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NOTES ON THE BREEDING SEASONS OF SEA BIRDS AT FRENCH FRIGATE SHOALS

by G. Causey Whittow

Amerson (1971) presented charts showing the months of the year during which eggs and chicks of different species of sea birds are present at French Frigate Shoals. These charts not only provide information on the breeding cycles of the birds, but they are also of practical value to the biologist for planning purposes. With the aid of the charts, visits to French Frigate Shoals may be arranged to coincide with the presence of eggs or chicks there. However, the usefulness of the charts in this regard depends on the consistency of the egg-laying season from year to year. Two separate visits to French Frigate Shoals (February 14-March 1, 1979 and June 8-June 18, 1979) presented opportunities to check the accuracy of Amerson's charts. Three islands (Tern, Trig, and Whale-Skate) at French Frigate Shoals were included in the survey and the presence of eggs or checks was noted for the following species: Laysan Albatross *(Diomedea immutabilis)*, Black-footed Albatross *(Diomedea nigripes)*, Wedge-tailed Shearwater *(Puffinus pacificus)*, Christmas Shearwater *(Puffinus nativitatus)*, Bonin Petrel *(Pterodroma hypoleuca)*, Sooty Tern *(Sterna fuscata)*, Common Noddy *(Anous stolidus)*, White-capped Noddy *(Anous tenuirostris)* Gray-backed Tern *(Sterna lunata)*, White Tern *(Gygis alba)*, Red-tailed Tropic Bird *(Phaethon rubricauda)*, Red-footed Booby *(Sula sula)*, Masked Booby *(Sula dactylatra)*, and Great Frigate bird *(Fregata minor)*.

The observations made during February fell within the range of dates presented by Amerson (1971), with the following exceptions: Two White Tern eggs observed on Tern Island by the present author were a month early. Amerson (1971) reported eggs of the White Tern on Tern Island, for the end of March to mid-August. A single chick observed on Tern Island during February 1979 had hatched inside one of the disused buildings; chicks were not seen out-of-doors. Amerson (1971) also reported eggs of the White-capped Noddy to be absent from January to May, whereas in February 1979 eggs were seen. Finally, Amerson (1971) reported eggs of the Common Noddy from February-October; none was seen during the period February 14-March 1, 1979. Only one Black-footed Albatross was incubating an egg in February 1979 and, although Amerson had not reported eggs of this species in February, it is possible that the single egg observed in the present instance was infertile.

In June 1979, eggs and/or chicks were observed at French Frigate Shoals, in accordance with Amerson's (1971) predictions, with the following exceptions: eggs of the Christmas Shearwater were not seen in June 1979, although there were chicks. However, Bonin Petrel chicks were not found. Although Amerson (1971) recorded the presence of eggs of the Masked Booby from January to August, none was noted in June 1979.

Following the closure of the U.S. Coast Guard Loran Station at Tern Island, French Frigate Shoals on June 30, 1979, it is likely that visits to French Frigate Shoals will become much more difficult to arrange in the future. Amerson's (1971) data, together with the present notes, may help to ensure that such visits are in synchrony with the breeding cycles of the sea birds to be studied.

Acknowledgements

I am grateful to the U.S. Coast Guard for transportation and the U.S. Fish and Wildlife Service for permission to visit French Frigate Shoals.

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FOREST BIRD AND FRUIT BAT POPULATIONS AND THEIR CONSERVATION IN MICRONESIA: NOTES ON A SURVEY

by
C. John Ralph and Howard F. Sakai

The birds and fruit bats of the islands of Micronesia are fairly well described as to their taxonomy and range (e.g., Baker 1951, Owen 1977, Perez 1972). However, virtually no work has been done on their abundance. Knowledge of the numbers of individuals of species is essential in determining endangered status and in focusing efforts on preservation or recovery. There are eight officially endangered forest birds in Micronesia, as determined by the Fish and Wildlife Service, U. S. Department of Interior (1976). They are the Palau Owl, Palau Ground Dove, Tinian Monarch, Micronesian Megapode, Nightingale Reed-Warbler, Palau Fantail, Ponape Mountain Starling, and Ponape Greater White-eye. Several others may be deserving of that status. Some have been placed on a Trust Territory (TT) list (Owen 1977) or on a proposed Guam list (J. M. Jenkins, pers. commun.). At this time there is a TT equivalent of the Endangered Species Act. Enforcement of these various laws is apparently somewhat difficult.

We report here a preliminary effort to determine the populations of some forest birds and the amount of fruit bat harvesting in Micronesia. We hope that this effort will stimulate further work in this neglected area.

Fruit bats are considered a delicacy by some residents of Micronesia. As noted below, the rate of harvest (Table 1) of this resource is possibly endangering the future supply and is deserving of immediate study.

METHODS

Between 31 August and 16 September 1977, we visited seven main islands in Micronesia (Table 2) to investigate some details of wildlife status, research, and protection in these islands. We visited Saipan (CJR, HFS), Rota (CJR), Guam (HFS, CJR), Yap (CJR), Palau (CJR), Truk (HFS), and Ponape (HFS). Among the other activities on the trip, we conducted a bird census in some forested areas on the islands.

All common names of birds in this report follows Owen (1977), with some minor exceptions.

We used a modification of the Emlen (1971) technique to census land birds opportunistically in any area of the islands we could reach. Species which are primarily sea birds, such as noddies, were not included for this survey. In general, we selected areas that were as typical of the remaining forest as was possible to reach. We worked along trails or little-used roads, avoiding urban and agricultural areas. We measured the distance walked on 31 ten-minute segments and found our average speed to be 178 m per ten minutes. We estimated the lateral distance from our line of walk to each bird seen or heard. Counts were made at all times of the day.

Aural records were used only for those relatively few species whose vocalizations we could identify with certainty; for such species as white-eyes on Palau, only visual

Table 1--Number of Fruit Bats Imported into Guam for Food

	Saipan	Rota	Yap	Palau	Ponape	Pagen	Tinian	Total
1974	0	6	22	350	0	0	0	378
1975	76	1,421	865	5,069	0	0	50	7,481
1976 (through October only)	1,514	1,379	2,737	10,722	212	190	132	16,886
Total	1,590	2,806	3,624	16,141	212	190	182	24,745
Number/ha of forest land	0.19	0.47	0.67	0.61	.01	.04	.02	

Source: Pers. commun. Ronald Strong, Guam Division of Aquatics and Wildlife.

observations were used. This will not affect the density figures given, except in birds such as rails which are not amenable to this census technique. The census method we employed probably also overestimates far-ranging and rapidly moving species, and thus the density figure for Marianas Crows is probably too high. Censuses were done in all weather conditions, except for rain exceeding a light mist, or winds in excess of about 25 km per hour.

The data gathered were used to calculate density by the method in use in Hawaii by Ramsey and Scott (in press). Basically, this method assumes that all birds are detected out to a certain distance (A in Fig. 1) from the observer. It also assumes that the proportion of birds detected declines at greater distances (beyond A). Ramsey and Scott have further assumed that this declining proportion fits a poisson distribution. Simply stated, their method first establishes a point (B) in the curve of birds detected where the density (D), beyond point B, is equal to the number of undetected birds before that point. To visualize the process, imagine the birds detected in D (beyond B) replacing those missed in C (between A and B). We calculated a curve similar to Figure 1 for each species, or each species group (indicated by superscripts in Table 3), obtaining in each case the distance to point B, called the Effective Detection Distance (EDD). Then, for each island visited, the density of birds can be determined by the formula:

$$\frac{n}{d(EDDx2)}$$

where n is the number of birds seen, and d is the distance traveled on that island.

A major problem in this method is that for some very secretive species (such as rails), there may be no zone of complete detectability. For these species the estimate will be too low. However, most land birds are best censused by this method. We estimated total population of birds by extrapolating our density values to the total forested areas of each island. This exercise is fraught with potential error. In spite of our efforts, the areas censused may not have been representative of the entire island. On Ponape and Truk, especially, access was limited.

Information on harvesting of fruit bats are from data supplied by Mr. Ronald Strong of the Guam Division of Aquatics & Wildlife, and enumerates the imports of bats from various islands to Guam. Many more are probably taken.

Table 2--Islands surveyed and details of bird censuses

Island	Hours spent censusing	Total km traversed*
Saipan	7.3	7.74
Rota	6.3	6.94
Guam		
Northern one-third	4.1	4.36
Southern two-thirds	3.8	4.09
Yap	4.5	4.80
Palau	10.0	10.67
Truk (Moen)	2.7	2.85
Ponape	2.4	2.58
Total	41.25	44.03

*Based on 31 measurements of the rate of travel by the observers ($\bar{x}$ = 583.6 ft/10 minutes = 0.11 mile/10 minutes).

RESULTS

Each island visited is discussed separately below. Populations given should be considered as approximations only.

Saipan

Birds

Because the island is an administrative capital, it is moderately well populated, and there are some pressures on the forest. We covered several areas of the island, primarily on the north end and in the central

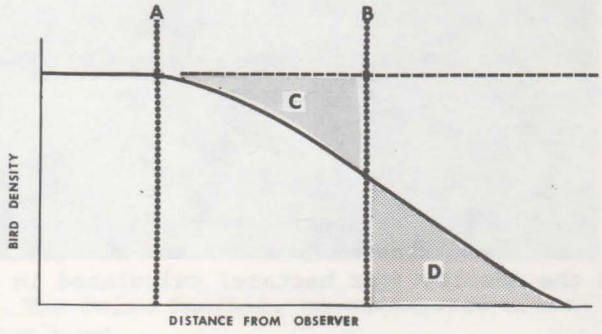


Fig. 1. Hypothetical curve of birds observed (heavy line) and theoretical density (dashed line) with distance at which all birds are seen ("A"), and the Effective Detection Distance indicated by "B". The number of birds in "D" is equal to the number missed in "C". See text for details (after Ramsey and Scott pers. commun.).

Name	Saipan			Rota			Guam						Yap			Palau			Truk			Ponape		
								Northern one-third		Southern two-thirds														
	Status[a]	Number seen	Number /ha	Status[a]	Number seen	Number /ha	Status[a]	Number seen	Number /ha	Number seen	Number /ha		Status[a]	Number seen	Number /ha	Status[a]	Number seen	Number /ha	Status[a]	Number seen	Number /ha	Status[a]	Number seen	Number /ha
Yellow Bittern[b]	U	5		U	1		U	4		1			C	3		C	0		C	2		-		
Banded Rail[b]	-			-			-						-			C	1		-			-		
White-browed Rail[b]	-			-			X	0		0			C	1		C	0		C	0		U	0	
White Tern[c]	C	0		C	10	.062	C	0		0			C	25	.225	C	0		C	4	.061	C	0	
Philippine Turtle Dove[1](I)	U	3	.055	U	6	.123	U	10	.327	1	.035		-			-			-			-		
Nicobar Pigeon[2]	-			-			-						-			RE	3	.024	-			-		
White-Throated Ground Dove[1]	U	7	.129	C	9	.185	UE	0		0			C	0		-			C	3	.150	U	0	
Purple-capped Fruit Dove[2]	-			-			-						-			-			C	0		C	2	.067
Marianas Fruit Dove[2]	U	31	.346	C	36	.448	UE	3	.059	0			-			-			-			-		
Palau Fruit Dove[2]	-			-			-						-			C	33	.267	-			-		
Micronesian Pigeon[2]	-			-			-						U	0		C	5	.040	RE	0		U	0	
Ponape Lory	-			-			-						-			-			-			A	3	
Short-eared Owl	-			-			-						-			-			-			R	1	
Vanikoro Swiftlet	C	10	.216	U	0		RE	0		0			-			C	93	1.454	-			-	1	
Caroline Swiftlet	-			-			-						X	0		-			A	43	2.521	C	32	2.070
Micronesian Kingfisher[3]	-			-			CE	6	.262	0			-			U	3	.054	-			C	2	.148
Collared Kingfisher[3]	C	14	.344	C	19	.521	-			0			-			C	14	.250	-			-		
Cicadabird[3]	-			-			-			0			R	1	.040	U	5	.089	-			U	0	
Palau Bush-Warbler[4]	-			-			-						-			C	5	.096	-			-		
Nightingale Reed-Warbler[4]	CE	17	.449	-			X	0					-			-			AE	4	.287	CE	0	
Yap Monarch[5]	-			-			-						C	4	.258	-			-			-		
Micronesian Broadbill	-			-			U	0					-			C	18	.431	C	7	.629	C	3	.297
Palau Fantail[5]	-			-			-						-			CE	3	.087	-			-		
Rufous-fronted Fantail[5]	A	97	3.875	C	40	1.783	C	10	.710	0			C	18	1.159	-			-			C	20	2.397
Palau Morningbird	-			-			-						-			C	25	.717	-			-		
Bridled White-eye	A	324	13.603	R	48	2.248	UT	1	.074	0			C	108	7.305	C	15	.457	C	32	3.653	U	12	1.512
Dusky White-eye[6]	-			-			-						-			C	13	.396	-			U	0	
Ponape Greater White-eye[6]	-			-			-						-			-			-			UE	2	.252
Yap Greater White-eye[6]	-			-			-						C	6	.406	-			-			-		
Cardinal Honeyeater	U	28	1.013	C	76	3.067	C	36	2.313	0			C	29	1.690	C	14	.366	C	70	6.883	C	39	4.234
Golden Honeyeater	A	133	6.784	-			-						-			-			-			-		
Blue-faced Parrotfinch[7]	-			-			-						-			RE	0		C	7	.758	U	0	
Spotted (Mannikin) Munia[7](I)	-			-			-						C	42	2.696	R	0		-			-		
Chestnut (Mannikin) Munia[7](I)	-			-			A	27	1.910	0			-			C	89	2.571	-			-		
Hunstein's (Mannikin) Munia[7](I)	-			-			-			0			-			-			-			A	20	2.391
Micronesian Starling	U	29	.827	A	119	3.787	C	56	1.470	0			C	39	4.412	C	96	1.986	C	26	2.017	A	15	1.284
Eurasian Tree Sparrow[7](I)	C	8	.319	C	8	.355	U	0		0			-			-			-			-		
Black Drongo(I)	-			A	84	2.324	A	31	1.365	0			-			-			-			-		
Marianas Crow	-			UE	12	.263	RE	12	.418	0			-			-			-			-		
Fruit Bat	R	0		R	0		R	0		0			C	2		C	1		C	0		C	0	
Population		27.960			15.104			8.908		.035				17.966			9.189			16.898			14.652	
Approximate island area(ha)		12,170			8,550			18,050		36,100				9,330			41,450			7,770			33,420	
Approximate forest area(ha)		8,550			5,960			11,230		22,450				5,440			26,430			5,440			27,980	

[1-7]Superscripted numbers indicate species groups combined for purpose of calculating EDD (see text).

[a]Status: Abundance--A = Abundant; C = Common; U = Uncommon; R = Rare (based on Pratt and Shallenberger's MS, subjective impressions of abundance)
Other--X = Extinct; E = Endangered status (on at least one list)

[b]No density calculated since species was not considered to be forest birds for purposes of this report.

[c]Calculated density subject to large errors due to habits of the species.

(I) = Introduced species.

Table 3. The species of birds observed (see Owen (1977) for scientific names), their status on the islands (based on Pratt and Shallenberger MS), the number of individuals seen (or heard), and the density (per hectare) calculated in those areas surveyed

part. The overall density of forest birds in areas we censused was very high, 28.0 birds per hectare. If this density is extrapolated to the entire forested area of the island, it would result in a total of about 250,000 land birds on the island. The only species on the TT and Federal Endangered Species lists is the Nightingale Reed-Warbler, which we estimated to be rather scarce. The Micronesian Megapode, endangered elsewhere in Micronesia, was rediscovered on Saipan by Pratt and Bruner (1978) since our trip, and this population will undoubtedly be added to the list.

We found high populations of the Bridled White-eye, Golden Honeyeater, and the Rufous-fronted Fantail. The Cardinal Honeyeater and Micronesian Starling were

somewhat less numerous. We encountered still lower populations of the Collared Kingfisher, Marianas Fruit Dove, Vanikoro Swiftlet, and the Eurasian Tree Sparrow. We observed few White-throated Ground Doves and Philippine Turtle Doves, and they may be rather rare.

Bats

Some exploitation of fruit bats continues (Table 1) despite their relative scarcity (Pratt and Shallenberger MS).

Rota

Birds

Since the American occupation after World War II, sugarcane cultivation has declined, and much land is beginning to return to forest. We were able to census in most areas of the island, about equally in the plateau and lowland forests. Despite the exotic aspect of the forest, much of it tangen-tangen (Leucaena leucocephala, called koa haole in Hawaii), several bird species are relatively abundant. Overall abundance in areas we covered was 15.1 birds per hectare, an estimated total population-if extrapolated to the entire island, of somewhat less than 100,000 forest birds. We found the Micronesian Starling, Cardinal Honeyeater, and Eurasian Tree Sparrow to be most common, followed by the Black Drongo, Bridled White-eye, and Rufous-fronted Fantail. Next were the Collared Kingfisher and Marianas Fruit Dove, and least common were the Philippine Turtle Dove, the White-throated Ground Dove, and an endangered species, the Marianas Crow.

Bats

Rota is increasing its output of fruit bats to Guam. Between January 1974 and October 1976, approximately one bat per five acres of forest land was exported (Table 1). This may be too high a harvest for the population to sustain itself.

Guam

Birds

For density estimates, we divided Guam into its northern one-third and southern two-thirds because of the great disparity between these areas. The northern third consists of tangen-tangen in disturbed areas, and more varied vegetation, such as Pandanus, breadfruit, and Hibiscus in some less disturbed areas, especially along the northern cliffs. The southern two-thirds, although rather wet and lush, is largely tangen-tangen and savannah.

Of all the high islands of Micronesia, Guam appears to have suffered the greatest depletion of birds. For instance, within the last few years, the Nightingale Reed-Warbler has disappeared from its last haunt, Agana Marsh. Almost every species of native bird has been proposed for endangered or threatened status, although Pratt, Bruner, and Berrett (in press) doubt that some of these designations are justified.

In more than 4 km of census in the southern two-thirds, much of it in the relatively undisturbed Naval Magazine area, we observed only a single forest bird, a lone introduced Philippine Turtle Dove (plus a Yellow Bittern, not considered a forest bird for purposes of this report).

The northern third of the island, especially around the fringing cliffs and abandoned airfields, had considerably more birds, about 8.9 per hectare in the areas we censused. If extrapolated to the entire northern third of the island, this would be an overall figure of about 100,000 birds. The most common were the Cardinal Honeyeater, Chestnut (Mannikin) Munia, Micronesian Starling, and Black Drongo. Less common were the Rufous-fronted Fantail and Philippine Turtle Dove. The rarest birds appeared to be the Micronesia Kingfisher, Marianas Fruit Dove, and Bridled White-eye. We did not see the Guam Rail, proposed as an endangered species, or the Micronesia Broadbill. However, we did see a few of the endangered Marianas Crow.

The Palau Fantail, an endangered Micronesian bird.

Photo by Phillip L. Bruner

Bats

Fruit bats are rare on the island, but considered a delicacy; witness the 15,000 imported in less than 3 years (Table 1). A recent survey indicates a population of less than 50 bats on Guam in the wild (J. M. Jenkins, pers. commun.).

Yap

Birds

Yap has been somewhat more resistant to "progress" than have most areas of Micronesia. However, the Yapese are moving towards development of their relatively untouched forested areas. We censused primarily on the eastern half of the island, and in the areas censused, found rather high densities of about 18 birds per hectare. If extrapolated to the entire island, this would give an overall population estimate of about 100,000 land birds. The most common bird appeared to be the Bridled White-eye. Less common were the Micronesian Starling, the Spotted (Mannikin) Munia, and the Cardinal Honeyeater. The Rufous-fronted Fantail, Yap Greater White-eye, Yap Monarch, and Cicadabird were all estimated to be in low densities, and may be in some difficulty.

Bats

Between 1974 and 1976, the Yapese exported to Guam more than one fruit bat for every two hectares of their forest, the highest rate recorded (Table 1). The population may not be able to withstand this rate of harvest for an extended period.

Palau

Birds

There is extensive forest on several of the islands that make up the Palau group. On the southern "rock islands," the native forests are protected by their relative inaccessibility. We did not visit these islands, where some of the endangered species occur, such as the Palau Ground Dove and the Micronesian Megapode. We concentrated our effort on the islands of Babelthaup (southern and western sides), and the Koror complex. The overall density in the areas we censused was 9.2 birds per hectare. Extrapolating this to the entire forested areas on the two islands would result in a total of about 250,000 individuals of all forest species.

Among the most abundant birds were the Chestnut (Mannikin) Munia, Micronesian Starling, Vanikoro Swiftlet, and Palau Morningbird. The Palau Fruit Dove, Bridled White-eye, Micronesian Broadbill, Cardinal Honeyeater, Dusky White-eye, and Collared Kingfisher were somewhat less common. Of possible concern because of their low numbers in our counts are five species: Palau Bush-Warbler, Cicadabird, Micronesian Pigeon, and Micronesian Kingfisher. The Palau Fantail and Nicobar Pigeon are both on the TT endangered species list and should be closely watched, as we counted relatively few of them.

Bats

Fruit bats are being harvested for the Guam market at a steadily increasing rate. This has more than doubled in each of the 3 years since 1974, reaching 10,722 in the first 10 months of 1976 (Table 1). Similar lack of restraint has been suggested with harvesting of the various pigeons. Some residents have noted a marked decline of the Micronesian Pigeon, the commonly hunted species (R. P. Owen, pers. commun.).

Truk

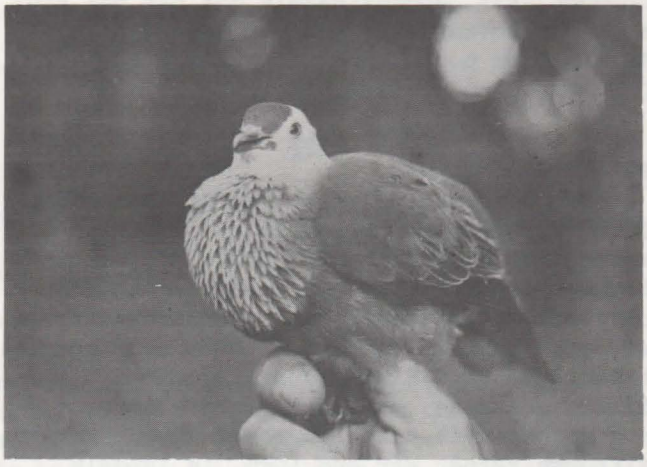
Birds

Of the various islands in Truk Lagoon, only Moen was visited, and that rather briefly. Overall density of birds in the areas, mostly lowlands, was about 16.9 per hectare. This would be a total population, if extrapolated to all forested area of Moen, of somewhat less than 100,000 birds. We did not see the Truk Greater White-eye whose population is probably less than 100 and may be dependent upon the rare Truk "poison tree" (Pratt and Shallenberger MS). Nor did we see the more common Micronesian Pigeon and Truk Monarch.

Among the commoner species on Moen were the Cardinal Honeyeater, Bridled White-eye, Caroline Swiftlet, and Micronesian Starling. Less common were the Blue-faced Parrotfinch, and Micronesian Broadbill. With least numbers estimated were the White-throated Ground Dove and the Nightingale Reed-Warbler.

Bats

No fruit bats are known to be exported from Truk to Guam.



The very striking Marianas Fruit Dove, photographed on Rota, Northern Mariana Islands in Micronesia.

Photo by Phillip L. Bruner

Ponape

Birds

Access to habitat at higher elevations was difficult on this island, and was not attempted. Therefore, we did not see one of the species on the TT endangered species list, the Nightingale Reed-Warbler. Overall density in censused areas of all species was 14.6 birds per hectare, a total extrapolated population of about 400,000 forest birds. The most common bird appeared to be the Cardinal Honeyeater, followed by the Rufous-fronted Fantail, Bridled White-eye, Caroline Swiftlet, Micronesian Starling, and the Hunstein's (Mannikin) Munia. Less common were the Ponape Lory, Purple-capped Fruit Dove, Micronesian Broadbill, Micronesian Kingfisher, and the endangered species, Ponape Greater White-eye.

Bats

Few fruit bats are known to be exported from Ponape to Guam (Table 1).

DISCUSSION

We realize that because of our inexperience with the avifauna, the few days spent on each island, the limited areas censused, and the somewhat different habitat on each island, the density estimates arrived at are only approximations of the true densities for the entire islands. However, we expect that our figures will at least apply to the areas of each island that we censused, and we feel the figures also have perhaps good application to the entire island. They certainly give, at the least, an insight into relative densities, and perhaps indicate some species that are in low enough numbers to cause concern.

Critical Situation on Guam

The most striking aspect of the avifauna of Guam is the almost complete lack of birds on the southern two-thirds of the island, despite what appears to be excellent, even salubrious, habitat. Our census in this area quickly became quite eerie; our footsteps were only occasionally augmented by the sound of leaves stirred by the wind, a lone cricket, or the far-off sound of a farmer's chicken crowing--the only avian sound heard. The effects of the 1974 "super-typhoon" Pamela have mostly disappeared. Many areas are as lush in vegetation as any island in Micronesia. The northern third, an area of about 11,000 hectares, contains most of the birds on the island. In fact, probably less than 5000 hectares have birds in any numbers. Although Drahos (MS) has laid at least partial blame on Pamela, his data (Kami et al. 1977) indicate that, at least in some species, the decline began earlier and was more gradual. Pesticides have reportedly been used in great amounts on the southern part of the island (Pratt and Shallenberger MS). Their entry into the food chain may have harmed the birds in some way. Whatever the cause, southern Guam was the most massive avian desert we have ever seen, and, in a most unlikely place.

Current Laws and Protection

Table 4 summarizes the scanty game laws in the area as they can best be determined. These laws vary from a two-month season on pigeons in Palau, to no game laws whatsoever on Yap and Truk. The Chief Conservationist of the TT, stationed in Palau, has a small force of game wardens (about six), all on Palau. Much of their work concerns marine resources, leaving little time for enforcement of game laws. There is apparently little enforcement elsewhere in the TT. On Guam, there are a few wardens, but much of the land with huntable populations of deer or birds is on military reservations; if any hunting infractions are noted, they are usually handled by military police. Possibly because of public relations considerations, the military police, according to several knowledgeable sources, are reluctant to prosecute game violators or to turn them over to the Division of Fish and Game.

Table 4--Status of game laws in the Trust Territories and Guam

Islands	Regulations and open seasons
Saipan	No game laws pertaining to birds.
Rota	No game laws pertaining to birds.
Tinian	No closed seasons.
Yap	No game laws pertaining to birds.
Palau	Micronesian Pigeon, 1 Nov.-31 Dec. only. All other species protected except Red Jungle Fowl, Collard Kingfisher, Eclectus Parrot, Sulfur-crested Cockatoo, and Purple Swamphen.
Ponape	No game laws pertaining to birds.

Status of Wildlife

There is some disagreement among ornithologists presently working in Micronesia as to what species are endangered, and which might benefit from official endangered status. Some of the disagreement perhaps stems from the lack of quantitative data on populations. Our report is a first approximation of the data needed for such an

assessment. Additionally, the amount of land area in the range of some species is important to their endangered designation. A species may be quite common on an island, but if that island is small, the total population could be only a thousand individuals. A small population is subject to biological "accidents" that can lead to extinction. For instance, the Rufous-fronted Fantail on Yap is rated by Pratt and Shallenberger (MS) as common, and indeed we did count 18. However, the total population of the species in forested land is probably significantly less than 10,000 individuals. Virtually any continental bird population of this size would probably be listed at least as threatened, if not endangered, and rightly so. There are several species in Micronesia that appear to have populations smaller than 10,000 individuals.

There are many pressures on the forests of Micronesia as the inhabitants assert their differing political status and establish their own economic priorities. To date, only two species have probably become extinct in modern times, the Kusaie (Kosrae) Mountain Starling and Kusaie (Kosrae) Rail. Several additional species are possibly on the brink. Many of the Micronesian birds have withstood native hunting, the intensive agriculture of the Japanese, and the devastation of World War II. They are obviously resilient, and given half a chance, could survive and prosper to augment the natural heritage of the Micronesians. The various peoples of Micronesia are the guardians of this resource, not only for themselves, but for the rest of the world.

Acknowledgments

Our thanks to several people whose informative help made it possible to be efficient in getting to various areas, especially Robert P. Owen, H. Douglas Pratt, Robert J. Shallenberger, and Marjorie Falanruw. Helpful comments on the manuscript were received from the above and also Phillip L. Bruner, John Engbring, Jack Jeffries, J. Mark Jenkins, Robert P. Owen, Carol P. Ralph, and J. Michael Scott.

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JAPANESE BUSHWARBLER AND NORTHERN CARDINAL ON MOLOKAI

by Leilani Pyle

On 27 May, 1979 I was hiking along the central ridge of eastern Molokai with a group from Foster Gardens, led by Lorin Gill. As we reached the overlook at Pēpē 'ōpae, the mist cleared for a moment, and we had some glimpses down into a part of Pelekunu Valley. Then it closed in again. While we waited hopefully for another look, at 1000 hours the distinctive call of the Japanese Bush-warbler, or Uguisu *(Cettia diphone)* rose from the valley floor below. First we heard several of its characteristic calls consisting of a long, sustained, low note, followed by several quick ones. Then it followed with the long extended complex song, ending in a descending series, like a wind-down toy. We listened to it for about 15 minutes before we left. Gill also heard and confirmed the song, and others in the group heard it.

We were camping and hiking in the upland area between the Waikolu Valley overlook and Pēpē 'ōpae from the afternoon of May 26 until early morning of May 28, but did not hear or see any other bushwarblers. We did not hear it in mid-afternoon at the Pēpē 'ōpae overlook on May 26 during about 30 minutes of observation.

This is the first record of the species being heard and recognized on Molokai (Berger 1972:218). In early June, after listening to tapes of the Japanese Bushwarbler song, Tim Bertrand of the U.S. Fish and Wildlife Service Forest Bird Survey Team confirmed (pers. commun.) that this was the song he had heard twice during April in the same area of Molokai. On 11 April, 1979 he and Al Holt were about 500 meters east of Pēpē 'ōpae and heard this song coming from Pelekunu Valley. On April 28 while hiking alone at about 1200 m elevation on Kahananui Ridge, Bertrand heard the song coming from Kahananui Gulch.

Japanese Bushwarblers were introduced to Oahu 50 years ago and remained rather scarce until the late 1960's. Since then, they have been seen and heard more and more frequently and at new localities around the island. Now the species has crossed the Kaiwi Channel to Molokai. Its status and range on Molokai will be better defined during the U.S. Fish and Wildlife Forest Bird survey this summer.

On May 27 as day broke at our campsite at the Waikolu Lookout, the first bird to call was a Northern Cardinal *(Cardinalis cardinalis)*. Another call was heard in the same vicinity late in the afternoon of the 28th. Thane Pratt (1973), in his survey of birdlife in this area of Molokai, makes no mention of the Cardinal occurring there.

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The Japanese Bushwarbler photographed on Oahu. The species is far more often heard than seen.

Photo by Mike Ord

BIRD OBSERVATIONS FOR JUNE-JULY DUE

All observations of rare, unusual, or just interesting birds in Hawaii for the summer season (June and July) are due in to Bob Pyle and C.J. Ralph by August 15. These observations will be used, as usual, in compiling the seasonal report for *American Birds*, as well as our own seasonal report. Please send all information to Bob Pyle (741 North Kalaheo, Kailua 96734), or telephone (Bob: 262-4046; C.J.: 988-6921).

American Birds has just expanded its format and is now extremely attractive. A year's subscription (of 6 issues) is $10 (950 Third Ave., NY, NY 10022).

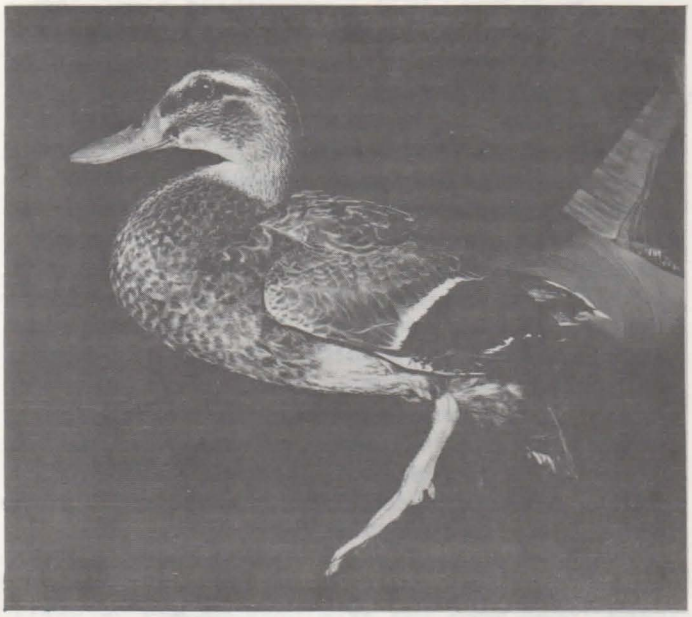
LAST MARIANAS MALLARDS NOW IN HAWAII

Two new visitors to the propagation pens at Pohakuloa on the Big Island may represent the last hope for an extremely rare species of duck, the Marianas Mallard *(Anas oustaleti)*. Formerly known from Guam, Tinian and Saipan, the species has been observed in recent years only at Lake Suspe on Saipan, and current estimates of the wild population run as low as six individuals. Historical records suggest that the species was probably never abundant, at least in the last century. Yet the population has suffered from indiscriminate collection, the ravages of war, hunting by island residents, and a host of predators, including quite possibly the large monitor lizards that are widely distributed in the Marianas.

The native, or Chamorro, name for the duck is Nganga Palau. Largely due to the efforts of Eugene Kridler, former Endangered Species Coordinator for the Fish and Wildlife Service, the species was added to the Federal list of endangered species in 1975. Kridler has devoted considerable time in recent years enlisting the help of the Northern Marianas government in protection of the species and has made several trips to Saipan in an attempt to start the propagation program. Several months passed for a lonely male duck at Pohakuloa until a female arrived by plane from Saipan in mid-June to start what is hoped to be a blissful honeymoon at Pohakuloa.

The Army Corps of Engineers has also been interested in Lake Suspe as a result of major flooding which occurred in August 1978. At the request of the Northern Marianas government, flood protection studies began immediately and are continuing. Close coordination has been maintained between the Corps and Fish and Wildlife Service to insure that measures taken to protect the neighboring community from flooding will not adversely affect the endangered mallards and other rare waterbirds that inhabit the lake and adjacent marshlands. Biologists from the Corps and F.W.S., together with private consultants on contract to the Corps, have made several visits to the wetland, conducting extensive limnological and ornithological studies of the site. Current efforts are directed at planning habitat enhancement measures to encourage waterbirds to inhabit several hundred acres of densely vegetated marshland adjacent to the lake that is currently of little use to the species. Hopefully, the combined habitat improvement measures and the propagation efforts in Hawaii will turn the tide for a species clearly on its way out without our help.

R. J. Shallenberger



The felmale Marianas Mallard just before she was introduced to the male at Pohakaloa. She is being held by Eugene Kridler.

Photo by Robert J. Shallenberger

HAWAII BIRD OBSERVATIONS
AUGUST 1978 THROUGH FEBRUARY 1979

by Robert L. Pyle

Ruff--Two Ruffs and a Reeve were discovered at the west ponds at Waipio Sep 4(RL,MO, RP). The HAS trip found 3 Ruffs and a Reeve there on Sep 10 and another at Kii Pond the same day. Three were still at Waipio Sep 16 (CJR,CPR). Two were found at South Pond, Waipio, Jan 3(RL) and Jan 7(RP,MO). Previously there had been only three known occurrences of Ruff in Hawaii.

Hawaiian Stilt (Ae'o)--More than 100 were counted on Niihau from the air during the statewide waterfowl count Jan 15 (fide VB). These may well have been from Hanalei NWR, K., where the winter population was 75% below the numbers there in fall (VB).

Pomarine Jaeger--Jaegers were first seen off Honolulu harbor Sep 17 and increased to a high of 80 on Jan 6 (RL). These numbers are down from the hundreds recorded in recent winters, probably because the sewage outfall off Sand Island has been greatly curtailed. One Pomarine Jaeger was seen in Auau Channel about 4 miles off Lahaina, M., on Jan 11 (CK).

Western Gull--A very dark-backed, large gull wintering at Paiko Lagoon, O., was first identified as this species on Dec 24. It was "watched for 30 minutes with scope and binocs in good sunlight at 40 and 80 meters distance, standing and swimming. Large, with rich pink legs; all-yellow bill with red spot on lower mandible. Eye all dark, seen carefully in various lights as it moved and turned its head. Mantle dark, smoky gray--in direct sunlight showing considerable brownish tinge to the feathers. When standing, a band of white separated the mantle from the primary tips, which were jet black in contrast to slightly grayer mantle. Much brownish gray mottling on head, nape upper back, neck and underparts as far as the legs. Ragged black band across the tail near the tip, but tip clearly white" (RP). The bird was seen many times thereafter by numerous observers (RL, MO, RS. et al.) until well beyond the end of February. Through February and March, missing flight feathers grew back, and the mantle became a glossier black. The eye remained dark, and the tail band showed no indications of diminishing. The Black-tailed Gull (*L. crassirostris*) of Asia is also dark mantled and retains the black tail band in adults, but it has yellow legs, a light eye, and a dark ring near the tip of the bill. The Slaty-backed Gull (*L. schistisagus*), also of Asia, has a light eye.

Herring Gull--One on Dec 4 and 23 and three on Jan 24 at Kealia Pond, M., were all immatures (CK).

Ring-billed Gull--A subadult was seen at Kii Pond Sep 10 (HAS), and another was at Aimakapa Pond, H., Dec 30 (DP).

Laughing Gull--A subadult Laughing Gull first found at the aquaculture shrimp farm near Kahuku, O., on Jan 15 (RP, BB), was seen frequently by numerous observers at nearby Kii Pond through the winter. A second subadult was seen with it from Jan 27 (DS) until after the end of February. Another gull of this type, thought possibly to be a subadult Franklin Gull, was observed under good conditions at Kealia Pond, M., Jan 24 (CK).

Bonaparte Gull--An individual in winter plumage was sighted at South Pond, Waipio, several times in November and December (MO, RP, DS).

Least Tern--An adult in fine plumage was watched at close range on Laysan Island Aug 17 (DW, CH). Single birds were reported at Waipio Aug 20 (probably adult), Oct 9 and Nov 5 (probably immature) (MO, RP, RL), and at Kaluapuhi Pond, KMCAS, O., Sep 10 (RP). Two were at Kealia Pond, M., Dec 4, and one on Dec 23 (CK).

Caspian Tern--When Rey Larsen had a short but good study of a Caspian Tern at Salt Lake, O., Jan 3, one more species was scratched from the dwindling list of North American waterbirds not yet recorded in Hawaii. This large and handsome tern, a fine adult in winter plumage with a deep blood red bill, was seen several times at Waipio during January and February. It then moved to Kaluapuhi Pond on the other side of Oahu, where it stayed well beyond the end of February. Numerous observers had excellent opportunities to watch it flying as well as standing, and several photographs were obtained.

Caspian Tern photographed on June 20, 1979 at the Kaneohe MCAS.

Photo by Rick Coleman

Black Tern--This very infrequent visitor to Hawaii was found at the east end of Kealia Pond, M., Aug 24. The observer, Rey Larsen, reports: "The bird was a relatively small tern, with a short tail which was only very slightly forked. The upperparts were a rather light shade of gray, except for the white forehead and a little white along the leading edges of the wings. The underparts were entirely white except for a dark bar down the side of the breast. There was a blackish patch behind the eye. The wing linings were whitish. The bill was black and quite slender. The bird's flight was extremely buoyant and graceful. It was observed for about twenty minutes, both perched and in flight, and I believe there can be no doubt about the identification. I have been familiar with the species for many years. The bird was present

at the same location on the two subsequent mornings" (RL). It was seen there again Sep 15 and Sep 24 (CK, PS).

Black Noddy--A count of 67 at Kaluapuhi Pond, O., Sep 23 (RP, PS) was unusually high, and no doubt included many young of the year.

White Tern--From one to three pairs are still being seen occasionally along Kalakaua Avenue between King St. and Ala Wai Canal, in the area where they nested two years ago (GC)

Red-crowned Parrot--One or two of these escapees are still seen now and then in Kapiolani Park, generally somewhere near the Aquarium, and generally early in the morning. Two in immaculate plumage were observed well while perched in that area Feb 3 (MO).

Barn Owl--On Feb 26 about 10 p.m. one flew across Puuloa Road near Moanalua High School, O., and settled into some trees on Mapunapuna St. (RL).

Short-eared Owl--At least 4 were reported present during mid-January on Sand I., Midway Atoll (fide CH). CH found pellets and saw pictures taken by residents, but did not see the birds themselves. The pictures are not the best; but the identification has been confirmed (CJR). These birds, near the northwestern end of the Hawaiian chain, raise the possibility that they were strays from Asia or Alaska, rather than the Hawaiian endemic race. One bird, safely assignable to the Hawaiian race, was flushed from grass-covered bagasse heaps at Waipio on Dec 10 (RP).

Greater Necklaced Laughing-Thrush--This species seems to be holding its own on Kauai. Twelve in a flock were reported from Huleia NWR Oct 3 and again Dec 10 (VB). About 6 of these handsome birds were reported near Princeville during March, sitting on the railing of a lanai and making short flights from the ground to small shrubs and low tree branches (RB).

Red-billed Leiothrix--Three were seen and heard together along Old Waimanalo Road below Kailua on the Honolulu Christmas Count Dec 17 (RP). The species is rarely seen nowadays on Oahu I. One was heard and a second one seen in a mamane tree in Wailuku Gulch at about 9400 ft elevation on Mauna Kea, H., Aug 2 (MM).

Red-whiskered Bulbul--These bulbuls continue to spread from their original stronghold in the Manoa-Makiki area of Oahu. They were reported this fall and winter in Punchbowl Cemetry, Kapiolani Park, Kahala, and along Ala Wai Blvd. (PS, RP, MO, GC).

Mockingbird--A vagrant was found on Necker Island in the Northwest Hawaiian Islands Aug 7 (DW, CH), and one was seen on Tern I., French Frigate Shoals in January (CH), Feb 15-30 (CW) and again March 15 (CH). It was not seen June 8-18 (GCW). Mockingbirds have been recorded once before on Necker and three times previously on Tern, all during the 1960's, but have never been reported elsewhere in the Northwest Hawaiian Islands.

Shama--At least 5 were seen along the road leading to Mililani Memorial Park in central Oahu on Feb 10 (RL). This would have been a most unlikely locality for Shamas prior to the great expansion of recent years in the range and type of habitat occupied by this species.

Japanese Bush Warbler--This denizen of the dense woodlands of Oahu is almost impossible to find when silent and maddeningly difficult to see even when singing loudly. In winter, however, it apparently wanders to lowland areas and occasionally shows itself in the most unlikely places. In November this year one was watched closely from a kitchen window as it worked quietly through a yard in the Woodlawn section of upper Manoa on two successive days (17th and 18th) (SC). One was found Dec 16 (again silent) on the Waipio Christmas Count at Honouliuli Unit, PHNWR, barely 150 meters from the shore of Pearl Harbor (GC, RP), and one was watched singing along the road to the top of Koko Head Feb 3 (GC, WMcK).

Drepanids--The following were found along the jeep road from Hale Pohaku to Wailuku Gulch, between 8600 and 9400 ft elevation on the southeast slope of Mauna Kea on Aug 2 (MM): at least 35 Hawaii 'Amakihi at several points along the road; 4 'Apapane and 2 'I'iwi singing and calling at one site 2 miles from Hale Pohaku in an area with only thin scattered mamane bloom; and 2 adult Palila (En) with about equally bright yellow heads, feeding on green mamane pods at the bottom of Wailuku Gulch (9200 ft). On Sep 26 about 200 'Apapane and 75 'I'iwi were estimated at Haleakala Crater, M., in the upper reaches of the forest reserve just below Koolau Gap (CK,PS). A Palila was sighted just off the Saddle Road at Puu Huluhulu, Hawaii Island, near the margin of its usual range, on Dec 29 (LS). More than 50 'I'iwi were seen in 2 hours on Jan 31 at Puu Laau, on the western slopes of Mauna Kea (CJR). An unusually heavy mamane bloom concentrated the birds at this locality where 'I'iwi are normally rather rare.

Warbling Silverbill--A large population, obviously established, was found below Ulupalakua, M., during the new Puu O Kali Christmas Count Dec 23 (JW, *'Elepaio* 39:89). This is the first report of silverbills away from their known range on northwestern Hawaii Island.

Black-headed Munia--Two adults and 3 immatures were reported feeding on grass seeds near Lawai, K., Oct 9 and 10 (NV). This locality is a few miles from Waita Reservoir in the Poipu Area, where a population of these birds was discovered 2 years ago (*'Elepaio* 38:18). This is the only population established on an island other than Oahu.

Java Sparrow--A flock of more than 100 birds was seen in a cemetery at Pensacola and Prospect Streets in Honolulu Feb 12 (GC).

Red Bishop--Two males in fine plumage were seen behind the Paki St. tennis courts in Kapiolani Park Sep 22 (RP, PS). One or two of these handsome males are occasionally seen in Kapiolani Park and have been recorded as far away as Waipio. The species is not established or breeding, since, as far as is known, no females have ever been brought in to Hawaii (fide MO).

Saffron Finch--Two were seen at Maloelap, near Salt Lake, O., Jan 17, where they had been seen frequently a year ago but not in recent months (RL).

Common Canary--The three Canaries brought to Kure Atoll and first reported in 1977 (*'Elepaio* 39:13) were seen around the Coast Guard buildings there on Jan 3, 4 and 5 this year (CL).

ABBREVIATIONS AND OBSERVERS--Main Islands: Kauai (K.), Oahu (O.), Maui (M.), Hawaii (H.); Endangered Species (En); James Campbell National Wildlife Refuge (JCNWR); Pearl Harbor National Wildlife Refuge (PHNWR); Kaneohe Marine Corps Air Station (KMCAS); Hawaii Audubon Society (HAS). Gordon Black, Barry Brady, Phil Bruner, Tim Burr, Vernon Byrd, George Campbell, Patrick Conant, Sheila Conant, Peter J. Connally, Jules Evens, Brent Giezentanner, Craig Harrison, Larry Hirai, David Jones, Cameron Kepler, Eugene Kridler, Rey Larsen, Jim Lewis, Daniel Luten, Walter McKinney, Mae Mull, William Mull, Mike Ord, Doug Pratt, Peter Pyle, Robert Pyle, C.J. Ralph, Carol P. Ralph, Rob Shallenberger, Roy Shigemura, Dan Snider, Lani Stemmermann, Maile Stemmermann, Paul Sykes, Tom Telfer, Nick VeraCruz, John Walters, Rick Warshauer, G. Causey Whittow and Dave Woodside.

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PALEHUA-PALIKEA RIDGE FIELD TRIP

Thirteen members of the Society rallied at 6:30 on Sunday morning, June 9, for a trip to the Palehua-Palikea Ridge Trail in the southern part of the Waianae Range. Access to the area, requiring notarized quitclaim statements from all participants sumitted prior to the trip, was arranged by leader Omer Bussen through courtesy of the Campbell Estate.

A paved road with locked gates runs from Farrington Highway to the trail head at Mauna Kapu, elevation 820 meters (2776 feet). Actual hiking began at that point. The destination, close to Palikea Peak at 870 meters (3098 feet), was reached at 10:00 a.m. and an early lunch break was welcomed. Returning by the same route, the group reached Mauna Kapu about noon. At a leisurely birding pace, this trip can be done in a half-day.

Ample sun, minimal mist and cooling trade winds complemented much bird activity. House Finches were abundant but numerous 'Apapane drew more attention. Highlight of the day was the simultaneous sighting of two owls, one on each side of the ridge. One was definitely identified as a Pueo (Hawaiian Owl). The other was similar in appearance but the sighter could not make a positive identification because of distance. Several other owl sightings included views from above in which Pueo markings were clearly visible. None of the owls seen appeared to be Barn Owls.

One 'Amakihi was sighted and calls were heard on several occasions. An 'Elepaio was heard. Calls of the Japanese Bush-Warbler were numerous. The track of an unidentified gallinaceous bird was noticed in dust beside a mongoose footprint. Other species identified from the trail were White-tailed Tropicbird (3 in Lualualei Valley), Spotted Dove, Spotted Munia, Northern Cardinal, Shama (heard), and Japanese White-eye. Seen on the Palehua Road to Mauna Kapu were Mockingbird (3), Black-headed Munia (3), and Red-Crested Cardinal (3).

Leader Bussen and other members identified many native plants along the trail. Among them was a rare variety of ae tree. Two plants growing in a small valley a few yards from this trail are the only specimens of this variety known to exist in the world. Eight to ten Clermontias were seen in bloom. A few land snails were noted. And last, but far from least, the views from the ridge were magnificent.

--G. Campbell

FIELD TRIP TO KANEOHE AIR STATION

This field trip on 28 April 1979, a supplement to the usual monthly schedule of Sunday trips, was held on a Saturday afternoon. About fifteen members and guests participated. We were escorted by Staff Sergeant Al Cox of the Public Affairs Office at KMCAS.

While waiting for firing on the rifle range to finish, we visited the Koloa release pen area by Nu'upia Pond, where we got excellent views of Black-crowned Night Herons, Golden Plovers, Ruddy Turnstones, Wandering Tattlers, Sanderlings, Hawaiian Stilts, Black Noddys, and soaring Great Frigatebirds.

We then proceeded out through the range area to Kahekili's Leap, at the fringe of the booby colony. From the vantage point there, a great array of optical power was brought to bear on Moku Manu. In addition to a multitude of binoculars and two conventional spotting scopes, two Celestrons and a Questar were in use. With these powerful instruments, Moku Manu yielded up a large variety of birds. Red-footed Boobys and Great Frigatebirds were very numerous, both on the island and soaring above it, and many of these birds also passed close to us as they rode the updrafts from the cliff. Hundreds of Sooty Terns were seen scattered over the open areas of Moku Manu, presumably on nests. There were many Brown Noddys on the island and some along the cliffs just below us. Several dozen Brown Boobys were seen on Moku Manu, including one bird which was caring for a large chick. A single Red-tailed Tropicbird passed by. A concerted search for Masked Boobys was made, and a single bird was finally identified in the middle of a Sooty Tern colony. The search effort was then shifted to the Gray-backed Tern. This species nests regularly on Moku Manu and on islands of the northwest chain, but which is very rarely seen on or around the main islands. After prolonged searching, several birds were found on the lower slopes of Moku Manu.

Small groups from the party made excursions into the booby colony and up to the crest of Mokapu Point, with its magnificent view of Moku Manu. Visibility was so good that Molokai was seen very clearly, and Lanai and even Maui could be seen.

After leaving the range area, we stopped briefly at Kaluapuhi Pond to see more stilts, plovers, turnstones, and tattlers. The star bird there, however, was a beautiful Caspian Tern, almost certainly the only one in the state. This same bird (presumably) has been on Oahu since at least January 3, when it was first found at Salt Lake. It subsequently was seen several times on the Waipio Peninsula, and now has been seen for several weeks at Kaneohe. It represents a new species for Hawaii.

We ended a delightful afternoon, having seen five species of terns and all three of the boobys which occur in Hawaii.

R. T. Larsen

GLEANINGS FROM THE TECHNICAL LITERATURE

ON THE PINEAPPLE ISLAND

Native birds of Lanai, Hawaii

by Lawrence T. Hirai

Western Birds 9:71-77, 1978

The brevity of this article is the reader's first clue that not many native birds are left on Lanai, the "Pineapple Island". In fact the total list, a result of over a year of field work, has only 13 species, and five of these are migratory shorebirds. Of the eight native breeding species, four are sea birds, one is an owl, and only two are passerines.

The author briefly describes the island, explaining that native forest now covers less than 7%; pineapple 20%; and introduced dryland plants the rest. Since Lanai is a small island, the forested area is thus quite small. As Hirai recounts in a condensed avian history of the island, the native forest area was already reduced by 1900, but it still hosted seven species of native, forest passerines. In this study, the author found only one of these, Hawaii's most abundant drepanidid, the 'Apapane, safely established. He glimpsed Amakihi, the second most abundant in the state, only once, so considers it possibly close to extirpation on Lanai.

This field work turned up one encouraging note, documented more fully in an earlier *'Elepaio* (38:71-72), that the Hawaiian race of the Dark-rumped Petrel probably is nesting on Lanai's forested slopes. This race, officially considered endangered, was thought extinct on Lanai. We can hope that serious conservation and expansion of Lanai's forest might bring further happy discoveries in the future.

C. P. Ralph

SAND ISLAND PARK TSUNAMI WATCH

From 5 p.m. August 10 to 5 p.m. on the 12th we will visit (with the Sierra Club) our newest state park. It will be a safe campout --the gates are locked at 7 p.m. and a caretaker patrols the park. Those spending the night must have a permit for their cars. The park has nice clean bathrooms with cold showers available. Reservations and fees ($3.50 for adults and $1.50 for kids) are due Aug. 5. Call leaders for any additional information.

Activities will include camping, singing, sunset watching, a habor tugboat cruise, Coast Guard search and rescue operation, a star watch, seashore botanizing, birding, and (on Sunday) a trip to Mokauea Island. On the island a special work project building a structure or stone wall will involve the group.

Leaders are Sally Gribbin (531-0375) and Lucia Peterson (595-7271).

ALOHA TO NEW MEMBERS

The Society welcomes the following new members and hopes that they will join in our activities to further the protection of Hawaii's native wildlife:

Joint with National: Rose Mae Ashcom, Kapaau; Lori Benton, Kamuela; Larry Bethoney, Honolulu; Gerald R. Bruce, Kailua; Gary W. Cline, FPO San Francisco; R. Hansell, Kailua; Brenda A. Katekaru, Honolulu; J.L. Long, South Perth, Australia; Mike McKee, Kaaawa; B. Miguel, Pukalani; Joyce Nakahara, Kanehoe; Mr. and Mrs. Clement L. Ralph, Berkeley, CA; G. Renollet, Honolulu; John C. Rodge, Kaneohe; Jane M. Slipp, Kahului; Maile Stemmermann, Honolulu; Henrietta Vitarelli, Haiku; M.A. Wentworth, M.D., Inc., Waimea; and Lorrin W. Wong, Brooklyn, N.Y.

Local Regular: Mike Bender, Kaneohe; Olive O. Dunn, Kula; Melinda Edmonston, Makakilo; Ruth K. Hanner, Honolulu; Marsha Morrison, Volcano; Steven Mundt, Honolulu; Walter Y. Tokushige, Honolulu; Douglass H. Worrall, Honolulu; and Herbert K. Yim, Ewa Beach.

Subscribers: Daniel Airola, Berkeley, Calif.; Joanne Chandler, Dayton, Ohio; Fanny W. Dale, Shaker Heights, Ohio; Suzanne Macfarlane, San Francisco, Calif.; and William H. Thompson, Marietta, Ohio.

Life Member: a special mahalo nui loa to Ruth Hauner for her contribution!

Contribution: mahalo also to Suzanne Macfarlane for a generous contribution.

EXPLORATION OF THE EVERGLADES FEATURED AT AUGUST MEETING

Rick Coleman, well known to Hawaii Audubon members, will present a slide presentation of his adventures in the Everglades National Park with *"The Widest River in the World"*. Rick, an excellent photographer, spent a year and a half as a Park Ranger in this wildlife haven. In the course of his duties he had many adventures and, most of all, many opportunities to take fine pictures of the abundant wildlife of the area. Rick will also document the problems the "glades" have had with fluctuating water levels, a phenomenon he is well acquainted with in his work with the endangered Hawaiian Stilt. Come for an enjoyable evening. August 20 at 7:30 at the McCully-Moiliili Library, 2211 S. King St.

MANANA ISLAND--AUGUST FIELD TRIP

On August 12 the boats will leave the Makai Pier at 7 a.m. for those signed up before August 1. For details and any last minute reservations contact Larry Hirai (531-2907). See the last issue of the 'Elepaio for more details of this exciting and traditional trip.

HAWAII AUDUBON SCHEDULE OF EVENTS

FOR DETAILS, SEE INSIDE BACK COVER

August 7 (Tuesday) Board meeting at the home of C.J. and Carol Ralph, 3467 Alani Drive, Manoa Valley (988-6921) at 7 p.m. All members welcome.

August 10-12 (Friday-Sunday) Sand Island "Tsunami Watch" (with Sierra Club) For reservations: Sally Gribbin (531-0375).

August 12 (Sunday) Field Trip to Manana Island. For reservations: Larry Hirai (531-2907)

August 20 (Monday) Regular Meeting. Rick Coleman will give *"The Widest River in the World"*, 7:30 p.m. at the McCully-Moiliili Library, 2211 S. King Street.

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HAWAII AUDUBON SOCIETY
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