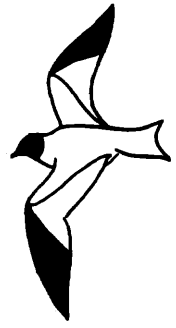


WESTERN BIRDS



Volume 26, Number 2, 1995

BIRD OBSERVATIONS ON WAKE ATOLL

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Wake Atoll, at 19° 18' N, 166° 38' E, is one of the earth's most isolated land masses. It is 1700 mi. (2700 km) from Japan and 2000 mi. (3100 km) from Honolulu. The nearest point of land is tiny Taongi Atoll in the northern Marshall Islands, 350 mi (550 km) to the southeast. As this island is seldom visited by ornithologists, its avifauna is little known. Wake Atoll, usually referred to as Wake Island, consists of three islets, only one of which is correctly called Wake Island. The atoll is V-shaped with its apex projecting southeast. Its total land mass is only 3 mi². Each arm of the "V" is approximately 4.5 mi. (7.0 km) long and averages about 0.3 mi. (0.5 km) across, with a shallow lagoon between the arms. Both arms are broken near their distal end. Wilkes Island, at the tip of the south arm, was once separated from the main island by about 300 feet (100 m) but is now connected by a causeway. At the tip of the north arm is slightly larger Peale Island, separated by a 400-foot (125-m) channel traversed by a narrow bridge. Seabird colonies are almost restricted to these two islands. Most human activity and virtually all permanent buildings are confined to the main island.

The birds of Wake Atoll are known from only a few accounts: Vaughn (1945), Bailey (1951), Bryan (1959), Rice and Kenyon (1962), Casey (1966), Fosberg (1966), Johnston and McFarlane (1967), Rowland (1990), and Sutterfield (1990), plus unpublished reports and field notes of the Pacific Ocean Biological Survey Program in the National Museum of Natural History, Washington, D.C. Pratt et al. (1987) summarized the known avifauna through about 1985. I visited the island from 24 March until 1 April 1993 as the ornithologist for a biological survey conducted for an "environmental assessment for long-term activities at Wake Atoll" (U. S. Army Space and Strategic Defense Command). I found most of the species reported by previous investigators. The Red-tailed Tropicbird (*Phaethon rubricauda*), Brown Booby (*Sula leucogaster*), Red-footed Booby (*Sula sula*), Sooty Tern (*Sterna fuscata*), and Brown Noddy (*Anous stolidus*) were breeding at the time of my visit. Three other species present but

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apparently not breeding at the time of my visit were the White-tailed Tropicbird (*Phaethon lepturus*), Masked Booby (*Sula dactylatra*), and Great Frigatebird (*Fregata minor*).

SPECIES ACCOUNTS

The following species accounts include, in addition to my observations, accounts of the birds observed and photographed by Lou Hitchcock, a civilian Air Force employee and 20-year resident of the island. Hitchcock is not an ornithologist and has had no access to field guides or experts, but he has documented much of what he has observed of the plants and wildlife over the years with an excellent series of photographs that I examined. Historically, no land-dependent birds other than shorebirds, ducks, and the now-extinct Wake Rail (*Rallus wakensis*) were documented from this remote atoll.

Laysan Albatross *Diomedea immutabilis*. This species breeds in the northwestern Hawaiian Islands and the Ogasawara (Bonin) Islands south of Japan, and may be establishing small colonies on Guadalupe Island and San Benedicto Island off the west coast of Mexico (Harrison 1990). It ranges at sea throughout the northern Pacific Ocean (Sanger 1974). It was formerly more common and widespread and may have bred on Wake Atoll. In Hawaii it nests during the winter (Harrison 1990), but in what season it has nested or attempted to nest on Wake Atoll is not clear.

Hitchcock frequently has seen up to four or five birds at a time on the island. He reports that they stay for a few weeks at a time but never nest successfully. They keep to the closely cropped grassy areas adjacent to the runway, where they lay their eggs. Hitchcock has never seen young and believes the feral cats, and possibly rats, may destroy the hatchlings. He has excellent photographs of paired birds in courtship (Figure 1). I did not see this species during my visit.

Titian Peale, artist and naturalist on the United States Exploring Expedition in 1841, found "short-tailed albatrosses" here, which may have been this species, as well as the Black-footed (Rice and Kenyon 1962). Peale referred to them as *D. brachyura*, believing the different plumages were different age classes of the Short-tailed Albatross. The one specimen from this expedition in the U. S. National Museum is *nigripes*, but an egg collected appears to be that of *immutabilis* (Rice and Kenyon 1962).

Rice and Kenyon (1962) also reported Alexander Wetmore's recollections from his 1923 *Tanager* Expedition to Wake Atoll. Wetmore told them of great destruction of birds by the Japanese in the years prior to his visit from 27 July to 7 August 1923. He found evidence of a recently operated skinning plant, indicative of extensive plume hunting on the island, that contained piles of bones from frigatebirds, boobies, and terns, but no albatrosses. He surmised that the lack of albatross bones suggested that they no longer bred on the island by 1923 and perhaps long before. Rice and Kenyon also stated, "Information supplied by several observers who were on Wake from 1935 until the Japanese occupation in 1942 confirmed the absence of albatrosses on the island during this period."

Rowland (1990), however, mentioned a 1936 photograph of the old Pan American hotel in the Wake Island Museum that shows an adult Laysan Albatross and several downy chicks on the lawn. He also mentioned a possible Laysan Albatross nest in 1988 reported to him by island residents in 1989. Furthermore, Bailey (1951) also suggested that some species of albatross bred on the island during the period of Japanese occupation in World War II. An American blockade of the island had all but cut off the Japanese from their supply lines, resulting in the starvation of

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many of the troops during the last few months of their occupation. He quotes from the diary of a Japanese officer stationed on the island at that time: "An order has just come out forbidding us to catch gooney birds [albatrosses] lest they be wiped out."

It appears from these accounts that Laysan Albatrosses have bred or attempted to breed periodically on Wake Atoll since the earliest visits by ornithologists in the last century. Unfortunately, little concrete evidence exists to support these observations.

Black-footed Albatross *Diomedea nigripes*. I saw two flying together about 2 km off Peacock Point on 25 March and observed one flying low over the airstrip on 31 March. Gary Lumia, an Air Force maintenance technician, described to me six large all-dark "gooney birds" he had seen regularly at Peacock Point for a period of time until about "four weeks ago." He thought they might be nesting because of their courtship activities but never saw eggs or young. Black-footed Albatrosses have bred on Taongi Atoll (Pratt et al. 1987), the land nearest Wake, but have not been definitely observed breeding at Wake Atoll since Peale's visit in 1841.

White-tailed Tropicbird *Phaethon lepturus*. I briefly saw one adult in flight near the rain catchment basins between the personnel housing area and the air terminal on 25 March. Hitchcock sees them every year and believes that a few breed. Fosberg (1966) reported one near Flipper Point in September 1961 and two on Wilkes Island on 8 March 1963. Casey (1966) reported two adults with one chick in the rubble of an old Japanese blockhouse on the island during her visit in 1966 (specific date not given). This species breeds primarily on high islands, in trees in the interior or in shaded rock crevices along coastal headlands, but also nests in small numbers on low-lying atolls such as at Midway Island (Harrison 1990).



Figure 1. Laysan Albatross courting, Wake Atoll.

Photo by Lou Hitchcock

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Red-tailed Tropicbird *Phaethon rubricauda*. Unlike the White-tailed Tropicbird, this species breeds primarily on atolls and other low-lying islands (Figure 2). Its numbers increased noticeably during the eight days I was on the atoll, suggesting that it was in the earliest stages of its breeding cycle. In all, I found ten birds on nests and observed courtship activity in several other areas, suggesting additional unseen or not-yet-established nest sites. Nesting and courting birds were in six more or less distinct areas on Peale Island and Wake Island proper northwest of the air terminal, but not on the southern arm of the atoll. Of three attended nests examined, one contained an egg and two were empty. According to Gould et al. (1974), this species breeds mainly from March through July or August on Wake Island.

Masked Booby *Sula dactylatra*. I saw three adults in the Brown Booby colony and these or other individuals on nearby offshore rocks at the west end of Wilkes Island. No nests, eggs, or young were observed. These birds may have been in the early stages of breeding (before egg laying). Apparently, this species breeds on Wake only in small numbers. Other accounts have reported fewer than six pairs. Fosberg (1966) saw only a very few on Peale Island on 22 and 23 October 1953. Casey (1966) stated that it is "rarely seen." Rowland (1990) saw only two active nests, both with chicks, on Wilkes Island in 1989. Sutterfield (1990) saw two Masked Boobies on eggs in late October 1989.

Brown Booby *Sula leucogaster*. I located two adjacent colonies of approximately 30 and 26 nests on the outer perimeter of the Wilkes Island Sooty Tern colony. Young were in all stages of growth from recently hatched to nearly full-sized downy with moderately developed flight feathers. No nest contained more than two young, and all nests with well-developed young had only one. I saw no eggs, but several



Figure 2. Nestling Red-tailed Tropicbird, Wake Atoll.

Photo by Lou Hitchcock

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sitting birds may have been incubating. Fosberg (1966) found it to be the most common of the boobies. He found 20 pairs, all with young, on the lagoon side of Kuku Point, Wilkes Island. Rowland (1990) counted 106 nests, most with young, on Wilkes Island in April 1989. Sutterfield (1990) found 148 Brown Boobies beginning nest construction and two on eggs in late October 1989.

Red-footed Booby *Sula sula*. I found two small adjacent colonies in Beach Heliotrope (*Tournefortia argentea*) and Naupaka (*Scaevola sericea*) trees near the west end of Wilkes Island. These two colonies were approximately 100 m apart at the interface between heliotrope scrub forest and the large grassy field (the Vortac area) at the island's west end. The nests were between 1.5 and 4 m off the ground. Approximately one third of the nests held nestlings; the other nests may have contained eggs or recently hatched young. No young were more than two-thirds grown. Approximately 26 nests were visible from the field and about nine others were seen as far as about 15 m into the scrub forest. Bailey (1951) saw no boobies of any species nesting on the island when he visited in May 1949, and attributed this to the near devastation of the island during the war, which had ended four years earlier. Fosberg (1966) found a few nesting on Peale Island on 21 April 1952. Rowland (1990) counted 41 Red-footed Booby nests on Wilkes Island in April 1989. The eight nests in which he was able to determine the contents all had young.

Most Red-footed Boobies on Wake Atoll are light-morph birds; however, at least two I saw were white-tailed brown morphs. One of these was paired with a white-morph individual and the other one may have been as well. A few other birds mottled with dusky on their back, wings, and (in some cases) tail I presumed to be immatures of the light morph. I saw no Red-footed Boobies away from the immediate vicinity of the colony other than one flying toward the colony from the ocean south of Wilkes Island on 31 March, suggesting that this species forages farther at sea.

Great Frigatebird *Fregata minor*. I saw up to 225 birds roosting on powerlines across the man-made channel that nearly bisects Wilkes Island about midway along its length. Often, a few were seen there well into the morning and well before dusk as well. About 70% of the frigatebirds I observed at the atoll were immatures. Frigatebirds showed no indication of breeding during my visit. Only one of the sources that I have read (Fosberg 1966) specifically mentions frigatebirds' nesting on the island, although most found a number of birds present (Sutterfield, for example, counted 274 on the powerlines). Fosberg (1966) found birds carrying twigs and "perhaps 10-12 pairs with eggs" in trees on Wilkes Island just back of Kuku Point in March 1963. He also found a number of individuals roosting in trees and on the remains of an old pier, on both Peale and Wilkes islands, in April and July 1952, October 1953, and September 1961.

Cattle Egret *Bubulcus ibis*. Hitchcock showed me photographs he had taken of a Cattle Egret, one of three that were present. The bird in the photographs was rather stocky and short-necked, with a relatively short yellow bill and black legs and feet, characters all typical of this species. It was photographed in the interior of the island in short grass. Although he did not record the date, his prints were processed on 16 October 1979. These birds could have been migrants or strays from eastern Asia or wanderers from the introduced Hawaiian population.

Northern Pintail *Anas acuta*. Hitchcock has photographs of five females on a small freshwater pond near the air terminal. The photos were processed on 16 October 1979. According to him, ducks show up twice a year, apparently on a regular basis, but never more than seven birds at a time. Fosberg (1966) found one on a small pond on 8 March 1963 and mentioned that a resident had seen up to nine ducks at a time. This species was also mentioned by Casey (1966) as one of three duck species that occur rarely.

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Black Kite *Milvus migrans*. I examined several photographs in Hitchcock's collection of an individual that appeared around 1980 and stayed for about five years (Figures 3). The Black Kite is abundant in much of mainland Eurasia from the tropics nearly to the Arctic Circle, in Japan, and in much of Australasia, including Sulawesi, Papua New Guinea, and portions of the Solomon Islands. Populations in northern latitudes (*M. m. lineatus* in Asia) are long-distance migrants, but extralimital island records are rare. Amadon (1952) and Dickinson et al. (1991) reported a 1907 specimen of *M. m. lineatus* from Palawan. MacKinnon and Phillipps (1993) described this species as a "rare winter visitor" to Sumatra and Borneo. Interestingly, the specimen from Borneo is also *M. m. lineatus* (Smythies 1981) rather than the largely resident *M. m. affinis* from nearby Sulawesi. To the best of my knowledge, this species has been reported only three times before in the oceanic North Pacific. T. Lemke and T. Pratt observed an immature on Pagan Island in the northern Mariana Islands on 19 February 1984 (Glass et al. 1990), and one was seen on Tinian Island, also in the northern Marianas, from 25 July 1989 until 19 November 1990 (Stinson et al. 1991). Glass et al. also mentioned, without further details, an unpublished sighting from Midway Atoll "more than a decade ago." Because of the paucity of extralimital records in the Pacific, the possibility that the Wake Atoll bird was ship-assisted must be considered. Black Kites are common in large ports such as Hong Kong, Shanghai, and Tokyo, where they may frequently be seen perched on ships' riggings.



Figure 3. Black Kite in flight, Wake Atoll, early 1980s.

Photo by Lou Hitchcock

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Pacific Golden-Plover *Pluvialis fulva*. This species is a common and widespread winter visitor on Wilkes and Wake islands, but is relatively scarce on Peale Island, which lacks open grassy habitats. I saw it primarily in short-cropped grassy areas, especially along the runway, taxiway, and golf course, but also on both outer and inner beaches. Johnston and McFarlane (1967) conducted a comprehensive study of the bioenergetics and seasonal status of the Pacific Golden-Plover on Wake Atoll. On the basis of seven visits between June 1963 and May 1965, they estimated that 200–500 winter on the atoll, with the first birds arriving in late July and the last departing in late May.

Wandering Tattler *Tringa incana*. I saw several individuals daily in a variety of aquatic habitats, including outer rocky and pebbly beaches, calm channel shorelines, freshwater and brackish ponds, and sand flats in the inner lagoon. This species is a frequently recorded migrant (Fosberg 1966, Casey 1966, Johnston and McFarlane 1967).

Siberian (Gray-tailed) Tattler *Tringa brevipes*. I saw and heard one individual in basic plumage at the freshwater pond between the tarmac and taxiway at the air terminal on 29 March. It gave a distinctive "tuwee tuwee" call, very unlike the "tee-tee-tee-tee" call of the Wandering Tattlers with which it was associating. This represents the first record of this species from Wake Atoll; however, it should be expected occasionally, as it is common in Micronesia and rare in the Hawaiian Islands (Pratt et al. 1987).

Bristle-thighed Curlew *Numenius tahitiensis*. I examined photos of a probable Bristle-thighed Curlew taken by Hitchcock sometime in 1983 (photo processed in December 1983). Although the photographs are rather poor, the bird's generally warm brown plumage suggests this species rather than the Whimbrel (*Numenius phaeopus*). Fosberg (1966) found a Bristle-thighed Curlew on 1 September 1961 and several from 7 to 9 March 1963. With no comment, Casey (1966) also listed this species for Wake.

Ruddy Turnstone *Arenaria interpres*. I observed one feeding in the closely cropped grass at the west end of the runway on 25 March. However, during brief stops at Kwajalein Island (750 mi. south of Wake) while traveling to and from Wake, I found this species abundant. Fosberg (1966), Johnston and McFarlane (1967), and Wetmore (Rice and Kenyon 1962) found small numbers in July, August, October, and March, suggesting that it is an expected migrant on Wake.

Gray-backed Tern *Sterna lunata*. This species is confined to the tropical Pacific from Hawaii south to the Tuamotu Archipelago, Tonga, and Fiji, and west to the Marianas (Harrison 1985). I saw eight, four, and seven individuals, respectively, on 26 and 27 March and 1 April, perched on and flying around a cluster of wooden posts just offshore on the lagoon side of the causeway between Wake and Wilkes islands. I saw no indication of breeding. Harrison (1990) listed Wake as one of the islands where the Gray-backed Tern breeds but gave no specific information. Casey (1966) listed it as present but did not elaborate.

Sooty Tern *Sterna fuscata*. This is far and away the most abundant bird on Wake Atoll (Figure 4). There was a large breeding colony at the west end of Wilkes Island and a smaller colony on Peale Island at the time of my visit. I also found evidence of two recently active colonies elsewhere on Peale; however, no birds breed on Wake Island proper. The Wilkes colony occupied 18,000 m² at the west end of an expansive grassy area just above the shoreline. The number of adults in this colony at the time of my visit varied between approximately 10,000 and 25,000, the higher figures being counted at dawn and dusk. The number of young I estimated at approximately 3000–3500, by extrapolation from counts of various sections of the

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colony. There were an estimated 9800 eggs in the colony, but none examined were viable and most were cracked or broken. Young birds varied from only a few days old to nearly full grown. No flying young were seen in this colony the first two days, but one was seen on 26 and 27 March flying over the shoreline just west of the colony. I observed no predation on Sooty Tern eggs or young; however, a feral cat ventured into the colony on 27 March. The cat did not attempt to capture any young but rather seemed intent on exiting the colony as quickly as possible.

On Peale Island the only breeding Sooty Terns were on and immediately adjacent to Flipper Point. Young birds were in groups along the shoreline, and a few were in the vegetation just above the shoreline. An estimated 300 young were in this colony; however, a direct count was not possible because of dense vegetation. In contrast with the Wilkes colony, many young in this colony had fledged and were flying about the colony on 24 March and afterward. The average unfledged bird was also about 1½ to 2 weeks more advanced here than on Wilkes. Island residents mentioned that there were considerably more birds (adults) on Peale a few weeks prior to my visit (one used the term "millions"). I found evidence of recent nesting near Flipper Point and at the west end of Peale, where I observed dead chicks and non-viable eggs. There were approximately 500 eggs and an undetermined number of dead chicks of all ages, as well as about ten dead adults. The age of the carcasses prevented any determination of cause of death. At the extreme west end of Peale I found fewer than 20 carcasses of hatchlings in a small clearing at the end of the road. I found no evidence of nesting anywhere else on Peale. Much of Peale Island is heavily vegetated with shrubs of *Tournefortia argentea*, *Scaevola sericea*, and *Pemphis acidula* so is not suitable for Sooty Terns.

Bailey (1951) described the Sooty Tern colony on Peale Island as "the largest I had ever seen," suggesting that it was much larger than the one I observed, although he



Figure 4. Incubating Sooty Tern, Wake Atoll.

Photo by Lou Hitchcock

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did not estimate its size, saying only that he saw "thousands of birds on their eggs" on 15 May. The Pacific Ocean Biological Survey Program (unpubl. field notes; Gould 1974) reported 1,750,000 Sooty Terns on Wake Island from 1964 to 1966. Fosberg (1966) found a "considerable rookery" on Peale on 20 and 21 April 1952 with "young in various stages of pin feathering to almost full grown." In October 1953 he found a "small flock near the western tip of Peale Island, including "almost fully grown young." On 8 and 9 March 1963, he found thousands of birds present, "with fully grown young, able to fly when approached." Casey (1966) reported "250,000 to 1,000,000 birds" in 1966.

Rowland (1990) visited the island in early April 1989 and found approximately 250,000 nestling Sooty Terns in a 48,000-m² colony at the west end of Wilkes Island. This stands in stark contrast to the 3000 to 3500 chicks I found in a colony only three-eighths this size at virtually the same time of year when the birds were in about the same stage of their breeding cycle. Rowland also found considerably more birds on Peale Island. He estimated about 100,000 chicks on Flipper Point alone and 43,000 more in the general vicinity. Sutterfield (1990) found no evidence of nesting on Wilkes Island in late October 1989, but did find "a few eggs" on the northwest point of Peale Island. He did not indicate if they were being incubated.

Hitchcock told me that Sooty Terns were formerly much more common and the feral cats have substantially reduced their numbers. He said that others had told him that a single cat working at night can kill up to 100 chicks and so disrupt the colony that many additional young become isolated from their parents in the dense vegetation and die. He said the tern colony once took up the entire graded area (the west end of Wilkes is graded every year to attract the terns away from areas around the runway where they would nest otherwise) but now takes up only about one-sixth of that area.

Most Sooty Terns at Wake nest in the spring, as on Hawaii; however, the timing of breeding on Wake and elsewhere in the central and eastern Pacific is poorly understood, with different colonies on the same island sometimes nesting at different times of the year (Ashmole 1963, Gould 1974). At least in 1989 and 1993, incubation had ended by late March and early April, suggesting a somewhat earlier breeding season in these years, although Bailey (1951) found Sooty Terns still on eggs in May.

Brown Noddy *Anous stolidus*. I found eight birds and two freshly constructed nests on top of a concrete bunker at the outer perimeter of the Sooty Tern colony on Wilkes on 26 March. The same day I saw four birds perched, one with vegetation in its beak, atop a rather large offshore coral "rock" covered with whitewash off the west end of Wilkes. On 28 March, one nest with an egg was located atop a large concrete block in the lagoon near the golf course on Wake Island proper. Also on this date, a flock of 65 noddies circled for much of the day around a cluster of *Casuarina* trees on the golf course and perched on offshore coral near the golf course. By 29 March the flock had grown to 90. Scattered other individuals were seen throughout the atoll flying along the shore or feeding offshore, with total numbers on the atoll increasing noticeably during my visit.

Fosberg (1966) found one nest (contents not given) and several birds on 20 and 21 April 1952, and a nest with a half-grown young on 22 and 23 October 1953. Casey (1966) mentioned Brown Noddies as abundant, "although [their nests] are sometimes hard to locate."

Black Noddy *Anous minutus*. I saw two individuals perched with Brown Noddies on a concrete structure just offshore along the outer beach opposite the golf course on 29 March. This species is rare at Wake, and its breeding has not been suspected by past observers.

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White Tern *Gygis alba*. I saw three birds in flight near the west end of the runway on 24 March. I then saw none until 28 March, when I observed six circling around and perched in the cluster of *Casuarina* trees at the golf course on the main island. I saw these birds there every day subsequently until my departure on 1 April but saw no courtship behavior. Fosberg (1966) found several birds in April 1952, October 1953, September 1961, and March 1963, but no indication of breeding.

Rock Dove (Feral Pigeon) *Columba livia*. I observed a flock of eleven birds on 28 March and six birds on 29 March in the vicinity of the golf course. They are apparently being bred by an island resident (Rowland 1990).

Short-eared Owl *Asio flammeus*. I flushed one from beneath a small *Pemphis* bush at the southwest corner of the catchment basins late in the morning of 28 March, and a few minutes later observed the bird flying low over the open scrubby area between the catchment basins and the golf course. Although this species is unrecorded in the literature from Wake Atoll, Hitchcock has seen owls (presumably Short-eared) at Wake on several occasions. He usually sees them in vehicle headlights when flushed from the roadside at night.

Other species reported in the literature from Wake Atoll but not recorded by Hitchcock or me are the Christmas Shearwater, *Puffinus nativitatis* (Pratt *et al.* 1987:344), Garganey, *Anas querquedula* (Casey 1966, Johnston and McFarlane 1967), Northern Shoveler, *A. clypeata* (Casey 1966, Johnston and McFarlane 1967), "yellowlegs" (Casey 1966), Sanderling, *Calidris alba* (Casey 1966, Johnston and McFarlane 1967), Sharp-tailed Sandpiper, *C. acuminata* (Casey 1966, Johnston and McFarlane 1967), Dunlin, *C. alpina* (Casey 1966, Johnston and McFarlane 1967), and Common Snipe, *Gallinago gallinago* (Johnston and McFarlane 1967).

ACKNOWLEDGMENTS

I am grateful to Lou Hitchcock for graciously lending me his prints for publication, and to the U. S. Army Space and Strategic Defense Command, the Earth Technology Corporation, and MBA International for the opportunity to visit the island. Doug Pratt and Roger Clapp provided many useful comments on an earlier draft of this manuscript.

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Accepted 21 February 1995