June 13, 1964

Wash DC. PM - Honolulu - PM.

The trip to Honolulu was eventful, and now at 10:30 PM. - (4 AM, June 13, Wash time) I tried to piece together the events of the day. After a private breakfast we left Smithsonian in time to be on time - left Baltimore on schedule for Chicago & point west. On the trip to Chicago in the baggage car we filled a bag with some dressing and after a brief game of 20 questions I decided it was a wooden doll. We were.

From Chicago to L.A. was interesting. The trip over the Rockies most fascinating. We flew over Grand Canyon, in the plane we could get a full view of the scene - fantastic. As we crossed the Sierra Nevada, I had a quick change job, changing from typical clothes into hiking trousers. The view was amazing. To the tune of Hawaiian music, we flew from L.A. to the lovely approach to the islands great 1st sight. We were to the sound on each side. Then the Molokai Towers against small rocks & ocean. Unbelievable! I heard a passenger engine met by Mrs. Elzy, with friendly hand.
us (Dale Hunter & I) over to the capable
media of 7th Fleet. We still haven't
received the cash at 1000 - to
offshore islands for more manana.
12 June 1960
Fri.

Awakened a 0600 by a persistent calling that wouldn't stop. Turned out to be Barred Owls. Also the noisy chatter of the Myrm contingent was a companionable dawn calling.

Went to Tantalus before our trip to Popoia Island. There we found the Pelagic, Rarotonga, Elypia, & a White-eye. All were common except the Elypia which was somewhat restricted to the higher elevations. Tantalus affords an excellent view of Deiend and in the distances, the Kauai, and over the mountains to the west. Back after little over one hour to count a band on offshore islands.

Picked up game at Deiend, home & out of to Popoia. The island is small, at low, no point reaching more than 8', where high tide. It is separated from mainland by about 300 yards of shallow water. As we approached (2 1700) we could see 2 Wedge-Tails flying low, hollering over the island. They were not at all nervous. We stayed quite near, more than 5 or 6 in air at one time until it was quite dark. Warner mentioned that last month of this time they were much more common perhaps 10-15 lines may as now. Warner, Courtney & I then in progress, whereas now most nests (9 out of 10 dead) contained 1 egg.

1st few the Bulimis fledgling began calling.
1. Barred Dove
2. Merah
3. Leiothrix
4. Rice bird
5. Eloping
6. White-eye
7. Wedge-tailed Shearwater
8. Bulwer's Petrel
Within their burrows, a dig-like cell that, when filled,Sinkers, facilitating location of the burrow. We went out these well-concealed burrows, Sandy's & of them. We also managed to find 2 of the very flightyWedge-tails.

Topia is very flat, an arch of gradually porous sand,covered with the holes are, actually, some stems like, running throughout the island, & lined with stiff coral projections into the openings. A better island for Procellaria, couldn't be devised, at least from the standpoint of its porosity.

Were the 1st Procellaria's nests in cavities, like these? Did burrow digging evolve from this earlier habituation of natural burrows?

Many dead birds were in evidence, perhaps because of some disease — some probably due to human interference. Women noted smaller birds on their tracks & quizzing, probably for some disease.
13 June 1944 - Sat.

Today brought the further acquirement of some more of Darwin's birds, as well as the finding of

wife tomorrow.

Originally we had planned a trip to the offshore

island - Modern Mann, but we could not

get accommodations boat in time for the trip. As

a consequence, we left at about 11.30 from

Kaeper Beach, for Maranui (Rabbit) Island.

We had an hour's wait for the boat to

call to Sand Beach (Wanaka) for a quick

dip, the sun was heavy (25' thermometer) &

managed to top us up a bit. We got back to

boat, saw Grasshopper Cardinal, feeling a young

the young have brown heads), & left for Maranui,

finding only the rather good fishing through

the reef.

Maranui - 4 breeding birds

1. Kook Taka - 3,100,000 - grey well advanced,

most will be flying within a week.

2. Hedg. Taka - Whiter - estimate 25,000, not

have started breaking, eggs + small gosling

in evidence - one with large gosling.

The most advanced Waddie (A newly hatched)

have grey, some older than the latest influx

where oldest are still small.

The Waddies mostly around the edges of the
9. Brazilian Crested Cardinal

10. Sooty Terns
11. Common Noddies
12. Greater Frigatebird
13. Red-footed Booby
17 June 1964 (Cont.)

Old crate, whereas Sorty Terns are around the
island below this level.

3. Wedge-tailed Shearwater — Crate, bottom
filled, Warren estimates 25.000 p.
Most now have eggs — 1 egg laid in
barn ground — Bearder near

4. Bulwer’s Petrel — 4 by 5 found, located by
Calling from barn — with eggs.
The throat is puffed out before the call is
Produced. All black petrel.

Flying over — saw few Red-footed Boobies —
(white tail) in area

Over Kelpa — 5 Frigate birds
were seen coming.

One among Noddy characteristic — that
appears to be a polymorphism in the chick, this being
either partly grey or solid brown. I would try to
estimate ratio today, but apparently it is 1:1.

Celestial advantage? Gravity of this?
14 June 1964

Marzana Is. – Oahu

Sun.

Left Kaua'i 0700 for Marzana, stayed until 1700. Banded sporty Laysan young – King, Hooted, Eg. at 1000. Banded 1900 birds at 0900. We saw a Noddy (common) with an Orange Throat – a Johnston Island bird. This is the first record of any Johnston bird turning up on the offshore islands.

Some of the young sporty – are almost flying. Catching them down was difficult.

Across streets – common sight – 2 birds flying together over the island again and again. What is junction – a courtship flight? Most Noddies have one egg on very small young.

Also seen today – Wanderer, Maltheron (1)

Friends over Kapa'a

Red-footed Booby, in channel between Rabbit & Kala.
No trips today. The way, however, I have heard that Fairymen are to be found on Cocon Island. Perhaps I shall try to find them.

Now all's Shearwater, must nest somewhere on Pukun. The are to be looked for in the Waiake Range - perhaps, hope with meaning, they have been found in Hokianga Harbour.

Attracted by the light? Women spent all night looking for them without success.

Oh! Makapu Pt. 2 years ago this was!

And please, Shearwater. Nest again three years. They are very delicate, still have white tail 0.24 feet. As you go South (Kohe), to Five Anchor Islands, the proportion of dark plumage birds increases tremendously. What is the function of this change in plumage? The same?

Wedge-tailed Shearwater is true for the Wedge-tailed Albatross.
16 June 1964

KULIOUOU SWAMP
Kupa Pond
Coco Head

1045 KULIOUOU SWAMP - Highly Cut Marshes
Arroyos (not dense), mostly open and flat
Trees out... mud and afternoon
Black - naked - 50
Golden Plover - 10 (2 in will break plume)
Wanderer Tattler - 2

1120 KUPA POND - Very dense, / part due to
construction all about. saw only Black crowned
Night Herons - 6

1215 - 1500 Coco Head - Stayed all day
in bloody crater, through the mosquitoes (?) in
embracing over cliffs & about. saw no Fawny
Terns, which was object of search. Managed
to get 2 or 3 more stumps instead of rich
in my troubles. 6 Fawny Terns were seen in
cliffs by Mike Ord & Warren King earlier this
month.

In area. - Merriam's Rail (2), Island Crow,
Chinese Spotted Dove, Zebra Dove, Pigeon,
Brown-Eared Bulbul, 2 Passer Domesticus game
16. Black-necked Stilt
16. Golden Plover
17. Black-crowned Night Heron
18. Mockingbird
19. Chinese-Spotted Plover
20. English Sparrow
17 June 1964

Bishop Museum

Spent the day in Bishop Museum looking up info. on the Gilberts & Marshallis.

In Museum came other cases on albino English Sparrows - the native ones tend to be pure white. Various people have mentioned that albino seems more common here than in other areas.
18 June 1964

Maihina Island

Left camp at 0830 and walked 4/ mile up beach to Kalamau Pt. All our gear was in a waterproof (almost) plastic bag. The island lies only about 400′ offshore, it is easily landed to.

A current from E to W. Works through the channel, narrows, canals, and so on. In keeping this may be of importance.

No birds were in the area when we arrived at island (1900). None were able to appear our land before dark, and only 2 or 3 did before we left. Nest at N. end of island. (Wedge-tailed Shearwaters) hard to find, a bird handled twice to realize abandoned area. Near Cabin (S. W. end of island).

There is some wood, & the Wedge-Tailed Shearwater lives in these. They can be handled & stuffed back into bag. No will not abandon the egg. Biwa are not dense, scattered over the island, may in open or under trees, or under rocks; or 3000′ or more, or beach.

Birds handled: 615 - 15626 - 32 (17 birds)

Birds handled with bands: 544 - 45408

6 - 45416
6 - 45478
65 - 03961
6 - 03703
61 - 15

Of 13 birds in hand, 6 were handled previously.

We can use this data to estimate island population.
18 June 1964

inland

\[ \frac{\text{not banded}}{\text{total}} = \frac{\text{of banded}}{\text{total banded}} \]

\[ \% = \frac{X}{100} \]

No Schaekels, no nets.

All birds were in burrows except one, which
was sitting outside burrow occupied by bird with
egg.

5 other birds were checked to see if they had
eggs. Of the 18 birds checked in burrows, 14 were
on eggs.
19 June 1964  Fri

NW Coast to survey offshore islands AM

Took a good look at islands along NW coast.
Many uninhabited islands looked approachable. Fed up with flying huge distances.
PM — Dr. Elz's house — swimming

20 June 1964  Sat

AM — Met Leventer & Dr. Elz & Pat Gould

PM — Afternoon off. Went to Tantaly where managed to find my 1st Drapanid — the Agapanora. Fantastic country in that trail area.
21. Программа

См. 50, 51
21 June 1964

Moku Moku

Undoubtedly the gem of Oahu, the heart of the island itself. What a fantastic area.
We left Kaneohe Bay 1000, I think the time, encumbering very heavy smelly, whitecaps were past the reef. Must have been 8-10', high irregular swells.

**At island, lee side landing area was relating calm water drops to cover 100', sheer. We mean of algae material in waterproof rubber bag. No leakage.**

We used face masks to see what we were doing a real aid, as one can see where to place feet as the swell washes in. A hundred feet below huge fish swim as we approach landing easy in spite of swell on open sea—good to watch.

** Species breakdown:**

1) Wedge tailed shearwater - It's very difficult to estimate, birds in barren all over island, prob. 2,000 pairs 100%. Many birds directly under red-footed booby nest. Most (70%) were incubating fresh eggs.

2) Kaua Island albatross - 20 ± 10 pairs

Restricted to scrub at top pt on west end of island. Very large but with no contour feathery development as yet.
Christmas Island Shrenwater
Blue-Footed Booby
Brown Booby
Gray-breasted Tern
Hawaiian Noddr
21 June

Bullock's Petrel — Saw 1 only.

1. Nest on egg, deep within burrow 6’ back in cliff side.

2. Blue-footed Booby — 1 pair

Incubating 2 eggs, 1 Western and 1 Eastern, were seen from shore, watch continued to incubate the 2 eggs.


Few eggs, mostly with young that have well developed plumage & color.

4. Red-footed Booby — 400–100 nests

Most with young, numerous & regular

Many few to eggs to naked young. One egg in process of hatching as we arrived on nest.

5. Great Frigatebird — 400–50

No nests, searched all about miles of island. At our approach, they flew to wind of 1st piece of island, headed there. Three males, 3 females, and several sample counts — 70 on 4-7 to 10 at 900.

6. Wandering Tattler — 1 on E beach area
9) Eudyptes chrysolophus Linnaeus, 1758
20 ± 5
I located many young, flew around area.
They occurred in S. central area near tide line.

10) Eudyptes chrysolophus Linnaeus, 1758
15,000 ± 5,000
 Everywhere on island, most young highly visible.
In the evening, many young were seen in the sea.
Two large flocks attracted numerous young, some adult birds.

11) Sula dactylatra Linnaeus, 1758
3,000 ± 2,000
Most on eggs - standing next to higher prep. of
young on top. Small young. Flying young
were also seen.

12) Harcourtia novaehollandiae
3,000 ± 200
North, several young, many nests in a
around lane. Nest of island.

13) Large Turtle
(30?), about 3½ - 4' long,
swimming off N. side.
To south island - 3 large (greater than 5')
sharks seen. Apparently hanging around
island.
22 June 1964

Pearl Harbor, Hebron Field, Dr. Ely's.

Red Tape AM - getting tickets for midnight flight.
PM - paper work - bored again.

23 June 1964

Hebron AM - Order for midnight flight.
POPOIA - 1700-2130.

With Mr. Nelson, Mr. Miller, Mr. Woodard.
Together we: 1) banded 65 Wedgetails
2) 9 Blandings
3) collected 13 blood samples.

She method for collecting blood involves:

- heart puncture, none of the birds died.
- Wedgetail, heart lies up against sternum +
  3" or so up under breast. Tiny needle required.
- When heart position is cleared, blood sample may
  be easily taken.

3 - recoveries (1 chick phase)

24 June 1964

Mokoli'i Island (Chimpanzee Hot)

Woke up AM for trip to Moku. Reflew to

Wedgetail, saw 3 - Augenite birds - White -

Tried to see birds - my nomination for the

loveliest nee bird. Perhaps 150 Wedgetail

meets on island.
White-tailed Tropic-bird
25 June 1964

In town - Left, chatted, red tape, For record - 2nd copy

Spent to date:

$74.50

11:30 (Taxi, check in)
1:00 Cab
2:50 Bus

58.76 Car rental - Honolulu
5.00

.25 Parking
15.32 Cab
.57 3 in 1 oil
71.06 Car rental

68.52

26 June 1964

Honolulu - Midway

6:30 AMTS at 0800, flight took off at 0940. We had excellent views of Kauai, Niihau, Pearl & Bermuda, and Midway Island as we flew up. Off Niihau, there is a beautiful crescentic island that may be a good bird island. Pearl & Bermuda, looked as though there was little or no shore land protein, although we couldn't see out. No clouds. They still were unbelievable in their situation & their colors. I would certainly like to be able to do spending in one of them.

Flying by Midway, we could see great #s...
23. Red-tailed Tropic bird
24. Layson Albatross
25. Black-footed Albatross
26. Peary Tern
32. Ruddy Turnstone
33. Fern Pigeon
26 June 1964

of Leyman Hill next day facing toward the island like spokes on a wheel. Also, most conspicuous of all were the 1000’s of Red-Tailed Tropicbirds that were coming over the island. I have seen petrel
head poppers stuck to people, but I was totally
unprepared for the sight of the grebes everywhere.
On lawns, people’s patios, in the road (they have
right of way) — thousands of them. Most goers are
about ready to fly — approaching the pt. Of
experimenting with their wings the air is filled
with the cries of flocks of Frigate Birds — Hawaiian
Noddy, with the Tropic Birds flying above them.
Ferling still is very much a bird colony.

LAYSAN ALBATROSS — most young men to posh
some getting off the ground, down retail in
main body to reach a head.

BLACK-FOOTED ALBATROSS — far seen my about 10
birds, seem more advanced than the LAYSAN.
Perhaps my going has left none in the main
breeding area, others seen were in open areas near runway.

RED-TAILED TROPIC BIRD — seem related to
notches of portions, areas away from densely populated
spots, where they are numerous, nesting within
5’-10’ of one another. Nest with small conical
eggs or pecked during young. Two young with certain
feathers.
26 June cat

Hawaiian Noddy - In colonies (1 by 30 by) in
Exuma Marine Park, most on north side, I am not
yet sure of their breeding status.

Sooty Tern - Spreads over colonies, most birds not
breeding. 2 Terns with eggs seen, I
bird flying with food. Height of breeding
season over? or beginning? At least
2-3,000 birds.

Golden Plover - 50-10 birds seen on East
Grotto Island - immense #5's on Eastern
portion of island.

Ruddy Turnstone - 40-50 birds, one area 40
seen flying on sand.

Wandering Tattler - 2, with Ruddy Turnstone.

Fiscal Pigeon - Fledged 6's, mostly white birds
scattered sparsely over island.

Sea Turtle - 2 seen, one baby - small (32"

2 or more islands near Channel
mouth, 1 swimming just N of rocks.
27 June 1964

Eastern Island - Midway A.

Left land 0730 on landing craft for Eastern.
Saw island, then started walking. The entire island is a bird colony with large numbers of species. No avians (abandoned) are almost vacant, no birds utilizing them. Open country with scattered low shrubs having some Tomy. Albations. With more brush in, we find Red-footed Boobies, Frigate
Tropic-birds, & Wedgetails in addition to Albations.
An absolutely fantastic scene.

B LAYSAN ALBATROSS - same status as on
Sand, May, young trying to fly. We collected
blood samples from 50 adults with
fetal fat. Adult, few & for hatching, young
coming in to feed young before flying again.
Stomach contents of one included both fish & squid.
May dead on road, hand
recovered.
Black-footed Albatross - No adults seen. Young
scattered & generally around edge of island,
most all were trying to fly, some banded.
The bulk of the pop - has paved. Left island.

Wedgetailed Shearwater - Abundant in bourns under
Seaweed & other thick vegetation. Found under
most pieces of completed metal mooring.
Blood collected from 50 birds, 1 died.
specimen.
None seen flying over
island. Almost all swimming, 18 with
will egg in conduit. On many, most on S. side, fewer on N. side.


Ruffins' habitations (?) - One bird seen briefly in flight thought to be this species.


Frigate Bird - 30-50 seen recently in casting trees, we were seen, attacked on boat. Seen God, what rough play!

Red-footed Booby - Several hundred nests in several. Most young on ledge getting prisoners, said naked young seen. Called "Blue Bill" by Waye.


Masked Booby - Saw 1 p.m. apparently 4 pairs on island. Did not see egg or young, but birds were close to nest site. Will check on Mor. (Called Eider-bill)


Red-tailed Frigate Bird - Nesting abundantly under brush wherever it is available. Most with well-circulated eggs or small young - done.


Common Noddy - 50-20 birds in area we were coding 5 of any but 1 of Commonwealth. Have seen No. Hawaiian Noddy in Eastern, no Common Noddy on Sand.
27 June 1964

Fair Teem - very few noted on Eastern.

Egg Teem - thousands upon thousands on Eastern. At least 3 separate colonies, 1 the size of the Mammee colony, 100,000 birds in it? With eggs all small young.

Gray-backed Teem - 1 seen diving - rolling or though, it had a nest. It had been flushed up from ground, but no young ever seen.

Red Teeth - general between sand & Eastern

Red Seal - one on land just behind island

Rat - one seen, Eastern.
28 June 1944

Sand Island - Midway

Checked out Terns + Tropic birds.

Most gannets have chicks; few eggs; most not in flight. If distress will mob present boat (see Davin, 1943). My gannets on roofs.

About 1400 - 1620 - Kuré Island - Had only about 1 Hour on Island; had brief glance around - with bee, Wedge-tail Eider. This is centring a perfect island for bird work - all these birds - accessible - easy banded & studied - also projects - Other breeding birds - including Eostryx, Fairy Tern, Fairy Pena (few) + rare Common Noddy, Wedge-tail + Eiders. Character: Almost entirely covered with Scenery, many ledges. I hope I can get to this spot on wind. Saw 8 Mark Eiders on Sand Spit as we were landing, several others on Kuré just.

May 1943, Mark Boobies, Northeast in center of island, not edges or other birds of this species on other islands.
28 June 1964 (Cont.)

Back on SAND ISLAND, MIDWAY A

P.M. — After dinner we hiked 1/2 §
Red-tailed Tropic Birds. I noticed
from the sampling. Did you know — the
eggs of this species are dimorphic
do — some have a white, some
are BROWN! What goes with
their head, nothing else the
same way.

Color Phases — no dark phased
Wedgetails seen here — Smell go on
Other Oceanic Islands, some get in
Whitings/Hi Line Islands. Some stay on
Dark Phase in Red - footed Boobies.
All 50 Wedgetails huddled near normal
color phase.
29 June 1924

Blood Sample: 20 Red-tailed Tropicbirds
8 Red-footed Boobies
13 Laysan Albatross
1 Woomera Dove

Died: 2 Imm. Laysan Albatross
1 Sooty Tern

All species as before, except:

1. Common Noddy - 3 nests found, each with 1 egg. Corn-mixed
   Pop = 25% in with Grey-backed Tern

2. Grey-backed Tern - found small colony, est. 50 nests in all. Nest is only bare space, generally
   Pop = 100+10. Nearly hidden, crypto, but much more flight
   than Sooty Terns. 3 nests
   found, 2 with eggs, 1 with
   1-2 day old Chick.

3. Sooty Tern - Nest on eggs, 1 young
   found hatching, 2 day chicks
   Less than 3 days old eggs

Pop - Prob. 250,000
Midway to Honolulu via long plane.

Amongst the most obvious aspect of the island as we leave are the birds - white cranes around the fields of the sugar. Red-tailed Tropic birds abound. It is sad to leave the island with its great bird populations. The men did a fair job in keeping the men from destroying the environment, which they invariably would if left to their own devices. One sailor got drunk, went on a rampage & killed more 20 or 30 goats. For his indiscretion he received 90 days in the brig, a temper from Midway is like knows what else. It is sad to think heroes that off through such rigid discipline can the birds survive. The sailors apparently lacking any instinct to admire & respect these birds, there is one unprotected species - the "meaning bird" - Wedgetail - that is not protected, with the predictable result that it has been killed off to the point of near extinction on Sand Island. We believe Island fowl is ok, perhaps because of its distance from the bulk of the men.
July 1964 → H, Honolulu → Sea.

This day is one of anxiety, optimism to wonder to we descend Honolulu behind a
steam into the immense space of the Pacific. I hope all goes well, the rocking of the
ships begins early, but no problem so
yet.

July 1964 → 19 July 1964

I write this in a lump because that
is how it remain in my mind, a lump in
stomach as well. To say that acceleration
is miserable is like saying Everest is high
an entirely inadvent/ description of an
obvious truth. God, what strange feelings
of the stomach, what rotten metallic tastes in
the mouth, doubts about life, spots before
the eyes, a mood that never subsides.
For 5 days, the situation remains unchanged,
the climbing of plates + silencers below me
add a burden to the whole suffering above
should a try to force down more food ultimately
destined for the alley, the side of the
ship. Finally a solution, if a pause
my stomach immediately before eating, I
have 20 minutes or so of blessed
Calm & relief before the grinding sensation
returns to the taste & chew the bread.
At sea (cont.)

20 minutes - time enough to get the dinner food down and secure a more position - one which allows you a chance of keeping the food down long enough for some digestion to take place.

Alarmed of dying in the great cold, not that now mild-temperature area. Having had the ocean seem so big, too land & the future so remote, 20 minutes resolved themselves into hours & days & live much more quickly and with sleep.

There were good days, before the Dromonine became ineffective & then a few before it did make some pills failed to take effect. I could quickly get used to the pills, but not the medicine. Some delicate mechanism somewhere in the inner recesses of the ear failed to realize that valium is a remarkable way of life, so sent message to minimize areas of delirium which the mind could fight only in vain. The body & the mind can contest, the ear unable to halt the blind & indefinite process of a stupid body. Never had the two plans been so clearly separated, never had the battle been so clearly declared, as never had internal thoughts been so stubbornly overpower by the more material forces of the changed inconstant body.
At sea (cont 3)

At the end an acceptance of the facts of the battle made the voyage easier, & I settled down to a routine, which did not
remove the sense of strain, but of writing, never of reading under dying moon. When, sleep was possible that greatest of all escape
it was sought to relinquished self with

May buds were sighted, & their names followed:
- *Carrs*, *Nore,'s*;
- *Wadget*, *Wrex Island*;
- *Petrels*; *Brim Island*, *White* - reared, *Bulwaj*;
- *probably Dark-ringed (white linrow eye)*.

Tropic birds: *Red-tailed*, *White-tailed*.

Brothers: *Brown, Red-footed*.

*Frigates*: *Great*.

*Tem?*: *Sooty*, *Common Noddy*, *Grey-backed*, *Feji*.

Several whale, I think (with 2 pilot fish)

All in all, the scenery of *Panjin* is a real
dream in the sea, with blueinded mountains fixed in sun, *Feji*, *Tou* - reared, *Grey* - reared near land. *Feji* has

Fins in the middle of all bombay when

* envoy *replied, *Squid* taken usually, in

*daytime*. 
19 July 1964 - 22 July 1964

At 1630 - released relief - Tony Lime. White Able to stand again upon ground. A day off for the go's seen (Kor). Tue (21) wed we spent time putting up shins at the Ely's.

23 July 1964

Kohipi Kapi (Black) Island.

The 1st S.I. went to this island was interesting & productive. We almost lost John & Antonio as they climbed upon the wrong plant. The island was rocky, fighting to get one boat on the island was difficult. A wall behind the island was the only way. Raft must be anchored in water 10' deep to avoid breakers. Anchor should be secured by hand (. bury ends). Because poison - spine echinoid abond, one may be ruptured. Beautiful reef fish & amazing slate - pencil echinoid. The current in morning sweeps itself toward waimamaku Bay - but can be strong enough to cause conflict in going on side always sweeping across in sun. We must look very funny indeed to the tourists dinghy the shore. Imagine the scene. 4 men in dinghy putting an undersized raft out to sea from a rocky point, trying to stay for calm. The
cruising down the river, we pass numerous kiosks, kiosks as we pass the living room. Now the tourists cross lines up to watch as the raft filled with water is ready to move at any speed. We are stopped dead in our tracks by an urgent call of energy. The tourists must be buying all the food into the current. Our paddles only inches the stubborn raft to many around and around in circles. Finally, barely competitive, they cannot help but notice the drum containing our clothes (happily dry) books about in the water-elastic raft hitting our slightly more will stick well. As we reach our island, we fall out to swim to shore — this time we remember the anchor. The tourists with binoculars must be no little amused as we are rolled up over the rocks, locking retailed but happy to find once again land under our feet. We are at last ready to put wings on our birds, finally mentally thin long simple life in the remote, lonely for all to see all relationships forged. Our birds had lined up in their burrow before our arrival.

**Bulldogs -** 2 young (0-10 days)

**Wedgedail** - 300+ #2 n=3, 145 banded - all 6 eggs. Frigate (2), Redf Feather (6), Noddi.
24-30 Jul - Honolulu - putting up buildings, canvas tents, red tents at Pearl City for supplies, etc.

30 Jul 1900 - Honolulu to Kauai
arrived Pm, motel - tomorrow to the folded Alakai range.

31 Jul 1904 - Kauai, Alakai Swamp Trail
Kauai, Kauai!!

Kauai is indeed a marvel of an island, green & lush for the most part. The drive along S. coast from Lihue is superb with a view on the island enchanted with many high above. At Waimea we turn inland. It is dry, xerophytic vegetation, with Opuntia abundant. As we climb, we pass through a narrow belt of cypress then see wild, unbridged country above, becoming more lush as we rise. Waimea Canyon is very large & extremely imposing (with cliff dropping over 2000'). The canyon bottom is 2800', below the rim a colorful play above the Canyon wall & wilder the deeper you go. About below a dozen>0 of more White-Tailed Deer.
Creepen
38. Iiwi
39. Aniwhau
40. Akopah
41. Chinese Thrush
42. Hawaiian Duck
43. Jungle Soul
44. Linnet
45. Calis, Quail

.....
31 July 1964

If about, Dixie, lady. Perhaps Nevel's greenery is also to be found there.

We then got to the Kauai look out. Here is the most astonishing stupifying view ever to behold, sheer cliffs dropping 4000 ft. to the canyon below, with jagged edges silhouetted against the blue of the ocean beyond - green beyond imagination.

As we are upon ening, with tree farms, Ohio trees, while Jasper and so best be held and a night. I should like to return again and again. One does not see Hawaii on Oahu, that is like having Cali, without having Kauai, Point Lobos or Joshua trees. We really took away a load for the Muhihi Peaks and the Kauai rings.

Floral: 6 min. of tough road, 5 min. of tough trail to the upper camps. We do not get into the canyon, just reaching its border but do see: Japono, Chinese, Innis, Anemones, Aka, Especie, Joshua, Chinese, Diamond, Hawaiai, Indian, Tangle Ford, and began birds. The area is a place of mystery of trees, ferns, tall grass, berries, Ober, etc. canyon, green, green, green. As we drove the road, the introduced ferns, flowers, flowers, flowers and berries. It seems the climate at the top is quite different from what we are used to and the flora is quite different.
1 August 1964

Kauai, Kokee-Hanape Res.

This morning we again set out to Kalalau lookout, then proceeded along the Kalalau-Hanape Road-Trail. This gets us into virgin forest much more quickly. Although the trail is obscure at first, it is not too hard to follow from the ferns, we must cross many streams. We stop for a short while as the trail begins to head toward the interior. In Hanalei, flats 6, we get a perfect view of the trail, less common here than the others. We see all the honeycreepers we saw yesterday as well as many more. They are seen much more abundant. This would be a great spot to stop in looking for some of the rare forms, such as O'o or Cuckoo.

We got to Hana, 1/2 mile, by 2:45, to have dinner to 4:00ish, then to Hana, 6, about. We minimize our rent before the 7:30 PM flight back to Honolulu. Would really like to spend more time here.

Western Meadowlark in cane field.
2 Aug - 4 Aug, 1941

Honolulu

Much out - work was, very little to do. On
3 Aug we saw Kuy, Pol, to stay at - sea, another
off. Gill, Helen, King, wanted money, went off to
big island.

PM - to Waiakiki Beach - my first swim.

4 Aug - Am 2:30 pm to go back to Kauai to
do some work with King on Kauai's. At 2:00 pm to
Pearl with Kauai's, get all the kauai material
together for Sand Island. Then at 10:30 am fly
go to Hawaii. Nothing works right. we cannot get
our helicopter today. We decide to Kauai survey
Cabin. We finally decide on Kauai just might to
listen for Kauai's. The first person we see is
Maggie, she went to Kauai to listen, then to Hawaii.

Overlook, the big mountain. the best shot of
kauai from the cabin. From Kauai's one hand,
from both the Kauai mountain to the ridge further
down Kauai - Pearmain Rd.
Left Mayfield - the lodge at 5:00 and
drove to the end of Multieke Rd. and we
took
directly to the cabin (50 mi) and in from there to
the trail crew. In early brush and logs - to beyond
Flag. About 10:00. We shi

We were
tired before there is really. Oh, what has
Point, ut there the

The flat just past the cabin
in the most
tiring part of travel there with the flat slowly stepping into the
uprighted exhuberence. the large trees form a
as exhuberence upon other times. We saw the 5
common things, figures (no. Amsterdam) for how what
was probably an 821. we failed to locate. 1

We had many a run 10 12:40 - 12:07
2 endemic thieves (Phasmeus incarnatus)
We came out this evening, the next day's
darkness made in the day) and things of 12-13-in.

We ate a quick, cold dinner of pineapple.
piece, pepperoni, play in tortillas, after
consuming service - some time on the trail.
Breakfast was something (2) to a custom. felt
naturally well fed.

At 9:30 went looking for mussels and
both this to 16 1 20C "PR" S from Warren trying
another... into the Canyon!

Stayed and went with mussels in the Dark
empty. The people in the town stop there with and
thoughts must likely.
OU - prob. need this species.

54. Ommo - (Democratic Republic
55. Harcourt's Storm Petrel
Up at 7. After eating tea, we drove to Waimea for lunch - oranges, U.S. cookies, Curry, grace. We found out that the Xmas house told the judgeManaging our program, so therefore we went there. Waimea has OK'd all but has been named a great deal of trouble. We can blame our game with the musician-who is most kind. We find 3 Min labeled sites, telling the name which the site is -
Hana (instead of Hana), Kauai, Wailuku (called Comm) & Neval's (unlabeled.) We take another Hana Arms Trail a road leading to the left from the Mohiki Rd. at the sign for the Kauai Forest Reserve. Our jeep gets stuck to make a grade, so we had to turn back.

At 1000, our game started at the Museum. On the way home, we began our descent down the Kauai Trail - 4 mi. to the river, 2300' below the rim.

We find the trail down very good & easy under a tree in the middle of a green forest - green and wet is all over the ground. One has to use one's compass, as we put our food in a tree before descending the last 1/2 mi to the river.

It rains at 1630 is most refreshing after our hot dawn. The water is brown but not muddy & the rain most refreshing - tadpoles abundant.

We eat & head out to a lightning plug. Our jeep hill is covered with laolema & quick sand, is extremely rough going. A show off finally
trees on back. As dawn approached, we climbed up a dry grade to a ridge, running past 200' above the canyon floor (600' elev.). At 0610 we heard calls—Hunnicut's stern, Parry's eerie. At 0625 we heard new calls—we met as many Hunnicuts to Hunnicuts (about 100 yards). The birds are all around us. We're below us.

That evening, we migrated the nesting sites at about 2000–3000' elevation, probably nesting on the steep grassy ridges scattered throughout the steep cliffs.

At camp, we heard more Hunnicuts, thousand above us—note as many as in the steep part of the cliff. To get to the brook, we must get some ropes—Van, Roanam, is probably the man for the work. Perhaps next spring.

En route to Warren, we joined Encho's Franklin along the road—1.
Mar. 1964  Kenai  Warren Canyon  Beach  Kenai Light House

We are underway at 9:43 a.m. by calls of Mr. Neil's leaving the canyon. We sail away more swiftly, but by then the jungle fronds are calling no one else. Now, we begin the ascent – it takes about 5 minutes to climb out – what a battle – there were times when we doubted we would make it.

On this climb, we are 3 Clinton Madison. We turn back to the beach near 3 mi. toward Kikiaw coast from Bakery Sands. What a delight! 2 min long road made of a green, clear white sand backed by high dry, scantly cliffs. As far as we can see is only direction – no people. It is here in the surf refuges us with our astonishing cliff.

At the base we head out to Kenai Lights. The West Point Lighthouse 1/2 here in great abundance – calm & not at all crowded by our presence. The waves lap, break, clink upon the rocks, 1. The boating, gale, & Weddell seal almost totally. The serenity is important – Mako seal should be hunted – perhaps by Henry Belcher.

The lighthouse maintains Neil's flag into the light frequently – perhaps we can catch him for his agreement to a proposal to close.

At 1:30 we climb aboard plane head to Kenai Hotels.
This is indeed a long day. At midnight still at 5 W cent., with Kay, we leave at 0100 to see Dick "Stephen", to arrive at the Ordines base. Take to 30
0400, then take more food, arrive here at 0505.
Since I am to get up at 0515, I don't see much
point in going to bed.
Please leave at 0730, a 3 hour flight to
Johnston. From there hike to the 5 island,
Johnston proper, North, E, NE. One other, landing
is made. A check in procedure is waiting, to
Then get a Coast Guard boat to sail. The water
around the dock lines with a lot of huge fish, and
is very muddy due to all the dredging. I can't wait to
ssee the night underneath.

Travel is great — small, bright tent full of
many birds. Not seeing the Bullet's Wedgeheads,
red-tailed Fregata Birds, black herons, Fregata (2001),
big-eyed tern, etc., etc. Not being the stress,
town lines hold numerous Fregata & Red-footed
Boobies. I think I shall enjoy this trip.

As I write on the dock, comment from about
overhead some Fregata. One is chasing a worm. Maybe
he again & again dives into water to avoid the Fregata.
Finally marina tie no more off.
At 2130 we collect 4 Wedge Tern Samples & 1
Wedge-tailed Blood Sample — collect the 4 mutton & 2
Work done:
1) Cat milk, mostly eggs, Wedgetail on eggs,
   cat milk traps, 42 Scotty Tam Blood Samples
   (2 each), packing Scotty Tams off with Dare.

Saw Bluntly Gy at 1000. PX call on Johnston.

11 Oct 1964
Miss check, mostly eggs, Wedgetail
on eggs - 2 on inlet have fledged -1 white, 1 brown.
70 Scotty Tam Blood samples, no birds/ sample.
We were getting a good touch, & could get hurt on
our mainstays. Needle goes directly under
sternum & back at about 15° - 20° c. The beating
heart can be felt if syringe is held lightly -
it beats back & forth. The needle is in 1-1/2".
We handled 11 of birds, 5 lost only 1 through
accident. First night we worked 84 & killed
3. Improvement. If you get on - you
have gone to far.

Beginning body work. Caught 6 marked 8
birds - 5 gry x 3 adults.

12 Oct 1964
Wedgetail on island, in numbers, mice.
Nothing. We weighted Wedgetail - this is only
a minor undertaking, the birds become well on the
scenery, however, simply standing in a hunched position
on the pan. All told, we weighted & measured 62. Nothing
12 Aug (cont.)

1 Balmain’s child. We were too poor for bloodwork but might, with spinning down to blood samples - rain most of day.

13 Aug, 1964 - We neither lost this day - th census on Johnston taken. The afternoon from 1300. There is very little in the way of bands out this, only 12 Fairy Terns or 1 adult red-tailed Tropic Bird was spotted. The Tropic Bird most scattered about only when the windiest. Vegetation, unbroken

3 eggs, 6 chicks - 4 juvans

After a flush, we took blood from 144 Biotis - 47 samples. That leaves only 40 samples on our Surveys are done - it is a good thing so most of the pop. has left.

26 Aug 1964

Today saw an unusual shore bird for here —
Ganderling. 1 only.

21 Aug 1964

Johnston To. - 1 White-tailed Tropic Bird found flying over PX.
17 Aug 1964 - A memorable night trying for blood samples
after a poor night's sleep. We left early to get to the
location where we had planned to collect blood samples.
After getting 20 samples, we discussed trying to get Phil to
collect some as well, but he was too tired. We engaged in a
good-natured argument and decided to leave. We collected
more samples and got 44 more samples. We arrived around 12:30 PM, Phil gone
on a few more hours.

15 Aug 1964 - PM - Went out to sea with Jim,
Wally, Bob, & Briggs who were diving. We had a fantastic
array of fish - surgeon, jacks, trigger, barracuda, and other fish, all set against the incredible
sea life that abounds. It was very beautiful. PM - Phil and Brian while I checked
mollusk & wedge tails. After diving, we got
to help us catch wedge tails in their hundreds -
we printed many and quiet at 12:30 PM.

16 Aug 1964 - We went to the end of the
sight, watched a collected bird in the ocean or what not be
a Wilson's Phalarope. PM - Count of Bobbies &
Frenzy at the end.

17 Aug 1964 - Rain all day! Found Great Frigate
which was 6000 (6000.), brought back, collected,
then frozen.
18 Aug 1964  - Usual - 24 Wedge-tail Eagles

Phil → 5 Kowraga seedlings collected
Age (3, 13, 18, 25 days, eldest in unknown)

19 Aug.  - Usual routine - 24 more Wedge-tail Eagles

20 Aug.  - Mouse traps checked &m, Phil spun down

Wedge-tail blood - need age must to know. We
must spin down centrifuge.

Collected 20 more Wedge-tail blood samples,
4 Adult Wedge-tail Eagles (also bled)

21 Aug.  - A change of Cubs - burial. Much drier
here. Phil got plastered again & forgot about the
change of Cubs, sleeping in the old one - no linen,
etc. Usual routine outside of that -

22 Aug.  - Usual routine - One of the young

Yamas &a. Atenciones left today

23 Aug.  - 26 Wedge-tail Eagles collected (Total: 101)

Flock of 24 Red-tailed Terns seen. Next we will
try to get Kowraga - much more difficult kinds.

24 Aug.  - Whipped Soil to turn boundary, usual checks.

collected 18 more soil etc. samples

25 Aug.  - Pat Mcleod (Holmes & Harvey) brought in

43 Black teepees on M. is. Will commence Sat. to see
25 Aug (cont.) Sand Is. 2nd Knox Island
Shenandoah left today.

26 Aug. USCG men see White-Tailed Tropicbird on Johnston Is. Sandalbag keen here.
Pm. - 59 Scott Team Blood Samples.

27 Aug. - routine checks during day. In afternoon more blood spun down. Phil is making a night mouse cage. Phil has OK from C.O. to remove cats.

28 Aug. - More blood spun down. Phil collected 5 specimens of plants from Sand. At night much activity in to wedgehead colony - morning, billings, digging.


30 Aug. Normal AM routine. PM - bleeding attempted. Worked to target - one very difficult. They are weak, + 6 cc almost half a bird. We decided to pool blood from 2 birds, taking 4.5 cc/bird. They are weaker than the others, only 5 or even 6 cc. Poultry are tough to catch also. 100 samples is much to large a goal. We catch & collect 1 of Peruvian.
31 Aug. I made bird census while Phil collected
about 25 species of plants. Found:
17 Fairy Terns, 160 10 June, 4 Hone (Whoo),
4 Red-tailed Tropic Bird Eggs, 25 Golden Tropic
1 Common Noddly (bittern), several Wedge-tail
Seagulls. Showed Phil MacKinnon plants around.

J. E. 147.

1 Sept. Dr. Ronald Joseph (Marine Biologist) came. Showed him about island. He was working
on radiation effects at Belini, Encinitas, a
Bayclap - saw very few birds there.
Collects very unusual seabirds PM
Spotted Sandpiper.


2 Sept. 4:18 more South Island Eggs 8 PM, some
banded 100 birds. Banded Budweiser's chukar.

3 Sept. Banded monitor, maw, etc. Thermograph

Fri. 4 Sept. put humming census. We got up at
0430 to count another sample of the rocket.
I ran census down to 1130, Phil took over soon
to check. Banded 100 Common Noddy chicks
1 down E. at 6 am.
63. Spotted Sandpiper
5 Sept. - Rainie. Phil went day sea fishing.
noticed that the shoal deepened on hand to
lead him to the best fishing spots.

6 Sept. Normal A.M. Collected 40 Scott samples
banded 190 Scotts.

7 Sept. Skin diving for 2nd time. Again extremely
impressive. Found a fantastic gander of
staying cool on reef. The reef man is
burned a rough, but seems to have more fort
than elsewhere.

8 Sept. Scott samples completed with 9 whole
blood + vision samples (died 5 Scotts whose had
8 + 10 cc. drained out - it survived this
fantastic defangulation). 1 regular Scott sample
taken. Phil banded 190 Scotts as abed.

9 Sept. Weighed Wodeas again - each time they
are down to weigh. The Bulwer which has
shift. hand was banded it on 7 Sept.
Scott almost all gone - Juggin bided while Phil
banded - & when I finished he still hadn't
finished. I helped him a then we banded 7 Wodeas
on 3 Fregiles. We immediately gathered the
Fregiles each & then found ourselves in a
dine predicament - what to do with these
beasts! We finally sứceeded them off to the holding cage, the
bitch went.
10 Sept. - Routine Wm. Went to Johnston P.M. to spend whole afternoon, after getting supplies, loading C & material around.


Sst. 12 Sept. - Usual day. Wedgetail pets one abandoned by us - almost all chicks now adults seldom in at all. Shoalitis, after increasing last 2 weeks, appear more abundant. White-tailed Tropicbird - Johnston.

13 Sept. - Ski diving on North Island - this area is much more much different than near the way. Water 80-30' deep, coral heads rising to near surface, and rugged mountain-like - some beautiful brain - coral shinning. Saw Carpet Fish 4' - 4½' long. This large specimen changes colors within 1 sec., from an all - over green to an alternating dark green - light green spectated appearance. The chromatophores must be under direct control to effect such a rapid change. Many beautiful fish against fish, course, Red - snapper, Saw-jawed fish, box fish, Carpet fish, Moonish 3/4, etc.
Saw schools of Cleaning Needle-nosed fish near water's surface - 2 inches wide. It looks as though the Red Snapper are strongly territorial - one for each structure - hiding underneath it. Saw a new species of Tiggerfish - instead of the normal black dorsal and fins - these were white bordered with black. Body marked purplish-black color.
10 Sept. - Usual routine. Word from Edy of our
next shipment — 25 Sept.

15 Sept. — Up early 6.30 to catch water boat to Johnston,
but it didn't come to Sandl. So — catch 2.00 UP
run — return Johnston. Took #1 bomb for
Tropicbirds, but none caught. 20 '3 Tanned, don't fit —
tuned only 11 units. #2. — Sand — Sand 1, only

19 Sept. — Thick Black Cuckoo. The umpire
of the umpireman & the crew is always cleary
I was glad to see & get some pictures of him.

16 Sept. — Usual routine. Many runners sent out.

7 Sept. — Phil went to Johnston to check on weights of bird
cases, etc. Report of all men starting to tidy up
coke — big inspection on Fri.

9 Sept. — Phil & I, one afternoon on Longport run.
PM — see Blithe — big bird Cuckoo against the
warship, flying among cats. We catch a
rare one, but cannot keep him and call species.
Looks like a Phoenix Island Petrel but the
measurements are not quite right, & the leg
color is pink, not yellow. We will probably
collect him, although it hurts to do it. The measurements
are as follows:

-
64. **Pterodactylus?**

- **Length:** 1274”
- **Tarsus:** 2 9/16”
- **Ung:** 11”
- **Tail:** 5 1/2”
- **Bill:** 1 9/16”
- **Wt:** 280 gr.
19 Sept. 1964 (Sat) - Spent a few hours at PX, then, since the water was clear around here, went diving at North End of Island. Saw a great many new fish. One school of 500-600 mullet circled me, swimming round & round - so thick I could not see through them - really great. Nematodes - nematodes - always were very plentiful here. Most of the coral has been killed by the coral dust filling the bays, but some pieces are still alive & may make it if it stays clear.

20 Sept. 1964 Diving North Island. Phil has his new Nikonos underwater camera & took many pictures. The camera is a good one - I hope the shot come out. Two men spear a fish -� - just 25-30 mins. We longer? I have seen the water clear as a bell. Thanks to Bonnells - now reported & to casual within the reef - perhaps they will begin spawning. We have yet to see either. Dinus was spawning fish for photography on land. We take them, preserve them: butterfly fish, Moorish Idol, Wrasse, Trigger Fish, Surgeon Fish & others. Hope the color cards - I have photographed them sometime.
21 Sept. 1924 We decide to bleed the Pt. & mass us.

22-23 Sept. Rainy. 23rd we go to Johnston, got hopes for

24 Sept. Getting Ray, assembling & painting addresses

25 Sept. Miss Guy's cousin due to transporting

26 Sept. Guy to cousin. Also called a Pecos

27 Sept. - Check Rotten - a Tvo. Brown Bear's

28 Sept. -
60. Richard Sandby
29 Sept. Phil dispatch box is going on as usual - return arrives on the 5th.

25 Sept. Normal Routine

30 Sept. Johnston in & M. Construction continues to destroy nests of young Red-tailed Tropicbirds. J. L. Young has agreed to call me if the nestlings are to be destroyed en masse - they could be easily removed here. Noddy sure this P.M. Bill Smith helps me by catching the chicks. All the Noddy eggs are hatched now & a few chicks remain. In 2 or 3 weeks this study will be completed.

1 Oct. 1964 Today Briggs finds a dead imm. Frigate. It is preserved (frozen) after removing it away from Briggs, who had wished to catch it himself. It is badly injured in stomach. A clothing broken wings are found. Perhaps parents will be able to keep them.

2 Oct. Most strange - while taking the Frigates census, 3 Frigates work in 2 with obvious broken wings (wired, black & destitute of skin) etc. etc. & 3rd kind looks in good shape - will make a pet of him if possible - why so many dying - who stikes today? Lots of birds
3 Oct. 3 Fairy Terns, Red-tailed Tropicbird, 45 Red-billed Tropicbird. Pouting Island: 3 parties. Toadies, Tropicbird, Sanderling, Blackie, etc.

3 Oct. Check mine & wash, then take parties to the Flying post. A Copepody is found, & we get two shots of it, as well as many aged Wedge-tails. Another Pointick being displayed by 3 male Flying.

4 Oct. To catch (or Fugott) very reluctantly, take food if it is canned down its mouth. It takes a man to force feed it, and often regurgitates its preferred food. It is a young bird (white head) & should be killed. The wing shows no broken bone, so must probably be a Peroneal joint. The problem - paralysed? Either of its wings.

We have caught about 10 dead young goats - just for fun. Should last a couple of weeks. One has its booty - we have a Fugutt.
6 Oct (cont.) today. Took picture of malleophaga
on beach, also eggs (Malleophaga?) on the
Brown Point food chain on 21 Sept. I hope they all
came out. The yellow attachment is sure a great
device.

5 Oct. 1964 PM Today banded 25 Notch Chick,
While banding the chick, mrcll Smith helping,
Saw a Diamondback on the beach. Markings on the
back clearly seen. I will try to get a picture
of this bird. Fed the Beach Pig fair sized
ground fruit. He is chauvinistic but will not
like perfumed food - Child must be forced.
He is stranger a about a remote break.
Long & upright, not banded earlier are now
ready to be banded. Will get them soon. Fed the
mine early (E 7:00 PM)

6 Oct. 1964 It's happened today. PM Check'd 61 mine
2 caught upon recording chart. Then there was
a huge range of calls from Johnston Island
- recording operations were beginning 5 of the miners.
I had lost the small out to retrieve he friend. 1
had not shown - dying! and apparently had
stopped around, as about 5 people called. Took
1 D'lok V.I. from Johnston and gathered up 7
tragic tails - 5 are young, that leaves 2
unaccounted for. Pushing like it's tragic and
adults as they were released. The young have been
placed in the island out of harm's way. They all kept
down food at the youngest ate quickly, taking
food from the hand. The others were free fed.
This means we have 6 birds to feed - 5
Tregians + Bird.

Saw a Buntshe-thighed Curlew today.

7 Oct 1964

Air was no better. PM - Everything went
wrong after dinner. Went to Band Frijate, a
broke the wing of the 1st young bird we handled.
The band on the 2nd bird overlapped - it took
10 minutes to get it off. While doing
so, the only flying young Frijate but a
gyvene with a sharp creasy & twisted
up - dropping there in space from the
smiling practiced wing. This was enough. In
one day - we got a .22 & killed the
dropping bird. Then left to feed the 4 Tregian-
birds which unfortunately are very well &
walking. I will wanted the young Frijate with
the broken wing - he may be able to survive
but I must disturb.

Of the 12 Frijate - 1st 3 flying broken
wings - was bands a & B & C. Died at ground
7 Oct. 1964 1st thing in the morning, went to see how Brack was doing - didn't look - very well. Meanwhile a new "beak" was found under garbage. No wing broke but he didn't look well. A strange bird - all noble looking. I could find - about 21 more - making 46 for 2 days work. Fed one Tropicbird after dinner - all ate voraciously. Caught up on birthmark P.M.

9 Oct. 1964 Another Frigate found dead, the bird found yesterday. This Frigate was bad, the head looks in very shape. An adult male bird. The Tropicbirds are in very good condition.

10 Oct. 1964 Ebb. Dr Net Island., sunny. Hall was filled with 5 Ruby Torrente, 1 Golden Plover, 1 Wandering Tattler. This is strange in July to see so many shorebirds. The flowers have and are still blooming, "there is a great deal of aggression between the birds. Numbered pairs, accompanied by marked mate and food."

Tropicbirds are in very good condition.
Vocalizations - choses common.

11 Oct. 1964 - Today was most successful. One 
reapplied has flown off. #3 primary feathers were 
damaged, but few. The outer 3 primaries of the oldest band remain due - it will be a 
time yet before it flies off. One rich #2 Feath 
was caught today, per fragon as specimen 
75015. A Sandefera + Zosterops 
were seen - 9st passerines at home 
noticed out here. We banded 100 Wedge-tail 
tonight - made several 
1 Frigate # had a fully inflated 
gular pouch at the throat. Of a #6 of other, my 
my throat red. # White-tailed Frigate 
flown. While banding wedge-tail, 
a Silver-banked Tern was heard.

Also picked up a Golden Plover with a bad 
wing.

12 Oct. 1964 - After checking the mist, we spun down blood 
samples from 2 Frigate # collected the Golden Plover 
(might faster), is worked on necropy forms a 
resident in the P.M. After dark we banded 50 
more Wedge-tails, gotty several (4) chicks & 
a few dark phase birds.
Tue. 13 Oct 1964 - Johnston Island Day 4 - P.M.

Saw 61 Golden Plovers, 40 Reddy Turnstones, 2 Wandering Tattlers, 3 Sandpipers, 9 Fairy Terns, 1 king Wedge-tailed Shearwater, 1 Wing 12th Red-tailed Tropicbird, 2 I DUCK!!! 

This was seen on the N end of island 10 feet towards land. We later found the bird on sand & got several photos of it. The Zosterops again was seen today. We tried to shoot it but without avail. Golden Plovers continue to be aggressive & the hundred plovers charges are common. Gulls poodles of Frigate continue to be brightly colored.

Wed. 14 Oct. 1964

A.M. - Caught 16 Mice, Collected 1 Imm. Frigate - with a broken wing. Collected many Humpbacked flies from neck, wings, & breast.

Bird was banded as 737-4454. Caught 11:00 this bird to North Island, where Toni showed us them the complex caves. It is amazing like coming a science fiction movie, with plopping sounds, closed circuit TV, 2 computers, clocks?
65. P. 27 mil
15 Oct. 1964  At 0740 I found Steller's gull watching
the Tufted puffin colony - rather over 9 young, 10
adults of 8 & 2♂. 10 minutes later, when a♀
flies over, all the♂'s give a display. The
wings are outspread as indicated, the head,
thrown back, the bill snapping, all accompanied
by a vocalization described as "shreashing". The
♂'s then take off, one by one, the colony before
settling down. When I return to the colony with
a camera, the area has been considerably disturbed
to the♂ have all deflated their pouches. A♂
flies over, fails to elicilt the response.
After lunch we begin measuring the Wedge-
tailed buzzard to ascertain how many young are
present or how many buzzards have been killed.
We poke sticks into 848 burrows, counting 2½ birds,
4 find 132 chicks in their burrows. We prob.
improve few. We banded 73 chicks, most
of which have all flight feathers growing in.
Most is a remarkable but most chicks are
in the same developmental stage - there is
very little spread in characters at all.
We moved the nest next to a boulder, locating
in the hopes of catching stragglers.

Return from smoke out - #11.
Catch 1 Golden Plover in net - #642-01154. #1
written on flesse.

We count wedged-tails - 3500 Adults counted, with
15 Oct (cont) 1000 of them on the west bluff an area
where there are few nests.

16 Oct 1964 - Started day at 0615 for an early
Bonnie Canon. Few birds out for some reason, from
the mine at all. We had 1 Golden Plover in Mint nest
(banded #1742-01152). At 1130 we had a Reddy
Turnstone (#1742-01152-52) & another Golden Plover
(banded #1742-01156-##3. We continue with
the Wedgetail Burrowing Canon, up to the 535-18800
area on the chucks.

The Plover banded stay about the area where they
have been caught - part way north movement down the
river. One bird staying on territorially
maintain. One Frigate chink begin to fly another
just to let Bonniie - we will try to feed it
see if it can come around.

One Wedgetail chink was extremely light -
it's feet dehydrated badly. Banded #535-13987.
Apparantly on Mr. Wardell of Johnston found a
bird - 77378718 - mailed it to Wash. D.C. on
an injunction and it came back today. One of our

Two very young & mine caught this AM in target
banded 342-343.

Total Wedgetail chink banded was 86. I found 2 bird
with holes in the neck.

Two more Plover - 642-0154-60 - Juke #4-65.
17 Oct. 1947 (Sat.) - Checking of nets produced more Golden Plovers. #6 & #7 - given 447-01161662. #3 has caught self now 4 times - seem that do not eat immediately in the area.

17 Oct. Knotpittick arrives at 10:50, we get him a cat on Johnston. After introducing him around the camp I go after book supper we go to feed the Frigate & the Frigatebark. The Frigate is much better. Stadel drops his watch off the pier, but I find it after dinner bring my watch to him. After book me good mine & wonder around. A & Frigate tries to land on his head & on mine, I think he might like it here.

19 Oct. How can the military make a 3 hour flight on 200 miles lasting 11 hours - they do it with long rests on both ends of the flight.

20 Oct. R & R - Tour of island/phot. 16th camp at Karlavag. Found a D&R. 6" stone on top of island.
21 Oct. R v R delighted. Pop into after Dark
with Warren Key, B. Kirtal, D. Britty, & Key. The engaged it as usual died
in mass) – full moon birds were all
quite clean – we banded 200 adults.
Next going home proceeds – secretary
will delay – I handled 3 birds still in
down I will send some left to
Sydney. I am dying – almost ready to go.
Sydney band was quite clean in down.

Then
22 Oct. Shopping out to Elgy – P M we
shambled to the bird at Martin Ordi
home – saw profile of his trip to England
& the Waterfall Burr at Elmbridge –
much interesting.

23 Oct. After one hour delay set for
Melvin arriving 3:00. Embarked from
Tangier at night before 4:00 and out early.
Mind rain & thunderstorms.

24 Oct. A field made inspection for
the arrival of South Chawah delay &
trip to English Island until 3.10. Find
1 hymn Reason (7517-36257) on
a badly decomposed bird, 1 return on
1 of 2 Black jelved stilts at
the island (1667-37029) found.
Up on the Eastern end. Wedge-tails are about ready to fly on both Eastern and only a few Pygmy Owls. Left as well - all going about ready to go. On Eastern saw no Red-tailed but 2 in trees, none in sea line.

Then remain 300-400 Sand Plovers, most of which have broken wings. Band-tailed Plovers unaged birds were killed and bands recorded as follows:

\[
\begin{align*}
813 & - 75444 \\
793 & - 89267 \\
29760 & - 84912 \\
28979 & - 70081
\end{align*}
\]

Some "weak" birds: 813-75421; 793-75216.

Bristle-thighed seen on eastern.

At dusk Boni Island Petrels begin coming. Many fly by pairs accompanied by calling. Some many birds (sex?) sitting about 3' from newly constructed enormous calling. No eggs as yet.

Appears to be courtship - chasing both on ground o in air.
25 Oct. Many migrants today
Saw 2 Bunting - thighed linces, 100's
of Golden Plovers & Ruby Tealstones, 5
Pectoral Sandpipers, 1 Dowitcher,
1 Mallard & 3 Sanderlings. Also 1 duck looks
much like Ewpy but:
1) Bill black tipped, rest pale pale
2) Bill ½ between Ewpy & Ewpy in
slope from head, not the Red head &
Ewpy dips from head, but not as flat as
Ewpy.
3) Parker color or back & flanks thin
Ewpy, many dark brown a black.
4) "Brown 1½" stripe of white
from body almost to tip of primaries -
much broader than at the 1½. Arnt. Ewpy.

Pat Jim Prince. Jim "Redneck" who
is watching birds, 2ndary band # 15
picked up, according for us on Monday.
Much zed. Quite good knowledge of the birds.
But named on again today - everything went.
Try for Brown Ew. Pat. He was.

For Brown Ew. Petal Retin 250 away.
<table>
<thead>
<tr>
<th>Sample Numbers</th>
<th>Recovery Numbers</th>
</tr>
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<tbody>
<tr>
<td>643 - 74397 R</td>
<td>740 437</td>
</tr>
<tr>
<td>643 - 74036 L</td>
<td>740 437</td>
</tr>
<tr>
<td>643 - 74048 L</td>
<td>740 437</td>
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<tr>
<td>742 347</td>
<td>741 02</td>
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<td>740 99</td>
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</table>

**Recovery:** 713 - 00251

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**NW of Barrier Building (41 birds banded):**

<table>
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<tr>
<th>Sample Numbers</th>
<th>Recovery Numbers</th>
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<tbody>
<tr>
<td>763 - 20352 R</td>
<td>57268 R</td>
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<tr>
<td>200 98</td>
<td>57281 R</td>
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<tr>
<td>200 19</td>
<td>57281 R</td>
</tr>
<tr>
<td>203 17</td>
<td>57281 R</td>
</tr>
<tr>
<td>203 24</td>
<td>57281 R</td>
</tr>
</tbody>
</table>

**Recovery:** 713 - 00728
It looked as though we weren't going to make the flight over to Kure again, but Kebschull decided to take a look to see if he could land, and after a pass over the island we set down rather heavily in the force of gusty side winds. This island is great. There is much important stuff going on, study that one can sink teeth into instead of banding and bleeding all the time. Most bird species are finishing up their breeding, but Bonins and Black-foots are getting underway. Fleet took off around to his Red-tailed Tropicbird nestlings and we took growth and development data from them. We found a marked seal on the beach with two unmarked ones. I saw sever Frigate encounters. One Frigate chased unsuccessfully a Red-tailed Tropicbird, another chasing another tropicbird forced it to disgorge but the booty landed in the Seaswala and was not retrieved.

One Black-footed Albatross showed up in the area across from the mess hall this P.M. It was a bird that had been previously seen. Bill let his homing rat go 1300 feet from the shack, and it was back in under 4 hours, a new record.

We caught and painted 184 Blue-faced Boobies after the flock, and found 3 new adults, unbanded and presumably not from Kure, at least since the project. All birds in the S. antenna field were painted red, N. A. F. - xxxxx. We found 3 new adults, unbanded and presumably not from Kure, at least since the project. All birds in the S. antenna field were painted red, N. A. F. - xxxxx. One Frigate was chasing a Red-tailed Tropic Bird without success.

The mist nets appear to catch large numbers of Procellariids, but have a notable lack of success with shore birds.

There are large numbers of Bonin Island Petrels coming in at night, but not quite so common as on Midway.

Weighed The 127 3 Noddy Chicks. All were present.
28 October  Rattus exulans, most of the day, there is still grease on my fingers. Noddy check 72 flying, 73 not in the area. 3 Bristle-thighed Curlews, 2 with orange streamers, were seen on the beach together near stake 46. They had flown there from the runway. We weighed the remaining Wedge-tails, Boobies, this afternoon. Then back to Rattus. Much transcribing of data on the Blue-faced Booby. On East beach there were no Black-footed Albatross.

2100 - Black-footed Albatross return - 737-45145, opposite from K 46.
Bonin Island Petrel return 793-20330, S.A.F.

29 October  The morning was taken up with the shorebird census. I took the antenna file and found several Plover (23), 21 R. Turnstone, 1 broken winged Noddy, and 3 Bristle-thighed Curlew. On the beach near M18 was seal 208 under some Scaevola - very tame. Also found and then lost a B-f. Booby with a wing missing - the bird was later found by Bob. Band 697-70644. Later went with Bob on the Rtb study. Bill off to Mlway.

30 Oct. Census day - long hours in the Radar tower. Good views of the Tropicbirds. Several feeding bouts were timed - all under 5 min. Many birds with flocks of black in wing (2nd year) often hovered around an adult feeding young in Scaevola, prob. not breeding birds but those with gonadal activity. Much calling as they flew about. Also Noddy chick weighing time, only 2 now left. Found a brown booby with a chick just emerging from the egg. Got picture of same as well as seal, very angry. P.M. a congregation of Black-footed Albatross on the beach - 6 of them.

Bands are: 737-45504, 597-34051, one unbanded.
-45259
-45569
-93934

Two other Black-goonies on the beach.

31 Oct. Finally got the Blue-faced Booby into the skeletonizing cage. Yesterday found Brown Booby with broken wing and a Frigate somehow injured so can't fly. The Booby will have to be frozen, perhaps
21 Oct. Cont. the Frigate will pull through.
This A.M. went to Sand Island, counted 35 seals, got
tag numbers from 5 and tagged one new one—a
ugly
old time with shedding skin who was so tired that he
let us handle him without much struggle. Bob and I
set up a study area for Bonins, but that night only 5
were found in the 100' x 100' plot. These birds were painte
red on the breast. Seals were found at 1600—number 176 or
north point and 208 in consort with an old bull.

1 Nov. Several seals spotted on the beach, three of
which were banded. An imm. Frigate was seen chasing
an imm. Blue-faced Booby, forcing it into the water.
Twice the bird got up, each time to be forced into
the water again. No food was regurgitated for the
Frigate.

2 Nov. Several seals spotted on the beach, three of
which were banded. An imm. Frigate was seen chasing
an imm. Blue-faced Booby, forcing it into the water.
Twice the bird got up, each time to be forced into
the water again. No food was regurgitated for the
Frigate.

3 Nov. This P.M. we check Black-footed Albatross
bands, painting the birds that we check. Of 58 birds
cought, 2 lacked bands. A group of 24 were found
at the beach just north of the dump.

4 Nov. Last night one of the Goonies barfed up what
looked like roe from squid. This A.M. a Ruddy
Turnstone was seen eating this barf. At 2229 1100
about 400 Frigates lifted from the central roost and
flew south-east. A huge cloud hung on the horizon,
and the Frigates flew in front of the moving cloud.
At about 1115 close to 1000 birds were in front of the
cloud, the storm hitting at 1120. In an hour we got
480" of rain. The Frigates drifted back singly or in
small groups throughout the afternoon.

5 Nov. Activity count all day. I had the early morning
and late evening counts. In the P.M. our first Laysan
Albatross arrived, 737-90718. After the count we went
out banding, and got 58 Bonins, and more 105 Wedge-tails,
most of which were immature birds. There was one Dark
Phase in the group. Bob found two more Sooty Storm
Petrels, digging under the Solanum. Apparently they
prefer vine-like vegetation to dig under. Hill saw them
on Laysan in Solanum.
67. Scoot Storm Petrel
6 Nov. Shore-bird count in the morning. He tried drugging a monk seal this afternoon, but only succeeded in killing it. Although the dose of Sernyl was 2/3 of that used successfully on fur seals, it killed the monk seal within 45 minutes - perhaps the hair seals are much less tolerant than the fur seals, or perhaps this is simply a characteristic of the Monk?

The second chick of the Brown Booby pair died, but the first still lives, although today it looked weak. Measured the boobies and wedge-tails today - one wedge-tail has now lost all its down.

7 Nov. Again more paper work. Helped Bob with his Tropicbird growth and development data. Squared away the final Blue-faded Booby material - we are now up to date. After chow the crew jumped me and I got all painted, shaved, and banded. I was a god-awful mess, and now have no hair atop the head.

8 Nov. Chuck arrived A.M. We walked all over the island showing him around, the view from the towers, tagged one seal. Did the Noddy Chick, only one now remains. After chow we read all remaining Black-foot numbers, painting the heads of all birds with green paint. Bob found 4 fish balls, no one else found any - ugh.

9 Nov. At 1300 a large group of Frigates left the North Point roost area, and a squall moved slowly toward the island; we did not know if it would hit us, but took shelter anyway, basically because of the flight away from the island of the Frigates. 15 minutes later the squall hit, and after it had passed a long phalanx of about 200 Frigates drifted back over the island.

At 1530 about 300-400 C. Noddy Turnstones were sitting in a tight clump on the beach near K2 with 1 ad. Sooty Tern, nearby were 3 Ruddy Turnstones and 6 Sanderlings.

At 1800 Seal 218 was found in the Scaevola near K30. At 2100 we went banding. 168 Wedgetails, including many young; 1 C. Noddy, 3 Brown Boobies, and 16 Bonx Is. Petrels were banded. There were many young wedgetails wandering out from their burrows. Study chicks 71, 4, and 5 were checked, and all were sitting within 3' of the burrow entrance.
10 Nov. A Golden Plover was recought today, and shows a great increase in weight from its first capture on Oct. 11, 1964, when it weighed 92.5g. At that time it had a prominent keel. It now weighed 117.7g - this an increase of 25.2g in 30 days. It is interesting that they can come back from a weakened and very thin condition so rapidly. Spent good part of day working on Battus skins, at 1500 went along north beach, saw adult female Gr. Frigate chasing Ad. Red-tailed Tropicbird, who barfed up fish, after which it she retrieved fish in air and returned to soar over the NE beach.

Found Seal 219 on N. point with an unmarked seal.
One seal had a small round hole where a tag should be, tag presumably pulled out.

Found six fish balls.

11 Nov. It was a rainy day - 1.2" for the 24 hour period. Consequently we did paper work. However, Chuck and I went out after dark and banded 12 Frigates, 5 RFB, 9 Bonin Isl. Petrels, and 35 Wedge-tails. The Frigates and Boobies were taken from the fringes of the central roost, and the neck-pole was very useful for getting birds beyond normal reach. Several recoveries were made, including many new Laysans.

12 Nov. Activity count - this has been renovated and is now more interesting - we still make a colony count, but only once and hour. The rest of the time we observe whatever of interest happens. Today I noticed that the RFB have a definite pattern to their leaving the island to fish. Birds will fly SW over the central roost, and then abruptly turn S over the runway opposite the Biltmore area, crossing the Scavola and then turning SW again, catching the updraft from the Scav along the beach. When they reach southpoint they head for the reef, and then cruise along a wave or two before heading out to sea. Others move along the East Beach from the north edge of runway and join those that come from the central roost. It seems that small flock formation is a function of the rather rigid flyways the birds have when leaving the island. Often 2, 3, 4, 5 birds would fly together over the central roost, only to break up on the beach and reform with other birds coming along the East beach. Other single birds from the Central roost flyway would sometimes meet birds coming along the beach, so that usual
12 Nov. cont

usually small flocks of from 2 to 5 birds would fly over the reef together. This happened repeatedly during the hours from 1030 to 1300 with the Red-Foots, and is probably correlated also with wind direction, which was from the South today.

The Brown Boobies took a different pattern, flying over the West or inside beach along the Scaevola, flying along the beach, over south point, and then continuing along the inside of the reef until they disappeared from sight near Sand Island. Do all the species have their own route? This can be checked. Is the route correlated with the wind or rather stereotyped and independent of wind direction? There is probably a general pattern overlaying a wide degree of individual variety - time will tell.

After dark 5 Wedge-tails (Imm.) flew into the side of the building near our quarters - probably attracted to the light. The young wedge-tails are all losing down, several of today's study chicks had no quills alive, and tonight increased activity of the young is noted. Most will probably be gone very quickly now.

Copulations were seen in the Black Gooney for the first time. Several pairs now have nests - shallow scrapes in the sand lined with plucked, green Scaevola leaves. Laysans continue to arrive, but no displaying is yet evident.

13 Nov. The shorebird count occupied a good part of the morning. I had the shore, and counted 31 Golden Plover, 78 Ruddy Turnstones, 10 Wandering Tattler, 7 Sanderlings, 1 Bristle-thighed Curlew, 43 Common Noddy Terns, 18 Laysans, and close to 150 Black-footed Albatross.

Also on the beach were 17 Seals, the tags of 8 of them were read. One seal had a broken tag. No. 208 has new pellage, and is very clean and shiny looking in a deep grey, rather than brown, that she has. Other tags were 333, 214, 276, 342, 231, 202, add 249.

I banded a mist netted Ruddy Turnstone, finishing another string of 2 bands - 642-00300. Two Sooty Storm Petrels were found in the study area 2 where Bob found them several days ago. One bird we had banded 9 days ago - 6642-00292. The other was an unbanded bird.
I banded 9 Red-footed Boobies and 2 Cr. Frigates after dark. Number 7B bands are much too large for both species. Unless slightly flattened, the bands easily slip up over the "knee" and against the body of the bird, rather than staying on the tarsus. I don't think the band could possibly slip down over the toes.

An interesting recovery - an Imm. Frigate 7374-45489 was banded as an imm. 13 months ago - so the bird is at least 2 years old and still in imm. plumage.

Five other recoveries were obtained.

Many young Wedge-tails continue to wander about the island at night. Bonin-Island Petrel activity is not as pronounced tonight. These birds are most difficult to understand, as local populations fluctuate drastically from night to night - one night there appear to be close to 1,000 birds in the air, while the next evening very few - only a few 100, are to be seen. Many burrows have been dug, but no eggs are in evidence, and apparently won't be until Jan.

14 Nov. At 0900 I found a Black Gooney sitting on an egg - the first egg we have found this year. We checked later and staked out 5 study nests of the Black-foot. Four of the bird had eggs. The fifth (Nest 2) had an egg in her oviduct which could be clearly felt by pushing in the abdominal region. All other pairs were sexed by checking the cloaca - those females just having laid an egg had distended and inflamed cloacae, and fluids were dripping from the opening. The males were not distended and whiter in color, and lacked the fluid.

Paul and the skipper joined us in seal tagging this afternoon, and 5 new seals were tagged, 16 seals were found on the beach. On the north end of East Beach a Laysan and Black-foot were seen sitting and billing one another.

After supper we made a booby census, and in the N.A.F. we found 111 ad. and 22 yng. Blue-faced Boobies; 38 ad. and 14 yng. Browns. There were 45 Ad. Blue-faced and 10 yng. in the South A. F. p only 6 ad. and 3 yng. Browns. ]

55 Ad. Blue-faced Boobies were marked for individual recognition, the breast and head being painted in a manner diagramed on overpage. A maximum of four
This bird would be R28.
### Blue-faced Boobies marked 11-14-64

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<tr>
<th>Red Series</th>
<th>Cat Black Series</th>
<th>Cooper Series</th>
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<tbody>
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<td>28. 697-24523 ♂</td>
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**Note**: 2-2-62, Kau, K., Chau Febhbug.  
**Note 2**: Jan., 1961, Ieiy, Chau.  
**Note 3**: G67-35038, 667-35032, 667-35019.
<table>
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<tr>
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<td>1. 737-95842</td>
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<td>1. 667-35057  ♂  &quot;meet #43.&quot;</td>
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<tr>
<td></td>
<td>2. 737-47001  ♂  &quot;with #24503 c=24-c&quot;</td>
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</table>
|                     | 3. 697-24509  ♂  "meet 14 (male kink)"
|                     | 4. 667-35059  ♂                         |
|                     | 5. 697-24517  ♂  "meet 1"               |
|                     | 6. 667-35047  ♀  "meet 2"               |
|                     | 7. 667-35036  ♂  "meet 1"               |
|                     | 8. 697-24530  ♀                           |
|                     | 9. 737-45121  ♀                         |
| 10. 667-35069       | 11. 667-35067  ♀                        |
| 12. 667-35052       | 13. 737-45111  ♂                        |
| 14. 667-39216       | 15. 737-98231  ♂                        |
| 16. 667-35030       | 17. 697-24516  ♂                        |
|                     | 21. 667-35030  ♀  "— 7 (male #691, old #7)"
|                     | 22. 697-24516  ♂                         |
14 Nov. spots is painted on the breast, each spot assigned a number value, 1, 2, 4, 6 or 7. The spot on the head is 14. By using combinations of these values, 28 birds can be marked with one color. Birds were painted with Red (R1-R28) and Copper (C1-C28). Birds paired at night were painted consecutively, such that two consecutive odd-even numbers are pairs, such as 1-2, 25-26, etc. The real power of these birds' bills was experienced, as one grabbed my hand, and Bob was actually shaking from the effort involved in opening the grasping bill.

15. Being Sun., we were overzealous in our relaxation. One new Black-foot nest was staked out by Bob. A north tower roost count yielded 235 Red-foots and 653 Frigates. One Short-eared Owl was seen as it circled around the tower before disappearing over the sea toward north point. There were many rats on the beach, but the owl ignored them - I'm sure he has no trouble finding food - he could simply stand on the ground and wait until a rat bumped into him.

16. Rat trapping All A.M. Two new records were set this morning - quickest time around area - 4hr. and 10 min. and the most rats caught in 1/44 traps - 146. After lunch Dave took us around the entire atoll in the boat. This took three hours. On the exposed portions of the reef (low tide) we saw both Wandering Tattlers and Ruddy Turnstones, presumably finding food. There were many Brown Boobies sitting on rocks and one sunken ship that we found. Crossing the channel into the lagoon, a large group of about 50-60 Bottlenosed? Dolphins charged at us and escorted us about for 10 minutes or so, breaching within 10' of the boat and swimming ahead of the bow. Many small individuals were seen in the group, and tended to lag behind the leaders. Sand Island had close to 50 Seals, most of which were tagged. Tags were read. There were 30 Brown Boobies and 9 Blue-faced Boobies - two unmarked, on the island. Because of poor weather and the lateness of our return, we did not set rat traps tonight.
17 Nov. This morning we made up stencils for more data sheets - I also made up data sheets for the Blue-faced Booby material I hope to get. Also made up card for a 6 Cr. Frigate that had been sitting around the shack for 5 days. This bird is so equipped for gliding - even the barbs on the leading edge of the 10th primary are reduced, flattened, and compressed, forming a cutting edge to the leading primary. The ramus of this primary is flattened somewhat so as to form a more thin edge to the wind as the bird soars. The bird this morning was molting heavily, and was gaining new no. 4 primaries in both wings, extensive new rectrices in an apparently chaotic manner, and extensive body molt. The gular pouch was bright orange. The bird was apparently coming into breeding condition.

Three more Black-foot nests were staked out - two nests have been placed in such close juxtaposition that the eggs are 1 foot apart and the incubating birds must touch one another. It will be interesting to see if both nests last.

18 Nov. Rat trapping all A.M. We caught 1/5 rats, a good number of them new. In the afternoon I did the Boobies - the Brown Booby has gone - and the Wedgetails. Three of the Wedgetails have gone - so now there are only six left. So far all birds have had a very musty smell before they have flown off. No bird having the smell have been found on the next study day.

19 Nov. RATS AGAIN. It went a great deal faster today. We have been made aware of the problem with the Verbequina on this island. Not found here a few years back, it has now spread to large areas of the NAD and SAP, as well as spreading in clumps over many areas of the island. The stuff is so thick it is in many areas crowding out the Scaevola. It is rapidly invading fields of Eragrostis, Tribulus, Eucalyptus, and Solanum, and kills these native plants with ease. We have pulled out large clumps, and the ground is barren underneath, nothing survives. There are so many seeds sown that I doubt that anything short of complete and continued effort could control it. If it continues to spread, areas now utilized for breeding by
19 Nov. (cont) Blue-faced Booby and Laysans, perhaps even Browns, will be crowded out by the Verbochina. Areas newly overrun this year that were used by Laysans this year are not used - the brush is too thick for the Laysans.

20 Nov. Rats all AM - the last of the rats for the month. In the afternoon Bob and I went after Laysan recoveries. We got some 130 recoveries and banded 20 new birds. Also, we found 2 Laysan eggs in the SAD. I forgot that last night we banded 19 Wedge-tails, 24 Bonin Is. Petrels, and a new Booby - new to the colony - banded No. 777-95642 and painted Blue 1.

I have taken a good number of notes on Blue-faced Booby behavior - there is a good deal of agonistic behavior in the colony, as well as pair maintenance ceremonies such as mutual preening or just standing closely together.

21 Nov. I have the early morning activity count - we had a great deal of rain. Blue-faced Boobies seem to leave the colony singly, and go directly to the area in which they will feed. Several examples will illustrate this point -

0755 - 2 SAF birds fly over NAF, to lagoon, up beach and out along north point, angling over the reef gradually.

0844 - R6 flies from NAF directly out over the lagoon.

0923 - NAF Bird flies directly to Lagoon beach, moves south along beach out of sight.

0926 - R9 from NAF, flies to lagoon beach and N. along Scaevola, out along N. pt., then heads straight toward reef and out to sea.

0931, 0935 - birds leave NAF, turn south along lagoon beach.

0944 - R11 and other bird leave NAF, fly to lagoon and join up, then R11 goes north in normal manner, other bird heads south.

This is repeated several times - it seems that the birds go directly to their fishing area. It is interesting that the birds head 1st the lagoon, westerly, when they fly to N. pt. and beyond, which is east of the colony. They were flying into the wind to get to the lagoon.
21 Nov. (cont.) At 1028 an unmarked Blue-faced Booby was seen flying over NAF, where it circled once, flew over SAF and circled twice, then to NAF, circled once before flying N. over scavary along east beach toward N. point. Is this new bird trying to get into one of the colonies? What is his status? I hope that we can follow several of these new birds as they try to get into a colony. We have marked one such - HL, found in NAF. Did Wedge-tail G and D, 2 more young have gone, leaving only 4 birds. On 18 Nov., only two of the birds had the musty smell - No. 18 and 47 - the two birds that were gone today. What is the function of its scent? What does it communicate to the adults, if anything?

22 Nov. Shorebird count in the noon time period, Bob walked the beaches, I did the interior. We had 85 shorebirds in the interior; 78 in the beaches. Totals were:

<table>
<thead>
<tr>
<th>Beach</th>
<th>Interior</th>
</tr>
</thead>
<tbody>
<tr>
<td>R.T.</td>
<td>47</td>
</tr>
<tr>
<td>G.P.</td>
<td>22</td>
</tr>
<tr>
<td>Bristle-thighed</td>
<td>3</td>
</tr>
</tbody>
</table>

There were 17 seals on the beach.

This P.M. Bob and I went banding Red-foots and Frigates in the central roost. In order to understand local island movement, all handled big birds are being painted according to their roosting area when caught. This has been done with the total pop. of Blue-faced Boobids - SAF birds are painted red, NAF birds - green. All central roost birds are being painted red on the breast and head, north roost birds will be made green. We can only paint the breasts of Frigates, the breast and head of imm. Frigates, nothing on ad. Frigs. Red-foots can be easily painted if adult birds. We banded 6 Frigates, 21 Red-foots; recovered 8 Red-foots, and painted all red.
23 Nov. I tried catching all the Blue-faced Boobies that had been marked with the Copper Kettle paint. This turned green, and blended in well with the green mark already on the birds. All copper birds are being changed to Black - still C series (cgt black). Only 13 of the birds were caught and remarked. All are numbered so that the odd numbered bird is the male, the following even number the female. Only exception is C17 (♀) and C18 (♂). The birds were caught during the day, but are extremely wary.

Since the day was so miserable - high winds and much rain (.48"), a good part of the time was spent doing paper work in the lab.

24 Nov. Before and after lunch we did n the plant plots, 8 of the 10 plots being evaluated. Data is gathered in terms of number of plants of each species, and total area covered per species, in each 25' sq. plot. The weather was so bad that two plots on the lagoon side in ravines between dunes could not be done because of the blowing sand and stinging wind. Some Black-footed Albatross had nested in these areas, and were waging a losing battle. In one area 2 nests had been undermined by the wind, and the eggs rolled out and down about 4' of slope. Another black gooney was sitting facing the wind, feathers ruffled and sand sticking in his eyes. The bird looked as though it couldn't make it. An abandoned egg lay 1' from the nest, the egg of another bird. After dinner, I began staking out Laysan nests. Four eggs were found in the NAF, and another nest was imminent, both birds hovering over a newly formed nest. All 5 spots were staked out - 25 nests will be so staked as eggs are laid - a nest attendance study is planned. Male birds are being painted with a green ring around the neck; ♀'s have green spots on the flanks directly in front of the natal position of the wrists when the wings are held into the body. A green spot is also
24 Nov. (cont.) painted on the head. One female was painted red on the neck, but this was discontinued so as not to interfere with anything H. Fischer may be doing on Midway.

25 Nov. While Bob and I finished the plant plots this A.M. Bill made ready for departure. The Black-foot in dire straits yesterday is still on the nest. The Scaevola has been heavily beaten back by the sand, and sand was covering many leaves – looking like snow. Most leaves on the lagoon-ward side are burned brown and withering, and most Boerhavia has been rolled up and is dying.

11 Laysan nests were staked out in the NAF this P.M., all new nests, including No. 29, where yesterday the two birds appeared to expect an egg momentarily. This gives us 16 nests staked, only 9 to find tomorrow. There are many completed nests now that lack eggs – they will be coming soon.

After chow did G. and D. on Blue-faced 56 and 3 Sedge-tails, only three birds left. Also got one-hours behaviorla observations in on the Blue-faced adults, including some neat sky-pointing and incipient nest-building displays in R21.

After the movie Bob and I banded 22 Bonins, 6 imm. Wedge-tails, 5 Frigates, and 16 RFB. One neat thing – a red Frig (painted 11-22 in the central roost) was found roosting in the north roost – this was an imm. bird. Perhaps our painting of him chased him from the other roost, or maybe they just move around frequently. The 21 large birds handled tonight were all painted green.

There were no ad. Wedge-tails tonight, nor were there the 22nd or since. We will run out of Puffinus within a few days.

26 Nov. THANKSGIVING Took it easy this AM. After thanksgiving meal staked out 6 more Laysan nests, 5 of the birds were ?s. Recorded who was in the colony of Blue-faced Boobies. After dark, Bob and I banded 1 Wedge-tail, 20 Bonins, 1 Laysan, 13 Frigates, and 16 RFBs. Got some Booby barf to feed the starved young RTTB that Bob found, it ate a prodigious amount, and now looks as stuffed as most of the crew, after thanksgiving meal.
26 Nov. (cont) - While banding in the north roost, we saw two green painted A*U RFB, and 3 green painted Frigates, birds we had painted in the same location last night. Tonight, in addition to the 31 birds banded, we painted 6 RFB that were band recoveries.

"79 Nov. 1964. Activity study, all day. Results of our painting effort have already shown up - three Green-painted Boobies have roosted in the Central roost now. Most painted birds are Red however. The 1800 roost check revealed 6 Red Boobies.

Also staked out more Laysans, and did G and D on Wedge-tails.

The activity study today should be called an inactivit; study - I have never seen fewer Boobies and Frigates in the air on the roost. At one point there were only 13 birds in the roost. Almost no birds flew by the tower all day, and it wasn't until 1 hr. before dark that EF and Frigates began arriving.

28 Nov. I had the beach count for the Shorebirds. There were 200 Black-foot nests with eggs, several abandoned eggs, including 3 that were within 1' of another nest. There were 23 seals on the beach - the increase probably due in part to the disappearance of Sand Is. 

There were 41 Laysan nests along the beach, many right in with the Black-feets. No hybrid pairs have yet been observed. Laysans in afternoon.

29 Nov. Laysans at 0800. Rest of day getting ready for plane. Arrived on Midway in the evening.

30 Nov. Wirt, and I, with Jim Priest, went to Eastern to check numbers of Blackfeet and Laysans. Bill had counted yesterday, but needed to finish some sections. There were almost 30,000 Laysans there.

1 Dec. Bill and I check in all of our equipment AX, flight leaves at 1600. After waiting about for customs check, and leaving some live Portulaca for Lamareux, we get to the Hawaiian King.
Dec. 2 to Dec. 6  Shopping about town, very little to do, weekend free - I spend some time body surfing at Haleiwa with Dennis. The surf is great - about 8' and breaking a good 200 yards offshore. Several good rides until darkness overcomes.

Second

Dec. 7  Errands - Shearwater leaves. R5ee£ shot. First was on Thur., the 3rd. D...!
Dec. 8 and 9 - skimming birds with Husted all day each day at Chuck's.

Dec. 10 and 11 - Mounting plants all day at the University. This is a pleasant change. It is fun once again to be around students at a University.

Dec. 12 and 13 - weekend, some swimming on the windward side, but it is very flat, so no surfing to speak of.

Dec. 14  I had an immune reaction to the shot, and got a rather large sterile cyst on my arm - as a result I don't have to go to Pearl to get another shot this AM with Dayle and Bob. Instead I go to Pearl City and get enough blood material for Kure, as well as a centrifuge which they are lacking. This, as usual, takes most of the morning, and the material is then packed in the afternoon and readied for the flight to Midway tomorrow.

Dec. 15  Flight to Midway, arrive there at 1530, check in.

Dec. 16  Foul, rainy weather all day. It would be nice if we could keep some foul weather gear on Midway so that we could do more there in the rain. I have a blood sample drawn for shipment back to Honolulu.

Dec. 17  What a day. The regular flight to Kure got off at 1300, and we flew into strong headwinds all the way, arriving in 45 minutes, much longer than usual. The ground gusts were 50 knots, so we could not land. We flew around three times, made a mial drop (shew), and then left. The plane bounced all over the place, so I pretended to sleep so as to forget about the motion. No problems, excepts landing on Midway, which was rather hairy. It seems a good storm is coming, and we were already feeling the first gentle whispers of hello.
18 Dec. Rain and high winds all day precluded a flight and much activity. A check at the overrun produced nothing new, 1 Bufflehead is still here, as well as 2 Short-eared Owls. Frigate point surf in getting big, and the wind and sand are strong. One Common Noddy chick is there, and Jim Priest has been photographing it every other day. This is a month later than the last chick on Kure.

19 Dec. I find that again there is no flight to Kure. Winds strong, much rain, very cold for here. There is little to be done in this weather.
20 Dec. A sketch of print sent last week. I am not sure if the blank for the blank will be sent. The blank is not to be sent.

I have not seen the blank. The blank is not to be sent. The blank is not to be sent.

I have not seen the blank. The blank is not to be sent. The blank is not to be sent.

I have not seen the blank. The blank is not to be sent. The blank is not to be sent.
On Fuglir point alone,
probably some 40 nests were lost. Other
birds were ringed in hand during sand.
The selective advantage arising to
these birds, comprising twigs, sticks,
Dream marble, etc., is easy to see.
These nests were withstand the heat
of the wind without conching song. Sand
and nests are exposed nests were completely
washed away by the wind and sand.
The clay found parts of the sand
below apparent beach. At least 5
Egyptian geese were washed away. Two
nest eggs were found in their nests
buried 5" under drifting sand. One bird
was sitting on a nest, the top of the egg
projecting 0.5 of the burying sand.

The pine (A. sp.) and (C. sp.)
break up, embraz platform at apparent
beach collapsed 10 high and 10 wide
contains.

Overall, perhaps a dozen trees had
fallen - only one dead geese found as a
result of this - some nests destroyed.
21 Dec. Winds calmed down to 50 mph.
No flight by Rms. Approaching Squalls, maybe rain?!

Jim & I walk the beach from B&Q to Pickett Pk. - from Pickett to Pk. is closed. The river must really have come up; the waves washed over close to 1000 yds of mooring, covered with range, & flooded into woods behind some dunes. What a mess. All geese on Pickett left gone - many abandoned nests on with range, where belaying stand has buried in one place to a depth of 4' or 5'. Found 2 young belays up on the right range in a log pile of debries. Mine has dominked.

It is very hard to estimate any clear, as most logs are buried under drifting sand. So I have 200 lnd of nests before storm, but both Jim & I放弃 500 more, 1st along beaches & exposed areas with belaining sand.
22 Dec. Again gale predicted until after dark. So, have some time to look about. The weather is still bad, although the winds have subsided to about 40 mp h. Rain in small squalls all day, temp low again. In the afternoon Jim and I climb 2 Casuarina trees looking into Hawaiian Noddy nests. One nest contained 1 egg, another nest is empty. It seems as though nesting is getting underway. Reports of chiks blown out in the storm, but none seen by me. It is remarkable that very little damaged hit the Noddies, as they nest fairly high up in the trees. I saw no destroyed Noddy nests in the storm, although there were probably a few.

23 Dec. Success! I feel that Kure is home, and it is sure good to be back. A pleasant relief after Honolulu. The plane left Midway at 1100, and we arrived convenient for lunch. Dennis and I checked Laysans after lunch, as well as Blackfeet. There are 14 of the original Black-feet nests remaining - the storm really wiped out the island and these birds - I wouldn't be surprised at 50 per-cent mortality for their nests. The Scaevola has been extremely hard hit, and looks as though burned off. South point is no more. A third plane for the day landed with our blood equipment, and so we packed that into shelves and readied it for use. Black-foot eggs were collected for blowing and shipping back as specimens - they line the beach.

After chow a check on the Blue-faced Boobies. I still have much transcribing to do. There seems to be more sexual activity. Sky-pointing was observed for the first time. Also El was in the colony - the new bird to the island. After dark Dennis and I painted Red-footed Boobies, banding 11 new ones and recovering an additional 11 birds.

We collected 25 rats for the month - the are most numerous, particularly around the building, and easy to catch.

24 Dec. Activity Study took all day. It is very windy, and a rain coming out of the east hit us in the face all day. Very little activity on the roost. No painted birds seen. GULLS GULLS GULLS. We collected 1 Glaucus-winged Gull, saw another, saw 2 Black-legged
(8) Lesser - winged Gull

(9) Black-legged Kittiwake (ad & imm. plunge)

90. Herring or Western Gull Imm.
24 Dec (cont.) Kittiwakes, two in adult plumage, one in imm. plumage, and also saw another gull, either a Herring or Western Gull in Imm. plumage. Checked the Laysans and Blackfeet. The gull skinned out. Try that again - The gull was skinned out. The rain continued on into the night. Cold.

25 Dec. Christmas. We rest, read, and generally relax all day, only checking the goonies. A new storm is upon us - rain less today.

26 Dec. Shore-bird and seal census, Laysan and Blackfoot nest checks. The Blue-faced Boobies are much more active now, and sky-pointing is a commonly seen event, whereas it was never seen in November. Mated as well as unmated birds sky-point, and the functions are different depending on the status of the birds. Mated birds call their mares from a short distance away to the cleared platform, whereas unmated birds sky-point to any bird flying over the colony to attract them. If one bird flies over, as many as 6 or 7 birds may sky-call to it as it circles overhead. *pt. - *Blue-winged Kittiwakes.

27 Dec. We began blood work today and have worked out a reasonable system, carrying enough equipment for doing 24 birds. The work is complicated by the fact we are also doing weights, measurements, and ectoparasites on the Laysans we are weighing bleeding, so it takes many operations to complete one bird. We found one Laysan with an oozing sore on back, and the skin was eaten away exposing the bones of the pelvic region. Two birds were seen this way yesterday, one was killed as it was almost dead, one being able to look down into the insertions of the femoral bones in the pelvic girdle. The whole looks gnawed and smells badly. We collected blood from the sick bird and collected it as a specimen for later autopsy.

After dark we walked to south point and there caught a Glaucus-winged Gull, got a Mcbee card on him, collected reams of lice from the head just behind the eyes and kept him overnight. He regurgitated a rat in the lab, and remains of another were later voided. He was weak and very light, having come in with the other 3 after the big storm. There are 5 Glaucus-winged Gulls now on the island (one was collected and skinned), and
27 Dec. (cont.) 1 of the Kittiwakes (imm.) remains, moving over the island freely. The Glaucous-winged Gulls stay either at S. or N. pt. Booby behavior at night.

28 Dec. Banded the gull and released him at the beach. He is so weak that he can barely stand, even though I forced a rat down him. Dennis and I get some pictures before he flies off and drinks from the lagoon. We put a 737 band on him, but this seems much to large, even though this is what Dept. of Fish and Game recommends. Perhaps his legs are small due to his weakened and thin condition. Spun down blood, cleaned up lab, worked on Laysans, painting some not marked. Two nests have been destroyed, the eggs broken and contents gone, probably eaten by rats.

We staked out the Booby colony, putting stakes in at 33 foot intervals. Next the colony will be mapped out and platforms designated. The birds have cleared platforms to dance in, and one pair (R13-14) have two platforms, dancing alternately in them. There is much manipulating of nesting material at the present.

Caught a Bristle-thighed Curlew, but he escaped from the lab before I could band him.

29 December - Dennis and I bled and took measurements and ectoparasites from 8 Laysans - one bird had an extremely worn band which was replaced - the band read 72. This Laysan, if the 40 means year banded, was banded 24 years ago. At any rate, it is an old bird, and was not bled. There were 4 Glaucous-winged Gulls at south point, including the one unable to fly. One bird regurgitated as I approached - much rat fur and many chelipeds from crabs. The birds can now be approached to within 150' before they fly off. Checked Laysan nests, observed and photographed various displays of the Boobies - in particular Sky-calling and agonistic encounters between R13-14 and R15-16. After dark Dennis and I painted 5 Blue-faced Boobies in the colony as follows:

- Orange 22, ♂, mate of R22 - 697-24516
- Orange 17, ♂, mate of R17 - 737-98231
- Orange 21, ♀, mate of R21 - 697-35030 (old band #7)
- Orange 1, unmated ♂ - 667-35057
- Orange 2, unmated ♂ - 737-47001
29 Dec. (cont) After marking the 5 Boobies, Dennis and I counted Boobies in the colony. There were 90 Blue-faced Boobies in the NAF, plus an Imm. (no. 56), and 26 in the SAF, only 17 in the colony, a considerable drop from Nov.

30 Dec. The activity study occupied all day, with fair weather. In the dawn minutes, there were several Red-feet that would fly over the colony one or two times, settling usually in the spot from which they left. As they flew, many others would Sky-call to them. This was continuous from 0715 until 0800, with usually 10 to 12 birds in the air at any given time. Roost counts failed to disclose any green birds in the roost - all the painted birds had been painted in the roost, i.e. - no discovered changeover. An ad. Frig. chased and caused another ad. to regurgitate a small fish on the beach, the booty being promptly recovered by the pursuing bird. Brown Boobies are acting as a flock, and at 0745 17 were feeding together off Sand Island. At 0815 they were all sitting on the Buoy outside the reef or the battered tug. Sand Island, having disappeared in the storm, is back, and at mid-day 48 seals were sitting there. At 1315 an adult and a yng. Brown Booby were feeding in very shallow water in the lagoon, and I could observe the bird underwater. The wings did not open, and after the strike into water in one instance not more than 3 ft deep, the bird would bounce almost completely out of the water - apparently due to its buoyancy. We painted 21 Red-feet or Frigates after dark, banding 17 of these new. Caught one Glaucus-winged Gull, collected innumerable ectoparasites, and banded him, and also caught the imm. Kittiwake. This bird has a bad but healed gash on the neck, such that the trachea is exposed for over an inch. The bird appears in fine health, much fatter than the Glaucus-winged Gull.

All the Blue-faced Boobies painted last night are now back in their appropriate spots. The orange shows up very well, and is easily distinguished from the red.
31 Dec. 1965 Shore-bird and seal census. We had 80 GR, 105 RT, 1 WT, 2 Sanderlings, 5 Bristle-thighed Curlews, 21 seals. The Laysan nests were 729, a decrease from 841 the previous week, and 832 the week before. The storm here raged from Dec. 16 to 22, so the abandonments occurred a full week after the storm abated. Blackfeet suffered the most, the counts revealing a decrease from 271 nests to 190 - a 30 per cent decrease. Most the the nests lost were on the West beach, from exposure to waves or heavy wind and sand. At least 4 Glaucus-winged gulls were seen this day. Laysans were checked. Booby behavior was observed after dinner.

1 January, 1965 Rested on this first day of the year. Checked the albatross nests, Dennis did some skins, I transcribed notes.

2 January. We began the report for this period, checked the Laysans. Took 9 blood samples and McBee cards on 8 Laysans. Of 8 birds handled randomly, 2 had the back rotting condition. These birds were bled. Another extreme case of the rot was seen and this bird was also bled, then destroyed. The entire thoracic area was exposed, and the scapula hung free. The bird could not use one wing, and was beginning to limp - literally being eaten away by whatever this disease is. Blood from these birds is being labelled as specifically from sick birds in the hopes that the causes of the diseases can be assessed. We have taken one specimen, and have its blood also. This rot is foul smelling, evil looking, completely debilitating, and thoroughly disgusting.

On south point I saw 6 Glaucus-winged Gulls. After the movie I went out and banded and painted Red 8 Red-footed Boobies. There were no recoveries.

3 January, 1965 While writing the report, I spun down the blood samples taken yesterday, then checked Laysans. On the beach there were two new gulls, a Glaucus Gull, clearly seen, esp. the pink at base of bill, lighter primaries, and light feet, and a Glaucus-winged Gull with an ad. type mantle, although the bird is still mottled below. Transcribed some behavior notes. There were 12 seals on N.Pt.
4 Jan. 65 Finally worked out some more mimeo forms - one for the Blue-faced Booby colony check, one for the shorebird and seal census, and another for a daily check on bird populations - particularly for those birds not on island in abundance. Dennis spent the whole day on the Laysan - the skin looks real good. I spent an hour with the Boobies - there was much agonistic behavior, and R9 and 10 are trying to supplant O2 from his platform - this caused a long skirmish between the birds - in one instance the o' seized O2 by the neck and tugged, but O2 broke away and continued Head-wagging, eventually getting the platform back. All quietly copulated with his mate, I did not see the beginning, but did see the end, it looked as though it may have been a good attempt, it would be good to get some eggs to watch before I leave. There was Sky-calling at 2200 as we were banding Bonins - could it be that some activity goes on through the night?

We banded 54 Bonins tonight - one burrow that I examined went clear out of reach, and the chamber felt as though it was widening out. We caught a Bristle-thighed Curlew, by hand, and banded it. I see now how it gets its name - the feathers of the thigh have no barbs, are gossamer-like and shine like a spider web catching the early rays of the sun. These birds are remarkable to handle, lying still on the table as I pour over him for parasites - none found. I could lay him on his back and let go - he could still just lie there. He was released at 2300 and flew off into the dark, with no calling.

5 Jan. Started a new study today to determine who is in the colony and at what time. Each hour on the hour the colony is checked and the activity location of the birds in the colony is noted. Each numbered bird is accounted for throughout the day if in the colony. It is rare for these birds to perch anywhere on the island aside from the colony area, so it is safe to assume that if they are not present they are at sea. We have seen groups of 3 or 4 birds on Sand Island, but when we did two of the birds were not colony birds at all.

It seems as though the males tend to precede the females in arriving back to the area at night. Single birds were as follows for a 4 hour period:
Sexual structure of single birds in NAF colony,
5 Jan., 1965

<table>
<thead>
<tr>
<th>Time (1400)</th>
<th>Male (♂)</th>
<th>Female (♀)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>1500</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>1600</td>
<td>11</td>
<td>2</td>
</tr>
<tr>
<td>1700</td>
<td>8</td>
<td>4</td>
</tr>
</tbody>
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This seems to indicate the earlier arrival of the ♂ to their platforms.

There were 5 gulls on S. pt. today - one Glaucus and 4 Glaucus-winged Gulls.

Worked on 6 more Laysans this afternoon - found one with a large hook in the neck, which we removed. Somebody probably fishing for gooneys from a ship somewhere. Found some very nice large black mallophaga in the upper wing coverts of two of the gooneys - the first ones like this we have found. Also some mite-like parasites in the neck. We now have cards on 32, needing 18 more to complete our 50.

Total no. boobies in NAF colony, hourly, from 1800 to 1800:

73; 12; 3; 7; 8; 9; 12; 19; 37; 80; 85.

6 Jan. We had an afternoon full of rain, I worked on a long overdue letter to Dr. Dilger regarding Boobies here on Kure. Also did some paper work. All in all, a rather uneventful day outside the lab.

7 Jan. Working on plant plot figures from Nov., this will consume several rainy afternoons. Dennis working on skins. It clears in the afternoon, so we go out and work with six more Gooneys - one of the birds flinched vigorously as we were bleeding it, and must have ripped the heart, for he died within 2 minutes of being released. Will be made into a skin. I could not find or feel a heart on one bird, so we did not bleed it. So - 5 more blood samples, 6 more McBee cards with data and lots more nifty ectoparasites. Behavior of boobies neat, with R2 trying to get R22, who is with another male nearby.

8 Jan. This day was spent on the N. tower, all day activity count. One RED Frigate was seen over W. beach, and one Red RFH flew and landed in the N. roost. The general impression one gets, however, is that there is a very limited amount of roost exchange in these two...
8 Jan. (cont.) species, although there is no where near the site constancy that is found in Blue-faced Boobies. Behavior this PM revealed both R2 and the 9 of R22 sky-calling simultaneously to get the attentions of R22. The unpainted male (painted 04 tonight) is definitely winning out, although R22 sits with R2 if the other bird is not around.

Painted all the Boobies we could catch fresh, and gave two new birds numbers as follows:

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<table>
<thead>
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<tbody>
<tr>
<td>03</td>
<td>the Sky-calling 9 at X0 697-24509</td>
</tr>
<tr>
<td>04</td>
<td>the 9 with R22 667-35059</td>
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Both birds were recognized merely by the positions they were in, relative to colony stakes and other birds. In general, all the birds were in the same spots they occupied at dusk, and have been occupying for the last week. One Laysan was found dead next to study nest 33, and was collected.

9 Jan. '65 The shore bird and seal census occupied 4 hours, from 1000 to 1400. The numbers this week were consistent with those found for last week - 732 Laysan nests is a variance of 3 nests. No Sanderlings were seen, 71 Golden Plover, 125 Ruddy Turnstones, 11 Wanderin Tattlers - a high figure. Five Glaucus-winged Gulls and 1 Glaucus Gull were seen. Most interesting were the figures on Laysan problems and their back-rot disease. 13 Ad. Laysans, 3 on nests, were found with the disease in various stages. It is easy to tell an incubating bird in this condition, as there is a mass of feathers surrounding the nest, where they were preened out or fell out as the skin rotted away from underneath. Walkers in advanced stages can also be spotted, as they limp, and often one or both wings droops down. This disease is a vicious one - not only is the skin attacked, but also all connective tissue, muscle, and probably nervous and vascular tissue in the area of infestation.

ALL 13 SICK LAYSANS WERE FOUND IN THE SAF - none were seen elsewhere. Also found, IN THE SAF, were 8 dead Laysans; those not badly decomposed showed the familiar back roting, and the others, can be assumed, died for the same reason.

Black-footed Albatross - nests found this week were 152 in number, a drop from 190 last week.
No Black-feet have been seen with the back-rot; indeed the Laysans are the only ones that are afflicted as far as we can tell.

Spent an hour with the Boobies this evening, they are all in normal position, although much more alert and scared of me than normal, I presume this is because of our painting effort last night. The paint on the head shows up much better now, as we put a thin line down each cheek of the bird. Those flying overhead can now be read with much facility.

Dave, Dennis, and I went skin diving in the afternoon. Although the water was cold, we managed a half-hour or so, and Dave and I made it to the reef. There are many wrasse, butterfly fish, parrot fish, and lots of others I have not seen - there is a great difference between the fish here and at Johnston.

10 Jan., 1965  We bled five birds today - all sick Laysans - two so bad that they had to be killed.
Two 10 cc. samples were taken from one bird, he died as a result - he was one of the very sick ones - could barely walk, could not fly, sore covered most of back. The two we killed, plus one that died sometime between 1400 yesterday and 0900 today, were taken to S. pt. and dumped into the sea. The disease must be contagious if all the birds affected are in the same small area. It seems unlikely that we could arrest the disease by disposing of the dead, as the same condition was seen last year in the same area, and is probably firmly entrenched in the soil, if it is some virus or bacterial disease.

11 Jan. Did the Blue-faced Booby hourly colony count today - it rained almost all day long. The rain seems to affect the leaving of the birds, as many more remained in the colony than last time. The hourly numbers are as follows, from 0745, 0900, 1000 . . to 1800.

95; 48; 14; 16; 18; 22; 21; 23; 41; 74; 89.

One bird, 87, a d, remained in the colony all day - if he left he would have had to go out, fish, and return within an hour, which seems unlikely in lieu of the length of time away from the colony that the other birds spend. Again, most birds remain in the same
general location within the colony throughout the day.

As the weather was bad, this was a good day, between checks to the Boobies, to remain inside and catch up on paper work — recovery schedules (one Red-footed Booby banded on Kure in Nov. 1963 was found dead on Eastern, Midway on Jan. 4, 1965 — Jim Priest sent the band over on the last plane). So un down the blood that we took from sick Laysans yesterday, transcribed some Booby data.

In the evening after chow, I spent an hour observing behavior. Of most interest still is the conflict between R2 and 04 for the 9 R22. 04 still triumphs, but when he is away R22 will m. twigs with R2 and approach his Sky-calling.

Transcribed more data after the movie until about midnight.

12 Jan. In the morning the weather wasn't impressive, so did more recovery forms — those from Midway were finished. We did McBee cards on 7 more Laysans — two to go and we are finished with them, blood from 6 more Laysans — I couldn't find the heart on one bird, so we released him unbled. For the 48 blood samples we have, only 2 birds died accidentally, a 4 per cent mortality.

We got 76 Laysan recoveries in the afternoon, and will check the same area tomorrow. Bonin banding by Dennis after dark, I do boobies after dinner, and wander through the SAF at dusk, counting 36 Blue-faced Boobies there.

At 1130 when checking the Laysan nests, I saw a SAF Blue-faced Booby in the NAF colony area — the first time such a mingling of SAF and NAF birds has been seen. At any rate, there is extremely little such mixing.

There was one real sick gooney in SAF this evening, could not fly and could barely walk.

13 Jan. In the morning we do Laysan recoveries in the same area visited yesterday — from lab to area 2, fuel tanks, along N. edge of runway. We saw 57 walkers, of which only 16 were handled yesterday, 41 being new birds to get recoveries from. Thus we have a 72 per cent turn over in walking Laysans in the area in less than 24 hours.

We check on a sick Laysan seen in SAF last night,
13 Jan. (cont). find 2 freshly dead, two very sick, could not get a blood sample so destroy this bird whose entire back is rotted away and is almost too weak to hold up his head.

At 0030 this morning I checked the Blue-faced Boobies. All were asleep when I entered the colony area, but I disturbed the first pair, who called loudly. Those birds within hearing range looked up and called, setting off a chain reaction which swept the entire NAF roost. I painted 3 birds we had missed on the 8th, and noticed that R2 and R22 were together - I could not see R4 around. So R22 has done it again, the polyandrous 2 sleeps with another male tonight.

Dave showed me how to work in the dark room, so after supper I printed 21 shots of Blue-faced Boobies in various positions, including one incipient Sky-call and mutual gazing. One bird caught holding a twig in the bill.

There were many gulls at south point today, including the Glaucus Gull.

At 1130 there were 20 seals on N. Pt. Sand Island is almost gone, so more seals are showing up here now.

14 Jan. '65 The activity study occupied most of the day. In the morning most of the boobies were heading out to the north, there was a strong wind from the west. Large numbers of painted Blue-faced Boobies were seen and recorded by number as they flew to and from the colony.

The roost count we use in very inaccurate. I made the 1700 count and saw about 70 Red-footed Boobies. However, 10 minutes after the count had been made the roost was disturbed, and twice that many flew from the Scaevola and 30 remained in the roost - the roost counts must be off by at least 100 per cent.

At 1700 R2 and R22 were together, R20 was alone. Maybe R2 and 22 will mate, but I'll bet R22 finds another c.

Jim Priest came over today to help us until Sunday.
15 Jan., 1965  This morning we went seal tagging, trying out a new method that Dennis thought up - using the canvas weighing sling to throw over the seals. This works out well, one end having been unchained to more readily accommodate the seals and facilitate my putting on the tag of the flailing tail. Jim Pries, who is here, and Dennis sneak up on the seal and throw the paraphernalia over the seal. If they catch it asleep, the beast is pinned by the ever-loving Dennis (who kisses it) and the heavy Jim. Before it knows what is happening I have grabbed the tail, attached the clip, and the seal is then released. There are several advantages to this method over the old wild west lassoing method: 1) the seal is more quickly captured, 2) the tail is more easily held, as most of the body is pinned down, 3) the seal cannot bite through the canvas, the old method allowed the seal to toss about with resultant danger to the tagger, 4) the tagged seal does not see the taggers often, and many remain in the area after being tagged, 5) the process is less hard on the seal - no constricting or choking ropes around its neck, 6) Seals in the area are less disturbed, as we all lie down on top of the seal, and other seals cannot see the captured seal - the sight of a lassoed seal often sent nearby ones scurrying. - we tagged 4, in 15 min., all within 35' of one-another, 7) it is easier to release the seal, just get up and the seal kicks off the canvas - no struggling to untie the confusion of knots and nooses around its neck. Result of the new method - 20 seals tagged in 5 minutes over two hours - the old record was 16 for one day!

This AM Anderson gave us a Bonin he found dead - Jim wanted skinning practice, so he skinned and, with help from Dennis, put up the skin. It looks great. We did paperwork in the rainy afternoon, I got in some Booby research - the wind, rain, and cold have resulted in early sleeping by the boobies - many were asleep at sunset. R2 and R22 are together again - 04 is literally left out in the cold.
16 Jan., 1965  As usual with Saturdays, a good part of the day is taken up with the shorebird and seal census. Jim and I took the beaches - two interesting discoveries. First, Sand Island is completely gone again - so seals - seals all over the island, we found 74 of them, 12 of those we banded yesterday (does this 12 of 20, or 60 per cent, reflect that 60 per cent of the seal population is on the island, or that there are 124 seals in the atoll?), and a total of 42 that were tagged.

There was an increase in Sandering Tattlers - we found 14 of them on the east beach. They were primarily in the Scaevola near the beach. Is their increase during the present (very) foul weather due to the fact that the reef, on which they feed during the day, is awash with heavy surf, with the consequent only dry area available (remember Sand Is. is gone) is our little paradise. This seems likely but, unfortunately, not provable.

One Black-foot Albatross egg has hatched - both parents are near the nest, one closely brooding the downy white chick. 15 or so other Black-foot nests were spot checked, but all had eggs. Our Black-foot count actually increase by 10 to 162, whereas the Laysan count was about the same. Considering that Dennis and I switch about (alternating beach and interior), and that today Jim Priest was along, our constancy in numbers must reflect that which is here. I think our sampling of such things as shorebirds, nesting Laysans and Blackfeet, adult Blue-faced Boobies and, until recently, Browns, is good. Less good is Red-foot Boobies and Frigates, and worst of all are total island use by Bonins, walker Laysans, Wedge-tails when they are here.

Behavior again today on boobies, again they closed up early.

17 Jan., 1965  Spent the day checking the boobies every hour, the sky was very light at 0700, and most of the boobies had already gone. They had all begun to sleep very early the night before. The moon was full, there were almost no clouds.

Saw Jim Priest off this P.M. He stayed since Thur,
17 Jan (cont.) had helped us with many projects.

18 Jan. Mon. I am afraid I have my first cold since last March - it has slowed me down, so I work insided on some paperwork, sleep part of the afternoon. No energy to do much of anything.

19 Jan. Now Dennis also has a cold, we are a sorry pair of bird men. Anyway, Dennis works on Skins, I try to get 1964 banding figured out - what a mess. There are mistakes throughout the progress reports that have been banned through from July 15, an error of a mere 2,000 bands. Checked Laysans today - very little other fieldwork. The invalids remain inside.

20 Jan. Dennis collected a Herring Gull today, an imm. bird just molting over into adult plumaged. This is the first for the season here, although 3 were collected here last winter - these are vega, the Siberian race of argentatus. Finally got out to Blue-face d behavior, the cold slowed me down abit. The north roost was checked for nests or eggs of Frigates or RFB, none found. Dennis poked about there. The RFB's on Midway are now nesting - Jim Priest counted 20 eggs there last week.

In the NAF the first Blue-faced Booby egg has appeared. It is the pair that had been interacting with R27&28, but is unmarked. I will mark them soon, as I think the male of the pair has another female aside from the one with the egg.

21 Jan. The activity study all day again - I took the morning count, Dennis remained until sunset. Most of the RFB went north, with the wind which was from the SW, then headed west from Norht point. Few came back during light times, but those that did came mainly from the north.

Booby behavior at night, 02 finally got a female to come over to him, but she left to go to the male of the pair with the egg. Ol has a female now - she was on his platform sleeping when I left the area. He did not have one yesterday. Something may very well go on at sea.

Temperature makes news here - a new low record for Kure - 39 degrees. This beats the old mark by 11 degrees. I wouldn't believe it if both our thermometer and
the CG. readings were the same.
Went out last night and marked the two Blue-faced Boobies sitting in the area with the wooden triangle behind the fuel tanks - study area 2. (SA2) One was a NAF ?. They were marked as follows:
- orange mark on breast - 737-98171
- orange ring around NAF mark - 697-24529.

22 Jan., 1965 This AM I cleaned our little shack - it once again looks quite presentable. I hope it remains this way.
After lunch we took weights, measurements, ectoparasites from 6 Black-feet, blood from 5 of these - the other's heart was too deep. These birds are quite a bit bigger than the Laysans, and not as difficult to work with. They have real neat Mallophaga - large and shiny black on their wings. These beasts crawl off onto the person holding the bird, but drop off fairly soon. There were some reddish and quite small ectoparasites around the head that were most likely mites.
The Blue-faced Boobies are most active, as far as arrival is concerned, about 1600. I got many pictures - lots of Ol Sky-calling (he lost his ?), it seemed that tout a monde was Sky-calling as birds poured in - often 5 or 6 in the air over the colony. R19 was with 03 for some time this evening, but R20 got her back after all 3 birds flew off for about 10 minutes.
Catching rats for autopsy this PM.
Some very interesting light on the Gooney back rot problem. While scouting about for rats, found a 'sick' gooney with rats all about him. I shut out my light and sat down to watch, waiting a few moments before shining the headlight back on the gooney. When I did so, many rats scampered off his back where they had been feeding. Sitting quietly, with the light on, I could see rats approach the live bird, crawl up his back, and feed on the exposed flesh. Every now and then the bird would twitch, turn back to try and get the rats, and then look forward again, the rats eating unperturbed. There must have been 20 of them on the gooney. Do the rats initiate the problem, or merely capitalize on, for them, an opportune meal. I wish I knew, but it appears in lieu of this that the rats are a bigger factor than hitherto supposed.
23 Jan., 1965
So much has happened today that it seems like 3
days have gone by. It was the day for Blue-faced Booby
hourly check, so I began that at 0700. Never were there
fewer than 23 birds in the colony at any time. I
cought and painted the ♂ with an egg - 06 now -
667-35047, and also got the ♀ (697-24517) - 05.
The male, after sitting some time with his mate
during the day, left and joined another ♂, even en-
gaging in territorial combat against R27-28 with this
new bird. B3 laid an egg today around noon, so we have
two Blue-faced eggs in the colony at the present time.
R19 spent some more time with 03, but rejoined R20
after all 3 birds flew about.
The Laysan abandonsments in SAF numbered 36 today -
this is after Jim Priest had taken 13 of the eggs last
weekend. 3 more bands from dead birds were removed by
Dave. I saw only two sick birds, but learned a good
deal more about them.
1). 4 ♀ incubating birds were noticed in the NAF,
surrounded by a circle of feathers on the ground. Ex-
amination showed that these feathers were not fallen
out of the bird, but were cut!! The quills have been
cleanly severed, as the one taped in below shows.
2) The backs of two of the birds were examined,
and there were ABSOLUTELY NO SORES on them - the stubs
of the cut off quills remained firmly in theback of
the bird.
3) Rats appear to be the only agent, aside from man
and scissors, that could cut the feathers as cleanly
as they were cut.
4) The feathers were removed in an area directly
anterior to the uropygial gland - an area often stricken
by the 'disease'.
5) All the birds mentioned were withing 100' of one
another - does this suggest that nomadic bands or packs
of rats operated within a given area?
6) In broad daylight, a bird was seen with rats
crawling all about him. I remained inthe area, and the
rats crawled over the tail of the live bird and commenced
feeding, even though the Laysan grabbed and threw 2 of
them off its back. The rats were feeding on live flesh
in the area in which the feathers had been removed from
the incubating birds. This stricken bird was near the
N. end of the runway, well over a dozen rats about him.
Pictures were secured of the rats on the back of the
23 Jan. (cont.)

Laysan. Thus it seems that rats are important in this condition – we do not know for sure that they bring it about.

QUESTIONS:
1) Why the localization of the disease to the SAF, with tendencies now for a spread?
2) One Laysan found dead and collected, was subsequently skinned and found to have a small hole, 3/4" in diameter, in its back. Is this truly a disease that caused the death, appearing to our eyes as a small hole (that rats later develop further), or did the bird get bitten there and get infected or die to some non-related cause???
   We should have a better indication from autopsy of collected specimens and blood.

   Two small pinkish-white eggs, presumably Bonin's, were found on the ground today in widely separated areas - one in NAF and the other near south Point in the Scaevola.

Both of the feathers are from live, healthy-appearing incubating Laysans. The backs of the birds were examined - the stubs remain. No zoones present.
24 Jan. Bob Standen arrived this afternoon, we showed him around the island, checked seals as well. There are very few seals on the beach now - Sand Island is back.

While I transcribed data, and read, Bob and Dennis got some Black-foot returns.

I put out 13 traps in an area where the rats were feeding on the live Laysan, then removed the Laysan. Next morning caught 12 rats. Set traps for rat trapping.

25 Jan. Rat trapping all morning - we are catching large numbers of new rats - 40 new ones today, out of 119 rats trapped.

Freeze the captured dozen rats for autopsy.

Blue-faced Booby behavior. OJ has not got the new female. 05 is O.E.

Blew out the Bonin eggs, spin down the blood sample from a "sick" Laysan caught yesterday.

26 Jan. Rat trapping AM. Checked Laysans before lunch - 4 eggs were pipped - 3 at 69 days, and one at 63 days. No chick has yet emerged. Some paper work in the afternoon, checked Blue-face Booby behavior after dinner - it was raining, the birds were inactive, so I only stayed 15 minutes. At 1800 I checked the Laysan Albatross from whom the feathers on the preceding page were taken; the rats are continuing their assault. Let's look at this Laysan chronologically:

1). Sat., Jan. 23 - loose feathers all about the Bird, cut off, stubs of the shaft remain in the back of the bird - no opening in the flesh - seems healthy.
2). Sun., Jan. 24 - as above.
3). Tue., Jan 25 - small hole, 1/2" across, in lower back, area from which feathers were removed, slight bleeding, blood stains in region of uropygial gland, bird still on nest. It looks like the rats are wholly responsible for the deaths of these gooney's. Found Fairy Tern, broken wing - FN 20420.

27 Jan. Rat trapping AM. Several rats dead in traps - it was cold (56) last night, and many rats were wet from their urine.

The Laysan study nests are rapidly changing in character. 9 of the eggs are pipped or cracked - the chick has emerged from two eggs so far. Many pairs are...
27 Jan (cont) present at the nest now, and there is much egg calling by both members of a pair. Of the 21 active nests, both birds were present at 3 of them.

After lunch Bob and I went collecting blood, ectoparasites, weights and measurements from Blackfeet — we did 5 birds in 2 hours. Bob was a riot — it was the first time he had handled the birds, and he ended up in some highly interesting positions, the bird holding onto him. A system soon materialized out of the chaos, however, and the last bird took the normal 15 minutes.

We found a Ruddy Turnstone (FN 20421) on the beach, dead.

28 Jan., 1965 The last day of rat trapping, we found a few more dead rats in the traps, and managed to get many new rats. In the afternoon I checked the Laysan nests — there were five chicks, 6 other eggs were pipped, this is 50 per cent of the study nests that now have pipped eggs or chicks. We may be slightly ahead of the general island population, as we set up the study nests from the first nests we found, so they are slightly ahead of the rest of the island.

Spun down yesterdays' blood samples, skinned and stuffed a Ruddy Turnstone today. It came out better than usual, but I still need practice.

Blue-faced Booby behavior not done this afternoon — I had to finish up the Turnstone after supper.

BE has now two eggs — only one yesterday, so the second must have come today or late last night.

Saw the old-time Laysan again today in the same area where we rebanded him in Dec. 29, 1964. He was walking in the colony. (See Deacon)

A Red-tailed Tropicbird was found in the Scaevola on a cleared scrape of ground. His band was 605-12677, an adult with the pink tinge to the feathers. He flew off immediately upon release. I have seen RTTBs land in the Scaevola so far this winter only one other time, that was the January 21 Activity Count from the radar tower.

An Adult c Frigate was making continued forays into the NAF gathering twigs and other nesting material — so nesting is underway.
29 Jan. The activity count lasted all day - Standen got the wettest watch, but it cleared in the afternoon and was very warm and clear - a real pleasure. Of prominence were the forays, repeated again and again, of a Frigate from the N. roost into the central plain for twigs. It seemed the bird would generally hover over Solanum clones and rip out large twigs of the plant - it looked like living strands were broken off.

The birds generally came back in flocks of from 3 to 8 birds, containing both RFB and Blue-faced Boobies, the flocks coming in from the NW and breaking up over N. pt. the BFB going to the NAF and the RFB landing in the north roost.

One study bird, the female Laysan on nest 50, was in perfect health yesterday. Today he was unable to stand, and a hole about 6" x 7" was eaten out of his back. I destroyed the bird, and his egg is being kept under a lamp in the lab, although it will probably not hatch. The rats work quickly.

After the great movie (Sex and the Single Girl) we all had to go out for exercise, so Dennis and Bob banded RFB and Frigates, I worked on Bonins and counted the Blue-faced Boobies and Brown Boobies and the island. There were few Bonins about, only 19 banded and 9 returns in 3 hours of walking about.

The numbers of boobies were low - 114 Blue-faced and 22 Browns - the latter consists of 10 Imm.

While banding Bonins I found an injured fairy Tern, an injured Bonin, and a weak Golden Plover. The Fairy Tern is being cared for in the lab, the Bonin was destroyed and kept for a skin, and the Plover was banded.

30 Jan. The shorebird and seal census was carried on today. Dennis had the interior, Bob and I took the beaches. An attempt to assay number of Albatross nests hatched revealed some interesting things - hatching over the island is far from uniform. At N. pt. 33 per cent (1 of 3 nests there) were hatched, 20 + 4 per cent hatch in all the rest of the beaches and the runway, whereas only 12 per cent hatched in the interior (both antenna fields). DOES THE activity of the Black-footed terns accelerate egg laying there in the Laysans? Anyway, the beaches are ahead of the rest of the island in eggs hatched.
The total hatch of the Laysans is 19 per cent, or about 120 of the 631 nests. 64 per cent of the Blackfeet are now on chicks, with 40 per cent hatched on N. pt, 67 per cent on west beach. Shorebirds are way down - only 37 GP and 58 RT. 
Blue-faced Booby behavior in the PM after show.

Jan 31, 1965 Checked the Blue-faced Boobies every hour today. the numbers in the colony are lower at night, but higher during the day. 69 were found at 0720, 74 at 1850. The lowest number were found at 1000 hours - 21. The female Bl6 is behaving strangely, sits in the same spot hour after hour, not standing but sitting. No egg, but since these notes are written a day late I can say that she laid an egg sometime during the night, as there is one there tomorrow.

1 Feb. Bl5 is on an egg in the same area that Bl6 was sitting all day yesterday. She laid the egg in the spot she stayed in all day. Almost all of today was taken up with report writing - an extra long report that covers everything from house mice to weather. We must find a way to census amount of Bonin Is. Petrel active burrows with eggs. Two eggs have been found on the ground, but we cannot check burrows without destroying them.

2 Feb. Finished off all my recovery forms this A.M. Cheded Laysan nests and Blue-faced Boobies at 1400, at that time all female boobies on eggs. At 1830, after doing some behavioral observations, noticed that all the nests were attended by males - each had changed mates on the eggs.

I found an injured and emaciated Imm. Frigate today - brought him back to the lag for bleeding. Won another dollar from Dennis - he bet I couldn't find the heart and draw 10 cc. of blood from the injured bird - got 11 cc. on the first try. The heart was located about 1 inch to one side of the center of the sternum, and almost 1 1/2 inches deep. The bird was dispatched and is now proudly wearing tag FN 20427. One wing was damaged in the carpal area. In carrying him back I picked up quite a load of Mallophaga - almost 50 of them on my tee shirt. I have never seen a bird - even among Frigates - so loaded with
2 Feb. (cont.) ectoparasites. The head and back were literally alive with them.

The molt on this bird was interesting - a young of the year with red tipped head feathers - molting on the head - the new feathers coming in were also red tipped. I thought this post juvénal molt was into pure white head feathers, but apparently not.

Seeing many "¥" looking Frigates - black heads, white breasts, in which the breast is mottled with black, and a prominent red Gular pouch is showing. Apparently the head of the male frigates turns black prior to the belly molt. One of these males, in Scaevola near SE beach, had an inflated pouch.

Went after Bonins tonight as Dennis and Bob went after Red-foots. The Bonins were thick, 30 birds in SA2 alone - 18 of which were new. When will that spot be banded to completion? Never, we still have yet to find more than about 60 per cent banded after all this time.

The SA2 's is alone tonight - his ?, originally from NAF, has now been seen on two occasions in SAF - she really gets around.

3 Feb. It was the best day I've seen on Kure, no wind, no clouds, warm and clear. Part of the morning I spent working up some booby data. In the afternoon did the Laysans and looked about to see what could be found - another RTTB was found that had a 605 band on it. The Blue-faced Booby behavior after supper was poor - the dictet failed to record, so many observations were lost.

After chow we had one of those things that we have all heard about - a tidal wave alert. We spent almost three hours on the beach before we could come down. Fortunately it was clear, although there was dew to dampen things down abit. This quake was just south of Attu in the far western Aleutians, and registered 7.5 at Cal Tech, closer to 8.0 in Japan, which is really huge. The swell may have extended as far as 5' up our beach.
4 Feb. Activity study all day, radar tower. Check the Laysans. There is very little action in the roost.

5 Feb. We worked on some Black-feet in the afternoon, doing six birds - blood samples, parasites, Mcbee info. It still takes about 15 minutes per bird.

Band Bonin's this evening, band 16 new to the area, 10 returns, and 1 egg found on the ground.

6 Feb. Shore-bird and seal census. The find of the day was a White-tailed Tropicbird cruising over SE beach. I also found, after weasel told me, a Glacous Gull, dead and rotted partially, on the beach. I plucked it and it will make a skeleton. FN 20429. The Fairy Tern we had, that got away yesterday, I found dead in the Scaevola, in usable condition. We also found a Golden Plover banded only a week or so ago.

7 more Laysans were found dead - all rats, and two were in bad shape - one had to be destroyed. In two cases both an adult bird and its chick had been eaten. The siege of the rats continues.

Spun down blood from yesterday's Black-feet (K63-68).

About 50-60 per cent of the Laysan Nests have chicks.

7 Feb. In the morning we went about in the area surrounding the central roost and got returns on the Laysans - we did about 150 birds. Birds on the nest are being painted with green stripe across the breast, those with walkers are being painted with a small green spot on the breast. Similar marks are being done in the SAF, although the paint used there is orange. Dennis and Bob went out and did more Laysans - in the SAF, after dark. I banded some Bonins, but they were extremely scarce - I found only 17 birds in all of SAF, and behind the fuel tanks. Only 9 needed bands. Time was 1000-1100.

Did Blue-faced Booby behavior and got some interesting interactions with K13-20-23 and 23. There is a definite aversion of the head in all interactions between pairs, while antagonistic interactions make more use of the bill directed at the opponent.

Ex. A Hā-tu w. by a male around his mate, almost without exception, features a bowing of the head down on the side of the breast away from the mate. Twigs are m. on the side away from the female, and then placed in
7 Feb. (cont.) front of her. Perhaps the bowing of the head-tucked walk itself functions in hiding the bill.

Head-w features a swinging of the head from side to side through an arc the center of which is directed at the antagonist. However, just prior to attack the bill, I think, is directed at the antagonist. Could it be that Head-w. represents a compromise in the aggressive and appeasment moods of the displaying bird as the direction at the opponent is aggressive, while the swinging away is appeasing. To be looked for in further work.

8 Feb. A word about the overall pattern of Laysan returns and banding should be mentioned. All banded and returns are being painted - all those found on chicks are given a horizontal line across the upper breast - all those xx that are walkers are given a spot on the breast. The color schema for the island is as follows:

Blue - to be used on birds on NE and NW beach only.
Green - birds of central roost and its extensions - SW beach, north side of runway, and S1.
Orange - birds of N roost, NAF, and SAF.
Copper Kettle - birds S. of runway, inc. SE beach.

This AM went out and got returns on all birds we could find S. of runway - Copper Kettle territory. We marked 165 birds. This brings the total so far this period to 643 Laysan returns, 201 banded. Dennis and Bob have accounted for most of this.

I managed to crank out another batch of recovery forms - we are getting about 10-15 Laysans found dead every week. The rats are busy. I found another young Laysan killed by the rats. "The young that I moved from nest 33 to nest 29 is thriving this PM. The young was fat and well fed - like a rubber balloon filled with oil. Rereading Feb. 7 notes I see I did not include this info. On Feb. 7 nest 33 was abandoned by the male who had been on the nest since January 9, 1965. The female had not been to the nest in that time, and by Feb. 7 the male was uneasy. He left the chick, then 11 days old, and it was already thin when I found it in the nest looking all about. The chick was attended at 1800 the 6th, so was probably not abandoned until the 7th."

Found Laysan 737-72347, Yellowhead - Firefly?
8 Feb. (cont.) morning of the 7th, as I doubt an unattended chick could survive the rats throughout the night. I first found him 1600, and returned at 1830, just prior to dark. As it was still unattended, I wanted to move him. Nest 29 still contained an egg, but it was way overdue - 75 days along on the 7th. It proved to be a non-fertile egg, so I removed the egg and put chick 33, 11 days old, under the incubating 29. The chick was immediately accepted, and the chick settled down on it as though it were her own. I remained about 5 minutes, but there was no feeding of the rather thin chick. However, this AM the chick was fat and full of oil, so it looks as though it is being fed by its foster parent. The 29 has not yet returned. Acceptance of an 11 day chick by a bird on an egg seems to defy all the traditional information we have about chick acceptance.

Blue-faced Booby behavior this PM - in a slight drizzle. There was a good bit of fighting between 06, 08, R23, R27-28 - all around 05 and his egg, 06 driving off all comers.

Stuffed a Bonin after chow - looks pretty good.
9 Feb. Spent a good bit of time with the Laysans this Am. and after dark. The NAF and SAF were done, as well as SW beach and central roost. Albatross checked, the foster chick at nest 29 is doing well. Another abandoned chick was found and given to nest 38, the chick on the nest accepted it without any unusual behavior. The egg from 38 was removed and found to be rotten.

It was a good night for Bonins, so while the three of us checked Laysans in NAF and SAF we banded Bonins - I also banded them in SA2 - we found 25 unbanded birds. We may be finally getting on top of the Bonins there - of 16 birds found there only 5 needed bands. This is after several months of heavy and continual banding in the area.

Checked NAF Blue-faced Boobies after dark to compare at-night count with the next day - found 2 new nests, both attended by the female. A House Mouse Casual.

10 Feb. Did the all day Blue-faced Booby colony count. There were two new ?? marked while on eggs - 010 - (I 737-45121) and 012 - 18 667-35067)

010 left the nest when marked at 1300 and did not return until 1830. 012 returned immediately to the egg, which had been numbered with magic marker. The bird placed the bill down as though to move the egg back under itself, then immediately straightened out and shook its head, as though in response to the adverse smell of the marking ink. This was repeated at regular intervals of about 20-30 secs. for the few minutes that we remained with her. We left so that she would not abandon the egg as 010 had done. I put up a Fairy Tern (FN 20424) that is a little shabby around the neck. Skinning is becoming easier - I just need more practice.

The three of us got some more returns on Laysans on the SE of runway area -

It appears that there is some tendency for Blue-faced boobies to incubate at night, and for females to remain off the nest during the day - not an absolute thing, however. At 2200 last night 05 and 07, as well as 015, were on their respective eggs. By 0900 today 06 and 016 were on their eggs, and at 1000 08 as well - all three females. By 1830 that night all the males were back on the eggs. This must be further checked.
11 Feb.
In the morning at 0900 checked the nests of Blue-faced Boobies, found 4 females, 2 males on the eggs. At 1600 there had been only one change - from 06 to 05. Saw the old walker Laysan with hatched neck again today, first time since about two weeks ago. This is old 40 --- on the band we replaced.

Saw the old walker Laysan with hatched neck again today, first time since about two weeks ago. This is old 40 --- on the band we replaced.

Spent part of the morning cleaning up the lab, getting out the Laysan skins for Dennis to take with him, and clearing up last minute details re. his departure. He is rather anxious to get home. Alan Anderson did not arrive,xxxxxx So Bob and I will have plenty to do until he arrives.

After the movie Bob and I go out and get returns and band 85 more Laysans. We should try for a hundred every night. 

12 Feb. Activity count all day. IX have the morning session, and find not very many birds in the colony at 0720 - about 100 Red-foots and 180 Frigates. The number of Frigates remains stable around 200 all morning. The number of Tropicbirds increases in the morning, and at 1300 there are about 8 birds over the north roost. Many Frigates are displaying with fully inflated gular pouches.

13 Feb. The shorebird and seal census occupied most of the day, the scooter has broken down so the interior was done on foot. There is a continued drop in the no. of Albatross nests - only 535 Laysans now compared to 577 last week. Of these 80 per cent have hatched, or 20 per cent more than last week. Blackfoot hatch now is at 92 per cent - the few remaining probably have infertile eggs. The shorebird population remains constant with 46 GP and 72 RT being sighted.

The Coast Guard took the boat out to Sand Is, and beyond, and reported a seal pup there. We will try to get out to it to tag it and if need be, the mother. This is 5 days before the first noticed arrival last year.
14 Feb. Bob, with the help of the crew, fixed the scooter, so we have wheels again. We learned yesterday that a seal pup had been born on Sand Island, so we set out this morning to tag, weigh, and measure it, but a squall and subsequent bad weather forced us back. We didn't get started anyhow, as the outboard motor refused to work. The storm precluded the arrival of the plane, so as yet still no Anderson.

Chips told us this afternoon that a seal pup is at south point, born this AM most likely; there were no pups yesterday on the island. Bob and I weigh and measure the pure black pup - tagged the mother no. 371, will tag the pup 372 the next time we work with it. The mensural data on the pup are as follows: Wt - 35 lbs; TL 43 inches; T 2.5"; FF 9"; HF 8.5" long x 11" wide; Girth 25"; The entire body was velvet black, iris dark brown, vibrissae black and curled, Claws, front flippers only 3/4", no teeth, eyes open; umbilicus, bleated in response to the grunts of the mother and capable of limited directional movement.

Pup measured at 1500, at 1800 had moved 40' from spot where left, with ??, attempting to nurse. The placenta still remained at this time, and was being fed upon by approximately 15 Ruddy Turnstones.

Two gulls, presumably Glaucus, flew over S. Pt., the first we have seen since 2 Feb.

15 Feb. Lots happened today, mainly a pile of news from Midway - both Dr. Fisher and Chan have reported Kure Albatross on Midway. One bird we found was a bird marked on Eastern-Midway by Fisher. 737-72347. Fisher and Priest report seeing a bird with a green slash on the breast - a bird marked here within the last two weeks while ON EGG. They also saw 737-92167 and 737-92172, both banded Green-Kure in Feb. '64. Chan saw the Bristle-thighed Curlew with an orange streamer at Midway, as well as Black-footed Albatross 737-92698 seen on Eastern Is. on Feb. 8, '65 - it was banded Kure on Feb. 5 '65, in the evening. Chan also has a nester Black-foot on Sand-Midway, 737-93993, that was banded here 17 Jan. '64.
15 Feb (cont.) Bob and I got all the necessary equipment out to restake the beaches, and then the plane bearing Alan arrived, so, after fond farewells to Paul Daly, the three of us set off and restaked from the dock to N. pt., checking Laysans and Black-feet as we went. We are painting all those birds found along that stretch of beach blue - Dr. Fisher is not using any color code on the breast of his birds, so our code is OK to use. The avoidance of confusion and misunderstanding such occurred last year is much to be desired. Also, by informing Fisher of our schema, he can look for our marked birds on Midway - he has already sighted one of them. Communication with him seems firmly established now - I hope we do not run into trouble again.

Checked the Laysans as usual, as far none of the study chicks have been destroyed, but we did find four dead young in their nests. Rats had gotten three of these, the fourth has been saved and will be skinned.

At 1100 we walked through NAF and noticed R4 standing on a platform. At 1600 she was on an egg, so we have laying time down to within a few hours on her. That makes 7 study nests in the NAF to date.

Blue-faced booby behavior after chow.

Another Mus musculus was caught today - that brings this period’s total to 5. It will be made into a round skin.

Seal 371 and pup doing fine, same position on beach - at K44.

16 Feb. A large part of the day was spent typing up the report. However, Laysans and Blue-faced Boobies were checked - two more booby nests this period, inc. one that had two eggs, one of which was soft and broken. It appears that the two were laid in quick succession, one of them not hard enough to endure the weight of the incubating $; perhaps it broke as it was laid.

Bob and Alan finished staking the beach - SW beach is now all done, and the island is once again ringed with red stakes.

I tagged the seal pup 372 today, no problem with it - it seems healthy and is attended voraciously by the mother.

Blue-faced Booby behavior after chow, then after the lousy flick we get returns and band in central roost.
16 Feb. (cont) area. We handled about 100-110 birds, mainly Laysans, in addition we banded some Bonins. Got a return on one Bonin with an egg in the oviduct 753-33861. Jim Priest on Midway is finding now many Bonin's with eggs. In 3A2 handled 11 Bonins - sad news - only 4 had been previously banded. Is there no end to the number of birds using the area.

17 Feb. Today I checked the Blue-faced Booby colony every hour. There were few birds early in the day, but the number throughout the day was high - there are now 9 nests, one of which (4) has been abandoned. The number of males vs. female incubating did not seem to change appreciably during the day and night. There were 3♀ and 5♂ at 00 0716, 4♀ and 4♂ at 1200 and 1700, and 5♂ and 3♀ from 1900 to 2300. Slight increase in the males on eggs at night. The locations and individuals present at 2300 were almost identical to those of 1900, almost no change at all - 7 new individuals had come into the colony.

Thick black on the back are names of the individuals. Alan put metal numbers on the last of the blank beach stakes, so that is all done. At 1600 on Bob and Alan counted the ratio of marked to unmarked Laysans in the Central Roost area. They found 86 marked birds and 15♀ unmarked, or 36 per cent marked. We have marked a total of 89♀ birds in the central roost, so this gives us a minimum of 2500 birds using that area. There is a tremendous turnover rate, and although perhaps 300-400♀ birds will use the area at a given time, a great many more, over time, come in.

We weighed and measured the seal pup again, it has grown slightly, with new measurements as follows: Wt. 40; TL 45"; T 2 3/4"; FF 9"; HF 8 1/2" long x 12" wide (stretched); G 27". There were no teeth, and the umbilicus has sloughed off. The young crawls well and bleats in response to the mother, who follows us wherever we take the young.

18 Feb. Activity study all day. It should be called an inactivity study again, as there was almost nothing happening, and the latter 1/2 of the day it rained and rained. In the 21" by 1800, and much more during the night. At 0700 there were 19 RFB and 5 Frig. in the roost. Things deteriorated all day, most of the time...
18 Feb. (cont.) there were no RFB in the roost, and the rain came down. At 1850 I made the last roost count - there were 27 RFB (mostly by SE beach) and 14 Frigates in the roost, and 24 Frigates still soaring over SE beach where they had been all day.

Frigates were chasing RTTB today, on one occasion an Ad. & chased a RTTB so vigorously that it hit the water and bounced about 10-15' before stopping. The Frigate picked something up off the water and flew off.

It was raining harder after dark, so we stayed in this evening.

We got letters from both Bill and Chuck, both urging more granting agency type action - so, a big push will get underway fro more blood and ectoparasites. We are and have been operating at full capacity re. Berleze - 3/7 day is all we have equipment fro.

19 Feb. Today we made a big push to band at least 100 Laysans - we got 114 or three counts, and got returns on another 145 birds. Boy am I tired; we will continue to work with Laysans until a reasonable percentage of the birds here have been handled. There are still a good 60-70 per cent unmarked bird on the island.

Alan and I bled 25 Laysans, one of which was hung up on guy wires and lost a wing. We took ectoparasites the new way (vials according to location) and dispatched the bird. He was too damaged - we never found the wing - to be of any further use.

After chow I did Blue-faced Booby behavior, and Bob and Alan set the traps for our autopsy rats. Rain threatened.

20 Feb. Shorebird and seals census occupied a good portion of the day - we all managed to finish prior to the rains which came and continued on into the night. We counted 466 Laysans with active nests, or a drop of 69 from the previous week. A total of 92 per cent of these had chicks (427 roughly), an increase from 80 per cent from last week.

There was an increase from 1 Wondering Tattler to 10 this week. This was the first week in the last three when the surf has been breaking over the reef, and the high numbers of Tattlers is most likely due to the inaccessibility of the reef to them. We, in fun, predicted before we did the count that a high number of Tattlers would be found. Alan did the beach, and his
Also - 1 RTTB seen - on egg.

20 Feb. (cont.) tally well with the high counts on this species that the rest of us have made during the winter. Laysan mixing is minimal. On all the island, with over 2,000 Laysans now marked, we saw only 2 birds in the area in which they were not marked. One Green bird, from Central roost, was found in runway area along SE beach (not far from Central roost area), and one orange marked bird was found in the central roost.

Large numbers of Frigates, still mostly males, are gathering nesting materials, still Solanum and Tribulus, from the central plain - all in NAF. The plants seized are generally living. 6 birds were seen gathering twigs, and at least 16 nests have been at least partially constructed in the **north** central roost. No nests were seen in the central roost.

Four new dead Laysans were found in the SAF, none elsewhere. There are now 18 Blue-faced Booby nests, 6 in the SAF and 12 in the NAF. The Brown Booby chick has been destroyed and eaten.

Two gulls were seen during the count, one at S. pt. and one at N. pt. They are thought to be Glaudus Gulls.

Counts on the other shorebirds are as follows: GF - 47; RT - 81; S - 4; BT - 4. Two Fairy Terns were seen. There were 35 seals on the island.

It rained all afternoon and into the evening, so work in the lab was done. 15 autopsy rats collected.

21 Feb. Pouring rain all daylight hours and on into the night. Due to the bad weather, we decide not to set rat traps for this evening. The storm looks as though it will persist. We got all caught up on data, everything from notebooks is now recorded.

22 Feb. The big day of inventory has struck - it was raining hard all morning, misting in the afternoon. Tout le monde is checked out, shelves and trunks are labelled, and we have a rough idea of what is here. Wirtzm has been thorough - there is an abundance of almost everything.

We went out this afternoon into the mist for Laysan returns and banding. We found, while in the process, another RTTB on an egg - this makes two nests to date. We handled 186 birds, 61 of which required bands, the other 125 we got returns from. These were all in the
22 Feb. (cont.) central roost, and boosts our total number handled there alone to 1318 birds. We still find a good percentage of the birds there unmarked.

After supper we set the rat traps. I sure hope that the rain will stop, and that tomorrow will dawn clear for the trapping.

Most of the Laysan study nests are now unattended. There were no new Blue-faced Booby nests in the NAF. We found another antanna casualty today — a one-winged Bonin. We found XX one yesterday, as well as a Laysan that was knocked silly — probably damage to the cerebellum the bird’s balance was shot, the hind legs were paralyzed, and it could make only uncoordinated movements of the wings. The bird was extremely accurate in pecking at intruders, however. He was bloo, as was one Bonin. We could not draw blood from the wounded Bonins with the small hypodermic needles; the $1/2$" needle finally succeeded in getting 5 cc. from one of the bird’s.

23 Feb. Today the morning and an hour and a half after lunch was spent catching and working with the rats — rat trapping has hit us again. Most of the animals handled appeared to be coming into or already arrived into breeding condition. Almost all the males had well developed cremasters and testes, and quite a few had enlarged cauda epididymis. There seemed to be a dirth of mites — very few of the animals handled had mites 1, and mites two were not at all abundant.

Almost all the females had perforate vulvas, and of those most were swollen and purplish in color. One female had a sperm plug across the vulva, one was lactating, and 3 had embryos that could be felt within. It looks like the trysting season is upon the rat population. They do not look so thin at the present time either. If more food is becoming available to them, we should see a decrease in the number of Laysan deaths in the antenna fields. Only 98 rats were caught today, of which 20 were new.

Before dinner Bob censused the painted vs. unpainted Laysans in the Central roost, and found that 169 out of 231, or 64.8 per cent, of the birds there have been painted. We have painted 1313 birds there, so a simple calculation says that there should be about 2028 birds
23 Feb. (cont.) in the area. This is a drop of about 500 from our calculation earlier. Perhaps reflected in the figures is the high number of birds that had been handled yesterday, birds that may still have been hanging around the area.

After dinner I checked the NAF and SAF for the same thing, and found 71 of 232 birds counted painted. This is 31 per cent of those birds present. We have painted to date 817 birds in the area; this calculation thus provides us with a figure of at least 2700 birds using the area. If these figures are anywhere near accurate, there may be 5,000 birds using the two areas, plus those S. of the runway and those ringing the north beach.

I saw old Laysan in the same part of the NAF today - the location he has always been in when seen. This is the bird with the checkerboard neck, caught originally in Dec. with an old worn band.

Bob and Alan chased down more Laysans in SAF and NAF this evening, and banded an additional 61 birds.

Rat trapping will continue tomorrow. I hope that I don't get bitten again.

We saw three Fairy Terns flying over the NAF during the trapping. One injured Fairy Tern was found, its wing ripped off. It could not be bled.

24 Feb. Rat trapping all Am., finished by 1130. We only caught 98 rats, and of these 17 were new, we are now up to Cl43 on the new rats. There were very few in the A-B area, more as we progressed East. The cloud cover we have been having finally broke, and the last hour was in clear, warm weather for a change.

After lunch we split up, Bob banding in the Central Roost, Alan and I getting blood samples from 8 Black-feet, McBee card data on 6 of them. We are collecting ectoparasites the new way - a vial for each main body region - head, body, wing. Rob Alan and I do the 1st seal pup - it has grown to the following dimensions:

Wt. 53 lbs; TL (snout to tail tip) 43" - (snout to flipper tip) 50"; T 3"; FF 9"; HF 615" inside, 10" outside; width, stretched 14"; Girth 33". Still no teeth

A new seal pup, born this AM, was found this afternoon, measured, weighed, and tagged No. 373. It is larger than the 1st pup was at birth, as follows:

Wt. 37 lbs; TL (to tail tip) 40"; FF 9.5"; HF inside 9.5
24 Feb. (con) HF outside 9.5" Width (stretched 13"); T 2.5"; Girth 23"; eyes open, iris brown; small nails - hind flipper, 3/4" nails on FF; curly black vibrissae; umbilicus 17" long, major portion only 4"; bleating, attempted to bite when we tried to stretch him out for weighing; no teeth. Very good at crawling. Vulva of ? (232) was bleeding when first seen by Van Bolt at about 1500. We didn't weigh him until 1800, after chow. The afterbirth was dry on the outside, but still moist within.

While setting rat traps from 1830 until dark, we found two more antenna casualties - both Fairy Terns, one dead. The birds were not there this AM.

There has been a great increase in the number of RTTBs today - we had 60 in the air at one time, and many are on the ground. After dark we hear many, perhaps 6 or even more, Sooty Terns calling. They will begin descending upon the island soon.

More Laysan banding and returns after dark.

25 Feb. Rat trapping in the AM. While Alan and I did rats, Bob went out and did some more Laysans. We got 100 rats, but only 4 new ones - i.e. C numbered rats. There were 2 double captures today!

Found one Bonin and 1 Frigate antenna kill today, the Frigate was an adult male in breeding condition, banded here in late 1963 (737-45411).

The news came today and I learned that I should leave today. There is too much unfinished business to attend to, so I will stay until Sunday.

Three Fairy Terns flew about us in the NAF today - calling and hovering overhead - the first time they have done this. There was a new (the 3rd) RTTB nest found by Böö.

After setting rat traps, we band more Laysans and get many more recoveries. We are counting per centage marked vs. unmarked Laysans in the Central Roost, and the last two population estimates for that area, based on total number marked, has come out 2230 ± 10 the last two days. We are closing in on the total population in that area. To date we have 1533 birds handled there.
26 Feb. Rat trapping all morning. Alan and I start at 0900 and just finish by lunch at 1200. We catch 119 rats, 11 of them unmarked, a total of 30 of them were not previously caught.

We are all exhausted after five or six 17 hour days, so we take a quick nap after lunch. About 1500 Bob and I attempt to get Black-footed seetoparasites and blood. Bob earns for himself the coveted Willet award for a new ornithological first. While holding a bird while I went for pliers, he strangled it to death. Not knowing it was dead he banded it. Alas and alack, we had to put the on another bird. Bleeding a bird if it is freshly dead does work - I got 10 cc. easily from the dead Blackfoot, who was immediately skinned and is now FN 20441.

Meanwhile, Alan searches for Laysans to band, but draws a blank in that quarter also - there is a very conspicuous absence of Laysans from the island. After chow we all run about getting Berlezes, weather, boobies, etc. I show Alan around the Booby and Laysan Albatross study areas - he will do that from now on. After a good flick we attempt once again to take a chink out of the goal of 1001 Laysans banded this month, but find almost no birds about. All the regular locations are deserted, for no apparent reason - our disturbance has not been as widespread as is the lack of Laysans - it must be some weather factor.

I had found a Bonin Is. Petrel after chow, so I do a Mc Gee on it when we dribble in from banding - about 2400. It is ☼☼☼☼ 0100 by the time I hit the hay.

27 Feb. We attempt and get away with the impossible today - we do both the activity count and the shorebird and seal census simultaneously. It is easy with the 3 of us, one on the tower and men two doing the count. I find 5 RT38 that I band and bleed, giving us a small series of blood from another species. All the results have been added yet for shorebirds, etc., but it looks as though all the Laysans that are going to hatch have done so.

Activity - RFB building nests like mad, many birds landing in the NAF and pulling for twigs at the Tribulus and Solanum, which is taking a beating, what with Frig, Blue-faced Boobs, and RFB all pulling at it. The RFBs are great pirates, stealing twigs from one-another's bills
27 Feb. (cont). as they attempt to make it to their nest. On one occasion I saw a twig exchange 'hands' 5 times before one bird finally managed to land with it. At 1855 Roost Counts were made both towers, as follows: N. Tower - 154 RFB, 200 Frig. R. Tower 120 RFB, 17 Frig. Total 274 217. This is a seen number, probably twice that number are in the roosts, or at least 400-600 RFB and about 400 Frig. We must add a cirrigen-da to last report - there were not 800 RFB in the roosts or about the island.

Brown Boobies remain hard to count - there are prob. still about 75 Brown Boobies on the island, but they are dispersed all about, roost on the reef & the buoy, and rocks, even on Sand Is., that a proper evaluation is difficult. The Blue-faced Booby number remains consistent.

On two successive days 3 Fairy Terns have been seen flying about the island. Today courtship flights by one pair were conspicuous, synchronized, but erratic, flights of the two over the N. Roost. We also had a tremendous increase in the RTTB pop - Alan had 3/4-2/5 in the air this afternoon. There were many more on the ground - so at least 200 birds, prob. a good deal more, were on the island today. We banded and bled five of them. They will continue to get easier to find and handle. Alan grabbed and I banded bled 5 SAF Blue-faced Boobies this afternoon after dinner. They gave me difficulty - I could not consistently find the heart. The sternum is box-shaped, with a projection ventrally that points caudal - it makes direct penetration to the heart more difficult that in other species. The blue-faced are hardy, and seem not to feel the needle, flying away afterward without hesitation.

While I remain after the flick to get ready for departure, Bob and Alan go after no. 1001 Laysan - only 60 more birds to band and the magic feat has been accomplished in the shortest month of the year. Considering that 3/4 of the Laysan have bands, we have to handle many birds to get 1000 unbanded ones.

The painting is showing conclusively that there is minimal intra-island movement of Laysans. Only one or two per day, out of several hundred seen, move from one area to another. In any location at least 99 per cent of the birds are of the color for that area.
28 Feb. Most of the entire morning is spent packing, washing, etc. in general getting ready for departure. Each person may or may not, a trunk full of boots for shipment. Finally we were permitted to leave at 1:30, and arrived at 1330, as we had worked dark into the night.

I was beat, so we napped after getting Gene's tickets at the station, with Jim P.M. Also saw Dr. Fisby, he has found 12 more Urne-banded Fayum birds.

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It appears that birds have moved slightly after being handled in Ren, at least
3/1 March. This A.M. spent fighting May Red Cape, but I finally got squared away for Mat. Flight to Bristol for takeoff. After lunch Chin. Gen. I head to Eastern for Fojzan work. I spend 2 days looking for haze - marked Fojzan finding 17, 6 of which were caught by head and fellows:

All on Eastern - landing

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<td>96108</td>
<td>Red</td>
<td>“</td>
</tr>
</tbody>
</table>

The last 5 birds were painted luminous orange on the head. In addition, one other orange throat was seen, west of island.

I pointed up 5座 mark, as follows:

Baysan: 697-38290  Ater: all found dead
667-26318
1 Month (cont.)

Hill Esten, Found Dead

Blackfoot
657 - 24017
637 - 78139
737 - 76580

A mottled Foreign Rattay of a hybrid kind, Wyman - Blackfoot colors, Breast white, throat gray, head gray, bill antediluv. in color between Wyman x Blackfoot. Dimensions of a Blackfoot (8 7/8), feet gray, under tail coverts white. Under surface of wing gray dark with light brownish pales. 11.5 587 - 58811, 2 red band, it.

1 Red Baked in Sand ejected 'Long Lind' + Esten.

30 Jr. Pea-gate (Esten), 2 to
20 fellows:

1 Jr.: (white head)
4 Jr. or 5 pouched nipples, spinately
2.5 Jr.

there were 8 Blue-jay Books, 3
nest, 2 w/1 eggs, 1 w/2 eggs - Nestly
has just recently deserted

The RTIE witk all flight feathers
ruptured at least 1" fully feathers with
no down. Several other hiding (no cont.)