Report on a Trip to Marcus Island with Notes on the Birds

NAGAHISA KURODA[1]

MARCUS ISLAND, situated about midway between the Bonin Islands and Wake Island in the western Pacific, is a small, remote island which belonged to Japan until World War II and is known to the Japanese as Minami Torishima, the South Bird Island. It is now in the possession of the United States, but a Japanese weather station, constructed after the war, is the only establishment on the island.

A zoological survey of this island was planned by Hokkaido University, which sent Mr. M. Yamada (for the litoral invertebrata) and Mr. S. Sakagami (for the insects). I joined them to make bird investigations, through the kindness of Professor T. Uchida, Hokkaido University, Dr. S. Wadachi, head of the Central Weather Station, and other gentlemen of the Station—Mr. N. Yamada, the Chief Secretary, Mr. Y. Nakada, head of the Marcus Island Section, Mr. T. Doi, the head, and Mr. S. Kitada, the secretary, of the Supply Section, and other people concerned. My cordial thanks are due these gentlemen and also Dr. H. E. McClure of the 406th Medical General Laboratory in Tokyo.

Taking advantage of the supply ship, "Kuroshio-maru" (450 tons), in charge of the Central Weather Station of Tokyo, we left Tokyo Harbor on April 25, 1952, arrived at Marcus Island on April 30, and stayed for a week until we embarked on May 7 to return to Tokyo. It was an intergrading season, the weather ranging from winter to summer type, and the sea was rough with N.N.E. winds which prevailed in about 4-day cycles, alternating with a summer wind from S.–S.S.W. which calmed the sea and brought hot atmosphere. Navigating southward through latitudes of about 28–33° N., far east by south of Hachijo Island, the change of temperature and the color of the sea showed the demarcation between temperate and semi-tropical waters. The southerly rear-guards of the Black-footed Albatross, *Puffinus carneipes*, Storm-Petrels, and Skuas, which were migrating to the temperate zone, were already in the cooler area north of the aforementioned latitudes. To the south, tropical species such as *Puffinus nativitatis* and *Pterodroma* were encountered. Sea birds in general, however, were scarce, the main group of oceanic migrants having passed north already, and the tropical species were probably concentrated around the breeding islands. Only the following species were seen en route:

Oceanodroma tristrami (or **matsudairae**)

A few were seen scattered over the ocean and followed the ship but were distributed north of about 27–28° N.

Oceanodroma castro (or **leucorhoa**)

Two were observed closely on May 10 at about 33° N.

Puffinus leucomelas

Many were observed near the mouth of Tokyo Bay on April 26, and a few were seen north of 30° N. on May 10.

Puffinus carneipes

Six birds in all were seen north of about 33° N. on May 10.

Puffinus tenuirostris

Two or three were seen as far south as about 26–27° N. on April 29. They were late

[1] Yamashina Museum of Birds, 49 Nanpeidai-machi, Shibuya-ku, Tokyo, Japan. Manuscript received January 29, 1953.

individuals, as the early birds can be seen along northern Japan in late April.

Puffinus nativitatis

Small compact flocks and a few individuals were occasionally encountered south of about 27° N. and also around Marcus Island.

Pterodroma brevipes hypoleuca

Occasional individuals were seen sailing over the sea south of 27–29° N.

Diomedea nigripes

A few were always seen, sometimes floating on the water, and they followed the ship south to about 28° N., but none was observed to the southward. *D. immutabilis* was not seen; its occurrence in Japanese waters is earlier than *nigripes*.

Stercorarius pomarinus

Two birds were seen in Tokyo Bay on April 26, and a bird followed the ship for a while on April 28 at about 28° N.

Stercorarius longicaudus (?)

Three birds, probably of this species, were seen at a distance on April 27.

On arriving at Marcus early in the morning on April 30, *Sterna fuscata* and *Anous stolidus* were seen flying about the island but were never observed offshore.

GENERAL FEATURES OF MARCUS ISLAND

The island is situated over 1,000 miles from Tokyo, 600 miles S.E. by E. of the Bonin Islands (Chichijima) and 790 miles N.W. of Wake Island at 24°14′ N. and 154° E.,[2] in the same latitude as the north point of Formosa.

According to Yoshida, the former Japanese garrison (crew of "Kasagi") recorded a summer temperature of 87–88° F., rarely over 100° F. The colonists recorded over 130° F. outdoors, at the most 92–93° F. indoors, and in winter never lower than 60° F. Bryan, during a week's stay in August, noted a low of 72° F. and a high of 82° F. The spring temperature during our stay was as shown below:

Date	Temperature Maximum °C.	Temperature Minimum °C.
April 30	25.5	20.0
May 1	27.5	21.2
May 2	25.9	19.8
May 3	24.6	20.9
May 4	25.5	20.7
May 5	26.7	22.0

It was, however, very hot indoors, and the sunshine was strong and glaring against white coral gravel, the earth temperature reaching about 45–50° C. The brooding terns and noddies seemed to sit on their eggs to protect them from being overheated, as the eggs were cooler than the gravel. The weather was fine, and the only precipitation was on the night of May 2. Rainfall is rare, and, as fresh water is lacking, the drinking water is said to be obtained mainly during the rainy season in August.

The whole island is formed of coral gravel and is flat, being only a few meters above sea level. It has a triangular litoral line, a little over 4 miles in extent, the white beach being particularly extended at the western point. The coastal reefs are to be found along the northern and northeastern beaches, and the island is surrounded by scattered coral rocks about 200 meters offshore, especially on the northern coast. Formerly, the island must have had some elevated parts, as Bryan reports that "Near the north end the land attains a height of seventy-five feet which was the highest point found," and, "In the middle of the island along this side the highest point is not to exceed forty feet, while at the southeast point an elevation of sixty-five or seventy feet is attained." However, at present the whole island is almost entirely flat as the result of war destruction, and the central planted part is low, reminding us of former lagoons, which he mentioned. At these places he found "four separate deposits of loose black alluvial soil," which were a few feet deep according to Yoshida, but we found such soil to be entirely lacking at present, and there was no sign of

[2] Various other records have been made of its position. Cf. Bryan, 1903: 78–79; Yoshida, 1902: 674.

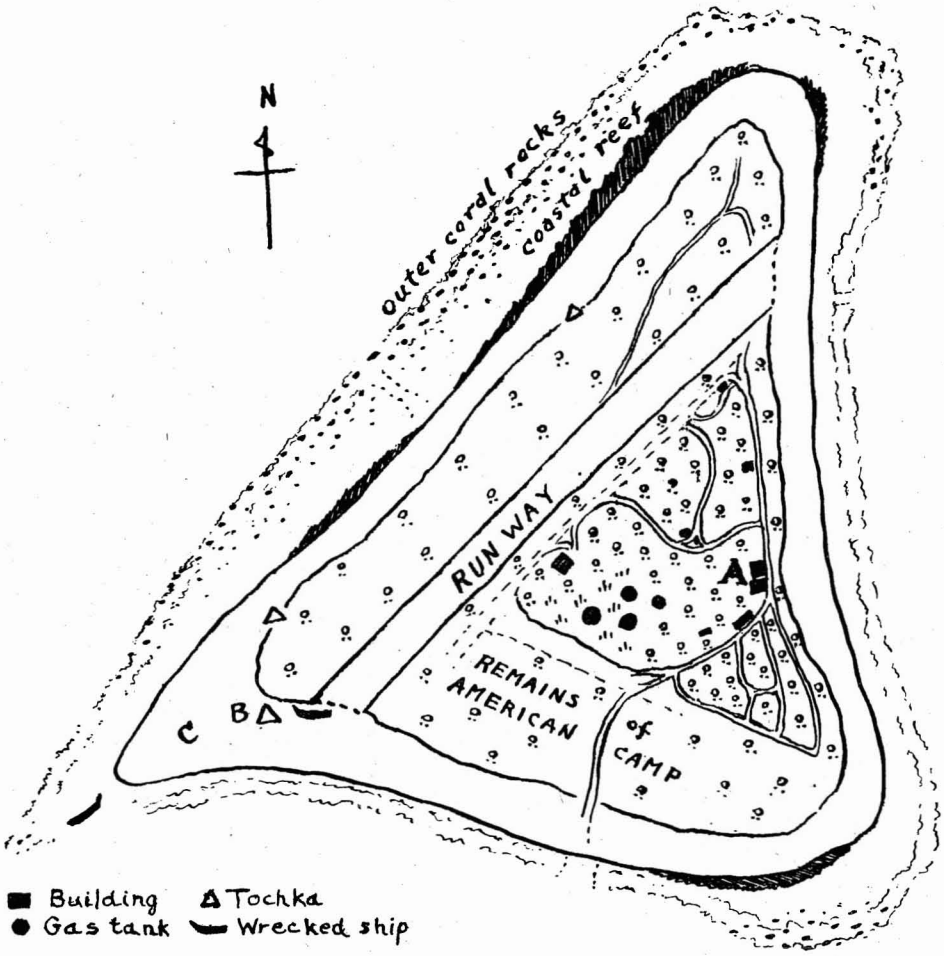

FIG. 1. Map of Marcus Island. A, weather station; B, a tochka on which noddies are breeding; C, main breeding place of the Sooty Tern, which also breeds on the outer coral rocks and flocks on the coastal reef.

the *Cocos nucifera*, which is said to have been thickly planted at these lagoons in an area of about three acres.

The central cover consists chiefly of *Messerschmidia argentea* ('Monpanoki'), a brushy plant, mixed with a few *Pisonia grandis* ('Togemi Udonoki'), with a dense creeping undergrowth of *Ipomoea Pes-caprae* ('Gunbaihirugao') and a few grasses. There were a few poorly grown papayas and five bananas, the latter having recently been brought from the Bonin Islands. It is interesting that Bryan reports no natural papaya, but states that he gave some seeds, together with those of several other plants, to the Japanese colonists to plant. Bananas were also introduced formerly, according to him, but have never fruited, and tobacco was then cultivated to be smoked by the colonists. Small land crabs, locusts, skinks, and geckos as well as Oedemeridae were particularly abundant, and we saw a dragonfly of *Sympetrum* type, said to be common in summer. We also obtained a young specimen of *Rattus rattus alexandrinus*, an unhealthy animal, found wild among the *Ipomoea*.

The above general features of the island, however, are now in a devastated state as the result of the recent war.

BRIEF HISTORY OF MARCUS ISLAND

It is said that an American priest discovered the island first, naming it Marcus, or Weeks, Island (whether Weeks is identical with Marcus is not clear). In November, 1883, Tsunetaro Shinzaki landed on the island as the first Japanese, coming on board the British ship "Eta" of the Yokohama Konshiro Company. Another Japanese, an offshore fisherman of Kinkazan (N. Honshu), reached the island accidentally. In 1889, Captain Rosehill of the United States visited the island and suggested its commercial value to his government, and in December, 1896, Shinroku Mizutani, the chief of the South Pacific section of the Tokyo Bird and Mammal Company, explored the island, followed by Haruzo Kobayashi, a former navy officer. They emigrated the natives of the Bonin Islands and Hachijo Island to Marcus, to engage in collecting feathers of the albatross which was then very abundant.

This trade was assisted by Shichigoro Kamitaki, a trader merchant of Yokohama, and the trade patent for bird-feather collecting, fishing, and salt production was given to Mizutani by the Tokyo Prefectural Government, which, on July 24, 1898, declared Marcus Island to be in the Bonin Islands section under the name Minami Torishima.

In July, 1902, a Japanese cruiser, "Kasagi," commanded by Lt. Akimoto, was dispatched to the island to receive the expedition party of Dr. Bryan of the Bishop Museum of Honolulu, who stayed on the island the week of July 30. On August 28 of the same year, another Japanese cruiser, "Takachiho," with Dr. Shinpo, Mr. Yoshida, newspapermen, a lawyer, and others on board, visited Marcus on a round-trip cruise from Yokosuka-Torishima-Marcus-Bonin Islands.

Both Bryan and Yoshida reported on the history, geology, climate, fauna, and flora, and the more scientific and detailed report by Bryan is of particular importance in ornithology. As curator of ornithology at the Bernice P. Bishop Museum, he gives valuable data on the bird life of the island, reporting many species which are not found on the island now, including *Micranous marcusi*, which he described as a new species. Yoshida, a geologist, only reports some birds in vernacular names used on the island. According to him, there were 29 colonists (including four women) making their living by catching the birds which they stuffed for exportation. The birds, about 20 species in all, were all sea birds crowding all over the island and were exceedingly tame. They were caught with a bamboo pole with a round net at the end and were stuffed in fast procedure. This regrettable slaughter, chiefly of *Sterna fuscata*, which was the most numerous species, is further described in detail in Bryan's report. Most regrettable is the fact that the albatrosses, *Diomedea immutabilis* and *D. nigripes*, for whose feathers the colonists first settled on this island, were already all gone by that time. The sad history of their disappearance is also recorded in detail in his report.

PRESENT CONDITION OF THE ISLAND

Until how recently the colonization existed is not certain. However, World War II was undoubtedly the second and decisive crisis for many species of birds, as the physical topography was entirely changed. About 5,000 Japanese troops were garrisoned on the island, and after severe bombardment by United States planes they retreated from the island before the end of the war to be replaced by American troops. The newly constructed camps and materiel of the latter were then all destroyed (a few trucks and jeeps have been repaired and are now in use on the island) by a violent typhoon, accompanied by storm waves which washed out almost one third of the island. (Bryan reports typhoons of particular violence in October, 1901, and September, 1902.) Subsequently, a weather station was constructed on the eastern coast by the Japanese under the supervision of American occupation forces (construction was begun in December, 1950). About 30

persons are now working at this station, supplied every 3 months with foods and materials from the Tokyo Central Weather Station.

Now being totally disfigured, Marcus Island, which lies peacefully and beautifully with green cover and white beach surrounded by deep-colored semitropical ocean, impressed us as a disappointment as soon as we landed on it. Everywhere on the island are to be found residues of war. All along the coast are trenches, with tochkas here and there on which rusted anti-aircraft guns are still pointing to the sky. On the northern coast, from the eastern end to the western, a broad runway was constructed for occasional visits of airplanes, and almost all the southwesterly one third of the island is left as it was devastated by the typhoon, the ruins of United States camps and trucks scattered everywhere. Thus, the brushy jungle which formerly occupied four fifths of the island (*fide* Yoshida) is now restricted to a small central section through which roads pass and which in many places is dug up for air-raid shelters, while ruined, rusty gas tanks are conspicuous among the green cover.

Under such circumstances, with continuous human intervention, many sea birds which formerly bred abundantly on this island have disappeared completely. The burrow-nesting shearwaters (*Puffinus pacificus*) lost their breeding place in the soily regions, and the ground and tree nesters such as *Puffinus nativitatis*, Frigate Bird, Tropic Bird, and Boobies as well as the beautiful Fairy Tern have abandoned the island. The island, formerly crowded by these birds, is now nothing but a ruined coral elevation. In fact, Bryan reports (August) 18 species of sea birds, including migrant waders, of which 9 species were breeding, and he secured 56 specimens without using a shotgun (the use of a shotgun is said to have been prohibited by the Japanese cruise officer).

On my recent trip (early May) I found but eight species, of which only two, *Sterna fuscata* and *Anous stolidus*, were breeding. The length of both Bryan's trip and mine was a week, and, although my visit was seasonally earlier, I was told by the workmen of the station that none of the other species come to breed in the summer.

The Sooty Tern (*Sterna fuscata*), which I estimated at about 1,000, should have been at least several times as many formerly. They are unfortunate survivors, because, to my regret, their breeding is still being disturbed. Their whole flock was gathering at the western beach when I landed on April 30, but it was a surprise that only three eggs were found left and few females were about to lay eggs. At this beach many eggs were said to have been taken until just a few days prior to our visit. Two days after, I noticed that the whole flock had given up this beach, scattering to the outer coral rocks of the northern side where wading is necessary to reach the eggs. They seemed to have soon laid eggs at these new, safer places, and this habit has apparently retained their present number. However, if this condition continues, their future decrease to the point of extinction on Marcus is quite certain, and, therefore, I hope that my friends on this remote island will pay attention to the future of their birds.

The noddy (*Anous stolidus*), on the other hand, is a species that has found new egg-laying places on war remnants which are safer than their former favorite sites on the trees, as reported by Bryan, where the eggs were likely to be disturbed by people. A few of them still breed on the coral rocks with the Sooty Terns, but they now breed principally in small colonies on abandoned gas tanks, tochkas, and the like, and even high up on the wireless towers. All these colonies are, therefore, inaccessible, or at least hard to reach, and, though their number is only about 200 in all, this species may increase in the future until these few safe places become crowded. However, compared with the former population their decrease is evident.

Only a few other species of birds were found on the island. Two *Gygis alba* were seen and

obtained, but they were nonbreeding individuals as both were females with small ovaries; none of the *Anous minutus marcusi* originally described from this island by Bryan was found. About 20 Golden Plovers were the only familiar birds living on the ground, and five American Wandering Tattlers were staying on the coastal reef on the northern side. A Turnstone and a Whimbrel showed up for a 1-day rest on their migration, and a Great Skua (probably) was unexpectedly seen.

According to the station workmen the island is only occasionally visited by the Frigate Bird, and recently an *Ardea purprea* (probably) and three white Egrets were obtained or noted on the island as stragglers.

ANNOTATED LIST OF BIRDS

Although the island was formerly crowded with sea birds, the species known from this island are very few, 32 so far recorded. Situated out in the ocean apart from other islands, Marcus seems to be visited by only a few of the migrant shore birds in very small numbers, but casual migrants or stragglers will be added in the future. Land birds are entirely lacking, and this might be correlated with the history of the formation of the island. It was surprising that we found skinks and ground insects, including ants, on this small coral island. That land birds can not thrive on this island is easily explained by the lack of fresh water and foods such as fruits and a variety of insects, spiders, or earthworms. Moreover, the only trees are two kinds of small, tropical, brushy ones, and, though they make a rather thick jungle, it is too simple a cover without any big trees which will offer a good, cool shelter for arboreal birds.

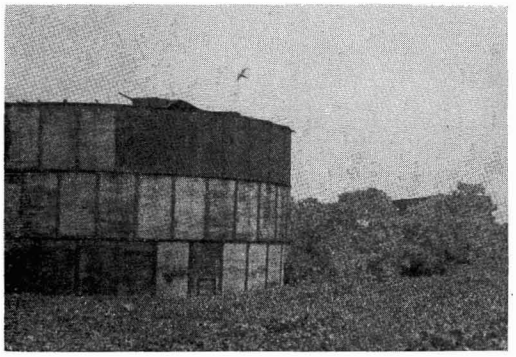

FIG. 2. Rusty gas tanks on which noddies are breeding. Photograph by author.

Bryan reported 18 species mostly collected by himself, and there are a few species to be added to his list based on specimens formerly preserved in the Tokyo University and in the Matsudaira, Kuroda, Sr., or Takatsukasa Collection, some of which are now deposited in the Yamashina Museum but others were destroyed during the war. These specimens were mostly obtained from stuffed-skin dealers in Tokyo. On the present trip the only species new to the list were sight records of *Numenius phaeopus variegatus* and *Catharacta skua* (not definite) and the herons of which I was told by the station workmen.

The list of known species are as follows:

1. **Fregata minor minor** (Gmelin)

   Bryan reports, under the name *Fregata aquila*, a full note on nest and chicks and mentions how it attacks the boobies. There are three specimens, in the Yamashina Museum, one adult and two juveniles obtained in 1911, and there were six more specimens (1911 and June, 1910) in the Kuroda and Takatsukasa collections (all destroyed). A bird is said to have appeared in May, 1951, and late April, 1952.

2. **Sula leucogaster plotus** (Forster)

   Bryan observed only a few individuals on the rocks but saw a young bird which had been captured and kept alive by the colonists. He reports this gannet under the name *S. cyanops*.

3. **Sula sula rubripes** Gould

   Thousands were breeding in August when Bryan visited the island. A detailed field note on eggs and chicks is given by him.

4. **Sula dactylatra personata** Gould

   Under the name *Sula piscator*, Bryan reports a few observed specimens of this

booby and one specimen given to him by colonists.

5. **Phaëthon rubricaudus rothschildi** (Mathews)

Bryan reports in detail on its breeding, eggs, and chicks but mentions that it was already decreasing at that time. Two specimens are now in the Yamashina Museum, one a former Tokyo University specimen, September, 1902, and the other from the Bernice P. Bishop Museum, August 5, 1902.

6. **Phaëthon lepturus dorotheae** Mathews

No record is found in literature except in the *Hand-List of the Japanese Birds* (1922, 1932, 1942). The source has apparently been the specimen in the former Kuroda or Takatsukasa Collection, now destroyed.

7. **Oceanodroma furcata furcata** (Gmelin)

Also reported only in the Japanese hand-list, 1932 and 1942.

8. **Puffinus pacificus chlororhynchus** ('**cuneatus**') Lesson

Bryan found this species nesting in burrows at soily places, and many were seen by him resting under bushes or logs. Eggs and chicks are also reported.

9. **Puffinus nativitatis** Streets

Young of all stages are reported by Bryan, who found this species under bushes or roots, together with *P. pacificus* and tropic birds, but never in burrows. There is one specimen, dated November, 1913, in the Yamashina Museum (former Matsudaira Collection).

10. **Pterodroma (?brevipes) hypoleuca** (Salvin)

[For specific name cf. Austin, Jr., 1952: 393.]

Not reported by Bryan, but in the Yamashina Museum (former Matsudaira Collection) there is one specimen obtained in October, 1908.

11. **Bulweria bulweri bulweri** (Jardine and Selby)

Only recorded in the Japanese hand-list, 1932, 1942.

12. **Diomedea immutabilis** Rothschild

Only one was seen and another was secured by Bryan, who reports the former abundance and slaughter by colonists.

13. **Diomedea nigripes** Audubon

None of this species was seen or secured by Bryan, but he reports that he was told that it was as abundant as the above species.

14. **Tringa incana incana** (Gmelin)

Few of this subspecies probably visit Marcus Island regularly. Bryan observed several birds in August and secured a specimen from the colonists. I saw five birds during my stay, obtaining one bird on May 1.

15. **Calidris ferruginea** (Pontoppidan)

Only recorded in the Japanese hand-list, 1922, 1932, 1942.

16. **Pluvialis dominicus fulvus** (Gmelin)

This species is a familiar plover on Marcus and is said to be seen in almost any season. About 20 were on the island, and I obtained two samples on April 30 and May 5. They were seen all the time on the hot surface of the runway or on the roads through the jungle, only appearing on the beach to bathe and drink water. Bryan observed a flock of 11 birds on August 4.

17. **Thalasseus bergi cristatus** (Stephens)

Only recorded in the Japanese hand-list, 1922, 1932, 1942.

18. **Sterna hirundo longipennis** Nordmann

Only recorded in the Japanese hand-list, 1932, 1942.

19. **Sterna lunata** Peale

There are seven specimens (dated October, 1910) in the Yamashina Museum (former Matsudaira Collection) and one in the Game Management Bureau, Tokyo, with the same date.

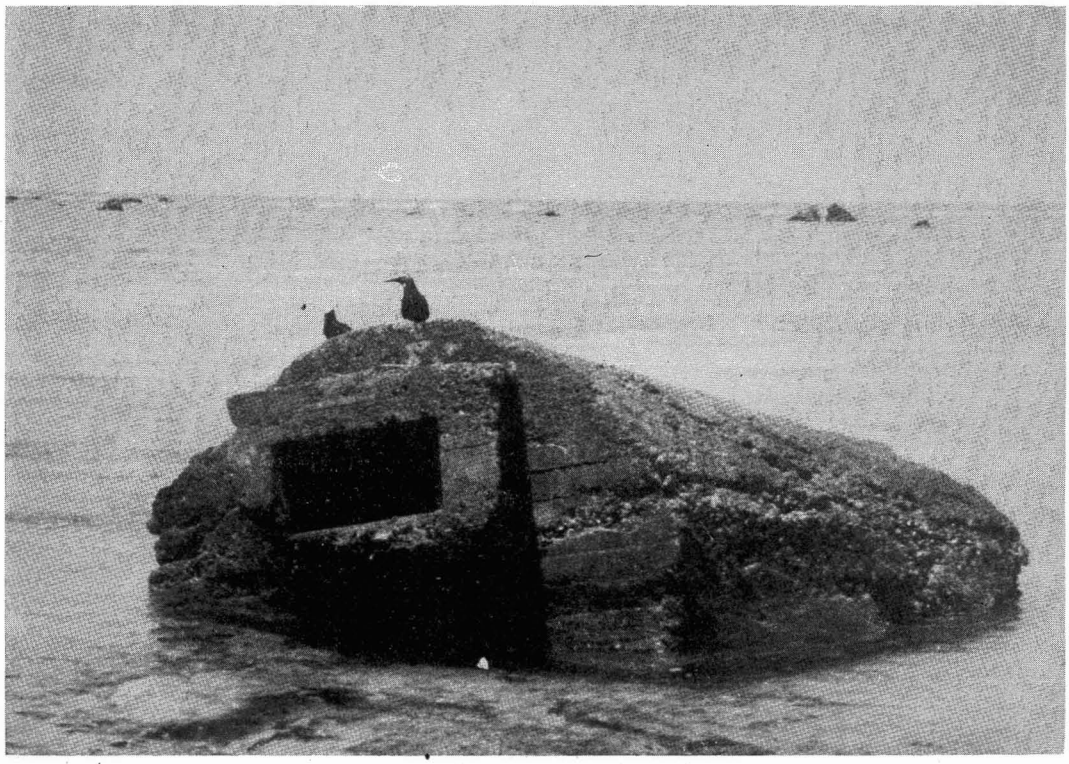

FIG. 3. A pair of noddies on a broken tochka near the shore. An egg lies below them. They are also breeding, in company with Sooty Terns, on the rocks in the background. Photograph by author.

20. Sterna anaethetus anaethetus Scopoli

Only recorded in the Japanese handlist, 1922, 1932, 1942.

21. Sterna fuscata oahuensis Bloxam

Bryan reports this tern as by far the most abundant bird and mentions its slaughter by the colonists. During March to September alone not less than 50,000 birds are said to have been killed. A specimen dated September, 1903, is in the Yamashina Museum (former Tokyo University Collection), and I secured eight birds and three eggs. The Marcus specimens are larger than those of the Bonin Islands, Palau Island, or Riukiu Islands.

About 1,000 were breeding on the beach and coral rocks. They are said to have arrived about a week before our visit on April 30. The female lays a single egg. No chicks were seen. In the early morning they were scattered around the island and gathered in a flock on the beach or coral reef. All day long, almost always in pairs, they were flying high and low, sometimes soaring at a great height, over the island to and from the coastal breeding place. Their white underparts and underwing coverts are quite beautiful when seen from below against the background of deep blue sky. Toward the evening and at night they were particularly noisy around the colony. When the colony is intruded upon, they crowded noisily over the intruder with harsh cries, almost attacking his head, and always from behind. Once a flock was observed fishing a little offshore on the northeast side of the island where squid (and, con-

sequently, big fishes) are abundant. All the birds obtained, including also *Anous* and *Gygis*, had small squid in their proventriculus. They never seemed to go far from the island.

22. **Procersterna cerulea saxatilis** Fisher

Only one specimen (purchased in Tokyo) obtained in August, 1911, was in the former Kuroda, Sr., Collection.

23. **Anous stolidus pileatus** (Scopoli)

This noddy was found by Bryan breeding in good numbers preferably on trees, and all stages of the young were seen in his visit in August. I found about 200 birds breeding in separate colonies on ruined gas tanks (four in number, about 10 pairs on each), a small wooden tank, and an abandoned tochka, and a few birds high up on the top of the wireless tower. A few isolated pairs were nesting on the beach and coral rocks. Seven examples and four eggs were obtained.

Their flight is different from that of the Sooty Tern (slower wing beats), and their edged, pointed wings often looked like those of a falcon; their large tails are very characteristic. They often skim near the water surface which they touch with their bills, probably to drink. A pair was often observed to make a rapid circling flight, almost touching each other, with very rapid flapping, then to rise higher and higher into the sky. This is apparently a kind of pleasure or courtship flight. Pair after pair were flying rather low over the island between the colony and the coast and were often observed picking up nest materials—small sticks, dried grasses, etc.—from the ground while fluttering their wings. At their colonies they sat closely on the eggs, and now and then the whole group took wing to circle around the colony for a while and then settle again. A few were seen at a great height on the wireless tower, sitting and bringing back nest materials, and flying until after dark. Their voice is quite characteristic, rather resembling that of a crow though much weaker, and they make two sounds—a call note of one syllable and an alarm note, translated by Bryan as K-r-uk, K-r-u-k. These voices, heard in hot atmosphere, are very impressive.

Anous differs from *Sterna* in various respects besides external characters and voice. The body fat and yolk of the egg are yellow instead of orange as in *Sterna fuscata;* the sternum, which is double notched posteriorly in *Sterna*, is single notched in *Anous;* the syrinx, correlated with the characteristic voice, is peculiarly provided with a gelatinous cover; and the caeca are long, not being the small attachment usual in the gulls and terns.

24. **Anous minutus marcusi** (Bryan)

The original description is given in Bryan's report based on two adults and fledged young. He reports that this species was much less abundant than the previous one. The Yamashina Museum has two specimens obtained in 1910 (former Tokyo University Collection), and another is in the Game Management Bureau Collection, dated December 4, 1908. None of this species was found during my visit.

25. **Gygis alba candida** (Gmelin)

Bryan reports this species as quite common, breeding in jungles, and he observed many grown chicks. Now it apparently does not breed, for the only birds seen, which were obtained, were two females with reduced ovaries. They were flying over the wooded parts and resting in *Messerschmidia*. The basal half of the bill is a beautiful cobalt blue, the rest being bright black; the iris is almost black; the feet are bluish white with creamy white webs and black claws; and the skin is grayish black.

There are two specimens in the Yamashina Museum, dated September, 1902 (Tokyo University Collection), and No-

vember, 1910 (Matsudaira Collection), and another example with the latter date is in the Game Management Bureau Collection.

26. **Larus argentatus vegae** Palmèn

A March specimen was given to Bryan by the colonists, who are said to have reported to him that it had been obtained four times previously in the winter season. He was told also that another species of gull had sometimes occurred.

The following are sight records.

27. **Numenius phaeopus variegatus** (Scopoli)

I observed one bird on May 6.

28. **Calidris acuminata** (Horsfield)

Bryan reports a single example observed on August 6.

29. **Arenaria interpres interpres** (Linné)

Bryan observed a flock of 11 birds on August 4, and I saw a bird on May 1.

30. **?Catharacta skua**

One bird was observed from a distance in the early morning of May 3 (after rain) at a pool remaining on the runway. It was preening its feathers and flew off soon so that I could not see it, but Mr. Sakagami saw the white part on its wings.

In addition to the above, the following two species are to be added, of which I was told by the weather station workers.

31. **?Ardea purpurea**

A bird was caught in mid-April, 1952. It was in an exhausted state and was finally caught by hand, apparently a straggler.

32. **Egretta** sp.

Three white egrets stayed on the island during the summer of 1951 and disappeared after a typhoon.

REFERENCES

ANON. 1902. (Historical notes.) *Chigaku Zasshi* [Jour. Geol.] 14(166): 567–568, 683–690.

AUSTIN, OLIVER L., JR. 1952. Notes on some petrels of the North Pacific. *Harvard Univ., Mus. Compar. Zool.* 107(7): 391–407.

BRYAN, W. A. 1903. A monograph of Marcus Island. *Bernice P. Bishop Mus., Occas. Papers* 2(1): 77–126. [With appendix of fish list.]

INOMA. 1904. (Historical note.) *Chigaku Zasshi* 16(191): 730.

KURODA, NAGAMICHI. 1913. (Record of *Procersterna*.) *Dobutsugaku Zasshi* [Jour. Zool.] 25(298): 419.

NAMIE, M. 1905. Animals of Marcus Island. [Review of Bryan report.] *Dobutsugaku Zasshi* 17(201): 218–226.

ORNITHOLOGICAL SOCIETY OF JAPAN. 1922, 1932, 1942. *A hand-list of the Japanese birds.* Ornithological Society of Japan, Tokyo.

YOSHIDA, O. 1902. Minami-Torishima Shisatsu [An Inspection to Marcus Island]. *Chigaku Zasshi* 14(166): 674–678.