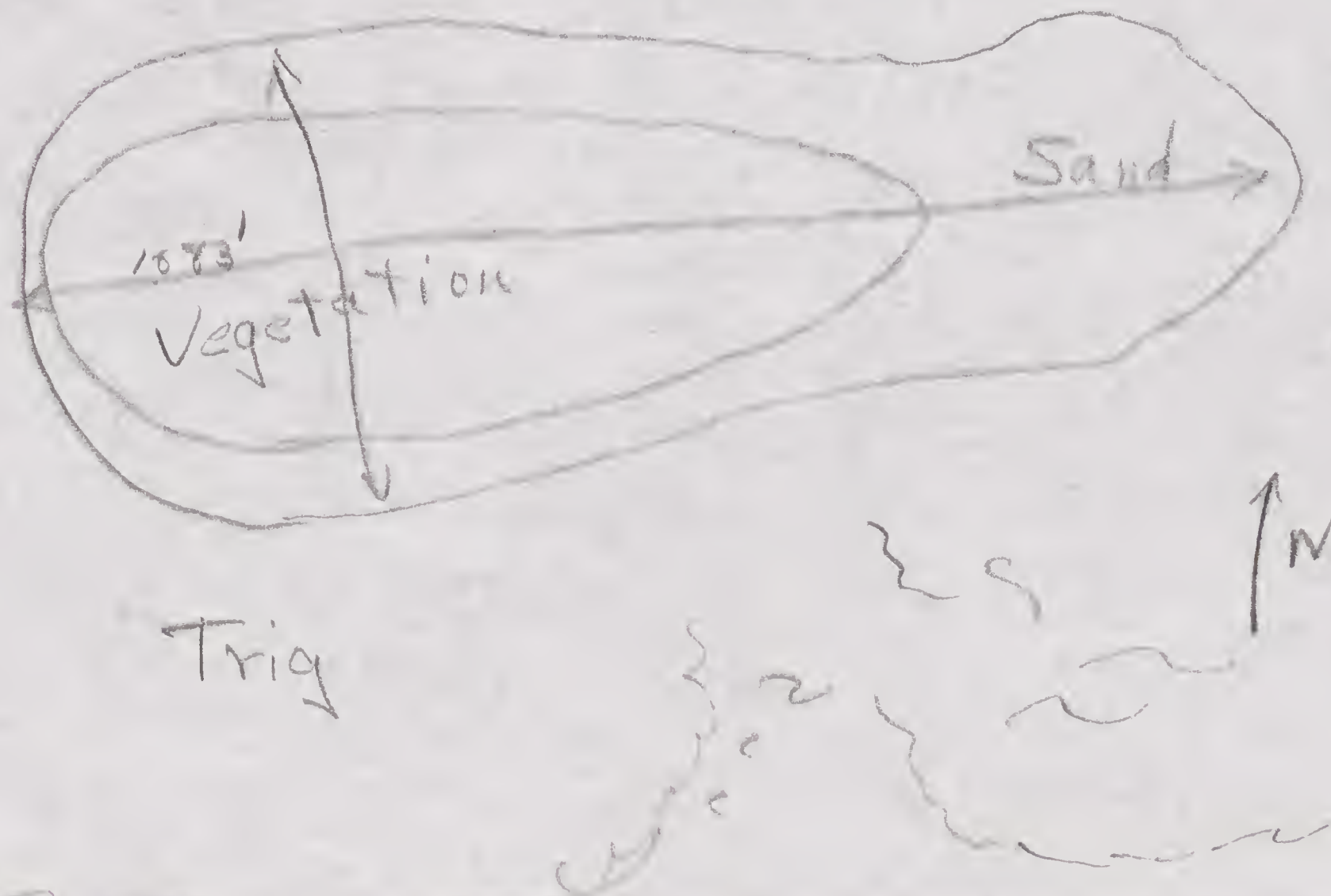
This morning I collected insects from the island. Many interesting things turned up such as: a syrphid fly, two other flies (some on East Island), a curculionid, two species coccinelids, one specie tenebrionids, three species moths, many spiders and ticks. The ticks were under rocks on the north point and appear to be a different spe ies than on Pearl and Hermes. Many mites were also collected. Fred, while banding Frigates collected a vial full of Hippoboscids. These birds and their nests appear to be heavily infested. The remaining few Black-footed Albatross and the few Laysan Albatross were banded before lunch. After lunch a map was taken due to the heat and afterwards filed notes were taken sitting in the shade of the tent. This island appears to be more blistering than East Island. Red-tailed Tropicbirds were flying over the island during the morning but none were seen landing. The Whaleboat returned at 2:30 p.m. to fix

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the radio (dead batteries). They also brought paper so we could write letters. (One to Bob and one to Maryanna). During the afternoon the accompanying map was drawn and we decided that the islands of Skaet and Whale had joined. While I stepped off the island Fred banded more Boobies and Frigates. Toward dark a large cloud bank appeared to the N. E. A light sprinkle fell before it got dark but soon stopped. I began banding Common Noddies and Fred began some more Boobies. It soon began to rain again and I decided not to continue banding Noddies since their eggs and chicks would get wet. Since it was raining off and on I went to bed. Fred continued banding until around 12.

June 14, 1963 - French Frigate Shoals.

This morning we left in the rubber boat for Trig Island at 7 a.m. The patch was leaking a little so some more glue was applied. We arrived at Trig Island without any problems and landed on the north side. I took the Poloroid Camera and walked around the island. Approximately ten seals were on the beach as were also turtles (three). The following is a sketch of the island.



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The island is approximately 1083 feet long and 238 feet at its widest point. At the West end the island is approximately 10 - 12 feet high and appears to be eroding due to its steep bank. The island gradually slopes from this height to the sea on the East end. The rubber craft could have landed about midway the island on the South side. A dead seal pup was found on the North beach. I banded all the Laysan Subadult chicks (eight) and all the Black-footed Albatross subadult chicks (thirty-nine) while Fred banded the Masked Boobies (adults and chicks) and Red-footed Boobies. Four Red-tailed Tropicbirds were also nesting. Many Shearwater burrows were seen and fallen into. Two Christmas Island Shearwaters were also seen. About 11:30 the whaleboat arrived and we decided to pack up and meet it and go on back to Whale-Skate. But the patch on the rubber boat gave way and the whole boat came on into Trig. It was able to get within 25 feet of shore but was on bottom. The equipment was carried to the whaleboat and loaded and the rubber craft pulled around the island and lashed onto the whaleboat. Before leaving we witnessed a seal fight between two bulls over a female (light color). It lasted about five minutes in shallow water with the loser leaving. Blood was drawn around the head and flippers. The female meanwhile lay unconcerned. We had a hard time pushing the whaleboat back out into deep water. Everyone including the Skipper (Lt. Gandy) got wet. The rubber boat was left in deep water. While on the way to Whale-Skate Island the motor in the whaleboat stopped and the crew had trouble

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starting it. We had to anchor and they worked for 15 minutes to repair it. We got back about 12:30. Ticks were also picked up on Trig as were also many insects.

During the afternoon at Whale-Skate I took some color photos of Frigatebirds and also some poloroid shots. Fred set up a mist net for Noddies and a few were caught but due to the winds, it didn't work so good. Fred and I both took a nap during the afternoon. At dusk clouds again appeared to the N. E. and light rain fell before dark. It soon cleared off though for a nice night. I began banding Common Noddies and finished a string of bands started earlier. I then began a short unfinished string on the Grey-backed Terns. This proved to be quite a job as they flew when approached and with our nets broken it took about 2 1/2 hours and a lot of walking to do about thirty bands. During one of my rounds of the beaches I came across one of the female turtles digging a hole to lay eggs. She was about half through when I began my watch (10 p.m.). The hole was about 1 foot swuare and widened at the bottom. It was dug with the hind flippers (one at a time) with the foot going down without touching the sides. The underside of the flipper was brought toward the center of the hole and the tip curved. This portion scooped up a small amount of sand and then dumped it to the rear of the hole. The final depth appeared to be about 1 1/2 feet deep or just as deep as the flipper would go. The egg laying then began and I began counting.

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The hind flippers during egg laying were held over the hole without touching the sand. Each time an egg was laid the hind flippers would raise up about 2 inches. A low grunt (and a wheez) could be heard also. The eggs were generally laid two at a time. A viscus fluid also was emitted. The eggs first were quite wet but appeared to dry quite quickly. The eggs were about two inches in diameter and off white in color. She laid a total of 102 eggs and it took twenty-one minutes to do this. She then covered the hole with sand. I didn't stay until she left. At 11:45 p.m. Fred and I started to band Wedge-tailed Shearwaters.

Halfway through a light shower fell and we feared we might get wet before finishing. We didn't though. We went to bed at 12:30 a.m.

June 15, 1963 - French Frigate Shoals

This morning we began to break camp to go back to the ship. By 8 a.m. the tents had been taken down and all the gear was packed. I then began to collect fresh Berlese samples to take back to the ship. Fred banded some more Boobies and Frigates but didn't find many which had not already been banded. The radio was again not making contact with the ship 6 miles away. At 9:45 the whaleboat appeared in the distance and by 10 we began loading equipment. Most of the officers brought the boat in and since they hadn't been on Whale-Skate had to walk around before leaving. We left about 10:45 and headed toward Trig Island. The whaleboat anchored about 100 feet offshore and we waded ashore. I first stepped off the length and width of the island (recovered the 14th) while Fred

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banded more Masked and Red-footed Boobies (he got 25 more). I tried to recover the dead seal pup but he had not been dead long enough and was still quite messy. I also collected some Berlese material. We returned to the Whaleboats and by 12:45 were back aboard the Tawakoni. The equipment was first stored on the quarterdeck and after taking a welcomed shower (and eating) we began to unpack the rubber bags. The material was sorted cleaned and more items added where needed. The equipment was then repacked and stored in the aft hole for Pearl and Hermes Reef. At 3 p.m. we left French Frigate Shoals bound for Gardner Pinnacles. Before leaving the material in the Berlese funnels were changed and the collected fauna preserved in vials. During the afternoon several schools of porpoises swam by the ship. At 7:30 I went to bed. Fred had already lain down and was filling out Banding Reports.

June 16, 1963 Gardner Pinnacles, Leeward Chain, U. S. S. Tawakoni

Awoke this morning at 6 a.m. after a good night of rest and sleep. Upon going topside Gardner Pinnacles was in view. We were told we would get there approximately 7:30 a.m. After eating breakfast we dressed for going ashore. Upon anchoring we could see that the water on the south side was very calm. Since the rubber boat was being repaired, we loaded bands, camera, net, and water into the whaleboat and left the ship. We landed on the S. E. tip without even getting wet. Our light gear was passed ashore. It was now 8:30 a.m. A signalman also came ashore with Fred and I. Fred started

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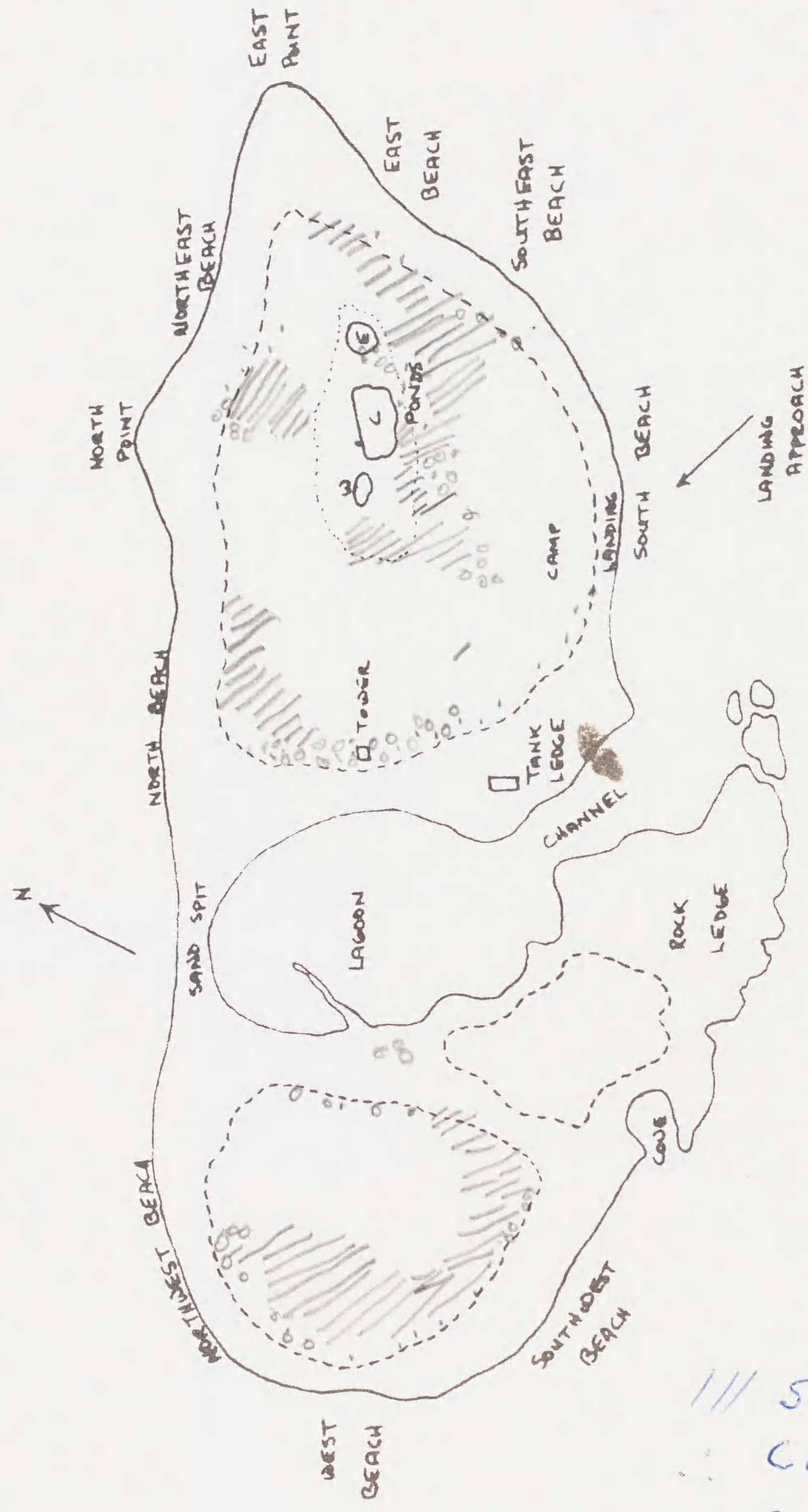
G.H.G. Gaskins

off by banding Masked Boobies and I began taking 35 mm black and white pictures and collecting Berlese samples. Several insects were found---earwigs, silverfish, two flies (very low population), dermestids, ticks--and a cricket was seen but disappeared before collected. When this was completed, I began banding Common Noddy chicks and Grey-backed Tern chicks. These were found on the various slopes of the island and considerable climbing and walking had to be done. The only problem encountered was loose gravel left when the top of the main Pinnacle was blown off for a helicopter landing spot. A few plants (Portulaca) were seen in various places. No other vegetation occurs. Seven Laysan Albatross (Subadult chicks) were banded. Many Masked Boobies (adults and chicks) were also banded. One Brown Booby was nesting (two eggs) and an immature Red-footed Booby was seen. Several () Wedge-tailed Shearwaters and () Bulwer's Petrels were banded. These were nesting in cracks and crevices in the rocks. Many Red-tailed Tropicbirds were nesting (eggs but no chicks) and were banded. Approximately 100+ Frigatebirds were seen around the island. These were seen sitting on the rocks before landing. They were not nesting but apparently only feeding or robbing the many Boobies. Sooty Terns were also nesting in various places. Fairy Terns were present and a few were banded. Eight Blue-grey Noddies were seen on the north side on the sheer cliffs. These were apparently nesting. Four were seen later sitting on the cliffs of the east side.

Bird Nesting Sites

21a

Southeast Island — Pearl and Hermes



- /// Sooty Terns
- Common Noddy
- o Gray-backed Tern

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A Wandering Tattler was seen three times (even on top). We left at 3 p.m. after a most profitable 6 1/2 hours stay. The whaleboat had no problem getting us off the rocks and we again didn't get wet (the rocks at sea level are slippery though). A turtle (not too large) was seen in the shallow water between the two rocks. The skipper (Lt. Gandy) spotted one seal lying on low rocks of the little Pinnacle about 8:15 a.m. and then two more about 3 p.m. in the same place. The ship got underway shortly after we got back on ship and headed for Pearl and Hermes Reef.

June 17, 1963 - U. S. S. Tawakoni

This morning the seas are very calm and the sky is clear with a very slight breeze from the N. E. We began "at sea bird counts" after breakfast. At 9⁴ a.m. we were approximately 47 miles north of Laysan Island. We definitely could tell it because of the increase in birds especially Sooty Terns and Black-footed Albatrosses. A nap was taken after lunch. It was learned that the patch on the rubber boat was not holding and we would have to use the whaleboat at Pearl and Hermes. It is hoped that it can be patched at Midway. A message had been sent earlier to Washington inquiring about the one being bought.

June 18, 1963 - Pearl and Hermes Reef, Southeast Island

This morning after getting up I walked around the island and only counted two seals. Fred began banding Red-footed Boobies, etc. and marking nests with paper labels. At 8:15 the whaleboat

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arrived and I went back to the ship to run the blood samples. Upon arriving I quickly took a shower and changed into clean clothes. I talked to the skipper for awhile and made arrangements for some nest marking stakes (150) to be made out of old welding rods. I began prelabeling vials to be all set during centrifuging. This labeling was completed by lunch. After lunch the centrifuging was begun and wasn't completed until 3 p.m. The Berlese Funnels were changed. By 4:15 I was ready to return to Southeast but Captain Gandy felt that it would be best for the whaleboat not to be taken in until morning due to nightfall. I then began to get ectoparasites off of some of the birds in the freezer. I talked with the skipper until almost midnight and then went to bed.

June 20, 1963 - Pearl and Hermes Reef, Southeast Island

The whaleboat left the ship about 8 a.m. and we arrived on Southeast at 8:20. I began making nest marker tags using monel tape in the hand lettering set. After making the ones for the Boobies (on Red-footed Booby nests) I began putting them out by following Freds numbering system and band sketch of their location. I finished before lunch. After lunch I made the ones for the Frigatebirds and Brown Boobies. Due to a headache I laid down during the afternoon and took a nap. I felt much better after this. After supper I banded 100 Grey-backed Terns and 100 Common Noddies. Fred banded Sooty Terns tonight.

June 21, 1963 - Pearl and Hermes Reef, Southeast Island

This morning Fred and I marked the nests of Brown Boobies and Frigatebirds and banded the adults and chicks of each.

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Before this however we observed and photographed sharks eating Albatross chicks who had fallen into the water while learning to fly. It was low tide at the time. Shortly after lunch I made photographs of various nesting birds on the island.

June 23, 1963 - Pearl and Hermes Reef

Got up this morning at 5:30 and started packing for trip to North Island. The tents, etc. were packed and ready to go by 6:30 p.m. The whaleboats (2) came to get us about 7 and by 7:30 we were ready to leave. Several large sharks appeared off the North beach and Mr. Dolph shot and killed one with a pistol. We would have liked to cut him open to find out what he had been eating but we didn't since we wanted to leave for North Island (7:30). The whaleboats made very good time until we ran into some shallow spots. We went slower then. The boat I was in even ran aground. We were able to spot North Island just as we were abeam to the Japanese wreck. As we approached the sandbar south of North Island the water got extremely shallow (low tide). The whaleboats were able to get through but at times were hitting bottom. Fred stopped at South North Island (unnamed sandspit) and banded the Masked Bobbies () and Albatross (Black-footed and Laysan) (). I went on ahead in one boat to unload supplies and start setting up camp. We got to North Island approximately 9:30 a.m. The whaleboat was not able to pull up on shore due to shallow water, so all the material had to be waded ashore. I walked around

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the island looking for a better landing spot while the boat went back to the sandspit for the rest of the supplies. I found no other landing. I began to set up camp at the South end of the vegetation on the sand area. The tents were set up by the time the boat returned. Due to low tide the boat had to leave the supplies at the extreme south tip of the island and we had to carry the supplies about 300 yards to the camp site. By 10:30 a.m. the boats left for the ship. Fred began banding Black-footed Albatross and Frigates while I went around the island counting the seals. There were on the beach (adults and pups). I then began banding Laysan Albatross.

We continued this until dusk. Fred then banded Masked Boobies and I banded 100 Common Noddies. It rained about 10:30 and both of us got soaking wet. We went to bed after this.

June 24, 1963 - Pearl and Hermes Reef, North Island

Got up this morning at 6:30 and began banding Laysan Albatross. Fred again banded Black-footed Albatross. This continued until early afternoon. I then began collecting insects. I found three different moths (3 pinks, Noctuidae, and ?) spiders, two species of flies, one parasitic wasp ?, a MIRIDAE, and a Gerridae ♂ (on beach). Some Mites were also collected. Ticks, which had been seen while banding Albatross, were collected alive. Argasidae were again collected from the bottom of the feet and Ixodidae were collected from the head and neck regions. These were very common in the gular area and in the area. These were placed in vials and

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put in the thermos bottle for storage. A new plant was found which we hadn't seen before. We plan to collect some of it before leaving. North Island is shaped like a tadpole with its tail pointed South. There are eight plants on the island:

There are many Black-footed and Laysan Albatross on the island. Most of the Black-foots are in groups on the beach and some are practicing flying. There are a large number of Common Noddies nesting (only one hatched egg was seen) over the island in general. A few (10 - 20) Hawaiian Noddies were also nesting. Frigatebirds () were nesting with small young (to eggs). A few Red-footed Boobies (8) were nesting (two with young and two with eggs). A large number of Red-tailed Tropicbirds were nesting under the clumps of grass. Seven Fairy Terns were seen flying over the island occasionally. At times they lit on the beach. Sooty Terns were common in the air but none were seen on the ground. A few Grey-backed Terns were also seen flying (only). Ruddy Turnstones (20+) were seen on the beach along with four Bristle-thighed Curlews and one Wandering Tattler. After dark Fred first banded more Masked Boobies and then joined me banding Common Noddies (and three Hawaiian Noddies). During the late afternoon and before dark we banded Wedge-tailed Shearwaters (200). We were able to see the lights from the ship anchored off Southeast. We have not been able to make radio contact since we have been here

North Island

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(too far for "May" radio). We went to bed at 11 p.m. after packing some of our equipment in rubber bags.

June 25, 1963 - Pearl and Hermes Reef, North Island

Were awoken this morning at 4 a.m. by a rainstorm. The tent leaked again as usual. We got up at 6:30 and packed the rest of our gear and took down the tents (8 a.m.). Fred and I then checked the island for any Black-footed or Laysan Albatross missed before. We found a few. Before finishing we spotted the whaleboats coming in the distance. Steele (the sailor) began taking equipment to the landing area. Our final Albatross banding came to Black-foots and Laysan. During the morning three Fairy Terns were caught by net and banded. The boats arrived by 10 a.m. and all equipment was loaded. On our way back we again stopped on South North Island. Fred banded more Masked Boobies while I took photos and collected plants.

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C. G. Loran Station, Sand Island, Johnston Island Atoll

July 7, 1963

Left Hickam AFB at 7:10 a.m. via MATS flight N33 bound for Johnston Island. Arrived 10:10 a.m. and checked in, etc. Moved to Sand Island at 1 p.m. C. O. of the Loran C. G. Station is Lt. (Jg) W. H. Hayes. We were quartered in the C. P. O.'s unit which are quite nice. After eating a light snack we unpacked our gear and personal items. We then walked around the island to see what birds were present. Sand Island is "dumb bell" shaped with the Loran Living Quarters, Buildings, etc. at one end and the antenna and birds at the other end. The two ends are connected by a man-made causeway.

The east end is approximately 800 feet by 500 feet and is covered with low grass and Puncture Plants. Approximately 200,000 Sooty Terns are on the island most of which have flying young. A few Gray-backed Terns (50+) are present but only one or two are nesting. Common Noddies (1000+) are nesting also and have eggs, and chicks and large chicks. Many came in at night and roosted on the low ends of the antenna guywires. A few Hawaiian Noddies are nesting also. About twenty pairs of Brown Boobies are nesting with eggs to flying young. Five Red-footed Boobies are nesting. No Masked Boobies have been seen. At night about 250+ Red-footed Boobies come in to roost but most are either on the guywires (up to 100+ on a single wire) on the rocks off shore. Ten to fifteen Frigate birds are nesting (eggs to lg young). No Masked Boobies have been seen. At night

C. G. Loran Station, Sand Island, Johnston Island Atoll

about 250 ± Red-footed Boobies came in to roost but most are either on the guy-wires (up to 100+ on a single wire) or the rocks offshore. Ten to fifteen Frigatebirds are nesting (eggs to lg young). Many also come in at night (150±).

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C.G. LORAN Station, Sand I., Johnston Is. Atoll

Wedge-tailed Shearwaters are nesting (500±) and Xmas Is. Shearwaters (25±) are present. Red-tailed Tropicbirds are present in small numbers (10-12). During the day 9 Ruddy Turnstones and 2 Wandering Tattlers were seen.

During the afternoon I talked to Lt. Hayes concerning our stay on the Island. Suddeth had been here earlier so I didn't have to explain too much. He said the station could handle 2 people indefinitely and if 6 only 2 weeks. He checked on a message from DTC and the date for the estimate population was July 5 (2 days before we arrived)!! Lt. Hayes appears very cooperative our stay should prove quite nice.

After supper we wrote letters etc. Before dusk we went to the east end and observed the birds returning. The Sooty Tern kept coming until after dark. As already mentioned a large number of birds (Noddies, Frigates and Boobies) roosted on the low ends of the antenna guywires. After dark we walked through the colony and noticed that the number of birds had definitely increased. We also saw two Christmas Island Shearwaters.

Just before dusk it rained a wetting shower. Another came after dark and we almost got wet. A nice breeze has been blowing also.

July 8, 1963

Another beautiful day appears to be developing. Found 3 Red-tailed Tropicbird nests with large young around the building

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C.G. LORAN Station, Sand I., Johnston Is. Atoll.

(2 under-Scaevola and 1 under fuel tank). Banded all 3 young and 2 adults - also 1 nonnesting adult. Before starting banding program, photos (color and B and W) were made of the island, its plants and birds.

During the afternoon Boobies were banded and nest data taken. Nineteen Brown Boobies were banded (8 chicks, 3 immatures, and 8 adults). Two of the adults were oneeggs. The adults from other nests became jumpy and will have to be banded later. Two banded Brown Boobies were recovered: (697--69607 on 2 eggs) and 697-69606- with lg. chick. These are probably birds Ashmole banded when he was here. Five Red-footed Boobies are nesting. We were able to band 3 adults and 2 1/2 grown chicks. Three of the nests contain eggs. Another Red-tailed Tropicbird nest (with large chicks) was found under a concrete slab on the east end. The chick was banded.

During the afternoon I sent a message to D.F.C. giving estimates of bird species numbers as requested by them. This was to have been made by July 5 but we arrived of course on the 7th. The Eerlese Funnel was set up in a work area provided in the pump house and a litter sample from the Sooty Tern colony was run. Wilz opened 400 no. 3 bands for use tonight.

After supper 12 mouse traps were set to sample the small mammals. Only Mus musculus is expected. Those were set on the east end of the island around the garbage dump. After dark (after 9 pm) we banded 400 Sooty Terns (all adults).

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C.G. LORAN Station, Sand I., Johnston Is. Atoll

Wilz was shown the procedure and caught on fast. The birds in the grassy area were easy to catch while those in open areas were not. This was especially true after the full moon moved into view. Many of the adults were feeding the immature birds-even those that could fly. Almost all birds had fish and squid, as indicated by their "upclucking". Many Wedge tailed Shearwaters were seen in the grass area also. We finished shortly after 11 pm and then checked our snap traps (50 percent capture of Mus mus.) The mice were placed in a plastic bag for ectoparasites and the traps reset (most had no bait though). We returned to our quarters and cleaned up before going to bed. Since our pants were very dirty we placed them outside to keep them from smelling up the room.

About 12 midnight a heavy rain fell accompanied by gusty wind.

July 9, 1963

After breakfast field notes from yesterday were written up. After this nesting Frigatebirds were banded. Eleven adults (3 on eggs and 8 on chicks) and 6 nestlings were banded. It was decided to try to get wooden nest maskers made (from old crates) for the Brown and Red footed Boobies and the Frigatebirds. Upon checking the immatures shearwater found yesterday we discovered that it was a Christmas Island Shearwater when one of its' parents was with it.

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C.G. LORAN Station, Sand I., Johnston I. Atoll

I had originally thought it was a Xmas Is. since it had black legs and feet. The chick is about half grown but has not feathered out at all. While looking in an old bunker 2 more Xmas Island Shearwaters were discovered one of which had a band (544-10501). The band was on very tight and so overlapped that a small pair of pliers had to be used to loosen it before the number could be completely read.

I spoke to Lt. Hayes concerning the wooden stakes and he said he would be glad to have them made. I set up my microscope in the pump house on a work bench and proceeded to check the Mus musculus for ectoparasites. I found Laelaptidae, Myobiidae and Myocoptidae species present on almost all specimens examined (6). I finished this shortly after lunch. Chief Heras brought me a stool so I would have a high chair to sit on while working. I also saw the Berlese litter sample from the Sooty Tern Colony and obtained many things. Among them were tenebrionids, various insect larva, Ants, a spider "saw-lugs", and many mites: Oribatoidea, Laelaptidae, Acaridae, Cheyletidae, Tydidae. While doing this Tropicbirds were heard outside and 3 more adult were banded and masked with red paint. One of these was the parent of one of the nestlings. One of the crew told us of another T-bird nesting under an old pier on the east end so during midafternoon we found one on a 1/4 grown chicks and another just sitting (no egg). Both adults were banded. Ken and I waded out to a spit of land and

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rock just off shore. About 25 Gray-back Terns were found but not nesting. Approx. 50 Frigate Birds (very few immatures) were roosting. Four Brown Boobies had nests (3 Locals and 1 nestling). What appeared to be a Masked Booby was seen but it had a few black feathers on it's back. It did not have red feet. Several hundred Common Noddies were present with some having eggs, chicks and locals. An old concrete bunker is in the center of the spit and Wedge-tailed Shearwater were nesting down inside under the edges. We waded back to the main island and I obtained a litter sample from Common Noddy nests. This was placed in the Berlese Funnel upon our return to the C. G. Barracks.

Ken Wilz opened 400 no. 3 bonds during the early part of the afternoon four use on the immature Sooty Terns. After dark (9 pm.) we put these on immatures in the same area as the adults last night. We were through by 10:30.

July 10, 1963

This morning Ken pointed identification numbers on the stakes and put them aside today. I wrote a letter to Dr. Humphrey, which took most of the morning. Ken made a listing of banded Frigates and Boobies so we could number nests and record pairs. After lunch we placed statkes at the proper nests. Five more Brown Boobies were banded, 2 more Red-footed Boobies, 4 more Frigates and 2 more Red Tailed Tropic-birds.

1963

C.G. LORAN Station, Sand I., Johnston Atoll

During midafternoon I picked fauna from the Common Noddy nest Berlese sample. An important find was the presence of Argasid ticks and chiggers (2 species probably). Also Orhatoidea, Acaridae, Laeloptidae (Hypoaspinae) Cheyketudae, Tydidae and a few unknown mites were found. Among insects were 1 unidentified beetle, and Cusculioidae, Formicidae, various larvae, "Sorubugs", and Diptera larvae. A nest sample from Wedge-tailed Shearwater burrows was placed in the Berlese funnel.

During the afternoon Ken opened no. 5 bands to use on Wedge-tailed Shearwaters tonight. We viewed "Bird Man of Alcatraz" and planned to band birds afterwards but had to heavy rain we canceled the night work.

July 11, 1963

Collected Arthropods this morning in order to send D.T.C. a preliminary lists. Collected as follows:

Insecta

Hymenoptera: Formicidae

Coleoptera: Dermestidae, Tenebrionidae

Curculionidae (2 eggs)

Diptera: Sarcophagidae, Muscidae

Lepidoptera: Unidentified moth and larva.

Orthoptera: Grllidae, Blattidea (3 spp.)

Mallophaga: on all bird species

Misc: Thysonoptera, Collembola, Psocidae

Arachnida

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Johnston Atoll

Acarina

Argasidae: litter and nests

Thrombiculidae - sev. spp.

Cbeyletidae

Myobiidae, Myocoptidae - on Mus m.

Acaridae

Oribatoidea - sev. spp.

Analgesidae

Proctophylloidae ----- on birds

Dermoglyplidae

Pterolicbidae

Spiders: sev spp.

The Acona were collected from bird nests run through the Berlese funnel. The above list plus a list of Mammals - Mus musculus (very numerous, House cat-2, Dog -1 was sent to D.T.C. in the late afternoon.

During the morning Ken made observations on Brown Boobies (nesting). I also collected ectoparasites from an immature (flying) Sooty Tern whose wing was broken. No nasal mites were found but feather mites and Mallophags were taken.

During the afternoon we banded more Brown Boobies (3) and 4 Frigatebirds and masked none nests of known banded birds. The Red-tailed Tropicbird nests were checked but no new individuals were found.

After supper Ken Wilz opened more # 5 bands and # 3 bands for tonight. Before dark we had a very light rain which only lasted for a few minutes. When completely dark (9 pm) we made our way to the East end and banded the following before 11:10: Wedge-tailed Shearwaters - 100, Adult Sooty Terns - 100, and Immature Sooty Terns -100.

C. H. Soran Station, Sand I. 10
Johnston Atoll

July 12, 1963

This morning I painted identification numbers on 10 wooden stakes to make Wedge-tailed Shearwaters burrows. While these were drying I obtained the fauna from a Red-tailed Tropicbird nest which had been in the Berlese Funnel overnight. Ken Wilz checked the Frigate and Booby nests and made observations on them during the morning. When the paint dried on the stakes, I proceeded to make 10 Wedge-tailed Shearwaters burrows and banded the birds in them. One burrow appeared to be just started but no adult was with it. I also worked an egg on top of the ground, but no adult with it. The other eight burrows had 1 egg a piece. The birds were also sprayed with red paint on their breast feather.

An adult Sooty Tern with a broken wing was killed and inspected for ectoparasites. Mallophaga (with eggs on feathers) and feather mites were obtained. Upon opening the nasal cavity, a large number of attached chiggers were discovered. No nasal mites were found, however. This was not finished until after lunch.

During the early afternoon Ken checked the boobies again and I checked the boobies again and I checked the Shearwater nests. Some of the adults which left the burrows after being banded had still not returned at 2 pm. I also banded 2 more Red-tailed Tropicbirds. One of these grabbed my thumb as I threw it into the air and consequently cut 2 gashes in the thumb. A mouse nest was obtained and placed in the Berlese Funnel.

C. G. Swan Station, Sand I,¹¹
Johnston Atoll

During the late afternoon (at supper) one of the Coast Guardsmen told me he had found a Red-tailed Tropicbird with a broken wing on the causeway. I found the bird and saw that its wing was in very bad condition. I killed it for obtaining ectoparasites. The skin was no good for a study skin because of the mangled wing.

Ectoparasites obtained were: feather mites from head and wing area, and chiggers from the nasal cavity. These chiggers were attached to the skin inside the cavity.

After dark we banded 100 shearwaters (Wedge-tailed) and 100 adult Sooty Terns. Upon checking the marked Wedgetail nests the same adults were on the eggs. Some were outside the burrows. The paint showed up well and if the birds were facing the right direction we didn't have to bother them.

During the afternoon a message was received from the S.I. telling me that 2 more S.I. personnel would be joining us July 21st for 2 weeks and would be bringing necessary bands with them.

This morning I wrote a long letter to Maryanna concerning the arrival of the two S.I. personnel. I also discussed the security clearance problem which is still bothering certain people. The A.E.C. wants us to get badges (photos, etc.) but this will not be clearance which has to be authorized from higher levels. I also discussed the problem of space here at Sand I.

During the morning I processed the mouse nest placed in the Berlese funnel yesterday. Very little was found. During the early part of the afternoon I tried to find some Christmas Island Shearwaters to band but the only one I could find was the nestling. I also banded one Wedge-tailed Shearwater which had been found in one of the

C.G. Swan Station, Sand I. Johnston¹²
Still

marked nests. All of the other marked ones were present in their burrows. No's 9 and 10 still had not shown up. (9 being an egg on top of the ground and 10 a new burrow.)

During the afternoon a cookout was held by the C.G. Some extremely good steaks were eaten by all. After dark we were going to band Sooty Terns but it rained so we watched the movie instead and went to bed.

July 14, 1963

This morning I processed the Berlese funnel sample of the Xmas I. Shearwater nest. Among other mites found were Cheyatis and Trobiculids (larval chiggers). Around noon I made movies of the Sooty Tern colony and other birds. I obtained a litter sample from a Red-tailed Tropicbird nest (under a scaevola bush) and placed this in the Berlese funnel.

While Ken banded 100 immatures Sooty Terns I attempted to wade over to the small islet near the old pier to land Frigate. Due to high tide I did not make it. Instead I walked around the head area and only banded 6 Frigates. I did band 11 Christmas Island Shearwaters, however. These birds are mostly located on the south side near the old concrete bunker. Only 2 were found on the north side (under cementslab). I counted 152 immature Red-footed Boobies sitting on the N.E. guywires. These were sitting side by side.

C. G. Loran Station, Sand I. Johnston
Stoll 13

July 15, 1963

This morning I checked on the marked Wedge-tailed Shearwater burrows. Three out of the 8 active nests were without birds. The eggs were cold. Three of the birds already banded were present and two new ones were banded. Two nesting Frigate birds were banded and one more Xmas I. Shearwater was found and banded.

During the late morning I obtained ectoparasites from a Sooty Tern adult: (Mallophaga, nasal chiggers, and feather-mites). Also a Frigate bird with a broken wing was processed but only a few Mallophaga were found. No mites of any kind were found. The Berlese sample was also processed. A large number of Aconidae were found. Again Cheylatida were present.

After dusk I waded ones to the islet (low tide) and banded 9 Frigate birds and an immature Masked Booby. I returned back to the mainland and during the night (until 11:15) banded 42 Frigatebirds (1 ♀, 32 ♂, 9 imm.) and seven Red-footed Boobies (6 imm. and 10 adult).

A common Noddy nest sample was placed in the Berlese funnel during the late afternoon also.

Ken Wilz banded 200, adult Sooty Terns after dark. We both finished our respective banding at about the sametime.

July 16, 1963

Wrote field notes this morning. Checked Frigate nests again and finished numbering all nests. Banded 2 more adult Brown Boobies. Immature Red-footed Boobies noted sitting by nests of adults on eggs. Could these be last years young? Processed Common Noddy nest from

C. G. Loran Station, Sand Island, Johnston Island Atoll

Berlese funnel. Check two Sooty Terns (one adult and one immature), which had broken wings, for ectoparasites (mallophaga and feather mites). Did find one chigger on head of adult. Placed litter sample from Sooty Tern area in Berlese funnel. Set up a roost made out of 12 foot plank to try to catch more at night. Saw two Sooty Terns with chicks which had just hatched. Very few of these left however. Banded a Red-tailed Tropicbird under a small Mesoschmidt plant--Maybe starting to nest?

Ken opened three hundred Sooty Tern bands (number threes) and these were used up on Immature after dark. Ken did two hundred. I did one hundred Sooties, twenty-four Frigates (39's , 21 ♂'s), two Brown Boobies and four Red-footed Boobies. Those with nests or chicks were caught on the little offshore island. The Masked Booby landed last night was back again. The red paint on the beaks of the Frigates banded last night shows up very well. The low tide again coincided with complete darkness and I had no trouble wading across the shallow water. A small (local Gray-backed Tern was seen on the island where the adults roost. This makes a total of two immature (one immature, one local) and one egg recorded on Sand Island so far. Several more unbanded Christmas Island Shearwaters were seen tonight in the area where the Brown Boobies nest. I'll try to band these tomorrow night.

July 17, 1963

This morning Ken and I made a "blind" out of a large wooden crate

C. G. Loran Station, Sand Island, Johnston Island Atoll

by nailing cardboard to its sides. It was large enough to sit on box inside. We placed it near the Frigate Bird nests to make observations. At 10 I checked the marked Wedgetailed Shearwater burrows and banded three new adults in them. A new number nine and ten (nest) were found and recorded. The Berlese sample was processed and a new sample from a mouse nest was added. After lunch Ken observed the Frigate from the blind for two and a half hours. Several pairs of unbanded Red-tailed Tropicbirds are flying around the island. They appear to be wanting to land.

No mail from the S. I. came on the plane today. This is discusting !!

After dark Ken banded two hundred adult Sooty Terns. This makes one thousand adults we have banded. I banded twenty-nine Frigates (5 ♀, 22 ♂, and two immatures). Fifteen of these come from the off-shore islet. Two Brown Boobies (one local and one immature) were also banded there. Two other Brown Boobies and three Red-footed Boobies were banded on the mainland. Two more pairs of Christmas Island Shearwater were found. Three of these birds were banded. The fourth one got away. Upon checking the pair under the cement slab on the north beach, a chick

C. L. Moran Station, Landed Johnston
Island

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was discovered . This had been overlooked by me before. It will be banded later when the adults are not present. At 11 pm I again checked the Wedge-tailed Shearwaters burrows. Some of the adults (2) were out of their burrows and were sitting on top of the ground. The adult in each burrow was recorded.

I got a ride back to the Station in the jeep. Before returning we stopped at the pier to try to spear a large ray which could be seen under the light above the water. The spear hit the ray ok but after a few moment of wild thrashing he came loose.

July 18, 1963

Wrote field notes of yesterday this morning. Checked Wedge-tail nests and recorded adult present. Still no egg has hatched. Paint is holding up well on marked individuals breast feathers. Banded one new adult Wedgetail on marked nest. Also banded Xmas I. Shearwater nestling found last night. It is about the same size (3/4) and age as the other nestling found on the island. Some feathers are beginning to show through the down and he is quite large. Obtained litter sample from the nest. Processed Mouse nest from Berlese funnel. Very little was recovered- Laeloptids (?), Oribatids, Trombiculid. Collembola.

Saw new Golden Plover this morning. This one was in partial breeding plumage. At 10:15 am saw 2 Red-tailed Tropicbirds flying over island. The earliest one has been seen was about 8:30 or 9 am though. That one was feeding one of the nestlings.

Ken again observed Frigate from the "blind" for several hours this afternoon. I took some more black and white project pictures

C. L. Soren Station, Johnston Atoll

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of subjects on the island. After this I killed an adult Sooty Tern which had a broken wing and went over it for ectoparasites. I found a large infestation of chiggers in the nasal cavity. These I photographed with black and white using my bellows.

After dark Ken used the last 100 # 3 bands on immatures Sooty Terns. I again waded over to the islet and banded Frigates. Not as many were present as before. I was, however, able to band 19 on the island before stopping. I also banded one immature Red-footed Booby and Brown Booby. After Ken finished the Sooty terns, we banded 100 Wedge-tailed Shearwater. Before turning in I checked the marked Shearwater burrows and recorded the activity. A note on the Christmas I. Shearwaters: Both adults are with the chicks at night. Ken has seen the adults come in during the day, undoubtedly to feed the nestling as they leave again quickly.

July 19, 1963

Processed Berlese Funnel sample of the Xmas I. Shearwater. Replaced it with a sand sample from the North beach (near water's edge) to see if anything is present. Looked over adult Sooty Tern for ectoparasites. Nothing on the top of the head. Nasal cavity again full of chiggers which are attached. An entire side of the nasal cavity was preserved in alcohol to show their attachment. Several bands from dead immature Sooty Terns were recovered. These birds were run over or died from broken wings.

Ken observed the Frigates both during the morning and afternoon and also recorded nesting data from the Red-footed and Brown Boobies.

C. G. Swan Station, Sand Island, Johnston I.
A. Stoll

I spent about an hour watching Common Noddies during the afternoon. They appear to be very sensitive and inquisitive. Even those quite a distance away come and dive at you ever so often regardless of how quite you are.

After supper, but before dusk, I checked the masked Wedgetail Shearwater burrows and recorded the adults present all birds are still on eggs. Those whose eggs are close to the top of the ground apparently have deserted their nests since no adults have been recorded on them for several days. Since it rained a light shower after dusk and due to 2 good movies, we did not work tonight. Received message saying Miller would arrive on Wednesday.

July 20, 1963

Obtained mites from various plants on the island. These were mainly Tereanidae (Spider mites). After lunch I made movies of Frigates, Boobies and Red-tailed Tropicbirds flying. Also some of Common and Hawaiian Noddies were made. During the afternoon we had a very heavy rain which lasted about 30 minutes. During this time the station recorded 3 1/2 inches of rain, which helped out the water supply. The roof of all the main buildings catch water and it is then pumped to a storage area. The station depends entirely on rain water.

Before dusk I checked the Wedge-tailed Shearwater burrows and recorded the activity. After dark Ken and I banded 100 Wedgetailed Shearwater. A large congregation of Wedgetails were found on the South side (along the guywire base). Approx. 60+ were banded and many

C. A. Sorenstun, Landel, Johnston & Hill¹⁹

got away. Several which we had banded earlier in other areas were picked up in this group. This maybe a gathering place for those individuals who are not setting on eggs at the moment. Only one adult seems to be on the egg at anytime and the adults only switch positions every several days.

July 21, 1963

Ken Amerman and Pat Elliott from the S.I. arrived today at approx. 11:30 a.m. After introducing them to the C.O. they were shown their quarters. They unpacked their duffels while telling us a little of the news from the office. During the early afternoon I showed them the part of the island containing the birds. All of the different birds were pointed out.

Part of the bands were in their duffels but the rest of them and other supplies were left in a trunk at Hickon to be sent as soon as possible. Of course their banding pliers are in the trunk!

They brought 2 boxes of bright orange-red nylon strips to be used as leg markers so the birds marked from here can be identified at sea. This will be a most important phase of the "at sea records" made by the YAG which begins operations the 1st of August. Since none of the leg markers are cut to fit, we will not band birds tonight. The Wedgetail nests were checked.

July 22, 1963

Wrote First Progress Report from here which covered the first 2 weeks of our stay (July 7, - July 20). During this time Ken and I banded 2642 birds of eight species. A total of 56 nests of four bird species have been marked and are being observed.

Location Sand Island, Johnston I. Atoll

Observer _____ Date July 23, 1953 Time _____ to _____

Weather _____

SPECIES	Abundance				Breeding			Remarks
	1-10	10-100	100-1000	1000 +	Nests	Eggs	Young	
Laysan Albatross								
Black-footed Albatross								
Wedge-tailed Shearwater			✓	✓	✓			1000 ±
Christmas I. Shearwater	✓		✓				✓	25 ±
Audubon's Shearwater								
Bonin I. Petrel								
Phoenix I. Petrel								
Bulwer's Petrel								
Sooty Petrel								
Red-tailed Tropicbird	✓							30 ±
White-tailed Tropicbird								
Masked Booby	✓							1
Brown Booby	✓				✓	-	✓	75 ±
Red-footed Booby			✓		-	-	✓	300 ±
Great Frigatebird			✓		-	-	-	200 ±
Golden Plover	✓							3
Ruddy Turnstone	✓							9
Wandering Tattler	✓							2
Sanderling								
Bristle-thighed Curlew								
Sooty Tern				✓	-	-	-	20000 - Birds Leaving
Gray-backed Tern	✓				0		3	100 ±
Brown-winged Tern								
Common Noddy			✓		-	-	-	1000 ±
Hawaiian Noddy	✓				5	2	2	75 ±
Blue-gray Noddy								
Fairy Tern								Johnston I. only, 50 ± (?)

→ Revised Estimate

C. G. Loran Station, Sand Island, Johnston Island Atoll

Revised bird population estimates are given on the accompanying DATA SHEET.

Ken Wilz observed the Frigates again after repairing the "blind" which had fallen apart after Saturday's rain.

After lunch we cut the leg markers in preparation for banding tonight. Several were tried on Sooty Terns, Wedgtails, and Red-tailed Tropicbirds so as to get the correct fit. They appeared to fit fine and one can see the markers quite well at a distance. Five to six hundred markers for Sooty Terns were cut.

After supper the Shearwater burrows were again checked. Pat Elliott also did some sketching. After dark (9 p.m.) we began banding adult Sooty Terns and color marking them: (F and W band on right leg: color marker on the left). It was decided (after trial) to place the marker on the left). It was decided (after trial) to place the marker on the femur to keep it from dragging when the terns walked. We worked in pairs: one catching and the other banding and marking. The time spent was tripled compared to just banding. It took Pat and I three hours to band and work two hundred terns where it normally takes only one hour to do two hundred. In all we banded and marked four hundred adult Sooty Terns before quitting a little after twelve midnight.

July 23, 1963

This morning the weather is quite different than usual--it is overcast and appears it will rain. I worked over a Berlese Sample of beach sand and found an interesting acarine which I had never

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C. G. Loran Station, Sand Island, Johnston Island Atoll

seen before. It is very dark and is quite heavyset (not an oribatid).

After a few light showers we all proceeded to the East end to observe the effects of the leg color markers on the Sooty Terns. We could easily see the marked birds from a distance. They seemed to be having no difficulty in walking and only one was seen pulling at the markers. It was noted that one might have difficulty in seeing the marker when viewing the bird from its right side while it is flying.

The Gray-backed Tern chick which appeared to be hatching on the 21st was checked and found dead. It didn't get out of the shell.

An immature Sooty Tern was killed and checked for ectoparasites. An important find was the discovery of a few shaft feather mites on this young bird. No colony had started inside any shaft, but one mite was found lying (facing downward) in the grave above the superior umbilicus. (A). Another mite was discovered burrowing into the shaft just above the superior umbilicus. The hole was in the center of the grave and the mite was entering laterally (B).

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I had originally thought that these mites entered through the superior umbilicus, but this shows they can also burrow.

Color leg markers were again cut and put together for tonight. After checking the Shearwater burrows Ken Amerman and I discovered that the shorebird population was increasing. We saw at least five Golden Plover and one Wandering Tattler in breeding plumage.

After dark (9 p.m.) we again marked and banded adult Sooty Terns. The time involved was shortened and we found that we (both groups together) could do four hundred in a little over two hours.

July 24, 1963

Northwest MATS Flight brought Mr. Bill Miller, Virologist, Fort Detrick, Maryland for a week's stay. He brought with him some of the blood taking equipment (syringes, etc.) not included in the trunk. Since four Coast Guard inspectors came for an overnight's stay, Ken and I moved out of the Chief's quarters. After discussing various phases of our work we ate lunch. A tour of the island showed him the different birds, etc.

Also on the plane were Mr. John Bushman, Col. Smith and Mr. Henderson from Deseret Test Center. They came over to Sand Island after lunch for a short tour of the island. After talking with Lt. Hayes (I was not present) I showed them the east portion of the island and pointed out the different birds. I discussed various points with Mr. Bushman. Among them was security. He assured me

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they were working on it. We discussed the upcoming YAG cruise and the color marking process. He suggested pinning color markers between the bases of the wings with a safety pin. I don't think this will be very good due to possible infection. The Laysan operation was brought up, and he said nothing was definite.

We discussed with Mr. Miller the upcoming bird and blood sample shipment. Two hundred fifty Wedgetailed Shearwater are wanted during the middle or last of September. No other birds will be needed by Detrick until March. Approximately one hundred blood sera samples are wanted on August 13. Mr. Busheman will arrange for dry ice to be shipped here on August 12.

Birds handed during the day and night include one Red-tailed Tropicbird, one Masked Booby [immature (of ?)], six Frigates, two Red-footed Boobies, and four hundred adult Sooty Terns.

July 25, 1963

Cut color markers. Elliott sketched various birds. Bird nests were observed, etc. Banded and color marked two Brown Boobies, seven Frigates, one Christmas Island Shearwater, and five hundred adult Sooty Terns.

July 26, 1963

Mr. Miller and I banded one hundred Wedge-tailed Shearwaters (also color marked them) after dark.

July 27, 1963

Birds banded tonight were one hundred Wedge-tailed Shearwaters and two hundred adult Sooty Terns.

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July 28, 1963

Checked Wedge-tailed Shearwater burrows. Banded and color marked one hundred adult and one hundred immature Sooty Terns. No trunk came in on the Mats flight today so a message was sent out trying to locate it or get it shipped from Hickam.

July 29, 1963

Banded and marked one Red-tailed Tropicbird during the morning. Checked the Wedge-tail burrows before dark. Banded and color marked four hundred immature and two hundred adult Sooty Terns after dark. The immatures are not in sufficient quantity to catch and they also fly up quite readily. Also there is a problem of dislocating them from their territory.

July 30, 1963

Learned this morning that the trunk was shipped by mistake to Kwajalein and was now at the MATS terminal on Johnston. It was brought over after lunch. Everything inside was in fine condition. A message stating that it had arrived was sent to Comd. Doyle to pass on to Mr. Bushman and DFC. The rest of the color leg markers for Sooty Terns were cut and put together. When these are used up we will have no more until the new supply arrives from D. C. I now estimate we have about a thousand five hundred left ($\frac{1}{2}$). A few Wedge-tailed Shearwater markers were cut. During the day a few movie frames were made of young frigates and Shearwaters.

C. G. Loran Station, Sand Island, Johnston Island Atoll

After dark (with a 3/4 full moon) we began banding birds.

Mr. Miller and I banded and marked one hundred Wedge-tailed Shearwaters and then joined Wilz, Amerman, and Elliott who were banding and marking adult Sooty Terns. We finished at 12:10 after doing five hundred Terns.

July 31, 1963

Wilz and Amerman filled out banding reports (Sooty Terns and Wedge-tailed Shearwater. Pat Elliott sketched some of the birds. Mr. Miller and I gathered weather data from the station log. We recorded wind direction, force, temperature (dry and wet) over the last year. Mr. Miller computed RH from this and obtained monthly averages. The temperature was surprisingly constant (one 80 - 85) as was the RH (85 %). Mr. Miller needed the data for his work so he will send a copy of it to the Sand Island for our use. Due to a very good movie we did not band birds tonight.

August 1, 1963

Since Mr. Miller was leaving this morning we discussed things for him to check on in Honolulu (dry ice shipment on August 11). I gave him a summary of our banding records as of the 31st (6163 birds). During the morning we set up a mist net across the road near the transmitter building. We were able to band one hundred birds in one hour and fifteen minutes. At 2 p.m. Mr. Miller left for the MATS terminal on Johnston Island. The plane, a C119, left about 3:30 p.m. During the afternoon we banded more Sooty Terns by using

C. G. Loran Station, Sand Island, Johnston Island Atoll

the hand nets. We were able to finish two hundred in about an hour. With Pat chatching I was able to do one hundred of these in forty-five minutes. After dark we finished banding and tagging four hundred Sooties (adults) by 11 p.m. The birds are extremely skitish and fly with the full moon up high in the sky. It may be best to even use nets at night. Total birds banded today--seven hundred.

This afternoon we saw and heard a Bristle Thighed Curlew. This is the first recorded visit of this bird to the island. The moon is almost full tonight.

August 2, 1963

It was decided to hand net Sooty Terns in the daytime instead of working at night. Before the color tag marker ran out we banded five hundred Sooty Terns. Two hundred more were banded after running out. Four thousand five hundred (4500+) Sooty Terns have been tagged since July 21st. We will now band until a new supply of color markers arrive. One band was recovered from a Sooty Tern today (723-44048). This, like the one on the Christmas Island Shearwater, was crimped so bad that the number could not be read before loosening the band. The band would not even turn around on the bird's leg. This may be one of the birds Dr. Ashmole banded in December.

The full moon tonight really illuminates everything. I attempted to band Frigates and Boobies but was only able to get one Frigate and one Red-foot. It is just too bright to do any banding at all.

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The Bristle Thighed Curlew was not seen today. Either it has gone to Johnston Island or migrated elsewhere. Total birds banded today--eight hundred two. Received message saying, "Pat and Ken stay on Sand--info to follow.

August 3, 1963

Today we went all out in banding Sooty Terns. Pat and I did seven hundred while the Ken's did five hundred--total twelve thousand banded today. Hand nets were used exclusively. I reduced the Sand Island map so it would fit on to field notebook paper. An outline for the progress report was drawn up during the evening.

August 4, 1963

Coast Guard Day--cook-out and free drinks. Finished Progress Report draft. A total of 6224 birds were banded during its period (July 21-August 3), giving a grand total of 8866 birds banded at Sand Island since July 7th. The list on the following page shows the number of each species banded plus the grand total. Approximately 5000+ birds have been color tagged also.

Species	Banded 7/21 - 8/3	Total Banded 7/7 - 8/3	Total Tagged 7/28 - 8/3
Sooty Tern adult	5600	6600	4200+
immature	400	1400	300±
Wedge-tailed Shearwater	300	700	500±
Frigate Bird	14	161	25±
Red-footed Booby	3	25	10±
Brown Booby	2	38	25±
Masked Booby	1	2	1
Christmas Island Shearwater	2	19	15±
Red-tailed Tropicbird	2	21	6

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August 5, 1963

Typed Progress Report and mailed it. Ken Wilz and Ken Amerman finished the banding reports (up through August 3). Approximately 3000+ color markers came in the noon mail. Also a letter from Fred. We began to cut the markers for use tomorrow. Six to ten thousand more color markers came late in the afternoon along with another letter from Fred. Still no response from Maryanna or Phil. Also no word on the dry ice shipment. Lt. Hayes called Honolulu by Ham radio and checked on Ken Wilz and my plane flight back to the mainland at the end of this month. Checked Wedge-tailed Shearwater.

August 6, 1963

Banded thirteen hundred adult Sooty Terns today using hand nets. Had to cut some more color markers at noon to have enough. After supper we all cut some more markers for tomorrow's use. Filled out band recovery forms for four birds recovered here. Typed these up and made carbon copy. Received two ice chests and letter from Bob.

August 7, 1963

Banded eight hundred adult Sooty Terns today. Took adult and immature Sooty Tern blood samples this afternoon. Took samples from Wedge-tail Shearwaters and partial lot of Woddies after dark. Tried some nice but was unsuccessful. Cut more color markers for tomorrow. Wrote letter to Fred answering some of his questions and sending list of bands on hand. Moon not coming up until 10 or 10:30.

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August 8, 1963

Banded ten hundred adult Sooty Terns today. Also color marked these. Also banded and color marked two Red-tailed Tropicbirds (adults), possibly a pair. Received package of bird decoys and letter from Maryanna. Letter gave no information as to Ken and Pat's stay. Read like there should have been another letter which we haven't received. Letter also included two hundred number two gands. Bird decoys were for attracting shore birds into a mist net.

Sent message to Hawseafontier concerning dry ice shipment arrangements since no information was sent to me by Bushman or Miller. Finished both adult and immature Comma Noddy blood samples tonight.

August 9, 1963

Banded seven adult Sooty Terns today. Recovered another band from an adult Sooty Tern (No. 723-44043). This band was also wrapped tightly around the bird's leg and had to be pryed open before the number could be fully read. Band loosened and properly closed. Processed blood samples during the afternoon. All appear to be fine. Serum samples placed in freezer unit of small refrigerator in Chiefs Quarters. Received message that Shed group would handle dry ice shipment and repacking for shipment to D. C. This was an information to me but was directed to John Bushman to see if he had made prior arrangements.

Caught 12+ mice at east protion alive. Held overnight.
Will attempt blood samples tomorrow.

August 10, 1963

Received message from Maryanna that a Chief Gragosian would arrive August 11 with dry ice and would be responsible for shipment. Received two letters from Maryanna. One dated August 2 suggested Ken Amerman and Pat Elliott stay on until the 4th of September. Their orders say August 18 and a construction crew is due in next week so I think this is impossible. Also it will be against the CO's wishes. The letter also suggested that Ken Wilz remain until September 10 so the replacement party will overlap with us. The other letter, dated August 6 stated that DTC was sending a chief to Sand to carry back 250 Shearwaters and would arrive on the 12th or 13th. Also bird shipping boxes, etc. have been sent to arrive no later than August 13 or 14. Also 150 more birds will be needed in late September.

During the afternoon we cut color markers (approximately 1000).

August 11, 1963

Chief Gragosian did not arrive. Sent message to DTC and SI to this effect. Also no dry ice was on plane. All plans for Amerman and Elliott to leave tomorrow are still in effect. They began to pack for this and got their clothes cleaned.

August 12, 1963

Received messages from DTC (both classified and unclassified) concerning the chief's arrival and purpose [collect birds (Shearwater) sera and ectoparasites]. Lt. Hayes received message that ten man

C. G. Loran Station, Sand Island, Johnston Island Atoll

construction crew would not arrive this week. He suggested that, due to arrangements already made and referring to his original statement on length of stay, Amerman and Elliott should leave on the plane tonight. I agreed since they can only stay one more week (unless their orders are changed). The YAG is suppose to be headed back to Pearl Harbor and therefore a reduction in banding in quantity, and because the majority of the Sooty Terns have left or are leaving. At 6:15 p.m. they left for the terminal on Johnston after getting all necessary paper, etc. The plane was late in leaving and did not take off until about 9:30 p.m. A message was sent immediately to the SI telling of their departure from Sand Island.

August 13, 1963

Ken Wilz and I left to band Sooty Terns this morning, but the numbers were so low that it was decided to wait until night. I processed a Wedge-tail Shearwater and a Common Noddy for ectoparasites. A plant press was constructed from plywood and cardboard from boxes available was used for fillers. A few plants were collected (determined by our having only five fillers). The press was placed outside of the generator exhaust which is quite hot. During the afternoon some photos were made.

Yesterday afternoon the first hatchling Wedge-tail Shearwater was found. It was wandering around on the beach and was away from its burrow. Pat sketched it before he left. Today it had died. I found several more hatchlings in burrows today and made photos

C. G. Loran Station, Sand Island, Johnston Island Atoll

of them. These appear to be only one or two days old. They are light gray above and almost white underneath. Their bill is dark gray with a white "tooth" on the upper beak.

Their feet are flesh colored with a dark tinge down the outside like the adults.

Tonight we took blood samples from ten Frigates. Not enough Red-footed Boobies are present on land to take samples. Two hundred Sooty Terns were banded before retiring for the night.

August 14, 1963

Chief Gragosian from DTC arrived today on the N. W. MATS flight. He brought some supplies with him for collecting some of the items he is to take back. These items are, in order of precedence:

- 200 Live Shearwaters
- Miller's Sera
- 100 Bird Sera (Shearwater)
- 100 Bird Spleen (Shearwater)
- Ectoparasites (Ticks)
- 100 Mouse Sera
- 100 Mouse Spleen

He brought no orders from MATS Headquarters. Scott AFB to carry the live birds back. He had also gotten various people involved at Pearl Harbor, etc., concerning permits for carrying live birds, etc., through Customs. It seems that Sudduth had told him to check on this before coming here. Messages were sent concerning both of these items.

The shipping boxes did not come in on the N. W. flight but did arrive later in the day on a C-124.

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Chief Gragosian brought no more centrifuge tubes so we washed out the old ones and borrowed the doctor's sterilizer to finish cleaning them. I discovered that he had brought some syringes, but they were 5 CC so some of our 10 CC were brought out. After dark Chief Gragosian and I went out to collect sera and spleen from Shearwaters (Wedge-tails). I took the first blood sample and we then killed the bird, cut it open, and took out the spleen. Chief Gragosian brought fixing fluid in vials for storing the spleen, but it has to be refrigerated at all times. Chief Gragosian tried unsuccessfully to take the second bird's (through the fifth) blood. He is use to taking human blood and this is a new and different process!!! After five birds I decided to stop for the nigh since I saw Chief Gragosian was getting tired from kneeling on the ground working. He is not use to working in the field and especially not at night.

Ken Wilz banded one hundred adult Sooty Terns. This now makes a toatl of twelve thousand. Saw first White-tailed Tropicbird at noon today. It circled over the station several times.

August 15, 1963

Chief Gragosian made shipping arrangements from here to Hickum through Captain Thompson (Head, Mats Terminal, Johnston Island)..

Equipment was gotten together for use tonight during the afternoon. After dark we began processing Shearwaters. Ken caught the birds and held them down while I took the blood samples.

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I then killed the bird and gave it to Chief Gragosian. He obtained the spleen from each bird. We processed thirty before stopping at 12:30. We did all our work on a wooden crate. It served as an excellent workbench.

Shipping boxes were brought over.

August 16, 1963

Processed blood samples during the morning. The used centrifuge tubes were washed and sterilized for use tonight.

During the afternoon I discovered a new bird on the island. We tentively identify it as a Lesser Yellowlegs.

Tonight we processed thirty-two more Wedge-tailed Shearwaters.

August 17, 1963

Processed blood samples and cleaned up centrifuge tubes. Saw Lesser Yellowlegs again near the "dump" area. Processed twenty-four Wedge-tails before the rain drove us in.

Saw White tailed Tropicbird again.

August 18, 1963

Processed blood samples and cleaned up tubes. The Station's yeoman shot and collected the Lesser Yellowlegs with the Station's twelve gauge shotgun. I froze the specimen and will send it back with Mr. Miller's sera.

Processed the nine remaining Wedgetails to finish out our hundred samples.

Wrote Progress Report (third) but didn't have time to type it.

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August 19, 1963

Processed remaining blood samples. Obtained ectoparasites from Common Noddy and Wedgetails.

Put twenty-five boxes together for shipping birds. Discovered that tape the S. I. sent to be used is absolutely useless. It will not stick and is apparently old. Chief Alexander had a stencil cut for us on Johnston for labeling the boxes.

Obtained a blood sample (sera and frozen whole blood) from a sick frigate chick. Its eyes were bad and its wings swelled and bleeding.

Chief Gragosian sent another message to DFC concerning the Mats, Scott AFB orders.

August 20, 1963

Processed blood sample collected yesterday. Obtained tape and paint from Chief Alexander and finished taping boxes and labeling them.

Sent message to S. I. concerning the date of arrival of our replacements so plans for Ken to leave can be made in due time. This message was sent during the afternoon. At 10 p.m. I received a message from the SI (which was sent before my message left here) saying that Ken Amerman was to arrive August 28 and McFarlane was to arrive September 8. One part was garbled and I am not sure which Ken leaves on September 2. I am assuming they mean Ken Wilz but there is no

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sense in changing already made plans for us to leave August 29 since Ken Amerman has been here before and doesn't need to be shown around. If it was someone else (new that is) it would be entirely different. Typed up third Progress Report. As of August 17, 12,968 birds had been banded and approximately 9,200+ had been color marked.

August 21, 1963

Three boxes of dry ice came in on the Northwest Mats flight this morning as arranged. It was immediately placed in the Station's food freezer. Due to the fact that no authorization from Scott AFB had arrived, a third message was drafted and a call was placed to Comd. Doyle, COMHAWSEAFRON. Before sending and completing either of these a call was received telling us that Scott AFB had sent the necessary approval. The time 3 p.m.!!

Arrangements for use of the jeep and trailer or truck were made and after dark Ken, John, and I proceeded to the East end with ten boxes to capture Wedgtailed Shearwaters. Just as we finished these ten it started to rain and we rushed them back to the trailer and headed back to the Pump House. We met Chief Harns halfway with our other boxes. Since it was raining I instructed them to drive under the garage. We unloaded the full boxes without any water damage. It then poured rain. We then carried nine boxes with us after the rain ended. We took along this time a plastic covering. It did not rain this trip but while doing the

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last six another sprinkle fell and the plastic covering came in handy. We finished catching the birds at 2 a.m. John went to bed and Ken and I tied all twenty-five boxes. Ice was put in the ice chest (for spleen samples). We went to bed at 3 a.m. after starting at 8:30 p.m.

While catching the Wedgetails we picked up a new species of bird for Sand Island. We tentatively identify it as a Manx Shearwater (Puffinus puffinus). It is black above and white below (sharply delineated). The wing underparts are white, its forehead black (even under eye). The bill is black with bluish-grey sides. The feet are black on the outside and blue-grey on the inside. This pattern runs down the leg also. It was setting among the Wedgtails on the South edge. It was collected and frozen and will be sent back with Miller's sera to Washington.

August 22, 1963

Got up at seven, ate breakfast, and proceeded to pack the dry ice chests with the frozen material. The material for F+ Detrick (including two frozen birds and ten mice for the SI) was placed in one box and the material for Dugway placed in another. The birds were placed on the boat and the truck loaded also with boxes drove on. At 10 a.m. Chief Giragosian left Sand Island for Johnston Island and went to the shipping department. At 3 p.m. he left with the bird shipment on a C-124 for Hickam AFB.

During the afternoon a vegetation map was drawn. Also the

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breeding sites of the birds were plotted on a separate map.

August 23, 1963

Sent message to SI giving estimate of unbanded Wedgetailed Shearwaters (estimate 500+, 200 shipped, 100 collected). Pump House and quarters were straightened up. Total of twenty Ruddy Turnstones were present early this morning. Banded one hundred "LOCAL" Common Noddies during the afternoon. We were just able to finish out the string. I noticed that the young Gray-backed Tern on the small islet was almost flying. After dark Ken and I banded three hundred adult Sooty Terns. These are very hard to catch and it took us over two hours to do them. The Wedgetailed Shearwater population (unbanded) probably should have been estimated at five hundred to one thousand.

August 24, 1963

Made list of items which will or may be needed by SI Personnel who will be here in the future. Also made list of band numbers placed on birds here at Sand Island since July 7. Cookout during afternoon. Watched movies tonight. Total of twenty Ruddy Turnstones around building this morning.

August 25, 1963

Typed up letter to Si this afternoon. Ken and I banded three hundred adult Sooty Terns after dark. They are very hard to catch-- about one hundred per hour. Also three Hawaiian Noddies were banded.

August 26, 1963

Cut color markers after breakfast. Then banded two hundred

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Sooty Terns before lunch. Learned that service had come back on the garbled message of last week. It said that Ken Wilz was to return to D. C. on September 12. This is impossible. We will still leave as planned.

After lunch we banded eight nestling Frigate birds and one each of Red-tailed Tropicbird, Red-footed Booby and Brown Booby nestlings.

Killed two Common Noddies (immature) with broken wings.

Obtained ectoparasites from these. Cut more color markers.

Early this morning there were twenty-nine Ruddy Turnstones and five Golden Plovers around the buildings eating worms in the grass.

Banded and color marked three hundred adult Sooty Terns after dark. After about an hour's walking through them, they get very jumpy and fly when the light hits them. The moon is now about one-third full and is fairly bright.

August 27, 1963

Cut color markers this morning. Ken and I banded two hundred adult Sooty Terns between 9 and 11 a.m.--extremely difficult (and slow) to catch. There seems to be even fewer Sooty Terns today. I would now estimate approximately ten thousand Sooties are present.

Filled out Banding Schedules after lunch. Also took some photos. Set up mist net in conjunction with the small sandpiper decoys in an effort to catch some Ruddy Turnstones and Golden Plovers. None were caught by darkness. A rain came about 9:30 p.m. The

accompanying wind undoubtedly blew the net down as it was found in this condition about 10:30 p.m. No birds banded tonight. No mail from the S. I. came in today as was expected.

August 28, 1963

Wrote Progress Report (fourth): Total birds now banded is 14,382 (ten species). Total tagged so far--10,500. Total banded this report 1414. The report will be typed up tonight.

Ken Amerman arrived this morning from D. C. at 11:20 a.m. He is to stay here through September. Bob McFarlane is to join him September 8. Briefly showed Ken East portion of island and told him some of the present operations.

A big rain fell during the afternoon (1:45 p.m.). We got approximately 7 inches. It has been cloudy all day and rain clouds have been going by the island. Even thunder can be heard which is very rare out here. -The rain continued on into the night but had almost stopped by 10:30 p.m. The Statia collected 24,700 gallons of water during the rain. Watched movie as result of rain. Typed up Progress Report number four mentioned above.

August 29, 1963

Sorted all correspondence to leave with Ken. Put all data, Banding Schedules, etc. to be carried back to D. C. in a large brown envelope. This was given to Ken Wilz. At 8:30 a.m. the Yeoman asked me if we would like to leave at noon instead of tonight. A special plane was to leave at 1 p.m. I said yes and hurriedly

notified Ken and began packing. We were to leave for Johnston at 11 a.m. This we did after paying all bills and thanking Lt. Hayes for his help and cooperation. The plane left on time and took four hours to get to Hickam AFB. By 6 p.m. we were checked in at the Skylane Inn. After checking on our tickets we went to Mr. Mike Chang's residence and chatted awhile. Mike was on Sand Island for a week. At about 11:30 p.m. we went to bed.

SAND I., JOHNSTON I. ATOLL



July

- △ R.F. Booby
- ◇ NAW
- R.T. Tropicbird
- /// Sooty Tern
- xx FRIGATES
- oo WEDGE TAILS
- ★ CHRISTMAS I.
- # BROWN Booby
- ∴ Common Noddy
- ⊙ GRAY-back T.



1" = 200'

July-August

- ≡ bunch GRASS
- XX TRIBUBUS
- PORTULACA
- ~ SAND SPURS



August

/// Sooty TERNS



71

Honolulu, Hawaii

August 30, 1965

Took Ken Wilz to the airport and saw him off at 9 a.m. Called Pat Gould and talked a few minutes and he told me they (Fleet and Ludwig) would come by about 11 a.m. Called Comd. Doyle and told him about forwarding or routing messages concerning SI or DTC personnel going to CG Stations to CCGD Fourteen. Also discussed full cooperation from CG at S and I. Asked Doyle to call the P.H. gate so I could get a Temporary pass. Called Lt. Comd. Gandy, C. O., U. S. S. Tawakoni and asked if he could talk with me this morning. He was delighted to hear from me and said come on.

A few items were discussed about the upcoming trip in October. He would like a definite committal as to how many people would be on the trip and who they are and their GS ratings. He would like to slightly alter the trip schedule as the ship needs to refuel and get fresh supplies during the trip. A ship (tanker) from Pearl Harbor could do this but would have to travel over 4500 miles. So it has been suggested by him (and is now before ComSeaPac and HawSeaFron) that the ship go to Pago Pago around the first week in November for food fuel and liberty for the crew. This would take approximately six days out of the present plan but could probably be made up by cutting some off of Baker and Howland.

After returning to the Skylane I met Gould, Fleet and Ludwig and talked about various parts of the Project. We all went to NSC Pearl City during the afternoon to get supplies for Ludwig to take

Honolulu, Oahu Island, Hawaii

to Midway and Kure.

August 31, 1963

Called Gould before leaving for San Francisco (10 a.m.).

Had a very nice trip to the Mainland arriving at 5:35 p.m.

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BIRDS Banded SAND ISLAND

July 7, 1963 to August 29, 1963

Frigate Bird

737-47201 -- 47299

47301 -- 47370

Brown Booby

737-44001 -- 44039

Red-footed Booby

737-44101 -- 44126

Masked Booby

737-47300, 47400

Sooty Tern

743-72001 -- 74000

753-10001 -- 21300

Wedgetail Shearwater

565-12001 -- 12800

Red-tailed Tropicbird

565-12001 -- 12024

Christmas Island Shearwater

514-78001 -- 78019

Common Noddy

753-30001 -- 30100 (locals)

Hawaiian Noddy

642-01001, 01002, 01003

BAND RECOVERIES

Brown Booby

697-69607, 606 July 8, 1963

Christmas Island Shearwater

544-10501 July 9, 1963

Sooty Tern

723-44048 August 2, 1963

723-44043 August 9, 1963

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Fort Collins, Colorado

September 1, 1963

Left San Francisco at 8 a.m. Plane stopped in Salt Lake City and I tried to call Mr. John Bushman. He was out of town. Arrived in Denver at 11 a.m. Left for Fort Collins on University Bus at 2:10 p.m. and arrived at about 3:40 p.m. Registered and checked in. Started meeting everyone.

September 2, 1963

9 a.m. -- First International Conference on Acarology began. Attended all meetings.

September 3, 1963

Acarology meetings continue. Called SI about meeting Bob McFarlane in Denver (talked with Fred).