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THE BIRDS OF FANNING ISLAND, CENTRAL PACIFIC OCEAN

WITH EIGHT PHOTOS

By HAROLD KIRBY, JR.

THE GROUP of coral formations in the Central Pacific known as the Fanning Islands consists chiefly of five atolls: Palmyra, Washington, Fanning, Christmas, and Jarvis islands. These islands lie close to the equator, the first four a few miles north of, and the last about eighty miles south of, the line. They are nearly directly south of the Hawaiian Islands; Palmyra, the most westerly, is in longitude 162° 6′ W., and Christmas, the farthest east, is in longitude 157° 28′ W. The islands are all low, possess vegetation in varying amounts dependent on the rainfall, which is greatest at Washington and Palmyra, less at Fanning and Christmas, with scarcely any at Jarvis, and are kept cool and habitable by the constant trade winds. The relative humidity is about 75 percent at Fanning, but higher at Palmyra and Washington, while the temperature ranges from 75 to 90 degrees. The climate is very pleasant.

All of these islands are well populated by birds. During a trip to Fanning in the summer of 1924, collections and observations were made of the birds there, and visits to Washington, Christmas, and Jarvis afforded interesting comparisons. I was able to visit the latter two through the kindness of the Bishop Museum Expedition, with Prof. C. H. Edmondson in charge. Thanks are especially due to the Fanning Island Limited, a copra company with a plantation at Fanning Island, in whose service Professor W. B. Herms and the writer made the trip. I am indebted to Dr. Alexander Wetmore, Assistant Secretary, Smithsonian Institution, for a critical reading of this manuscript and for supplying the scientific names to be used for the species concerned. To Dr. J. Grinnell, Director, and Mr. H. S. Swarth, Curator of Birds, Museum of Vertebrate Zoology, University of California, I am indebted for aid of various sorts—first in making ready for the trip on which these observations were made, and also for criticism and assistance in preparing this paper for publication. Specimens were collected of each species of bird here listed from Fanning Island, and these are now in the collection of the Museum of Vertebrate Zoology.

An investigation of the birds of Christmas Island was carried on by the Whitney Expedition from the American Museum of Natural History in 1921. The birds of the Hawaiian Islands, which include many of the same species, have been thoroughly studied in the last few decades. Thos. H. Streets (1877) made collections from

Christmas, Palmyra, Washington, and Fanning islands. In 1883 Canon Tristram published a description of the Kokikokiko of Fanning Island, and notes on some of the other birds found there. Rougier (1914) reported on the birds of Christmas Island, of which island he is the owner. S. C. Ball and C. H. Edmondson made small collections from Fanning in 1921. The Bishop Museum Expedition of 1924 collected on all the islands mentioned.

Fanning Island is a typical coral formation. A ring of low land, shaped like a footprint, surrounds a shallow lagoon, and a passage deep enough for a schooner, as well as two more very shallow passages, connects lagoon and ocean. Vegetation covers most of the land, save the tidal flats. As the island is used as a coconut plantation, coconut palms, wild or planted, are replacing the original "bush", which is being cleared away as rapidly as possible. Still, wild vegetation is abundant in the uncleared portions. The rim of the ocean beach is bordered by a dense, almost impenetrable growth of *Scaevola frutescens* and *Tournefortia argentea.* In most places palms occupy the land between this hedge and the lagoon, but in parts umbrella trees (*Tournefortia*) grow abundantly. *Pisonia grandis,* the largest tree, and *Pandanus* are present in limited numbers. Besides these trees there are several herbaceous plants. *Monerma repens* forms grassy beds, offering comfort for some of the ground nesting birds. Creeping vines of *Ipomoea glaberrima* often add to these beds. *Portulaca oleracea* covers the ground in places, and *Sida fallox* sometimes forms dense thickets.

Vegetation at Washington Island, which is much more moist than those islands east of it, grows luxuriantly, forming impassable jungles in places. The trees, which are the same on all these islands, are taller and afford better rough lumber; and there are several plants which are absent at Fanning, as *Asplenium nidus,* the bird's-nest fern. Coconut palms in all stages of growth are abundant, for the nuts have been allowed to sprout where they fall, which they do readily because of the abundant rainfall. In recent years, though copra has been harvested, the island has been visited only at intervals and then left undisturbed for months at a time. Christmas Island is rather dry and barren, but there are many umbrella trees and extensive *Scaevola* growths, as well as much grass, *Portulaca, Sida,* and other small plants. Jarvis Island is quite barren, having nothing but very low grass and herbs, and there are no trees for those birds which nest in trees elsewhere. From the report of Rock (1916) it seems that the Palmyra Islands are as richly wooded as Washington.

Birds were more abundant formerly on these islands than they are now, for they have been much disturbed and, especially at Fanning, deprived of nesting sites by clearing. Rougier (1914) records the presence of "millions and millions" at Christmas Island, and states that the Japanese used to poach birds there. But birds are still very numerous and have not, save at Fanning, become very much accustomed to the presence of man, so that they exhibit little fear. There is no limit to the food available for sea birds, and the two species of land birds certainly find enough for their needs.

The voyage from San Francisco to Fanning Island was made in a small schooner which sailed most of the way under a good wind. This trip gave an excellent opportunity for the observation of the birds and fishes that came near the ship. The Black-footed Albatross (*Diomedea nigripes*) soared about us from about 350 miles out to within a few degrees from the tropics. With a good trade wind blowing from behind, they generally sailed behind or beside the ship, scarcely ever flapping the wings, or rested for a time on the water. When the birds turned against the breeze they generally rose kite-like, and after attaining a height of perhaps twenty-five feet they tipped, generally on the left side, and turned to glide with, or at an angle to, the

wind. They may also rise when sailing with the wind. When an albatross alights on the water the wings are raised, the legs and feet spread, and it settles slowly onto the surface, finally folding up the wings carefully.

At the time *Diomedea* left us, in latitude 26°, the first flock of Red-tailed Tropic-birds (*Phaethon rubricaudus*) was seen flying high with energetic wing beats and continual squawking. These "Bos'n Birds" were seen at times for several days after this, while we were near the Hawaiian Islands, and one or two again near the Fannings.

After crossing latitude 10° N., a few Boobies (*Sula piscator*) came near and we were able to watch them diving for flying fish, which were very abundant, rising by hundreds near the bows of the schooner. The Boobies fly with much flapping and some soaring, often tipping the water. A bird sights a fish from about thirty feet above the water, bends the wings suddenly, drops headlong, disappears beneath the surface, and in a few seconds comes up with the silvery fish in its bill.

At Fanning Island there are two species of land birds and nine of sea birds, as well as a few migrants. The Red-tailed Tropic-bird was the only species that is said to occur there at times and which we did not find in spite of thorough exploration.

Procelsterna cerulea (F. D. Bennett). The local name for this little tern is the "Grey Love-bird", because of its resemblance to the White Love-bird (*Leucanous alba kittlitzi*). It flies near an intruder as that species does, and resembles it also in delicacy and beauty. The two occur together in the coconut groves south of the settlement and more abundantly across the lagoon, in the southwest portion of the island ring.

When disturbed the birds fly with quick, soft wing beats in wide circles among the palms, keeping, for the most part, quite silent. At times they utter a whistled *prrreeee*. It is difficult, as Fisher (1903) notes with regard to *P. saxatilis,* to discover the nest of this tern. At one time, after watching a bird fly about until it came to rest in a slanting palm, I climbed the tree. A quantity of rubbish, consisting of dead palm leaves, sheaths and grass, was gathered just below the crown, and in the hollow among the dead grass stems I found one egg. This egg was smaller than that of *Leucanous,* ovate, quite narrowly pointed at one end, and heavily spotted with brown, especially at the larger end. Although this was the only nest found, it is probable that the usual nesting place at Fanning is in the crown of palm trees, on rubbish gathered at the base of the fronds.

Anoüs stolidus pileatus (Scopoli). Noddy Terns are recorded from Palmyra and Christmas islands by Streets (1877), who states that they build nests of twigs in the forks of trees. At Christmas they are the least abundant of the terns, but are quite numerous at Fanning where they stand in large flocks on the flats or roost in the coconut and umbrella trees. They were not breeding in abundance there. The nests, built of twigs and sticks roughly gathered together, may be close to the ground on grass and shrubs, in the crotches of trees, or at the bases of coconut leaves. On Christmas Island, in August, some were nesting on platforms of sticks built on tufts of grass on small islands in the lagoon, each sitting on a single spotted egg. The gregarious habits of *Anoüs* are interesting. They gather in large numbers on the tidal flats and lagoon shores and are often seen flying in large numbers at sea, indicating by their activities the presence of schools of fish. As stated by Watson (1908), who has made a thorough study of the behavior of these birds in the Tortugas, they pursue schools of minnows which are jumping out of the water in efforts to escape larger fish.

Noddies are commonly seen roosting in the coconut trees and flying over the tidal flats drinking from the "streams". They fly about all night through the coconut groves, uttering frequent harsh cries.

Megalopterus hawaiiensis (Rothschild). In the infrequently disturbed northwestern part of the Fanning Plantation, where there are *Tournefortia* trees in abundance, numbers of this white-crowned black tern are seen nesting on the branches. The nest is composed of leaves and twigs plastered onto a crotch of the branch and soiled with a good deal of excrement. They are not abundant at Fanning, as they are at Christmas Island on Motu Manou and Cook islands, where some small, leafless umbrella trees bear a bird on almost every crotch.

During the visit to Christmas Island, early in August, the young birds were rapidly nearing maturity, but there were also many unhatched eggs in certain groups of nests.

Leucanous alba kittlitzi (Hartert). On the Fanning Islands the "White Love-bird" is the most attractive of the sea birds. It occurs everywhere in the coconut groves and *Tournefortia* bush, and is the most abundant of the three terns present. Among the trees where these birds are breeding, many may fly about one's head, approaching very closely. They are mostly silent, but at intervals when flying they utter a metallic note.

At noon one day a White Love-bird was seen carrying a small fish to the top of a broken-off coconut trunk. There was, however, no recipient there, and the bird seemed bewildered. An observant inhabitant of the island stated that the young bird had been taken away, and that the adult would carry that fish about "until sundown". He had often seen a bird do so under similar circumstances.

There were several birds at the camps which had been captured young and tamed, and sat all day on sticks waiting to be fed. These birds, accustomed to being fed by man, would endure being handled.

The interesting nesting habits of *Leucanous* have been described in many reports. Fisher records that at Laysan they generally lay their eggs on lumps of phosphate rock, among bush grass, or under the overhanging shelter of some shrub or clump of vines. Streets states that on Christmas Island, because of the absence of trees, the eggs are laid on the surfaces of large coral blocks. At Palmyra, however, Streets found that the single egg was placed on the naked branch of a tree, as occasionally at Laysan (Fisher). At Fanning Island the egg is placed on the branch of a *Tournefortia* tree, on a bare limb that is often quite small, where it is not attached in any way. None was observed on blocks of rock or on the ground. Over this precariously situated egg the bird sits or stands, and may readily fly away when disturbed. One egg was found on the mid-rib of a coconut leaf about two feet from the trunk, at a distance of ten feet from the ground; when the leaf was pulled down at the end the egg rolled off, and only then did the parent bird fly away. The presence of other "fairy terns" on coconut leaves indicated that this habit is not uncommon.

At Christmas Island most of the terns seen, on Motu Manou and Cook islands, had laid eggs on *Tournefortia* branches and not on coral blocks. *Leucanous alba kittlitzi* is very abundant at Washington Island, where its habits are the same as at Fanning. At Jarvis Island, where there are no trees, it is not present.

Phaethon rubricaudus (Boddaert). The Red-tailed Tropic-bird was not observed at Fanning Island during our stay, but it was stated by an inhabitant that it has been found nesting there, though rarely. Likewise, on Washington Island the bird is not found. When we crossed into the tropics on the *Doris Crane* this species was seen in small numbers for several days, flying high and squawking.

On Christmas Island the bird is common, nesting on the ground under *Scaevola* shrubs. *Scaevola* grows over large areas on Christmas Island, and in certain sections

of the growth there are colonies of *Phaethon*. The individuals of the colony are not gathered close together, only one or two being seen under a single bush, each sitting on the single reddish brown egg which is laid on a few gathered leaves.

Fig. 47. LARGE LIMESTONE SLABS PILED ON THE BEACH AT JARVIS ISLAND. UNDER THESE, MANY RED-TAILED TROPIC BIRDS WERE NESTING. THE SLABS FURNISH THE ONLY SHELTER ON THIS SMALL ATOLL.

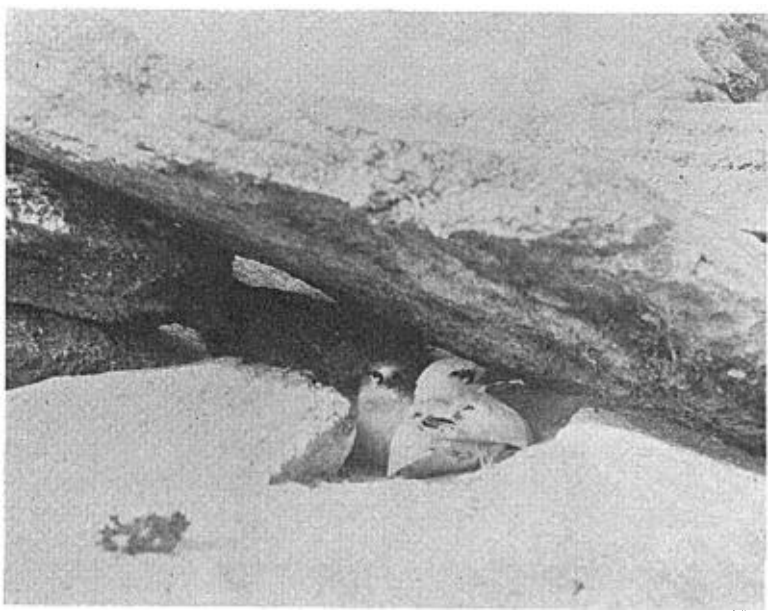

Fig. 48. CLOSER VIEW OF A NEST OF THE RED-TAILED TROPIC BIRD, SHOWING AN ADULT AND A YOUNG BIRD.

There are many of these birds nesting on Jarvis Island, where there are no trees or shrubs to afford shelter. For shelter the birds utilize the coral slabs which are

piled up on the western shore. Some of these slabs are several feet square, and are piled up in such a way that there is plenty of room under their edges. At the time of our visit almost all the available rocks sheltered adults with eggs or young.

Phaethon lepturus Daudin. The White-tailed Tropic-bird, as it is locally named, is not abundant, but is rather conspicuous at some distance south of the settlement at Fanning, where it may fly low among the palm trees, gleaming a beautiful white in the sunshine. The very long white tail feathers are quite noticeable. Others fly very high, generally in companies of three or four, uttering incessant squawks and constantly beating the wings. The inability to soar is in marked contrast to the powers of the Frigate-birds, which are to be seen there also.

Fig. 49. THE RED-FOOTED BOOBY ON FANNING ISLAND, THE NEST IS A MASS OF STICKS IN AN UMBRELLA TREE; IN IT TWO EGGS ARE LAID. THIS IS THE MOST NUMEROUS OF THE BOOBIES ON THAT ISLAND.

Phaethon lepturus nests in the tops of tall coconut trunks which remain standing after the crowns have broken off. The two white tail feathers protrude when the rest of the bird cannot be seen. On the elevated islands the birds are said to select inaccessible precipices for nesting sites. This instinct to build high is exemplified by their selection of the highest available places at Fanning. It is present in similar situations at Washington Island, but is absent at Christmas; according to Rougier its absence there is due to the fact that there are no crownless coconut trunks.

Sula piscator (Linnaeus). The Red-footed Booby is the most abundant bird on Fanning Island, building its nests in the *Tournefortia* trees almost everywhere that these are growing. The white birds show up against the green for a long distance, and dot the green thickets. The odor and uncleanliness of a place where there are many of these birds nesting is very unpleasant, as is also their harsh squawking.

The nesting period extended over the whole time of our stay, from May 5 to October 3. In September the nests mostly contained well grown young birds, one to a nest, which were then acquiring the adult plumage. As has been repeatedly

observed regarding these birds, two eggs are laid, but only one young comes to maturity. The nest is a platform of twigs, mingled sometimes with *Tournefortia*

Fig. 50. A COLONY OF RED-FOOTED BOOBIES AT JARVIS ISLAND. MANY BIRDS ARE ON THE GROUND, OTHERS IN FLIGHT.

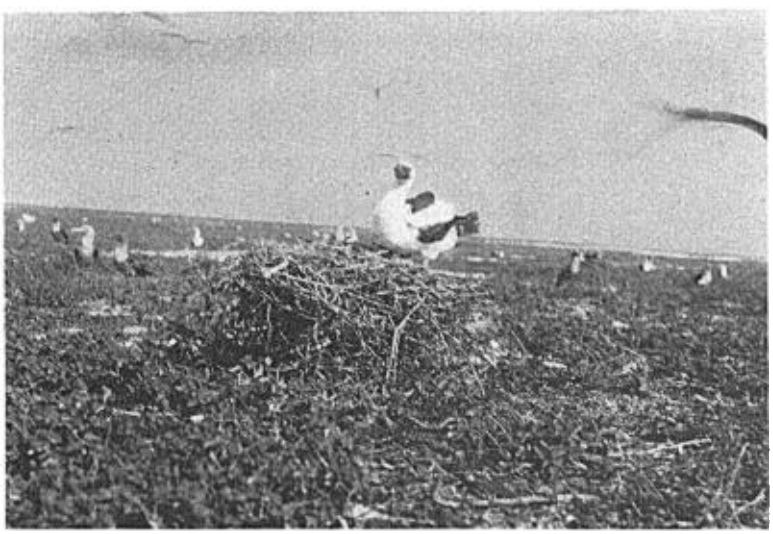

Fig. 51. A NEST OF THE RED-FOOTED BOOBY AT JARVIS ISLAND, WHERE THERE ARE NO SHRUBS. A YOUNG BIRD IS ON TOP OF A LARGE PILE OF STICKS COMPRISING THE NEST.

leaves, and is covered with excrement. The adult sits on this nest until the nestling has grown large enough to take up all the room, when the parent stands on a nearby

branch. The head of the young bird, when it is resting, often hangs down over the edge of the nest. Boobies generally do not fly when approached, or even when threatened with stick or gun, but present vicious bills and give noisy squawks.

The Red-footed Booby is very abundant also at Christmas, Washington and Palmyra islands, and is often met with in numbers at sea. The habits of nesting in umbrella trees are the same on all these islands.

At Jarvis Island they find no umbrella trees. During a visit early in August, 1924, they were found nesting in several colonies. The nests, built on the ground, consisted of piles of sticks from quite low to a foot or more high, much soiled with excrement. This habit is noteworthy. Fisher (1903) states that they never nest on the ground, and they do not when there are trees available. Boobies flew about the ship off Jarvis in large numbers.

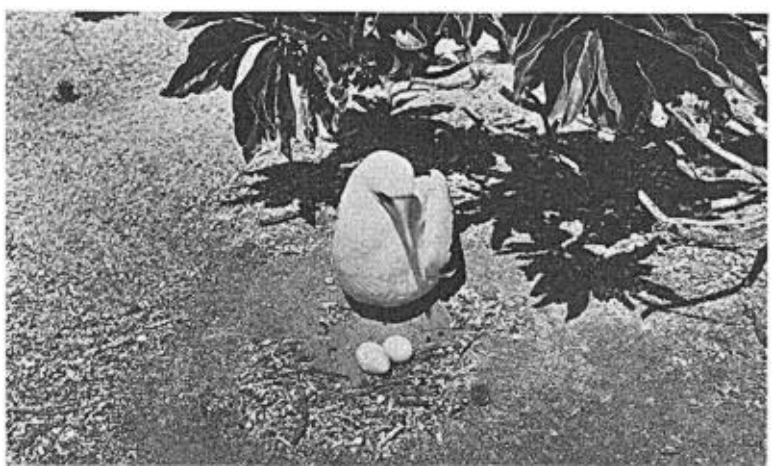

Fig. 52. THE BLUE-FACED BOOBY ON FANNING ISLAND. THERE ARE TWO EGGS IN A CRUDE NEST CONSISTING OF A DEPRESSION INTO WHICH A FEW TWIGS ARE GATHERED, UNDER AN UMBRELLA SHRUB.

Sula dactylatra Lesson. The Blue-faced Booby is now very scarce at Fanning. The birds are almost never seen unless the nesting grounds are visited, and these nesting grounds are in a single remote part of the island. Probably there are few more than a score of them on the whole atoll. On a tidal flat near the ocean beach at the extreme southern part of the ring a colony of ten birds was visited. Early in July there were three nests, each containing two eggs, and two well grown young birds. One of these had white down, the other, brown mottled plumage. The nest is extremely simple, for the eggs are laid on the bare ground, sometimes with a few leaves and twigs collected in a shallow depression.

Near the place where these boobies were nesting, more than a score of Frigate-birds were soaring high in the air. Each time a *Sula* flew up, frightened at my approach, a number of the "hawks" would beset it, pursuing closely until it either disgorged a fish or alighted on the ground. Before rising, the boobies would look about anxiously, evidently expecting an attack by the hawks.

Sula dactylatra is rare on Washington and Palmyra islands, but is present in fair numbers on Christmas and Jarvis. The nests are isolated, mainly located near the

ocean beach and the surf. Early in August there were young in all stages of development, from eggs to nearly full grown birds. This is the largest and least abundant of the birds on Fanning Island.

Sula leucogastra (Boddaert). The common Brown Booby is fairly abundant on Fanning, especially on the southern and southeastern shores. The nesting grounds, where numbers of the birds congregate, are just above the beach rim among the grass and weeds. There are likewise a few on the northeastern and eastern shores. The nests are rudely constructed of a few twigs gathered together on the ground among rocks and grasses. They were in all stages of development from eggs to large downy young, when visited early in June. In September almost all had finished nesting, and only a few young birds, already growing the sleek brown feathers, were still unable to fly. At times the Brown Booby was seen flying over the lagoon or out at sea in company with *Sula piscator*.

Fig. 53. THE BROWN BOOBY ON FANNING ISLAND, ONE ADULT AND NEST IN A COLONY OF THE BIRDS. THIS BIRD IS IN A DEFIANT ATTITUDE, PREPARED TO DEFEND THE NEST.

Only a few were seen at Christmas Island, but they are said by Father Rougier to be abundant at the southern end, nesting in June, July and August. This portion was not visited. On the southern, windward side of Jarvis Island, near the Man-o'-war-birds, a few nests were found in August.

Fregata minor palmerstoni (Gmelin). The Frigate-bird is a persistent parasite of the boobies on Fanning Island, feeding, as it does, only on stolen fish. None was seen purveying for itself, as Chapman (1908) says they do, excepting that fish left lying on the ground by fishermen were sometimes picked up; nor were any seen devouring unprotected young of other birds, a habit they are said to have. The birds will very skilfully catch fish thrown up to them, and, as stated, are able to pick fish off the ground. There are always a number about places where fish are being caught. They were often seen drinking from the "streams" on the tidal flats and from the

lagoon. The pursuit of boobies of all three species was repeatedly observed, and the "hawk" scarcely ever failed to catch in the air the fish disgorged by the squawking victim. The fish sometimes falls on the surface of the water, and then it seems to be difficult for *Fregata* to secure it; in one case four or five dips were necessary before the fish was taken up. The natives often catch the bird by attracting it to fish held in the hand and grabbing the legs when it comes close enough.

Frigate-birds nested in numbers in the less frequented parts of Fanning during our stay from May to September. At Jarvis Island early in August there were two large colonies nesting close together. The young birds of one colony and half of the other were nearly full grown, but the second half of one colony had eggs and very young nestlings, which would certainly not reach full development until late in the year.

Fig. 54. A PORTION OF A COLONY OF FRIGATE BIRDS AT JARVIS ISLAND. MOST OF THE BIRDS SEEN HERE ARE YOUNG, WITH BROWN HEADS. IN THE FOREGROUND THERE IS AN ADULT FEMALE SITTING ON A SINGLE EGG IN A NEST CONSISTING OF STICKS PILED A FOOT HIGH.

When there are trees present, *Fregata* builds its nest of dead sticks and twigs among the branches. *Tournefortia* is always selected at Fanning, but at Christmas, where there are large areas covered with *Scaevola,* nests were in the tops of these, five or six feet from the ground. These structures are platforms only a little larger than those of *Sula piscator* and equally filthy with excrement. Early in August there was a large brown-headed young bird, growing black feathers, on each of the nests. At Fanning the nests are generally built in the same trees with the nests of *Sula piscator.*

The habits of the Frigate-birds at Jarvis are unique. The nests are quite large piles of sticks, all filthy. They are of variable height, from quite low to a foot and more, and are placed close together, some not more than a foot apart. There were two colonies of not less than seventy-five birds each, one near and one on the rim of the beach on the southern side of the island. On each nest of one colony sat a single,

full-grown young bird with a brown head; the adults were generally soaring high in the air. On certain of the nests, however, a male or a female was sitting on an egg or a young bird.

An observation was made of a struggle of four males, all with swollen gular pouches, for a nest. Originally a male with a greatly expanded pouch was standing on the platform of sticks. Then he flew away and after a time a male, probably the same one, came and deposited a twig on the platform, departing at once. Another occupied the platform until he returned and managed to seize and fly off with the twig he brought. Four males then began fighting. One would alight on the nest; another would come and peck at him or cross bills with him with an audible knocking. When the intruder drove his opponent off, another came and fought with him, and such combats continued until finally a male with a big pouch retained undisputed possession.

Sounds were heard from the adults of both sexes during mating activity. The musical, owl-like, vibrant cry of the excited male when the pouch is blown out and a female is flying near may be responded to by a note like a song-bird's cheep. There is also a low, harsh cackle, as Fisher reports. The female may approach the excited male on the nest, bill with him and stroke his pouch with her bill, but he generally continues to shake his head and wings until she again flies away.

On one occasion a female alighted near a well-grown young bird who had been gaping and gazing skyward, anxiously and alone. The young bird uttered a squeaking sound and rubbed its bill against that of the adult. Eventually she opened her mouth and down her throat went the long bill of the youngster until the head disappeared, emerging again in due time; then the adult flew away and began soaring. Both Boobies and Frigate-birds feed their young in this way. Frigate-birds may be "tamed" if they are taken from the nest when young and are fed. They will remain near the source of food.

Conopoderas pistor (Tristram). In the less frequented parts of Fanning, as well as in the tropical jungles of Washington Island, dwells the little Kokikokiko, the only native land bird besides the Paroquet. It is found in association with the White Love-bird (*Leucanous alba kittlitzi*) and the Paraquet (*Vinis kühlii*), nesting and feeding in the tahuna trees (*Tournefortia argentea*). Hopping from branch to branch, flying only for a short distance, the bird is seen only by one's watching intently for it. It is of small size, and gray in color, with delicate, fluffy feathers, short black bill, and black feet and legs. The only markings are some black bars on the wings. The specimen hunter does not like to shoot this little warbler, it is so weak, so delicate, so very inquisitive and trusting. While it is hopping about picking up beetles, no sound is heard from it for long intervals; then a descending squeak, readily imitated with the lower lip against the upper teeth, may be uttered, and another bird may respond with a few chirps. Once when a pair was squeaking and chirping in some tahuna trees, I imitated the squeak. One of the Kokikokikos then hopped closer and closer towards me, twisting his head in every direction in an effort to find the "other bird", clinging with small, black feet to the branches or the bark of the trunk. Finding nothing, yet still hearing the call, he hopped to a branch not three feet away from me and peered around. Still, he paid little attention to *me,* only to the sound. In time he became discouraged and went off in another direction.

The nest is saucer-like, with a rather shallow bowl; it is made of grass and may have some intermingled leaves. It is placed in a crotch in a branch, ten to twenty feet above the ground. The stomach of one bird contained a large number of the elytra of a very small brown beetle, together with other parts of these insects. Evidently these constitute its chief food supply.

As already mentioned, *Conopoderas* is not uncommon at Washington Island. Streets makes no mention of it. On Christmas Island it is very abundant, and its nests are to be seen everywhere. It is said to devour the beetle (*Diocalandra taitensis*) which is responsible for some injury to the coconuts on these islands, but this is doubtful.

Vinis kühlii (Vigors). The small Paroquet forms a conspicuous part of the bird life of Fanning and Washington islands. At Fanning it is far less numerous than it once was. It occurs everywhere throughout the island among the coconut palms, but the natives capture the birds at every opportunity and attempt to keep them in cages, with the result that they soon die or at least fail to breed. Paroquets are very abundant in the coconut groves at Washington Island, where they are not so much molested.

Besides the birds here listed which breed on Fanning Island, there are several migratory species present on the extensive tidal flats and on the shores of the lagoon. The Bristle-thighed Curlew (*Phaeopus tahitiensis*) comes in large numbers in September and October from some boreal breeding ground and is mercilessly hunted on the flats with shot guns. Thus the numbers of migrants are being much reduced. There are some present at all times, probably individuals which were for some reason unable to continue the flight, or decided to stay there. They feed on the less disturbed flats during the day and take refuge among the rubbish in the coconut groves at night. The Wandering Tattler (*Heteroscelus incanus*) arrives about the same time from its breeding grounds in Alaska and frequents the lagoon shores, and the Pacific Golden Plover (*Pluvialis dominicus fulvus*) comes likewise and makes itself at home. Later in the fall there are several migratory ducks, but none of these were seen by me.

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