BANDING AND RECOVERIES OF RUDDY TURNSTONES IN THE PACIFIC

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In the summer of 1964, the Smithsonian Institution Launched an intensive banding program of Ruddy Turnstones on St. George Island, the Pribilofs, Alaska. St. George Island was picked as the logical site for the operation as thousands of Ruddy Turnstones congregated here during migration to fatten up on insects before continuing southward. The turnstones are attracted to the abundant food on the Northern Fur Seal killing grounds. These grounds have been utilized for over a century for the harvesting of the fur seal. The carcasses on St. George are left on the killing field to rot away, thus attracting large numbers of insects.

At the height of the migration, the number of turnstones was estimated to be in excess of 10,000. The high density of turnstones lended itself well to the use of a cannon-net for trapping purposes. We had previously tried using mist nets, but the high wind and presence of Arctic Foxes rendered them

unsatisfactory.

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The cannon-net was a modified Miller type using 3 projectiles on a 75' x 35' nylon knotless net. The charges were commercially prepared and one per cannon was used in the firing. The cannons were detonated by a simple hand-cranked blasting machine.

It was found that the Ruddy Turnstones when frightened would fly down to the beach or off into the tundra and remain there until we had completed setting the net. After setting the net, one person would walk the area around the killing field and flush the birds back to the killing field. The other person would be midden near the net to fire it when the birds were in from of the net. After a few observations it became obvious that the birds tended to land in a certain area before fanning out to feed. We had a great deal more success by setting the net up in this area than where they were actually feeding. The net was first set without any camouflage, but after one or two firings, they soon became wary of the area and avoided sitting in front of the net although they would sit immediately behind it and on each end and in front just out of range. We then started placing grass cuttings over the net, completely hiding it from view. The birds never seemed to be disturbed by this rather straight line of grass in the middle of a black patch of earth.

The largest number of turnstones taken in one firing was 158 birds of which 31 were recaptures. We took as many as 321 in one day by setting up the net and firing twice in one day. This practice of firing twice in one day was usually avoided as the birds would be skittish after the first shot. We alternated between killing fields, so as to give the birds a chance to

settle down for one day without being disturbed. The only two exceptions to this were when the schedule of the seal killing crews coincided with ours and we were unable to work in that area. The other exception was during heavy rains. At this time the ground would be so waterlogged that the net would saturate the birds by pressing them into the soil. The net would also become waterlogged and would not extend properly.

It took approximately two and one half hours to remove 158 birds from the net, band them and color-mark them with International orange paint. The turnstones were quite fatigued after this length of time in the net. Being heavy with pre-migratory fat, many were not able to fly and would sneak off into the grass. We found that heaving them into the air was sometimes enough to get them started.

Our biggest problem seemed to be Arctic Foxes. We would set up the cannon-net and leave it for a couple of hours. When we returned we would have birds in front of the net and would fire the cannons only to find that the foxes had come along and cheved our firing wire into about six long pieces. The foxes were also another reason for halting mist net trapping. The best time to catch the turnstones with mist nets was at daybreak which came at 3 a.m. The foxes were usually a little earlier than we were and would catch the birds in the net and eat them. They were kind enough to leave the leg with the band on the Gray-crowned Rosy Finches so we could adjust our schedules accordingly. Besides being hard on mist nets, it was hard on the birds. We found that the quickest remedy was to shoot the foxes in the immediate vicinity of our operations.

Mortality from the cannon-net itself was extremely low and we lost only four birds out of 2,000 netted with the cannon-net.

In the course of banding the turnstones, we recovered three Japanese bands. These bands were badly worn and were replaced with U. S. Fish and Wildlife Service bands. The bands were returned to the Japanese. The turnstones had been banded near Tokyo in 1962 and 1963. They had received one other recovery from Siberia.

We suspended banding operations on St. George on September 2. Our first recovery was taken on Ailinglaplap Atoll in the Marshall Islands, 3553 miles southwest, on September 18. This was an average of 237 miles per day. The bird was the last bird to be banded on September 2. The turnstone probably did not leave the island immediately after banding. We clocked a flock of turnstones by the jeep speedomster one day and found that they could go about 35 m.p.h. At this speed they could expect to cover the distance between Ailinglaplap and St. George in 4.2 days. There is no indication that the turnstones rest from the time they leave Alaska until they arrive at their destination. The fact of the matter is, there is no land between the Marshall, Gilbert or Caroline Islands and St. George Island. We did have a sighting of a color-marked bird at Ummak Island in the Aleutians on October 7. The longest recovery was from Truk Atoll in the Carolines. This bird traveled 4,128 miles in 21 days. All together eight of our birds were recovered during the fall of 1964; one of these was taken again on another island a month later. All of the birds recovered in the south had been color-marked. Nearly all birds recovered were taken by natives.

We will leave again in June to return to St. George for another summer

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of banding. We will have at least 25 days more netting this year than last year and hope to double the number of turnstones banded.

To be presented at Eastern Bird Banding Association - Ocean City, Maryland, April 24, 1965.

Journal 1765 Washington, D.C. 2 Gam arrived back in Washington today about 11p.m. Im staying at the Vivian Hotel. 10 gan Left Washington this morning. at 9:45 a.m. for Honolulu and armed I 4:45 h 4:45 p.m. Honolulu Hawaii 11 gan Today Worg and I went to Pearl Harbor to get my gate spass and to see the USS Hitchiti. Mong forgot his gate pass and Smithsonian card so had to go back and pick it up. Finally got back and found the Atchik fut so close to lunch time went to Pearl lity to warehouse. Good God what a mess. Requesting Merill be sent out on Jan 18 to help Doug sort and clean up the mess. Went back to Sitichite after lunch and falled with the XO. Real nice guy and seemed enthusiastic about the trip Lots of space in the after hold for slowing gear. also an entomologist alraid in the

Journal 1965 Honolula Hauri 1 yan form fan Ensign. The lab was brought out today from the warehouse for installation. XO said they didn't have an experienced boat landing crew but were going to train one. Left the Aitchiti and dropped by Sichop Museum but Gessett wasn'there. Went on to ala Moana Center and bought some field clothing. Had busted break line on the ear so traded with national for another. Birion dame in this Evening. Deart City again loday also stopped by the setthic but warnt avail the 13 Jan blong took Binion to Acham this morning and this p.m. at did some Shopping at ala Moana Buin and seryford left for Sand Along and Quent & fearl 2. this arm. City again and to the Attachite but the Xo wasn't Shere.

Journal Honolulu Hawaii 14 Jan This morning long and I picked up the outboard motors and took them to the Ship. The XDand Captain are both present. The XO's name is dictenant JS. Zogg and the Captains is Shelley or something like that Hackman and Twill latin the Wardroom and the seat atim The chiefs quarters. Three people will stay in the chief Quarters and they in the Crews quarters. We left the outboard motors at the ship. We later stopped and did some thopping for the trip. Went out to Pearl City and packed somethings for the trip. Everything and there is destandy a mess. We need a place clover in with shearing for soting things. In p.m. went out to Elys and took Some epcess gear which should have been Stored there in the first place. Learned yesterday that Beshop Maseum

Journal Honohula Alawani 15 Jan is sending al Samuelson on the ATF. Ely will be happy to hear that. 20 Gan Nothing much has gone on the part few days. All the gear is ready to load aboard ship tomorrow. Sy returned on the 18th Merillauived on the 17th Everything seems to be Sunny Smoothly Started loading the ship in larnest Whay. all equipment that canely put in the daw is being put in. Tomorrow we will load the afterhold. We are scheduled to depart at 0800 on Monday morning Bob hong has the botany equipneut seady to go and we pick it up at 7:30 Satulday morning. Con meal can be purchased in 25 tags at Hawaii Bakery Supply Co. 730 Pohukana St. 25 yan Sot underway this morning at 2930. Auber arrived at 1010 last nile. The light

Journal Amolula Hawaii in the lat have been installed and make a tremendous difference. The weather is real good today with gentle suches. Nearly funched cleaning up the labs bet the watches as soon as we deared Pearl Harbon. Saw 6 Larus sp. sitting at the mouth on a coral reef. They were in juvenal plumage and seemed to be fairly large gullo. Seemed to be many gaegers flying around the ship. It was difficult to tel whether or not they were the same one we were seeing over and over again or different press. Several flocks of Sterna Juscata were sen the largest with about 25-50 in it. At- Sea Between Oahn & Howland 26 Jan Survice This morning was at 0714. 1 Sorty Tern was observed at 0640. Today a total of 8 were seen (sooty Terms) all morening in a WNW direction. 9 Red-fooled Boolues were observed, I wedge-tailed Shearwaten, 1 Masked Shearwater, 1 Tern sp. and 1 Teach's Harcourt Peter. a total of 639

1965

Journal at-Sea Between Oahn + Howland 26 Jan minutes were put in observing birds. a total of 12 sightings were made with 1.91 birds ger sighting. The weather continues to remain calm and we are 40 miles ahead of schedule. The Officers still seen agreable and every-Thing appears to be moring along normally. Doug attitude toward the Navy continues to le negative although they haven't done anything yet. Only time will bell and I prefer to reserve my opinions until that Three The supply officer will handle the sequesto for food. 27 Jan Watch was set at 0540 This morning and secured at 1800. 35 birds were sighted in 15 sightings averaging 2.33 burdo per sigliting. Permission was granted today to visit Palmyter. Jook radios, up to sachoman Weather was again chellent today with lasterly winds. We are still running this. ahead of xichedule.

Journal SW Johnston Island Paarfie Dear 28 Jan Skys were mosely cloudy today with squallo. The total bird sightings went up to 12 Today for a total of 21 bride seen at 1.23 birde per mile sighting a total of 682 mules were spent observing. assignment were handed out today. XO and Captain want a meeting to descus plans for island landings. Several Pterodroma were seen lockay which appeared to be Juan Fernandez and one Kermadee Petre! Woodward saw lither a Fahitiens os Phoenit Fland Petrel. Soot NE Howland I. Pacific dea Watch started this morning with clouds obscuring the sun. a total of 694 number of observations were made with 18 sightings and 21 birds or 1.17 buds per sighting. among the birds observed today were 2 Kermader Kettel, 1 juan Fernandez Petrel & Buliver's letrel and a Black - browed albations identified by Paul Woodward. Yellow bill observed

1965 Soot mi. See Howland &. Paulie 29 Jan clearly. Abundance of birds seems to be going up. 3 Birds were observed before 1200 and 18 birds after 1200 The day was plaqued with sain squall all day long. Merertheless this was our best dag yet in number of burd sightings. a total of 41 sightings were made with a total of 159 abserved or 3.87 buch per sighting. Christmas Island Shearwaters, Thoen Is. Petrel were observed for the first time. all seems to be in order for the Monday morning arrival, Blood samples are complete except for holding sacks which are at Elijs a message from Chy yesterday said to proceed with the Verging mission on Frigates met with the captain today the discussed the boat landings etc. and also signals in last of an emergency. HO mi NE How hand & Paulie 31 Jan The dast day of January and we approach Howland in the norning.

Journal Not . 1965 110 mi. NE Howland Is. Pacific 31 Jan Everything appears in readiness. The life boats were inflated today and the splach sail on one promptly wore a hole thur and went down. All gear seems to be packed and ready to go. Bird sightings increased to 43 today with a total of 525 birds seen or 12.2 birds per segliting. Nothing of any interest was seen. The weather was mainly clean today with a very light chower about 7: 30 p.m. The few clouds in the sky enabled up to see the "green flash." I continue to break out in a source rast when Texpose myself to the sur. My right and is becoming worsernow. It really cont a rash but bleeters. The air temperature is mereasing at a steady rate as we go south. It was about 85° as was the sea temperature, Larry Huber apparently blew his nove yesterday on the budge without benefit of a hankerchief and splashed some on the watch He complained and the complaintieventually got back to me mal I reprimanded him.

Journal Mot C. Thomp Howland L. Prafie Doan arrived Souland about 9:30 a.m. Went to show almost immediately the surf was summing low so not much trouble We sun an island survey of breeding birds as soon as eary was set up. Moug Says breeding Blue faced Booby populations are way down. The survey tarned up 800-1000 which is probably exaggerated The east side of the wood had 3-yourall clubs which Woodward banded in the evening. I believe he bandled 152 in one evening of got 179 returns There were 73 nexts and 64 ment with chicks. a grand total of 152 were banded Inta Sula, Orly a few present on the interior of the coland nesting in Corcha which is dead and Jollen down. Tourten pairs were present in daytime and 40-50 soosting at nite. Anla leucogaster - Population is apparently mereasing as we found 33 nests mostly on the west wide of The island. Doug estimated 60 roosting Phaethon subricanda - Only 5-10 seen. 2 nests with small young four of

Journal Howland I, Prafic Coon Esegata minor- 80 nesto in Cordia Trees on interior of the island. 63 of the 80 had fuch eggs Male diplaying Fregata arel - Possibly 5000 misland. 1500 young still haven't left nestring thea On south end of island. Sure hoosting at night in bodia trees on interior of the island. Sterva fuerata. I new neating colony has started an westride of island of. We banded a few here but hit the old colony on the east side with about 2700 bands. The colony on the east has both eggs and young. The west colony are all fosh eggs Doug estimates 3000 nearly fledged and 25000 on heavely Wcubated eggs. Sterna lunata - 50-60 nexto on weakoide Hisland in coral sand & Leptusie. 1st nosting in this ara. Anous stolidus - 1-3/4 grown nestling banded by Woodward. 1st nesting for island. Numeris tahitensis - 10 on frige of sland. than teteroscelus manun - 16 seen on reef and 6 banded

Journal Not C. Thompson Not C. 1965 Howland Is, Pacific Quan arenaria interpres - 79 counted. Still-in Pluvialis dominica - 76 counted 2 banded. Blood samples were taken in p. m. by Hackman, Merriel and myself. Vacataning worked real well for Blue-fared Boolies \$ Great Frigates. Story Terns were more diffult and we continued to use hypodemics. 100 Samples were taken, 80 Sorty Terns, 10 Blue Jaced Boobies & 10 Great Frigates. a total of 2700 brids were landed last mite. Foday floug and Ralph put blue steamers on breat Frigate birds, Couldn't see color. Larry & I looked for loclenterates on the seef. In p.m. looked at wing not from sooty Terms. No sime or reason to not and no pattern. Birds were stooped out of the air with great and checked, banded & released. This evening We concentrated on Sterna ficiata and succeeded in bunding govot. Jotal island banding was 12000 & Farry banded 3507 Terns hunself. I new record for the project Al reef was practically barron of the coelecterates

Journal -1965 Howland Is Painfie Decon 2 Feb we were looking for Feb Rescued at 0800. Surfrough but the boat men are learning. Scheduled to land on Baker at /130. handled on Baker and what a landing Surf was terribly rough. Boat lost its motor Coming back for second load and had to peddle back to ship. On second load couldn't get back out on westaide so lefton south and where it was fairly calm. They took many spills before they thought of the lee side This evening about 5:30 p.m. we made our eatend Sula dactylatra - 6 nests were found with eggs. My 2 had Leggs each. One clubon south side of island 167 birds and conother 30. Several pair are spaced around the peripheny of the island. Paul banded 60 + got 57 returns anous stolidus. 250-500 menting on small bland in quano pit on eastride of reland . Motall seemed to be sitting on eges. Sula leucogaster Saw 104 setting on electric poles on eastinde fisland also for flying by sland

Journal Not 1965 Baker S. Pacific Com Eregata op Probably minor flying over island. Saw about 20t. Sterna fuscata - Saw several small flocks By overhead in evening & heard several bunches in evening in evening Sterna lunata - Saw several individuals flying around wland. 4 Feb Called ship at 2700 and fold Them no boat run, a tremendous surf today on westside ofisland. At 0800 I made the shorebird count and saw the following: Plunialis dominica - Saw 7 on reland around the beachs and back of grassy areas near beach. Still in winter plumage arenaria interpres - Law an estimated 113 in flocks around the island. They are all still in winter plumage. Heteroscelus incomum- Aur 10 along the beaches. Numerius tabiliensis Anber heard & sav two yesterday. Sterna lunata- Saw what appeared to be 12 resting birds on the south side of the island. This is first group away from esland since cal billed.

Journal Baker & Paufie Quan 4 Feb Vegetation here looks worse then on Howland. To much dry weather. Mostly Rigitaria, very title Inbulus and a plant that is not on Howland Sida fallow which has a ting Arbiacus type flower. Ipomea a most prostate plant grows on the beach Loto of Boorhavia and Portulaca alao The island is generally rocky and very lette soil for plants to grow. This evening we took blood samples from Blue-faced Boolies. We took 30. The club pained so we debit get to work them much. Broke camp at 0600 this morning First boat made it to show with out much trouble but second load got exemed in meler the Polaroid cameria was lost in the surf although all other equipment was saved Sawa Phoenix So. Betrel flohose During all the brouble a Phoener & Petrel flew past the ship. This is the first record for this usland. Initiation of pollywords occurred today and got thoroughly initiated

Journal Not C. 1965 Mckean Is, Paufie Ocean arwed loday at 0915. Pat uprang on westaide of island. Surfwas very good and no trouble was had landing. I nest survey was run in the a.m. and in p.m. Ilanded bygis alba. The Island is 900 yards by 1000 yards and has a central lagoon which had 12" of water in it. The wind was 18 kusts straight out of the east which made it impossible to pitt up a tent fly. In evening I took 100 blood samples, including 20 Sterna Jusca 20 anous stolidus, 10 Puffins iheriminen, 30 Sula dactiglatra + 20 Fregata minor Finished up about 1230 so banded a few Audubon's Shearwaters. When we came back to our tent we found it fullof tukes. They were marching thru the door like an army. We were being laten alive at mile. Late in the evening we got about 18 of Rain. In p.m. Larry and I dove around the reeflooking for Coelenterates. Found the same type a we got in Howland Lo. Many large and beautiful reef Joh Leve. Mesting varoey

Journal 1965 Mikean & Paufic Chean follows. Hackernan made wing nolt studies on 50 Sterna fusca. Hackinan also made some actoparaile collections from Sterna lunata, Fregata minor, anono tenurostris and Paffinio hermineri. We put white wing tags on 21 Geenter Frigates This color (or absence there of) shows up very well in flite (Hackeman). A Meating Survey! Phaethon subricanda-



Journal Not C. 1965 McKean & Paufic Ovar after a night of being eater alive by ticks, I got up and went out and banded Dycis alba until 1200. Messill came back at 1400 and brought my Edita and film. Took 36 pictures of birds. at \$5.6/500 Jook 5 spennen of Sterna lunate and 3 specimen of Neofregetta albigularis in Various phases of melaniam. Yesterday we got 3 amous stolidus. while sampling blood. Woodward and Huber censused the shorebird Population this norning. This report follows at end of this one, Several Berbee samples were taken of various vesto. The tent has been full of teches all day so slepton beach this evening. as many or more ticks here as in tent This This evening I banded audubon's Shearweiters, White - throated Storm Peteel, Bulwer's Petrel Fairy Jen, Hawanan Noddy and Blue gray Moddy. all foll We banded about \$ 500 brids. The radio wouldn't work again Hisp.m. Don't know what is wrong with it worked at 2 p.m.

Hound 1965 McKean Is, Pacific Doan Shoreburg Survey numerius talitiens - 42 on me lagoon and around seashore. Eating Sterna Juscata eggs. 2 Banded Heteroscelus incomum - In 9 seen and 6 of these banded. arenaria interpres - 286 estimated and banded. Pluvialis dominica - 48 counted and banded Hall Island, Pacific Ocean Ship picked usup at 0 soo gesterday and we get underway about 1430. Arr-ived it tall this morning at 0630. at 0300 we loaded our boats and attempted to make a landing. The surf was so rough that we finally returned to the Ship and unloaded the gear. However, they managed to break the handle on The second motor to we have two alike how. They still operate. We will sleam around here until we see if the weather is going to calm down. Fit doesn't we will go on to Birnie this evening.

Journal Mot C. Thompson Hall Island Vanfi Dean 9 reb about 1115 we arrived off of the dellage site and the surf was calm. Optain asked if we wanted to go ashore. I said yes so took year in to poison fuch ete 1 to collect coelenterates. Upon arrival on shore we went to get out the fish poison and it wasat with us. So we went across to the legoon & searched for soft bodied onimals and found a fairly sterile goon. We lane back to the life saft & find it had blown a lole in itself. Ship was notified and sent in another raft. We ted the end up on it and they populled the half deflated raft out to the ship. The ftrnon lurned into such a fiesco that we all came back about about 3pm. At 1800 we got underway for Biring Birnie Is Pacific Fo arrived of Bisnie about 10 a.m. The surf was real quiet and an easy landing was had by all. The island is very ling being about 1000 yards long and 300 wide.

Journal Mot C. Thompson Not C. 1965 Birnie Is, Pacific Is. We searched the reef of Birnie for coelenterates and found the same one we had found on Howland and Mckan present. a small shark was seen as were several rays! There appears to be a small wlong of Sterna Juscala and Sterna lunda present. The S. Juscata proves on a second look to be only hovering around the island and not realing The nesting survey was runat 3pm With following results: Phaechon subricanda - 6 nesto = 1 egy each, later sur two none under rocks z legg rach. I nest hada small chiefe Inla dactylatra - 5 nesto z 2 eggo each I nesto i legg lach and I ment i a small young also 14 nestling areforend. Jula lencogaster. I mest 22053 The moon was to bright in p.m. to band brok so slept in early evening. During duck, several Paffins pacificus were observed flying by the uland, as were one or two observed flying over the wland in afternoon.

Journal Mat , 965 Birnie & Pacific Ocean 11 Feb Awoke at 2: 30 am to find moon just setting in west. Finally got crew around and set off to band birds. Doug and Ralph handled the blood sampling. I banded Terns. although there were alot of terns on the island they were Very spooling and hard to catch. I estimate the populations as: anous Stolidus - 2000 ± minutus - 500± Sterna lunata - 1000 ± Paffinus chermineni- 1 (banded) Sala dactifatia - Soot Aula leucogaster - 50-100 t Aggisalba- 100+ Procebsterna cerulea - 50+ Merrill returned from spinning blood at 1400. Amperature is very high today and everyone is suffering. The sat population, Rather exulan, seems to be fairly low This may account for the lange number of Aray-backed Terms prevent. The vegetation which is mostly Portulaca, Boochairia & Securium is closely cropped.

Journal Birnie J. Pacific Quan The population of Phaethon subricanda is fairly small. a group of 8 were son courting over the island. Whole population probably wit over 50. R.t. tropic bird O-G.B. Term Grayback Term OR.T. Tropile R.I. tropicloird 12 Fel Banded Common Moddies again last nite. The following is the banding record for Wedge-tail Shearwater - 5 (1st banded?) Audubon Shearwater - 2 (1st banded, Ispainen) I Return Red-tuiled Tropicbird - 13 banded and 3 seturus Blue-faced Booby - 23 Adults, Timm. 15 restlings, 5 unknown, 299 Returns 5 recoveries. Brown Booby - 16 Adults, 6 unature, 18 Return Dray-backed Tern - 86 banded Farry Tern - 31 adults 2 mettings, 7 returns Blue-gray Woddy - I banded Howanan Noddy- 20 banded, / return Common Nodaly - 402 landed 6 returns Wandering Tattles- 3 banded

Joural C. Mot C. Thompson . Mot C. 1965 Birnie Is Pacific Daan 12 Feb Ruddy Turnstone - 8 banded Aolden Rlover -Total 647 banded, 335 return, 5 recoveries, 2 Specimens Left Birnie Island at 0700 for Ender-Inderbury 2, Pacific Dean arrived at the reland at 1200. We are staying in an old abandon but which was used by guano diggers in the late 1800's. The island is roughly 1×3 mles. The surf was med and no trouble landing. We surveyed the island (southend) for rests and these will be included with the northend. In late afternoon we collected blood samples from boty Terns (50). The moon came up at 4: 30 p.m. also banded Red forted Boobies. 13 reb arose at 0430 this morning to bled birds. Sot 25 Blue faced Boshies and 25 Greater Frigate birds. Huber walked around the island taking the shorebut count and Woodword walked awand the lagoon. Merull took The blood to the ship to spin down and wel be back in the afternoon

The galle Samera II. End-forted haven Dhow Granter Frizelte ٣ Dout Ter -We wanted to be 6-1:55-0 line and the transferring of the second the Bart Schedeling of in the production of the second

Journal What C. Enderbury Is taufic Ocean 13 Feb Went to take survey of neats on north. side of house about 11 que. The breater Fugates are neating in mass in the Messerschnidtia. Quer 1000 nests were counted a few Red-forted Boobies are nesting there also. We banded Jula and went on up further north to the stand of loidia where blawanan noddies were nesting along with hela sula-Mesterday while banding the man 2 banded and adult with a newly hatched young the adult returned to the nest and promptly killed it. Doug says he has never seen this before a fairly large georp of forty Terns. an nesting on the porthand in about 3 distinct colonies. An estimated 100,000 mall 3. The southern most is just hatching young and thas a few in gin feathers. The others have older young. There is also the tring colony on the south end of The island with 5000 buds maybe. Hey are just haldning. Howit crabs were observed to ear the young. We came back to camp and the

Journal Not 1965 Enderbury Is Pacific Ocean 13 Feb beach party had come ashore. about 5p.m. the crew returned to the north end to band File and I banded on the south and with by m. and I went to the north end. We banded antil 11 p.m. all buids had to be caught with nets due to the moon. We watched about 1000 Hawaiian Moddies come in to roost. Banded I before they fled. Auber banded I audubon Shearwater and collected one. We took 25 samples of bloodfrom Sula sula this evening and managed 5 kill 4 birds doing it. Woodward & Kikpatrick helped this time for ex-14 Fel Left reland at 0 800 for ship to spin down blood. Hackman is suppose to band Meater Frigates and wing tag Them. Huber is skinning. Pucked up my camera and washed out some shorts and my t- shit. The blood spun down well and I got 25 deals of sera. The lab had alot of soot in it where the stack gas had come thry the vent.

Journal Enderbury & Pacific Vean 14 Feb arrived back at camp at 1315. Mary brought 20 men ashore for a beer party. About 1/2 Got bombed. Some of them while-find caught quite a few Red Anapper off the reef. In p.m. Long and I went and banded Sooty Terns and checked wing molt on 50. Coming back we found a Brown Booby nest with 2 young, a small & large. The small was out of the next so I put it back. Ho some had I gut it back than the lange of the Two began to nethodically push it from the next. This was repeated several time with I put the large one out of the next and the little one in. The larger Stayed In evening Hack and I walked over to the booty Tern colory and ded a molt check on 50 terns. We bended 50 more also. In locuing we broke up into 2 leans to band bala sula We returned about midnite. Our group bundled as sorty Terms & the other 500 chicks. The moon is still up all milt and prevents our doing any mas banding at mite,

Journal Enderbury Is Pacific Ocean 15 Feb For up at 0730 gr. m. and left at 0830 to band and put streamers op Greater frigates. about 180 were marked with blue band on right wing and white on left. We returned to camp about 1130 and went skin during. Beautiful reeflent quite sterile. Only a few coelenterates were found. We also saw a shark but very few large fish. The last beach party arrived about 1pm. Rather subdued brinch after yesterdays france. They left about 4 p.m. 5:45 p.m. we went down and netted 300 Sooty Tems in the south colon and bunded them. Take in evening we bried to catch Blue Jaced Books but had very little success considering the full moon. The clubs flew while we were 200° away. The Brown Booly chicks we watched yesterday are both still alive and the adult was brooking Them state in the evening. The larger one made no attempt this evening to push the other from the nest. Ralph bronght back some not find ducken from the ship and other provisions. The days are hot and evening what.

Journal Not 1963 Enderbury S, Pacific Ocean 16 Feb Kather dull day. Figured we had molested the frigates enough. Went over to east side of island in a.m. and took pictures of Messerschundetia and figales. about 1130 or 1230 we went out and looked for more of the coelenterates. We found quile a few but you have to look hard to find them. We also saw quite a few fish. Kale in p.m. we went down. and banded 200 Sooty Terms. Huber took 1000 bands twent to the north colonies to band chickes. after the sur went down we rounded up 115 returns on Blue faced Boobies and banded 15 new ones. I almost caught a lurles but mised when I jumped for it. Tomorrow at 0700 we depart for Carton Is, Filled L'Soty Terns while banding. Doing This evening we went out during an brief period of darkness and worked on Blue-faced Borbies.

Journal Not C. Thompse Canton & Pacific Dean Left Enderbury Is at 0700 this morning and arrived off lanton at 1030. We put a boat ashore at 1200. Upon arrival the island manager Mr. Steorge avery, Comm. USN KET. met us at the lock. He took us to a Mr. Clyde V. Preese who rented a jep to us for We drove along the airport road and counted birds. The following nop shows the location of the colonies, Tem Wadge-turled Shearnolter Common Hodoly on of The Arry- backs were incubating and also Some had chicks Hycown. I also saw one or two young just hatched. The 2 colonies probably contained nearly 10000 tords. a colony of Wedge-tailed Shearwaters were also found on the western shore of the island. We day out 14 and banded them. This induded I medum sized neathing.

Journal Not ,965 Canton I.s. Paafie Quan The colony consisted of perhaps 100 nests savities. Both lite phase & dak sphere were found but predominantly darke. The colony is about to sullo beyond the Paafic Missile Range Tracking Stationa Included in our saland total Today were also booty Terms nesting aniong the Gray backs. The pumber probably didn't lifeed 25 mesto although Deggs & Inesthings were found. about 2000 tommon noddies all nesting on Span Island. a few were seen flying around theisland. The following is the sest of the hit. Volden Klover -Wandering latter - 15 Red tailed Tropicbud 3 Ruddy Turnstone - 16 Hawaiian Wodby - 2 Brown Booky - 15+ Farry Torn . 4 Blue faced Booky- 10+ Adults & Imm. Jesser Frigale - 2 Left the island at 1815.
Journal Eurorte to Samoa -18 File Left Centon Is at 0400 this morning. at Sen watches were recurs at 0600 this morning. a gun watch was set up on the bow in the p.m. alst of birds were seen today. They included 982 birds in 104 sightings. This was 9.4 birds per sighting. atolat of 11 shearwater petrel were seen, no ked-Tailed Frozichisch were sighted. 8501 The sightings were terns in which we saw 10.9 Terns ger sighting. No shorebid were seen. 22 borbies were seen in 15 sightings or 1.46 per sighting. Fingate. birds sightings included 11 with 22 birds a total of 39 flocks were observed with 862 birds. 7 of the flocks were feeding with a total of 222 birds. Some of the Blue Jaced Boobies of -Served had black funt maskings on the breast. The ship passed within sight of Birnie S. about 0830 a.m. 19 Feb Watch commenced at 0633 this morning. agun watch was stood all day long. Only one bird was collected a Sooty Terri

Journal Not 1965 Erroute to Samoa 19 Feb ly me. This evening we pass within 20 mles of the Tokelan A. as of 1805 There is my sign of pickup in bird minhers. We have seen sather lange gives of Fairy Lerns and at least 2 rundentified petrels one of which may have been macronectes ggantea. The ather was a small getich which could have been Storodroma withing or possibly P. Solandri. It didn't come close enough to shoot.

Journal Not 1965 Fakaofo, Jokelan Is Pacific 26 Feb arrived here today at 1030. The chief Monton and Sargent of police came out & mest the boat. Ofter lunch we took 4 allage people and camped on a small. Juillage (2 p.m.) have and I went out & collect birds, Doug insets, Paul plants and the The following is a lest of bids observed by me: Egretta saera - Collected one along the lagoon and saw a while please one which I missed . harry also collected I doub phase. Several others were observed by Various people. The buil I collected had 4 collopsed follecles and an old brood patch . Frecata minoz - Common in the immediate Uninty of our camp. Roosting in Proona an estimated 400 in area. Sula leucogaster - Saw 3-5 in muebale



la Pangai O BNukus Tokikimoa O Fulatutas Tisungatu S Fulatutas Motutulatula O Tafola-elo Awtanop B Saumata fanga The summer of the second 32 3 Motu 1. A Solo Sakea Ferrição Miles Nantical 0 14 -112 FARAOFO ISLAND

Journal yor 1965 Fakaofo De, Telelan De. Parific 26 relvicinity of camp. They were also hoveling in Piconia. Gugis allow - Very common. One seen sitting on egg in Pandance Other seen carrying Jich. Iterna sumatrance An uncommon epicas. I only saw I but Huber killed 3 and saw others. Anone stolidus - have about no off the village but none around camp. Willage but none around camp. Comme minutes - a pair was observed catching fich and carrying them inhad. This was observed several times. Tarry

collected one Plutials dominica - Several individual observed around the island. 2 collected. harry paw one mothing. arenaria interpred- very common in flock of 5-10. I shot I with one what. These birds were in various stages of molt but all were notting. Heteroccelus incomm - Several individual's observed on coral reefs around the island. I collected Storna fuscata- I flying overhead. Said to next ly natives but little habitat.

Journal 1967 Fakaofo aldel Tokelan Is, Pachie Spent almost all day collecting finds on the windward selde of the caland, in the channel and in the Lagoon. The collection is a generally very poor but got 2- 2 driveno with fish. The atte de lagoon seefs are very goor on the iondurand side. We starv almost no large fish at all. In the late late afternoon we went to the frigatebind colony and collected 5 adult males Fregata ariel. No other winds were sen (minor). also collected I Sula leucogaster immature. Those birds were all reating in the Associa at night along with anous minutes (I coll.) and Gygio alba. The Prairie was about bo tall. The anous minute mumbered about 2-500 birds. We skinned birds until 11:30 p.m. also taken today were 1 Ducula pacifica and 1 Numerius takilinis. Larry said he saw a Crocethia alle and what he thought to be a Memerius phacopus at 1215 a.m. they finished cooking the crabo and Frigates of invited up to eat although they intended to take it home In suce.

Fakaofo atoll, Takelan Is, Paafie 28 Feb Broke camp and got underway about 0630. By-passed the village and went. Straight to the ship. Departed Fakaofs at 8:45 a.m. Nokunono atall, Tokelan Do. Pacific. 28 Fel-Sighted the caland about 1015 Looks like coconits from me end to the other. 2t is !!! We had visitors to the ship and talked over situation. Father Arlifinch a new Gealand griest helped with logistics. We used his boat on our motor and another boat with our motor. Jook us 1/4 hrs. to go 8 miles. We are situated on the furtherest island north called Tokeland Island. This wand still has some remement forest on it such as Presonia. The vielage is fairly Tiny and has 525 people. The ushand ist is on is fairly long with angle room for expansion as with the other relands the flies are very bad as our nos guitos. We arrived at camp about 4:30 pm.

annann mannannan and the summer to a Mumphimmetanimmetanimmetanimmetanimmetanimmetanimmetanimmetanimmetanimmetanimmetanimmetanimmetanimmetanimmetanim Flat. Reef N.W. Island (Fananava) Avakilikili Nuialemo Te Palaoa Laulania Puka Saumangalu Vini kanavataulotu Niututah Natoli halosuma (halo) Te Kamu Murr Sta Clump of brush Conception of the Nukunono 2008 Mataulanga The second stand of the second stands Ministration and a second second Motusanga LANDING (dangerous) Matautu (Vaitupu) S. E. John and (Punalei) May Puka alton www. Ahua Motufala Sinne Nantical Miles NOKUNONO ISLAND 士 女 0

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Journal Not 196 Tokelan 25 Nubunons alol, Jokelan Is Painte 28 Feb I completly forget about the radio check. a quick island survey shows the following Egretta sacra - Fairly common along the ocean shore. Both white and dark plane present. Fregata ariel - a few were seen off the north end of island but roosting colony not anous stolidus - Common around the island and coming in to roost at nite. The birds we collected showed evidence of coming into breeding conditions anous minutus - abundant the most Common tern around. a meeting along is located on the north end of the island in Preonia trees about to high. An estimated 150 nests were in the thee. I couldn't tell whether they had young on eggs. Cycis alba - also common freen carying fish into the forest. Sterna fuscata - 50% observed around the island. The one Collected seemed to be coming into breeding condition.

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the sta Journal Not . 1965 Toi law Is, Mulermons altell, Jokelan IS. Prafic 28 Feb Sterna sumstrang - One seen at the village on rocks. Heteroscelus incomum- I observed at orlkge and 1 at island. Arenaria interpres 2 seen along the la-goon. Larry saw 9 in same area Numerius talitiensis - 1 flying along reland in prom. Churialis dominica - at least 10 observed along the beaches. Dumla pacifica- I our 2 on westside fisland about 6:45 p.m. Everyone saw Alem today somethe common. Continued collecting activities today. Mr. Goldfinch arrived in morning and is spending the night. 2 Mar Returned to village in afternoon, about 4p.m. translend our gear to ship. This evening Father Goldfinch invited us to dinner & a dance. Returned To the ship I got underway at 1030 p.m. In Alafu. New maps of Tokelaw to maybe availably three Londs & Survey Dont. Welling ton



ATAFU ISLAND Nantical Miles 1 7 2 4 0

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Journal 1965 alofu Atal Jokelan Is Paafi 2 Mar We arrived here at 0930. Boat with officials came out to meet as. Dr. Servis was the spokes man. Soon as all decisions were reached we took the rafts & went to Fenuloa &. about a jellion natives homeding also. I collected fiels while Habert Merrill collected birds llong insects, halph rate 1 Paul plants. I didn't have much If a chance to look at birds. The layoon was very sterile for fish and we got very few. On the onter seefor Ferriton we got alst of new fish we hadn't ser on the other islands. It was a flat seef with live coul pools. These pools had abot of coral laters in them. We transferred our camp to a smaller waland in evening as it had been raining all day long and Their was no Jale on Femiloa. Boys got about 30 Virds today micheling a New Zealand Euckos. Ils. Semo come to the roland late in the evening of stayed le mite.

Journal 1965 atafu atoll, Takelan Is, Painfie 4 mar People went out collecting this morning. Rvery hectic morning in which we ended up menus a snorkel, my contact lens, batteries etc. People were robbing as wind. We returned to ship about 1230. The bird purming is in flouge fournal. We got underway for Jourisat 200 p.m. Convoite to Jawis. Jarvis Se, Pacific Ocan after looking for about an how we finally found the island about 4:30p.m. We got the boats in the water about 5p.m. Porpoises were playing around the boat I raft. The next wory was the landing. 8-10' waves were crashing into the channel. Once we got pass the channel we faced an abrupt rock wall 3'2 high which was pounded by waves. We dedit get the boat ashore. The next bout made it skay alas. We brought The old boat ashore & deflated it & took the motor ashore

1. A. Journal Jarvis 25 Pacific Ocean 2 march After moving werything to the house and straightening up we set out to band birds. The Sooty Terms were non-existent as far as banding goes. The ones that were present last trip were gone. Aappears That large numbers of terms have laid eggs in part but have abondon them. Several large Blue-faced Boothy clubs were present when we arrived. They were extremely skitish and very few were bundled. We did manage to land 210 out of 2500I. Réd-footed Boobies were present in 2 clubs of about 800 total. Istal island gope. lation is about 1000%. We bended 346. Greater Frigatebirds and Lesser Frigatebirds are present in low numbers. The Lesser Frigatebirds number about 3-500 hear the house & the Greaters Frigates about 200 near the guans gits. No attempt was nick to band either species, lats still abound on the island. We killed 4 This evening and saw more. Call have really upset the ecology of the islands. I also sur I mus muscales on the island fet

· . · · · · Journal Not 1965 Jarvis Is, Pacific Ocean & march Worked until 3:30 this morning. Mot. up at I and finished the banding records. Went back to sleep about 0830 and slept until 11 a.m. We did our mesting survey today. Left the house about 12 pm and returned about 4 p.m. It is gente a long walk around the island. Thesting survey adds up as follows: Blue-faced Booling - 11 nexts with eggs \$ I with young. Brown Booky - 69 nets with eggs and 34 nests with young. Red-forled Borby - 45 nests with eggs and 21 with young. Creater Erigate - 87 nests with leggs. all populations are down except Brown Boobies The vegetation on the island is esteedingly sparse and badly burneds Septurus is bidly burned up as is Tribulus. The antial depression is damp and the Summer is guen. This evening we are taking blood samples and hope for a good surf tomorrow.

Journal What 1965 Jarvis Js. Pacific Ocan 8 mar This evening we blod burd. about 25 Greater Frigatebirds, 25 desser Frigatebude, Red-foold Booly 25, Blue-fared Booky were done. We finished about 1:30 g.m 9 Mar Paul took the shorebuil asant today. Only Daw & Wandering Tattle and 25 Jolden Plover. The latter had a few in breeding plumage. Showers were all around the island today but failed to kit the island. Ralph hunted cats this afternoon and got one. I saw 2 this evening around The waland The moon set about 1130 p.m. so we deduit go out until 12 a.m. a couple of large dubs were present but they didn't hold very well so banding was poor. We stirted dragging backing about 4 a.m. Filled out bouding schechules today. 10 man Talked to ship this morning about 0800. Auf is worse than any place on Thip. 15 waves are pling in. git

Journal 965 Jarvis Is, Paafie Dean is like this tomorrow, we won't be going anywhere. And damy to the ship yesterday with swollaw inquinal lymph glands. He will stay aboard ship unit we leave tomorrow. Aackman also has swollen glando. These stern from Tuck biles gotten on Mckean Is. and are now infected. It is another windy day with the wind but of the northeast. The surf should be flat but it sure ain't. 13 more days to Went out this evening at 0115. Uk bandled the usual birds. We also got caught in a rain storm which must be the first That Jawis has chad in a long time. The ship came into puch us up but surf was to high to get off. Loaded the raft with our gear and pushed it in the inner reef tidal gool around to The lastride of the island. We mouraged To puch off and started the engine. The boot was partly fillated and the engine, went under the boat hilling the engine. The other

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Journal Jawis Dr. Pacific 11 march boat would have made it Fking They were cruising offshore and thew a line to us and towed up to the ship There waves that seemed sky high. Meedless to says we were all very happy to get to the ship safely. We departed for Xmas Is. at 1100. Christmas & Painfie assived of hondon about 0100. The plip got us ashow about 1030 a.m. Doug and crew went immedially to Moter Tabe To work. I went with the XO to meet Mr. Douglas Coole, waland manger. We rented a hand hover from him to take down the island. Charges us for petilonly. about 1230, Paul, al and I leave To The south sast and of the island. Lagoons are hard to get to there so came hack to the Soles hagoon on Power Way to work. We went out in a of man raft and surveyed the wands. Not much on any of them except The larger one on the couth end. This island had large numbers of frigutes Athle and shearwaters. We brended what we could

Journal 1965 Christmas Jarvis Sand, Pacific Ocean and got back to camp about Tp.m. The bilds abserved today were as follows: Palpinus gauficius a common meating species on the large island. a few banded. Therodroma alba - Many adults with young nearly fledged, many adults courling and a few setting on eggs. about 50 banded. nesting mainly under Leptures clumps. Pullimis nativitatis - Fairly common in same habitat a the Phoenix Island Vetrel. a few with young, loggs and others fust sonting Pullines iherisinerin - Saw only one and it was nesting on a small reland under a stone lege. Maybe fist nesting record for Xmas. Sterna lunata - about 50 pair nesting on small islands. Only one young found. Steran fuciate - Just starting to fledge yound in colonies along the num road. We counted at least 6 groups of many Thousand each. Some young already flying. W2 bunded 400 in evening but very lear of us and defpeult & catch.

Journal Christmas Island Paapic Vean 12 march Procesterna cerulia - maybe 30 on islands in the lagoon. Not to common & mo mests found. anous minutus - a few observed resting in low trees but definitely uncommon in area at the time. anous stalidus. about 10 nexts on the islands. Not a common neater but hinds observed at most times of day. I heard at note. Cucis alba - Only about 5-10 were seen in the lagoon nesting on Mconerschmidetia limber. Mumenue tahitiensis - Estimated atoll population 1000t. Very Common along the beach ridges. Largest concentration I have seen on whole trip. Pluvialis dominica - Only shore buck more common than the curlew. Total island Sopulation probably around 5000 -Heteroscelus incomm- most uncommon of the shorebordo. Maybe more common along beach edge. , 3 March Sout the rile at the Soles Lagoon. Reched up this morning to go to London Town and can wouldn't start. No mater what we did it wouldn't

1 Journal 1965 Christmas Island, Pacific Ocean 13 mar Start. So about Tam. Sjumped my bruge and started for town at 0820 I was at the airport aimst 20 miles away when they picked me up. a guy had happened by in a Land Rover and gave thema puch. No apparent reason for the can not starting. ate lunch with Mr. Cook and then started back to Tales Regoon with our notor for the boat. Left al at the airport to work. We drove nearly over to techia Lagoon to see what we could see. actually very little use going any further than Sales hagoon in search of burds. We visited One Island 3 miles west of here and it had a few audulion Shearwaters resting but very little else. A evening we come back to the lagoon and putted over to band birds. we also visited another usual which we had missed prevously. The she of the more starting things was the andubre Sheareraters sesting and a few nesting on the big island. I for the my no. 3 bands. The Wedge-tails were even

Journal not jabs Christmas Island Daifie Daan 13 mar more common them I originally suspailed yecterday but you had to dig them out. the file we banded about 2000 Phoenis So. Petrels and 75 Wedgetails. Paul also bould Frigates and Red-fooled Boobies. We returned to the car about 1030 p.m. Dead sence no sleep since 0200 this morning The small islands in Ales Lagron have rate on them. I saw at least one on the main islands. There didn't seem to be much effect on the bird populations 14-mar after a good mites seles we loaded the Rover and it wouldn't start. I took the hood off and let the sun hit it for a few minutes and it started straight away to borrow an English term. We headed for manula Jagoon to check the islands that Fred had looked at in November. white - throated Storm Petiels were outually finished mesting and only a few nexts were found. One or 2 were on eggs.

Journal 196 Christmas Is Pacific Vaan 14 mar Choening . Petrol. a few were seen on the islands but quite scarce. Mostly 12 grown chicks Wedge-tailed Shearwater - Fairly Common on "Scarf" island. Population estimated at 30 pairs. Christmas Dr. Skeerwater One or 2 bandled but fairly scarce. Brown Boolny - 3 next found, one with taggs, 12 2 aggs \$ 12 legg. Red-footed Booky - afew around the Common Modely - a few nests around but not common Proceliterna cerulea - lommon on the few islands. young & egge both present. Probably 200 to in lagoon Sterna lunata- about 250+ nesting on "Scarf" Island. Thalassens bergin - I near airport. Gygis alba - about 10 seen in whole Chris is Is. Warkler Saw & at anfield and they were singing. Yesterday I saw one near Carver Way.

Journal NOT 1965 Christmas Is, Pacific Dean The following is an account of all the birds seen on the main area of Xmas. Wedge-tailed Shearwater = 300-500 = resting. Phoenix So. Petrel - 700 = nesting - young b grown. eggs. Audubon Shearwater - 50-100%, resting. egge. white - throated Storm Petrel - 30 - eggs to nearly fledged-young. Christmas Se. Shearwater - 2007. nesting + Red-tailed Tropiclind - 50 ± 15 nests with aggs to large young Blue-Jaced Booky - 25± 1banded Red-forted Bosty - 200-3002. Some nesting. Brown Booky - 25x 3 nests. Greater Frigatebuid - 400 + 48 nests = 993. Large number of flying young. Golden Plover 5000 . Wandering Tuttles - 300I CRel, Brisele Thighed Curlew - 10005 Stoty Tern - 300,000 - large young

Journal Not 1960. Christmas & Pacific Ocean 14mar Seay-back Tern - 1000 t, 500 t nesto with egg. Connon Delly - 2007, 8 north. Alawaiian Noddy - 102, 2 nests Blue-gray Moddy - 400= somerto zeggs & young. Earry Tern - 205, 2 mesto. Christmas Is. Workler - Saw at least 3 around airport singing Crested Tem - 1 15 Mar Left the island about 100.m. for Palupa. Palmyra Is. Pacific Ogan 16 Mar We arrived this p.m. about 20 chock. Ranny and quite windy but cleaved in evening. This evening we bandled Sooty Terms and bled them. The population is fastache and covers the entrie runway from one and & the atles. I edinated it at about 500,000-1,000,000. Tomorrow we will examine it close. The buds are on eggs and the young are fund -halching. other birds abserved on the main island. around the camp one : Bristle - Highed

· · · · · · · Journal 1965 Palmyra & Pacific Ocan 16 Man Curlew 5, Bolden Place 20, Ruddy Turustone 2, Wandering Tattles 1. also sour Brown Boobies & Red-forled Boobies. This evening we banded Sooty Terms to the time of 3300. They were fairly junpy & hand to band. This morning we took the boat actors the lagoon to the otherside. We walked about 12 down the island to look at a yound for ducks. No ducks. We did whe a survey of shorebide along the coast an estima I to Brittle thighed lurlew, 20 wandering Tattles, 2 Rudely Turnstones 50 Golden Plover. The latter are mothing into breeding plermage, We also sour 2 while fuiled populard flying quile high toward the island. This lovening we finished up the Sotty Tern bands 1800 of Theme. 2 notice that some of the clicks medway down the island are large than the over just hatthing & run around on the ground,

1 11 Journal Palmyra S. Paafie Crean Went over to the islands near the channel & banded a few boolies today. Quite a few Hawaiian Modely Terms an Common Modely Terms realing on the uland. We managed 5 get 20 kedfooted Boobys banded. This evening we crossed the lagoon to the south end of the island and Ganded Red-forted Boobies there. We got around 280. The water was sunny nick deep and we finally got the boat to help us. dlick walked around the Sooty Tern colory and confined my estimate of the number of 1,000,000 in the Colony. Some rain fell this evening but it was generally a dry stay. 19 man Honey honey it is all over. We left palmyra at 0630 for the ship. The ship had 6 cases of Gethipsarcotofism the fairly bad but he pulled out of



NUMBER ELEVEN

(ISLAND REPORT)

BY

Max C. Thompson



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Date	Island	Depart	Arrive
January 24	Oahu	0900	1
February 5	Howland		0600
	Baker		1300
February 7	Baker	0630	
	Howland	1330	-
February 13	Hull		0630
		1300	
February 114	Enterbury		1300
February 16		0635	
February 18	Swain's Island	1130	0730
February 19	Samoa (Pago Pago)		0800
February 23		1130	

February 24	Swain's Island	1230	0830
February 27	Baker Island	*	1330
	Howland Island		1730
February 28	Baker Island	1830	
March 1	Howland Island	0730	
March 11	Christmas Island		0830
March 15		0345	
March 19	Oahu		2230

PRELIMINARY REPORT SIC NO. 11 (ISLAND)

by

Max C. Thompson

SIC 11 departed Honolulu with a complement of nine personnel aboard, including Max C. Thompson (Biologist-in-charge, island work), Richard S. Crossin (Biologist-in-charge, at-sea work), Brian Harrington, Norman Heryford, Robert DeLong, James Lewis, Dayle Husted, Frank Smith and Jeff Tordoff. Tordoff was returned to Honolulu from Canton Island due to illiness. DeLong returned to Honolulu from Pago Pago. The second half of the trip was made with a complement of seven personnel. Support was given by the USNS Shearwater (T-AG 177) with G. Krull, Master. The usual cooperation was received.

Bird populations were generally low. The first half of the trip resulted in the banding of approximately 900 birds. The second half of the trip showed an improvement with about 28,000 birds being banded, mainly on Christmas Island. The trip banding total of 28,755 was an all time low for the POBSP. This season of the year has consistently produced low banding totals and represents that period in which most of the birds are between nesting cycles. The second half of the trip was beginning to show signs of a population increase on Howland and this will be discussed below.

A brief summary of the island work and the more important elements in the avifauna are discussed below. Tables listing the different complilations from the islands can be found at the back of the report.

Howland Island

After an absence of nearly one full year, Sooty Terns were again swirling over the island. The following is a daily activity account showing the swirling behavior and number of birds:

6 February

- Small swirl over SE end of island (30). 1530
- 11 11 (75). 1555
- Swirl broke up. 1610
- Swirl forming over SE end of island (125). 1640
- Swirl Broke up. 1700
- Swirl alternately breaking and forming. 1705
- Swirl over end of island contains 250 birds. 1725
- Swirl over sea west of island (100). 1745
- 1810 SE swirl has 1000 birds.

W swirl has 250 birds

Much interchange between swirls. New swirl over lighthouse (200). 1830 Three swirls now present.

1830-0130

1.604

NAME OF TAXABLE PARTY.

Swirls amalgamated into SE swirl and swirl over lighthouse. Each swirl probably had 2-3000 birds. Birds departed from the island at 0130. 28 February

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Many terns still calling over the lighthouse. 0200 Only a few terns were calling. 0300

0400 No terns present.

0400-1530

Occasionally Sooty Terns were seen flying over the island, but rarely more than 3-4 at one time.

- 1530 30 terns flew over lighthouse but back to sea.
- 1550 50[±] off west shore, 100[±] off SE shore both groups moved over land and then back to sea.
- 1558 SE swirl again moved over land but moved back to sea shortly.
- 1603 SE swirl broke up but immediately started reforming over water.
- 1605 W swirl (50) came in over island and formed a loose swirl.
- 1700 200 terns in swirl over center of island; 300 terns over SE section; 100 terns off W shore. Groups forming and breaking up constantly.
 1800 1000 terns over SE shore; 500 over S end; 500 over lighthouse. Groups appear to be stabilizing.
 1900 Two southern swirls merged and single group (5000+) over SE shore; 1500 over lighthouse. Impossible to estimate numbers after dark but calling and flying around the island again ceased around 0300.
 From past behavior of Sooty Terns we feel certain that the terns will be down within a month or two to begin a new nesting cycle.

The second trip shows that the Howland nesting season was

beginning in earnest. The Blue-faced Booby nests had increased within a month from 49 nest to 111; Red-footed Booby 15 to 21 and the Great Frigatebird from 0 to 11. The shorebird survey showed an increase in the number of birds of the three species recorded.

Baker Island

Baker Island continues to show little bird activity except for the Common Noddy Tern breeding at the lagoon on the east side of the island. On both visits this trip a small Bluefaced Booby club was found on the south shore of the island.

Approximately 400 Common Noddy Terns were utilizing the lagoon nesting area. There were 25 eggs found on the island in early February and 92 in late February. The young in early February numbered 70 and in late February 19. A total of 65 young and 33 adults were banded.

The daily activity on Baker Island was limited to a few

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Sooty Terns and frigatebirds flying overhead with Blue-faced Boobies gathering in a small club on the south side of the island in the evening. There were no Blue-faced Boobies banded during the first visit of SIC 11 but 10 were banded out of 40 handled the second visit.

The shorebird population was generally down from early February except for the Ruddy Turnstones which increased in number from 159 to 200+.

The House Mouse populations were high both trips and six blood pools were taken.

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The weather machines set up in early February functioned

poorly and only one machine recorded any usable data. This record showed the wind to blow generally from the northeast during the month of February at a speed of 10 mph. The machines were reset but only one was working and one was removed from the island.

Hull Island

Approximately four hours were spent on the island to determine if Sooty Terns were breeding. They were not but swirls over the island indicated that possibly they may be by early April. A swirl of 3000 was noted over the lagoon in the morning.

Fourteen species of birds were seen on the island including a New Zealand Cuckoo, <u>Eudynamys taitensis</u>. This was the first record of this species for the island. Also seven Crested Terns were seen flying around the atoll. This species

is not common in the Phoenix Island group.

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Enderbury Island

Enderbury Island showed signs of recent rains with the central depression containing approximately 10 acres of water. The islands in the depression were flooded, preventing some of the usual birds from nesting, i.e. Common Noddy Tern and Graybacked Tern. The water attracted large numbers of shorebirds with 544 Golden Plovers, 627 Ruddy Turnstones, 74 Wandering Tattler and 35 Bristle-thighed Curlews. Also three Pintail Ducks were seen.

Although Sooty Terns were not nesting, there were at least two small groups on the ground and an estimated 5000 swirling

over the island. These birds should be coming down in a few weeks to breed.

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Only two small clubs of Blue-faced Boobies were seen on the island and no evidence of breeding was observed.

Most of the time was spent banding Great Frigatebirds and a few Lesser Frigatebirds. The Great Frigatebird colony numbered approximately 5000 birds of which 80 nests were found. The Lesser Frigatebirds had apparently just finished the breeding season as nearly all birds banded were immatures. The Greater Frigatebirds appeared to be going into another nesting cycle as many displaying males were seen.

The usual roosting population of Hawaiian Noddy Terns was roosting in the Cordia at the north end of the island. Bluegray Noddies were seen regularly around the central depression and one flock of 35 was seen resting in the Sesuvium.

Swain's Island

An emergency stop was made at Swain's Island to take in supplies for the people. The hurricane that struck in late January had destroyed most of their basic supplies. About 8 hours total was spent on the island on both stops. The island was small and entirely covered with coconuts with what indigenous vegetation that was left, growing underneath. A few large Pisonia were present and several other trees which could not be identified.

The mammals taken on the island were Rattus exulans and were collected with .22 dust shot. These animals were abundant on the island and were seen running in and out of the

piles of coconut husks.

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The birds on the island consisted of nine species. Since this is the first visit to this island, a species account follows:

Golden Plover--Common around the periphery of the island and along the trails in the coconuts. One was collected out of an estimated 50 seen.

Ruddy Turnstone--Several small flocks were seen feeding on the reef surrounding the island. The total island population was estimated to be 60.

Wandering Tattler--This species was seen singly feeding along the outer reef at low tide. It was not nearly as common as the two former species with only 30 being seen. Sanderling--One bird collected on the south side of the island on sand beach.

Common Noddy Tern--Abundant in the coconuts where many were

seen sitting on the fronds. It was undoubtedly breeding there as the five specimens taken had brood patches.

Hawaiian Noddy Tern--This species was not common and only 200 were seen feeding around the reef. It undoubtedly occurs in larger numbers during the breeding season as the habitat is nearly like that of the Tokelau Islands where it was breeding in abundance.

Sooty Tern--Three birds were recorded from the island on the last trip as the ship was departing. Fairy Tern--The most abundant bird on the island. The population was estimated to be 3000. Several were seen sitting in <u>Pandanus</u> and were thought to be incubating eggs.
New Zealand Cuckoo--This species although not unexpected, was certainly not expected in the numbers seen. We estimated a population of 50 on the island. This seems an exceptionally early migration date but the literature has not been surveyed.

The island had no bandable bird populations.

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Christmas Island

Since an extra day was picked up during the course of the trip, we spent four days on Christmas Island instead of the intended three. The Sooty Tern populations were just completing the breeding cycle and had many flying young. Two colonies were investigated and worked, i.e. Four Wells at the north end of the island (probably formerly called Northwest Point but several miles east of there) and one at the southern end of the island at Aeon Point. There was another colony at Isles Lagoon area but it was not investigated. Both colonies worked, probably had an aggregate of 350,000 birds. We banded 27729 Sooty Terns in four nights banding. Fifty-one returns from birds banded in July 1965 were obtained at Four Wells.

The three main islands in the lagoon were worked but briefly. One full night was spent on Motu Upua to bleed and band petrels and shearwaters. The Phoenix Island Petrel and Christmas Island Shearwater were both in various stages of the breeding cycle from fresh eggs to fledged young. The Christmas Island Shearwaters were also in the same stage. The Wedge-tailed Shearwater were present but not breeding except for one pair which had a 3/4 grown chick in a burrow. Motu Tabu was worked briefly one afternoon for shearwater/petrels and Cook Island was visited about one hour to determine whether the Sooty Terns were breeding there now or not. The colony was just finishing and had 3 young left. The Crested Tern colony had also just finished up and only two large young remained.

Isles Lagoon and Manula Lagoon were not surveyed due to insufficient time.

A folder containing all of the bird information from the District Commissioners files on Christmas Island was given to us by the Commissioner (for a fee of \$20).



Table 1. Banding

	Howland	Baker	Enderbury	Christmas
Wedge-tailed Shearwater				254
Chriatmas Island Shearwater				125
Phoenix Island Petrel				532
Red-tailed Tropicbird				1
Blue-faced Booby	5	10		
Brown Booby	9		24	
Red-footed Booby	64		89	
Great Frigatebird	18		576	
Lesser Frigatebird		e i i	140	
Golden Plover			1	
Sooty Tern				26800
Common Noddy Tern		98		
Fairy Tern				18

Blue-gray Noddy Tern

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ISLAND TOTAL 96 108 831 27730

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GRAND TOTAL 28765

Table 2. Returns

	Howland	Baker	Enderbury	Christmas
Wedge-tailed Shearwater				27
Christmas Island Shearwater				22
Phoenix Island Petrel				45
Red-tailed Tropicbird			1	
Blue-faced Booby	168	37	111	
Brown Booby	2			
Red-footed Booby	25		66	
Great Frigatebird	1			
Sooty Tern				51
Common Noddy Tern		5		
ISLAND TOTAL	196	42	178	145
GRAND TOTAL 561				

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Table 3. Recoveries

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Table 4. Blood Samples

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	Howland	Baker	Hull	Enderbury	Christmas
Wedge-tailed Shearwater					30
Christmas Island Shearwater					23
Phoenix Island Petrel					33
Blue-faced Booby	132	5		110	
Brown Booby	9				
Red-footed Booby	48			25	
Great Frigatebird	13			70	
Lesser Frigatebird				1	
Ruddy Turnstone		2			
Sooty Tern			2		105
Common Noddy Tern		1			5
House Mouse		6			
ISLAND TOTAL	202	14	2	206	196

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Table 5. Specimens Collected

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Howland Baker Hull Enderbury Christmas Swain's Golden Plover 1 3 2 Ruddy Turnstone Wandering Tattler 1 1 Bristle-thighed Curlew 1 Sanderling 3 50 Sooty Tern 5 5 Common Noddy Tern 1 Hawaiian Noddy Tern 5 Fairy Tern 2 Crested Tern 1 4 1 1 New Zealand Cuckoo 2 Line Island Warbler 4 House Mouse 12 Polynesian Rat 26 60 6 0 7 2 ISLAND TOTAL 59 . -102 GRAND TOTAL 100

M.Thompson Field notes from SIC 12 H

Howland Island - 6 April

We arrived off Howland Island at 1930 and put the skiff ashore to collect Sooty Terns. I returned to the ship at 2300. While I was gone they collected on board. These specimens were taken for nasal mite samples.

Howland Island - 7 April

A 30' survey was made offshore this morning at 0630. Most of the birds had left the vicinity by that time. The actual departure times were not noted due to an error in records.

Enderbury Island - 13 April

Arrived at the island at 0900. Tje Sooty Terns were swirling over the island but werent on the ground to stay. Other birds werent present in any numbers except frigatebirds. The central lagoon was about 6-12" lower than it was in March. However the vegetation was green indicating continuing rainfall. We banded Lesser and AGreater Frigatebirds, Red-footed Boobies and a few Gray-backed Terns and Noddies.

Enderbury Island - 14 April

After looking over the situation we decided to pull out this morning and head for Phoenix Island. Departed at 0900.

Phoenix Island - 14 April

Arrived at 1300 on the island. Lots of birds but Sooty Terns werent on the ground. They have just finished breeding (See Sooty aTerns). We worked the island for blood samples and banded several species of birds. The central depression had about 5 acres of water. Vegetation is luxuriant and two small rain showers fell today. Winds are NE and a very low surf provided ideal landing conditions.

Phoenix Island - 15 April

This monring I sent the blood to the ship about 0830 and we then took the nest survey and shorebird count. at least Six <u>Erolia</u> were seen on the count including <u>melanotos</u> and <u>acuminata</u>. Gnererally speaking there were very few nests and lots of curlews.

Hull Island - 16 April

Arrived here about 1100. We went in and surveyed the island but no Sooty Terns so departed about 1400

McKean Island - 17-18 April

Arrived here about 1100. Nice calm landing. Vegetation on the island was very dense compared to last year in March. The Sida around the ruins is so dense the Sooty Terns could hever get down. We had rain this evening, a general rain and not just a shower. Probably 100,000 Sooty Terns over the island. The central M. Thompson Field notes from SIC 12

McKean Island - 17-18 April (cont.)

depression had about 1 foot of water in it. Departed the island at 0730 the 19th.

M.Thompson Species Accounts

Phoenix Island - 14-15 April

Pterodroma alba: Present in low numbers. About 8 were banded. Population 25+

Puffinus pacificus : Common. The nesting season is advanced with young in each burrow examined. One pair observed copulating. One club of 50+ birds was found and 43 banded. Population 3000 +

Puffinus nativitatus : This species was in all stages of breeding from fresh eggs to 3/4 grown young. Most common just above the beach crest in the coral rocks. A few around the lagoon area where nesting sites were available. Population 1000 +

Puffinus lherminieri : Abundant around the beach crest. Most all nests had fresh eggs but at least one had a 3/4 grown young. Population 1000+

Nesofregetta albigularis : Present in the dense stands of grass on the west side of the island. They are using old Wedge-tail burrows under the grass. Population 350 +. 1 dark phage collected

Phaethon rubricauda : Quite a few seen and had eggs and young. Some of the eggs were quite fresh.

Sula dactylatra : Boobies were quite numerous with at least one club on the west side of the island. We took 75 blood samples. Very few nests. Population 500+

Sula lecuogaster: A few nests and birds observed but very uncommon. Island population 50+

Sula sula : A few dotted around the island but only 10-20 total

Fregataminor : A few nesting on SE side of island. Area on NW side of island still has a few young thought to be this species on the ground. They werent banded becasue of poor health. Many dead young around. Population 1000+

Fregata ariel: Large flock (500 +) over SE corner of island over Greater colony. No known nests.

Pluvialis dominica : Several seen around the island. Many in mottled plumage (47)

Arenaria interpres : (14 April) Not too common but small groups observed. Most in breeding plumage. (15 April) Count was 46

Heteroscelus incanum -- No entry in notes

Numenius tahitiensis : Still present. High density population. 1313