

THE BIRDS OF MIYAKE JIMA, JAPAN

BY JACK T. MOYER

AMONG the most interesting areas for ornithological research in Japan are the Izu Islands. Beginning at Oshima Island, a mere fourteen miles from the Izu Peninsula at the entrance to Sagami Bay, the Izus stretch southward to the tiny island of Tori Shima; a distance of nearly 250 miles. Included in the chain are, in addition to those already named, To Shima, Nii Jima, Kozu Shima, Miyake Jima, Mikura Jima, Hachijo Jima, Aoga Shima, and several tiny islands and reefs. All are part of a volcanic belt stretching from famous Mount Fuji, on the island of Honshu, through the Bonins and the Volcano Islands to the Marianas Islands.

The avifauna of the Izu Islands includes a number of endemic species and subspecies, including *Phylloscopus ijimae*, *Zosterops japonica stejnegeri*, *Troglodytes troglodytes mosukei*, *Parus varius namiyei* (To Shima, Nii Jima, Kozu Shima), *P. v. owstoni* (Miyake Jima, Mikura Jima, Hachijo Jima), and *Ixos amaurotis matchiae* (Hachijo Jima).

The similarities between the avifaunas of the Izu Islands and the island of Yaku Shima off the southern coast of Kyushu are striking. The interesting Seven Islands Thrush (*Turdus celaenops*) is found only in these two localities (*T. c. celaenops* in the Izus and *T. c. yakushimensis* on Yaku Shima); and populations of the Pigmy Woodpecker (*Dendrocopos kizuki matsudairai*) and Japanese Robin (*Erithacus akahige tanensis*) of the Izus are both indistinguishable from the corresponding Yaku Shima forms.

Other particularly interesting birds of the Izu Island birds are *Otus asio*, which is indistinguishable from *O. a. pryeri* of the Ryukyus, and *Synthliboramphus wumisuzume*. The latter was once fairly common in the Izus and, to a lesser degree, in the Korean straits; but as there are no recent records from the Sea of Japan, the Izu Island population may be the last to survive.

Unfortunately, transportation to and from the various islands is not easily available, and as a result only a limited amount of field work has been accomplished. Oshima, because of its proximity to the Honshu coast, and Hachijo Jima, a former home of the noted Japanese ornithologist, Tokutaro Momiyama, are best known. Miyake Jima, the third largest of the Izu Islands, has been visited by various ornithologists, but much remains to be learned about the status of birds there. It is hoped that this paper, a result of my six journeys to Miyake Jima, will be of some value to students of

Japanese birds, and that it will stimulate further field work in the Izu Islands.

My journeys to Miyake Jima were made between July, 1952, and April, 1954, as follows: July 24 and 25, 1952; April 5, 6, and 7, 1953; April 12, 13, and 14, 1953; May 23 to June 3, 1953; August 22 to September 1, 1953; and April 6 to 16, 1954. A total of forty-two days was spent on the island, all in the spring and summer seasons. Extensive field work was conducted on all but the last two trips, when only limited time was available for ornithology.

Miyake Jima is an active volcano which last erupted in 1940. The island is nearly five miles in diameter and is dominated by 2600-foot Mount Oyama. Situated at Latitude 34° 5' N and Longitude 139° 30' E and bathed by the warm Kuroshio (Japan Current), Miyake is blessed with a subtropical climate. Forests of live oaks, live beeches, camphors, and cryptomeria, and extensive camelia orchards blanket the island. Several volcanic craters of varying age account for a variety of ecological niches. Two of these are the settings for Lake Tairo and Shirei Pond, both of which are surrounded by magnificent virgin, subtropical forests. A third crater forms an extensive, forested amphitheater southeast of Tsubota Mura. The crater of the 1940 eruption, about two miles north of Miike Beach, is surrounded by barren slopes of volcanic ash, as is the main crater at the summit of Mount Oyama. Two other craters between Tsubota Mura and Kamitsuki Mura are gradually being reclaimed by vegetation, largely Black Pine (*Pinus thunbergii*).

The Miyake coastline is dominated by black boulder-strewn shores, frequent perpendicular cliffs, and an occasional beach of black volcanic sand, the most extensive of which is Miike Beach.

The island is populated by some 7,000 Japanese, most of whom are engaged in the fishing for and preparation of "tengusa" (*Gelidium cartilagineum*), a red seaweed from which agar is produced. Camelia oil, dairy products, and charcoal are other important resources.

Most of my field work was limited to the area between the 1940 crater, south and west to Ako Mura, with by far the greatest amount of time being spent between Tsubota Mura and Lake Tairo (see Figure 1). Limited observations were made in July, 1952 and May, 1953 in the vicinity of Igaya Mura; and occasional surveys of the lower slopes of Mount Oyama were conducted. Three boat trips were taken to Sanbondake, a rocky reef five miles west of Miyake Jima.

I am indebted to a great many individuals for assisting me in this study. Ornithologist friends who accompanied me on various trips

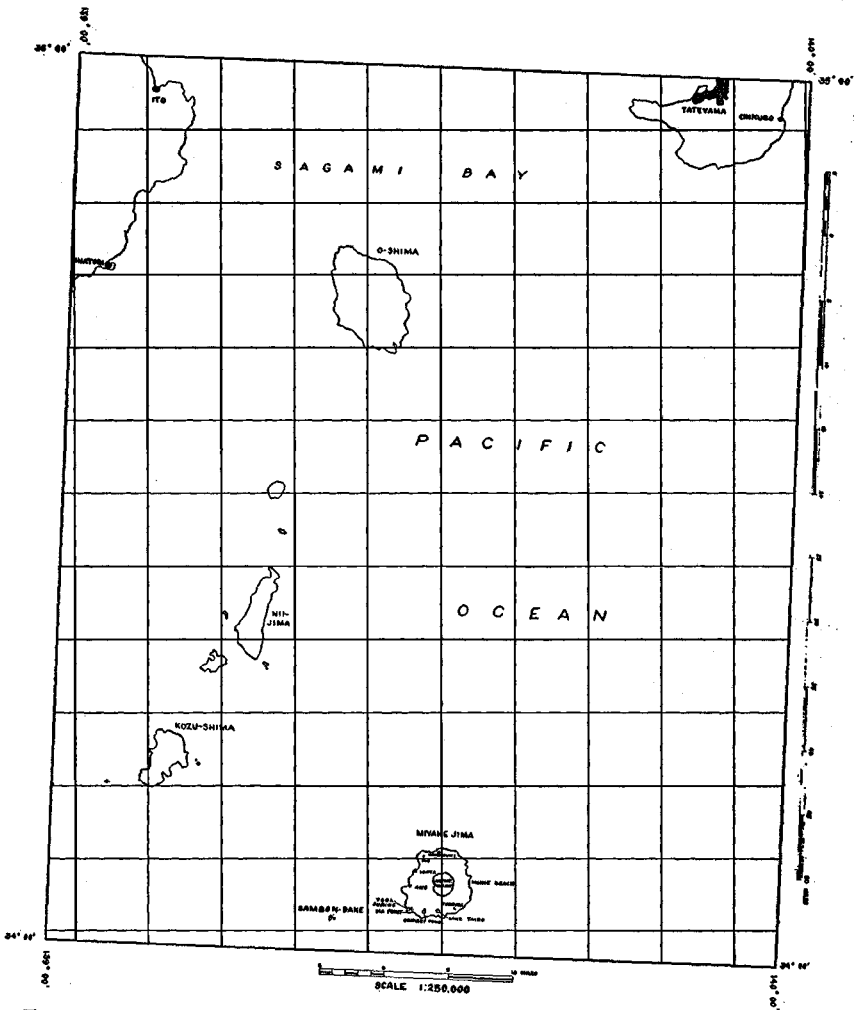


FIGURE 1. The Izu Islands from the mouth of Sagami Bay to Miyake Jima.

and generously allowed me access to their notes and suggestions are Dr. Robert Smith, USAF; Dr. H. Elliott McClure, 406th Medical General Laboratory, Japan; Mr. Tatsuo Udagawa, Forest Experiment Station, Asakawa, Japan; and Mr. Hiroyuki Morioka, Kyoto University. Dr. McClure also contributed several fine photographs. Other companions, Mr. Charles Fletcher, Hyattsville, Maryland, and Dr. Van Philpot, University of Wisconsin, are thanked for their willing assistance in collecting specimens and in general field observations. I am grateful to Mr. Herbert Deignan, of the United States

National Museum, who checked several of my specimens and added many interesting comments; and to Mr. Chester Fennell, who allowed me use of the notes of his trip to Miyake Jima in December, 1952. I am further privileged to acknowledge the encouragement and helpful guidance of the Department of Zoology, Colgate University, and especially Professor Raymond Myers, who read the manuscript and made many valuable suggestions.

Field work on Miyake Jima would have been extremely difficult without the generous and willing coöperation of the local residents. I am deeply indebted to many of them. Particularly, I wish to thank Dr. Tatsuo Tanaka, Mr. Gonichi Yamada, and Mr. Nagata, all of Tsubota Mura, for unforgettable hospitality and assistance. And finally I shall always remember the friendly and invaluable assistance given by my close friend and constant field companion, the late Akio Tsukuba, of Tsubota Mura. Akio's sudden death in an accident in November, 1954, was a tragedy deeply affecting all who knew him.

In the preparation of this paper I have followed the nomenclature of Austin and Kuroda (1953). Asterisks (*) indicate first sight and/or specimen records for Miyake Jima, based on a complete list of Izu Island birds published by Shirai (1952). Botanical nomenclature is that of Makino (1940). Present locations of my specimens are indicated by the following abbreviations: USNM (United States National Museum), CNHM (Chicago Natural History Museum), and UMMZ (University of Michigan Museum of Zoology).

Puffinus leucomelas. Streaked Shearwater. Abundant over the ocean a couple of miles off-shore. A typical entry in my notes, April 7, 1953, reads as follows: "About one mile from shore, where the currents from both sides of the island meet, we began to see shearwaters. For the next few miles, hundreds and hundreds were observed skimming over the water, passing and re-passing the boat in such numbers that an actual count was impossible."

During the ten-mile boat trip from Tsubota Mura to Sanbondake Reef, May 26, 1953, shearwaters were constantly in sight, and more than 1000 were counted. A male was collected by hand from a crevice in the rocks on Sanbondake, and three more males were shot on the return trip to Miyake. (CNHM, three males; UMMZ, four skeletons.)

**Puffinus griseus*. Sooty Shearwater. I saw two with Streaked Shearwaters between Sanbondake Reef and Miyake, May 26, 1953.

**Sula leucogaster*. Brown Booby. One flew past our boat as we approached Sanbondake Reef, April 5, 1953.

Phalacrocorax capillatus. Temminck's Cormorant. Common during April, 1953 and 1954. From thirty to forty birds roosted on a cliff near Miike Beach both years, and an equally large roost was found near Toga Shrine in April, 1954, from which an immature and three adults were collected. Sanbondake Reef provided another large roost, and numerous individuals were frequently seen resting

on large boulders along the Miyake coast. Cormorants were sometimes observed, and an immature was collected, at Lake Tairo, April, 1953.

By May nearly all had departed for their northern breeding grounds, and in the twelve days of observation in late May, 1953, only four cormorants were seen. The large roost near Miike Beach had been abandoned to swifts. (CNHM, two skins.)

**Phalacrocorax pelagicus pelagicus*. Pelagic Shag. Shirai's (1952) list of Izu Island birds records this species only from Oshima and Shikine islands, and Austin and Kuroda (1953) list it as occurring "sporadically to the latitude of Chiba." In April, 1954, Dr. Tatsuo Tanaka, of Tsubota, showed me an immature of this species which had been collected near Kamitsuki Mura by a local hunter. I collected an adult and an immature at the cormorant roost near Toga Shrine, April 20, 1954. Both specimens are now in the collection of Mr. H. Morioka.

**Butorides striatus amurensis*. Mangrove Heron. I collected an adult male at Lake Tairo, May 25, 1953, as it fed with five juvenile Black-crowned Night Herons in shallow water near shore. I observed single Mangrove Herons at Lake Tairo twice, May 26 and again May 29. One was seen exploring the rocky coastline north of Tsubota Mura, May 29, 1953. It would follow the waves as they receded, taking to the air as new waves crashed in, only to repeat the act again and again, moving each time several yards down the coast in a manner reminiscent of the Reef Egret (*Demigretta sacra*). (CNHM, one skin.)

**Egretta garzetta garzetta*. Snowy Egret. Dr. McClure collected a Snowy Egret at Lake Tairo, June 3, 1953. This appears to be the only record of this species from the Izu Islands, which is not surprising since the topography of the islands does not favor waders. Early in the morning, May 31, 1953, I saw a white egret of undetermined species flying northward, high over Miike Beach.

**Nycticorax nycticorax nycticorax*. Black-crowned Night Heron. At least one pair of night herons nested successfully near Lake Tairo in 1953. On two different occasions on May 25, I flushed a flock of five immatures from the shore of the lake. The birds were not yet accomplished flyers and made their escape not without difficulty. While collecting at Lake Tairo, May 29, McClure and I frequently observed immature herons in the dense forest surrounding the lake, but owing to their wariness and the density of the foliage, we could not accurately estimate their numbers. On June 3, I shot a fully-grown immature as it flew from a camelia tree in an orchard on the ridge above Lake Tairo. Adults were collected April 5, 1953; April 6, 1953 (Morioka); and May 30, 1953 (McClure), all at Lake Tairo. However, not all records came from Lake Tairo. Three or four night herons passed noisily overhead at dusk, May 27, as I hunted woodcock two miles north of Miike Beach.

Gorsakius gosisagi. Japanese Bittern. Not uncommon on Miyake, where it is called "Baka Dori" (fool bird), a name resulting from its weird call. I often heard it calling shortly after dusk, however obtaining a look at this secretive species is not an easy task. I saw single birds at Lake Tairo, May 29 and May 30, 1953, but both disappeared into the deep forest before I could get within gun range. They are less wary at night, and I once was able to stalk in the darkness to a point directly over one as it called from a high branch. Its call, at close range, was typically bittern, beginning with a quiet pumping followed by a much louder "croaking." The initial pumping is inaudible from more than forty or fifty yards, and the "low, simple croaking" described by Austin and Kuroda (1953) is merely the climax of the call.

Schoolboys brought three nestlings to my room in Igaya Mura, July 24, 1952, and the following day they took me to the nest. It consisted of a rather sloppy

platform of twigs, placed far out on a branch of a small deciduous tree which grew out from the bank of a narrow gully. A shallow stream flowed through the heavily forested gully, and the nest-tree grew out at such an angle that the nest was directly over the stream at a height of some 15 feet.

Yamashina's late egg dates from Miyake Jima (July 10, 1934) and Mikura Jima (July 20, 1934), suggested as possible second-broods by Austin and Kuroda (1953), are particularly interesting when compared to the three Igaya Mura nestlings, which we estimated to be approximately twelve days old, July 24, 1952.

Milvus migrans. Black-eared Kites were a familiar sight soaring low over the crowded villages, searching the rocky shores, or hanging suspended on the monsoon winds, high over the island. In May, 1953, three pairs occupied the area between Miike Beach and Lake Tairo. The two birds at Miike Beach were particularly tame, often passing quite low over the *tengusa* fishermen. Once I saw one of them drop into a farm yard to pick up an unidentified object. A dead tree on the ridge above the beach was their favorite roosting place, and both birds spent many hours there daily.

Kites are known as great gatherers of trash paper, old shoes, rags, etc., with which they line their nests. Near Ako Mura, May 25, 1953, I saw a kite drop to pick up a large piece of paper, which it carried away toward some unknown destination.

Buteo buteo burmanicus. Eurasian Buzzard. A fairly common winter visitor on Miyake Jima. Chester Fennell, who spent two weeks collecting on the island in December, 1952, saw buzzards daily, singly or two or three at a time, soaring over the island. He collected a male. I found the situation much the same on Oshima in January, 1953, where I collected one buzzard and frequently observed four others along a three-mile strip of coast.

Buzzards were much less common on Miyake in April, the last being observed April 12, 1953, behind the Tsubota High School. I worked the same area carefully, April 13 and 14, and saw none. Nor were any observed during the May, July, or August trips. It is possible that some may have remained throughout the breeding season, but if such were the case, they were unusually elusive. In this respect my notes of April 5, 1953, are interesting. "Just after sunset, as we approached Lake Tairo, we saw a *Buteo* (A) fly across a field and land in a pine near the lake. After a moment, another (B) swept in, landing in an oak in the middle of the field. (A) then flew from its perch, landing in the oak, directly under (B), who was noticeably smaller, and may have been the male. I expected to see them mate, but (A) took off followed by (B), and they began soaring in wide circles over the lake, (B) making occasional feints and short dives at (A). Soon they disappeared against the dark background of the ridge."

Butastur indicus. Frog Hawk. A common and well-known summer resident on Miyake Jima, where it is erroneously called "Hayabusa," the Japanese name for the Peregrine Falcon. It is easy to determine the exact arrival date of Frog Hawks from their winter quarters, since they call almost continuously every morning from their arrival until after the eggs are in the nest. My earliest Miyake record came April 12, 1953, when one was heard calling. Their presence was further announced the following day when a bulbul was seen giving an excellent *Butastur* imitation. Shortly after, a Frog Hawk flew over the forest and thereafter, two or three were seen daily. They are rather secretive breeders and, were it not for their morning calling, they would seldom be observed. The call, which is often given as the bird soars two or three hundred feet over the tree-tops, is usually described as a plaintive, cat-like meow. Actually it can easily be compared to the cry of the North American Broad-winged Hawk (*Buteo platypterus*). The difference is that the Asiatic bird's

call is slightly louder and more harsh, and there is a slight break or pause in the cry, unlike the smooth, unbroken whistle of the Broad-winged Hawk. Their respective calls can be described as follows: *Butastur indicus*, "Whick-aweee"; *Buteo platypterus*, "Peeeaaweee."

The breeding territory of the Frog Hawk can be quickly located in April and early May by the cries of the courting birds. During incubation, the calling is much less frequent, but it can still be heard. Guided by such calling, I was able, with the aid of several Tsubota schoolboys, to locate six definite territories and three nests in May, 1953.

Nests are difficult to find owing to the secretive, elusive behavior of the adults when enemies enter their territory. Unlike many of the *Buteos*, who scream defiantly whenever anyone approaches the nesting site, the male *Butastur* retires quietly into the dense foliage and the incubating female lies flat on the nest, invisible from the ground. When the nest is discovered and the tree climbed, the birds usually defend boldly. Both scream continuously and often a series of diving attacks is made at the intruder. I have climbed to six *Butastur* nests and have never been struck, although one particularly aggressive female at a nest near Tokyo (the sex had been determined from earlier observations) brushed my head with her wings as she swept by.

My first Miyake Jima nest was found May 23, 1953, in a forested gully about one mile from Igaya Mura. The nest was placed in the fork of a camphor tree (*Cinnamomum japonicum*) some twenty-five feet over the floor of the gully and about the same distance from the base of the tree, which grew out from the side of the gully. It was sixteen inches in diameter, made of sticks, and lined with old sprigs of cryptomeria, but there was no fresh lining. After the eggs hatch, Frog Hawks line their nests with fresh leaves. I made daily observations of a nest near Tokyo in 1952, and found fresh leaves of a variety of deciduous and coniferous trees added to the nest daily for the first eight days after the eggs hatched, and every two or three days from the ninth day until the young left the nest on the thirty-sixth day.

The Igaya Mura female was incubating when we arrived, but left the nest to defend when we started climbing. The male made one screaming pass over our heads but then disappeared into the forest. I collected the female and the set of three well-incubated eggs. The iris and cere of the female were a very brilliant yellow and the legs only slightly paler. This is a condition clearly associated with breeding and is not found to such a marked degree in specimens taken in late summer and during migration. The Igaya specimen was very fat and her crop contained two lizards and a grasshopper. Another lizard was in her throat.

The next nest was found the following day in a live oak (*Shiia sieboldii*) in a small grove of trees near Miike Beach. It was placed far out on a branch, forty-five feet over the ground, and was identical in structure to the Igaya nest. It was fourteen inches in diameter and contained no fresh lining. The adult birds made no attempt to defend the nest, even when we climbed, but when two Thick-billed Crows passed over the territory, the male followed in hot pursuit. Later as we watched from concealment, the male flew over our heads to the nest with a lizard in his mouth, which he fed to the incubating female.

I collected the set of two eggs, which, like the Igaya Mura clutch, were well-incubated. As I climbed to the nest, the adults, instead of defending, flew to a nearby hillside where the male mounted the female, who made no effort to resist; a good example of what students of bird behavior call "displacement activity."

The third nest, found May 26, 1953, was placed twenty feet from the ground in

a camphor (*Machilus thunbergii*). About ten yards from the nest, in another camphor, was an old, broken nest which schoolboys said had been used by Frog Hawks the previous year.

I saw two Frog Hawks near Igaya Mura, July, 1952, and a single bird at Tsubota, August, 1953. (CNHM, 1 female, 2 sets of eggs.)

Pandion haliaetus. Osprey. At least four Ospreys were observed between Tsubota Mura and Toga Shrine in April and May, 1953. The first record came from Lake Tairo, April 6, 1953, and many ospreys were later observed there. A pair was observed soaring over the ridge behind the Tsubota High School, April 12, 1953.

On May 25, as McClure and I hunted for murrelet nests along the rocky shore near Toga Shrine, an osprey passed over our heads carrying a large fish in its talons. Later, at Lake Tairo, we watched an osprey dive into the water and come up with a carp.

Three ospreys were seen soaring together over Lake Tairo on June 3, giving their weak, whistling call; and, as I watched, a fourth swept in from over the ridge to the east.

**Falco peregrinus*. Peregrine Falcon. Single Peregrines were observed April 5 and August 27, 1953, at Tsubota Mura, and May 23, 1953, at Ako Mura. The many rocky cliffs along the Miyake coast offer excellent nesting sites for the Peregrine, but there is no evidence of it breeding there. The only previous records from the Izu Islands came from Hachijo Jima.

Bambusicola thoracica thoracica. Bamboo Partridge. Abundant. With the White-eye, Brown-eared Bulbul, and Bush Warbler, this is one of the birds best known to Miyake residents. Several could be heard calling daily, even during August. The call was especially noticeable in April and May. Eighteen individuals were heard calling, May 23, 1953, between Tsubota Mura and Lake Tairo. Five adults were collected in April and May, and a brood of five chicks was taken in May, 1953. (CNHM, 2 adults, 5 downy young.)

**Gallinula chloropus indica*. Moorhen. At least one pair was observed and frequently heard in the rushes along the east shore of Lake Tairo in May, 1953. The splashing sound made as they walked among the rushes first attracted us, but they were shy and difficult to observe. A male was collected, May 30.

**Charadrius mongolus stegmanni*. Mongolian Plover. I collected a male on the rocky coast near Tsubota Mura, April 13, 1953. This was the first Mongolian Plover ever seen by my Miyake friends, but others may have been passed off as "Umi Shigi" (Sea Snipe), the local name used for all shore birds. Shirai gives Oshima as the only Izu Island locality for this species, and it appears that it passes through the Izus as a rare migrant.

**Actitis hypoleucos*. Common Sandpiper. The first Miyake Jima record for this species was a pair collected at Lake Tairo, April 6, 1953, by Dr. Robert Smith. The local fishermen say that sandpipers are frequently seen along the beach and seawall at Tsubota Mura during April. I collected three from a flock of six, near Tsubota Mura, on the rocky shore, April 13, 1953. Flocks of more than ten birds each were observed along the Tsubota sea-wall, August 29 and 30, 1953. (CNHM, 3 skins.)

Heteroscelus incanus. Wandering Tattler. Tattlers were observed daily in May, singly or in small flocks, along the coast between Tsubota Mura and Miike Beach. Dr. McClure collected one, May 28, 1953, but the specimen was not saved. Two were seen on the Tsubota shore, August 26, 1953.

Scolopax rusticola rusticola. Eurasian Woodcock. A rather common summer resident. Three were observed April 5, 1953, one each on April 12 and 13, 1953, one on May 26, five on May 30, one May 31, and four June 2, 1953. The bird is

rather difficult to see during the day, but pairs can sometimes be seen at dusk in slow courtship flight over the tree-tops.

A juvenile was caught and given to me by Tsubota schoolboys, May 26, 1953, and I shot an adult female, May 30. Mr. Gonichi Yamada, of Tsubota, showed me a nest in a camelia forest near Lake Tairo, April 12, 1953. As we approached, we flushed the incubating bird from four eggs in a hollow scooped out in the dead leaves and grass. (CNHM, 1 adult, 1 juvenile.)

**Larus crassirostris*. Black-tailed Gull. Dr. McClure saw one at Miike Beach, May 24, 1953.

Synthliboramphus wumisuzume. Japanese Murrelet. The purpose of the first 1953 trip (April 5 and 6) was to study this interesting species. It was difficult to persuade local seamen to make the long journey from Miyake to Sanbondake Reef, partly because of the high seas and partly because *tengusa* fishing was more profitable. Smith, McClure, Morioka, and I made the journey on April 5, but very high seas prevented a landing at the reef. Even so, the trip was most profitable! We followed the Miyake coast from Tsubota Mura to Ma Point and then headed directly toward Sanbondake.

We began to see murrelets about a half mile from Ma Point. The high seas prevented an accurate count, but there were more than fifty near the Miyake Coast, scattered in groups of two and three. We soon left this gathering and only scattered individuals were seen until we got within a mile of Sanbondake Reef, where they again became common. (See Figure 2.) They were quite tame and allowed us

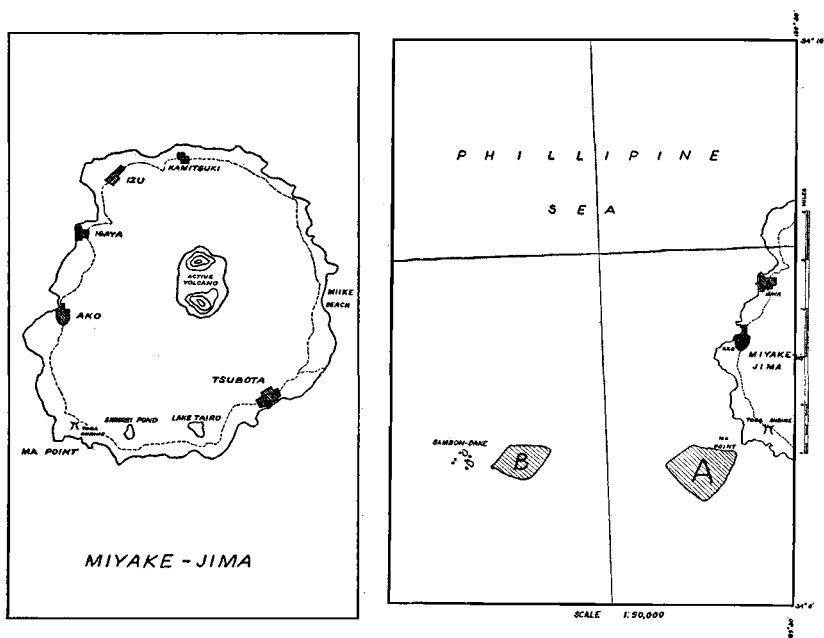


FIGURE 2. (Left) Miyake Jima. (Right) Sanbondake Reef and adjacent Miyake Jima coast. (A) and (B) indicate concentrations of Japanese Murrelets (*Synthliboramphus wumisuzume*) observed on April 5, 1953.

to approach within fifty feet or less before diving. They seldom took to the air, doing so only when, surfacing from a dive, they found our boat a few feet away. Then they would fly for sixty or seventy yards, hit the water, and immediately dive again.

Because we were unable to land and thus had no way to determine accurately the size and condition of the colony, we collected selectively, taking only twelve specimens. Breeding is said to be at a peak in April and, with this in mind, the sex ratio and gonad condition of our specimens are interesting. Of twelve birds collected, ten were females and two were males. Since plumages are identical, we had no way of distinguishing the sexes before shooting. A completely developed egg was found in one female, eight had medium-sized ovaries, and in one the ovaries were small. The testes were of medium size in one male and small in the other.

Stomachs of the specimens contained small minnows, tiny univalve molluscs, and, in one, a crab larva. The molluscs are evidence of bottom-feeding.

We were unable to reach Sanbondake again until McClure and I went on May 26, 1953. Not a single murrelet was seen. This time we were able to land, and we found the breeding grounds a grim reminder of two years of use as an U. S. Air Force bombing range (1951-1952). Twisted bomb fragments and carcasses of shearwaters and murrelets littered the flat rocky strip of shore where the birds formerly bred. A thorough search yielded no murrelets, but there was limited evidence of breeding. Several grass nests were found tucked far under large boulders, and broken egg-shells were numerous. Under one large boulder I counted seven nests. The evidence seemed to indicate that at least a few birds may have reared young in 1953. I was able to salvage a few skeletons of both murrelets and shearwaters (*Puffinus leucomelas*).

Because in April we had seen a large concentration of murrelets near Ma Point, we made a thorough but unsuccessful search there May 25 for evidence of nesting. (CNHM, 3 skins; UMMZ, 3 skeletons.)

Columba janthina janthina. Japanese Wood Pigeon. Not uncommon, although Dr. Tanaka of Tsubota told me that their numbers are steadily decreasing. Five were observed each time I entered the shrine forest in the volcanic amphitheater behind Tsubota Mura, April 5, 6, and 12, 1953. Four were heard calling from the ridges surrounding Lake Tairo, April 13, and pairs or lone individuals were occasionally seen.

Wood Pigeons were more in evidence in May, and their cooing could be heard at any hour of the day at Lake Tairo. A flock of ten was observed in a cryptomeria grove near Tsubota, May 31. I saw many large flocks in August, 1953; the largest, eighteen birds, was seen flying over the Tsubota Junior High School, August 24. (CNHM, 1 skin.)

Sreptopelia orientalis orientalis. Eastern Turtle Dove. Common. Eight were heard calling in the vicinity of the shrine forest in the volcanic amphitheater near Tsubota, April 6, 1953, and many were seen daily. In August, the forests were silent except for the calling of Turtle Doves and Bamboo Partridges.

Cuculus poliocephalus poliocephalus. Little Cuckoo. Common summer resident. None was observed in April, but in May, 1953, I counted seven pairs between Miike Beach and Lake Tairo. Although considered a shy bird, Miyake cuckoos were often observed and were surprisingly tame. A pair was seen and heard daily within the limits of Tsubota Mura, often calling from garden trees. They showed little fear of humans, and it was a simple matter for me to collect both birds. A cuckoo was heard calling near Tsubota at 11 P.M. on a bright moonlit night, May 25, 1953.

I collected four specimens, one of which is in hepatic plumage. The other three are in gray adult plumage, but two of them are reddish around the throat and

shoulders. Mr. Deignan, who examined my red-plumaged specimen, suggests, in a letter to me, as follows: "My material seems to show that all immatures begin as squamated gray birds, but that some go through an hepatic plumage and then into the gray of the adult." My Miyake specimen, he feels, "seems to be in subadult plumage, passing from this second-stage hepatic plumage into that of a full adult." In the other two reddish specimens it appears that the change is nearly complete. Such a plumage change could conceivably take two or three years, although the bird becomes physically adult in one year. (CNHM, 4 skins.)

Ninox scutulata. Brown Hawk Owl. Morioka and I heard the distinctive call of the Hawk Owl at dusk, April 5, 1953, at Lake Tairo. I heard another calling from the slopes of Mount Oyama, late at night, May 25, 1953.

Apus pacificus pacificus. White-rumped Swift. Common summer resident. Large breeding colonies were found at the cormorant cliffs at Miike Beach and at Toga Shrine, May, 1953; on the cliffs north of Ako Mura, July, 1952; at Igaya Mura, July, 1952; and at Sanbondake Reef, May, 1953. Several smaller colonies were also observed. Dr. Van Philpot, who climbed Mount Oyama in May, 1953, reported seeing swifts in abundance at the crater. My earliest record was April 12, 1953, when I saw five at Tsubota Mura. (CNHM, 4 skins.)

**Alcedo atthis*. River Kingfisher. I saw two at Lake Tairo, August 30, 1953.

Dendrocopos kizuki matsudairai. Pigmy Woodpecker. Common. I collected eight specimens. Drumming was often heard in early April. A drumming male was collected from a cryptomeria, April 14, 1953. By late May family groups were seen daily. I collected an adult and two young from such a group, May 31, 1953, and two more immatures, June 3. (CNHM, 5 skins.)

Hirundo rustica gutturalis. Barn Swallow. I recorded this species only three times. A flock of eight was seen perched on electric wires at the veterinary station near Tsubota, April 12, 1953. Two more were seen there the following day and again on April 14. I collected a female, April, 12, 1953. (CNHM, 1 skin.)

Corvus leuallantii japonensis. Thick-billed Crow. Abundant. A flock of over forty was seen frequently in April, May, and August, 1953, and April, 1954, at the Tsubota Mura water front. On April 6, 1953, I saw a pair of Thick-billed Crows carrying nesting material at Tsubota. An apparently active nest was found in a shrine forest near Lake Tairo, April 12, 1953. Both adults circled and cawed continuously at us while we were in the area. We did not climb to the nest, which was 35 feet above the ground in a Black Pine (*Pinus thunbergii*).

On May 27, 1953, McClure and I found a nest in a gigantic Black Pine on a cliff overlooking the ocean. The nest was sixty feet up in the tree and about 200 feet above the rocky coast. It contained three half-grown young, two of which were collected.

All crow flocks were observed with care, and no Carrion Crows (*Corvus corone*) were seen.

Parus major. Great Tit. Very common, particularly in cryptomeria forests. We often heard them singing from trees near the inn in Tsubota Mura. A family group of one adult and five begging juveniles was seen in front of the inn, June 2, 1953.

Parus varius owstoni. Varied Tit. Very common resident. Thirty to forty birds could be seen in a day afield. Many were observed investigating holes in trees, April 13 and 14, 1953. Often I mistook their drumming for that of *Dendrocopos kizuki*. I collected six adults. (CNHM, 6 skins.)

Ixos amaurotis amaurotis. Brown-eared Bulbul. Abundant and conspicuous. More than fifty were observed daily in April, and they were only slightly less in evidence on other trips. They seemed to be more common on the wooded slopes of

Mount Oyama than near the coast or at Lake Tairo. Bulbuls are noisy, having a variety of calls, and they sometimes imitate other species. The bulbul imitation of a Frog Hawk, heard at Lake Tairo, April 13, 1953, was an unusually accurate example.

Troglodytes troglodytes mosukei. Wren. Not uncommon around Lake Tairo and in heavy forests on the slopes of Mount Oyama. In April and May, their song was heard frequently, but they were not often observed. Single adults were collected April 13 and 14, 1953, and I collected a juvenile at Lake Tairo, May 26, 1953.

Mr. Deignan noted that my specimens, which he examined, are very much darker everywhere than specimens of *fumigatus* from Honshu and Shikoku. The Miyake specimens agree perfectly with Austin's and Kuroda's (1953) description of *utanoi* of Kyushu; being, in fact, much darker than specimens of "*utanoi*" in the USNM, which are indistinguishable from *fumigatus*. (CNHM, 2 skins.)

Zoothera dauma aurea. Ground Thrush. A woodcutter gave me a juvenile Ground Thrush, which he had found, nearly dead from starvation, in a forest behind Igaya Mura, July 25, 1952. (CNHM, 1 skin.)

Turdus celanops celanops. Seven Islands Thrush. Common resident. Although we saw them in a variety of habitats, we found them particularly abundant in April, 1953, in camelia forests. April 12, a typical day afield, I counted twenty-three. McClure and I found a nest fifteen feet above the ground in the fork of the lowest branch of a gigantic live oak, May 27, 1953. The nest, made of mud, moss, and grass, contained two half-grown nestlings, which were collected.

Three empty nests were found, all in cedar trees, May 31, 1953. All were between six and eight feet above the ground and made of moss, roots, mud, and grass. (CNHM, 8 skins; UMMZ, 7 skins, including 2 immatures and 2 nestlings.)

Monticola solitarius magnus. Blue Rock Thrush. Abundant along the rocky shores. Singing males were particularly conspicuous on April 5 and 6, 1953. The song was most frequently given from the top of a large boulder on the rocky shore, but the fluttering flight song was also common. Occasionally males were seen singing from the top branches of large pines overlooking the shore. I counted four singing, displaying males in 200 yards of coastline near Tsubota Mura, April 6, 1953.

On May 24, 1953, I collected two young birds from a nest in the cinders near the crater of the 1940 volcanic eruption. This nest, nearly half a mile from the ocean, was the only example we found of Rock Thrushes breeding away from the rocky coast.

In the spring, they were observed only in barren, rocky habitats, however, in late May many were seen foraging in the forests, fields, and gardens, sometimes more than half a mile from the shore. (CNHM, 6 skins.)

Erithacus akahige tanensis. Japanese Robin. Abundant in April and May in dark forests. The songs and call notes of robins could be heard almost continuously throughout the day at Lake Tairo. Eighteen were observed there, April 12, 1953, in a rather detailed survey of the forests surrounding the lake.

In the shrine forest behind the Tsubota High School, I counted nine singing males, April 5, 1953. In early April the females remain quite out of sight while males sing from conspicuous branches. Many females were seen carrying food in May, but no nests were found. Courtship displays were observed both in April and May, 1953. The following example is quoted from my field notes of April, 1953. "I first noticed the male hopping from branch to branch, singing continuously. Soon he jumped down to a dead horizontal branch about four feet above the ground. As he sang, the female hopped up next to him. The male immediately bowed forward displaying a widely spread, waving red tail and fluttering his wings. He continued to sing with his bill pointed straight up, giving the female full view of his brilliant throat backed by the waving tail."

Another male was observed displaying similarly from a twenty-foot branch, and a third was seen giving the same display from the ground. (CNHM, 3 skins; USNM, 2 skins.)

Phylloscopus ijimae. Ijima's Willow Warbler. Easily the most abundant summer bird on Miyake Jima. It is found wherever there is dense vegetation, from tangles of small shrubs to dense forests of gigantic live oaks and camphors, where it seems to prefer the lower branches. In many places it is so abundant that accurate counts are extremely difficult. Its weak, thin song was heard constantly in April and May. On April 6, 1953, I stood in a shrine forest near Tsubota Mura and counted ten birds singing within sight.

The differences between this form and *P. occipitalis* in the field are quite striking, and I am in complete agreement with Austin and Kuroda (1953) who write that it "is so vastly different from them (*occipitalis*) in its song and its nesting habits that it seems better to regard it as specifically distinct." (CNHM, 5 skins.)

Horeites diphone ijimae. Bush Warbler. Next to the preceding species this is probably the most abundant bird on the island, but limited only to second-growth areas such as brushy fields, brushy clearings in forests, forest borders, wind-swept crests of cliffs, etc. I collected eight singing males between April 5 and June 2, 1953. All were ragged specimens in various stages of molt around the throat.

A dome-shaped nest, found May 26, 1953, was three and one-half feet from the ground in dense bamboo grass (*Phyllostachys* sp.). It was made of grasses and contained four chocolate-colored eggs. (CNHM, 3 skins.)

Locustella ochotensis pleskei. Island Grasshopper Warbler. Common summer resident, locally abundant. None was observed in April, but in May, 1953, they were met with daily. The wind-swept knoll on Ma Point, behind Toga Shrine, provided a particularly suitable habitat, and grasshopper warblers were abundant there. The vegetation, which consisted mainly of a very thick tangle of bamboo grass and twisted recumbent camelia trees, formed an impenetrable mass, knee-high near the ocean, increasing to heights of fifteen feet farther inland. The bird population diminished as the height of the foliage increased. Such dense foliage made the collecting and recovery of specimens difficult; but the warblers were quite tame and curious, and if forced to take cover they soon reappeared to examine the intruder, and they were easily "squeaked" to within gun range. As I hunted for a freshly-collected specimen in shoulder-high vegetation, I counted eight birds singing within fifty feet of me. They have a typical thin warbler song and a buzzing, grasshopper-like flight song.

Other dense concentrations were found in fields of thick brush, loose pine forests with dense floors of bamboo grass (*Phyllostachys* sp.) where they were supplemented by *Phylloscopus ijimae*, and in brushy borders of cultivated or grassy fields. Miyake Jima residents apparently do not distinguish between this species, *Phylloscopus ijimae*, and *Horeites diphone*, and they call all three species "*Uguisu*," the Japanese name for the Bush Warbler.

**Acrocephalus arundinaceus*. Great Reed Warbler. I heard the unmistakable song of this species coming from a patch of reeds behind Miike Beach, at twilight, May 27, 1953. Another was observed as it sang from the top of a lone bush in a field of wet grass near Tsubota Mura, June 3, 1953.

**Muscicapa latirostris*. Broad-billed Flycatcher. I collected a pair at Tsubota Mura, June 3, 1953. (CNHM, 2 skins.)

**Motacilla cinerea*. Gray Wagtail. A black-throated male was seen hopping along the shore at Lake Tairo, April 12, 1953. White-throated birds were seen there April 13 and 14, 1953. No others were observed.

**Bombycilla japonica*. Japanese Waxwing. In April, 1954, Dr. Tatsuo Tanaka, of Tsubota, showed me three specimens of this interesting species, which he said had been collected in March, 1954, by a resident of Kamitsuki Mura. The only previous Izu Island records come from Hachijo Jima.

Zosterops japonica stejnegeri. Japanese White-eye. Abundant. I counted fifty in two hours of collecting, April 5, a typical day. They were particularly abundant in the cryptomeria forests and camelia orchards. Birds collected in April had mouths stained yellow with camelia pollen. A nest with four young was found in late May, 1953, nine feet above the ground in a small maple in the garden of the Tsubota Mura Primary School.

Flocks of white-eyes came daily in August, 1953, to pick at the ripe fruit of a peach tree near the inn at Tsubota. Another interesting feeding habit observed in August is quoted from my notes: "Directly opposite my window there was a row of small camelia trees. Periodically during the day, flocks of white-eyes moved into the trees and began poking through the leaves. Several small white moths were flushed from the leaves, chased, seized, and immediately swallowed. There seemed to be no end to the number of moths and this method of feeding was observed daily." (Tsubota Mura, August, 1953.) (CNHM, 4 skins.)

Passer montanus. Tree Sparrow. Abundant in the vicinity of houses and in stands of large pine. Nests are commonly placed under the tiles and thatch of roofs. Several nested, in April and May, in crevices in the pines overlooking the shore at Tsubota Mura.

Chloris sinica. Oriental Greenfinch. Common and well known. Islanders call it "Daikon Dori" (Daikon Bird), because it is often seen in the fields of giant white radishes called "daikon." Green-finches were particularly common on the southwest side of the island near Ako Mura, where the slopes of Mount Oyama are more gradual and cultivated fields are more common. A nest with four young was found on May 31, 1953, in a cedar tree at the edge of a cultivated field.

Emberiza spodocephala personata. Black-faced Bunting. On April 6, 1953, Dr. Smith observed a small flock at Lake Tairo. I collected a female from a flock of six individuals on April 13, 1953, at Lake Tairo. Another small flock was seen there, April 14.

Emberiza cioides ciopsis. Meadow Bunting. Common and conspicuous. I observed twenty-seven in two hours of collecting near Tsubota Mura, April 14, 1953. Like *Chloris sinica*, Meadow Buntings were more common on the gradual slopes of Mount Oyama near Ako Mura, where cultivated fields are more numerous. Two nests were found, both completely concealed in thick bamboo grass, less than three feet from the ground. Three adults and two broods of nestlings were collected. (CNHM, 1 skin.)

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