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Hawaii's Seabird Islands, No. 2: Hulu Island and Vicinity, Maui

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This is the second in a series of articles on Hawaii's seabird islands. The first article appeared in the January 1984 'Elepaio (Kepler et al. 1984).

LOCATION: Hulu Island is located 30 m northeast of the Maui coastline 1.5 km northwest of Waihe'e Pt. at 20° 58' 45" N. latitude, 156° 31' 15" W. longitude. Map location: USGS Kahakuloa Quadrangle, Hawaii.

STATUS: The island is privately owned by Wailuku Sugar Company.

PHYSICAL DESCRIPTION: Hulu (Hawaiian = "feather") Island is an oblong sea stack with an area of 0.61 ha. Its most prominent feature is a narrow ridge that forms the top of the island and runs northeast to southwest along the island's long axis, reaching a maximum elevation of 30 m in a pronounced central knob (Figure 1). Cliffs from 5 to 20 m high border the southern two-thirds of the island's coastline, whereas the northern third is low and apparently wave washed during winter storms. The physical nature and geology of the island are virtually identical to Moke'ehia (Kepler et al. 1984), which lies 3.5 km to the northwest. There are at least 15 small rocky islets in the vicinity of Hulu; these serve as roosting and feeding sites for shorebirds, but are wave washed and do not support breeding seabirds.

ACCESS: Numerous submerged rocks in the vicinity of the island, onshore surges, and currents make boat access difficult even during the best sea conditions. We swam to Hulu from a peninsula 600 m southeast of the island (Figure 2). Although choppy water caused by the small islets surrounding Hula made swimming somewhat strenuous, we were able to reach the island, with equipment, in about 30 min.

VEGETATION: We found 19 species of plants on the island, 8 (42%) of which were native (Table 1). Vegetation occurred above the vertical cliff-line to the topmost ridge and was most evident on the eastern side of the island, where it covered 60% to 70% of the ground. The most common species were the introduced *Tricachne insularis* and *Atriplex semibaccata*. *Chenopodium oahuense* was the principal species on the west side of the island, which is much steeper than the east and more sparsely covered with plants (about 30% cover based on our visual estimate). We estimated that vegetation covered about 30% of the total island and about 50% of the sloping portions above the coastal cliffs.

ORNITHOLOGICAL HISTORY: There is no published information on the island.

PRESENT SURVEY: We landed on Hulu at 1400 on 27 August and remained until 1000 on 28 August 1981.

BREEDING SEABIRDS AND THEIR STATUS:

Wedge-tailed Shearwater (Puffinus pacificus). Shearwaters were the dominant breeding seabird on the island. Nests were found in all available habitat (Figure 2). Over 90% of the nests were excavated burrows in soil, primarily on the eastern side of the island; the remainder were in crevices, scrapes, under ledges, or under vegetation. Colony size, based on a total count of the island, was estimated at 750 ± 50 burrows. We examined 63 shallow burrows where the contents of the burrow could be seen; 31 (49%) were empty, 25 (40%) contained chicks, 1 (1.5%) contained an adult with a chick, 2 (3%) contained incubating adults, 1 (1.5%) contained a lone adult, and 3 (5%) contained adults of unknown status. From these data we estimated that the island supported about 350 breeding pairs. This is probably an underestimate as we were unable to examine the deeper burrows that probably contained a higher percentage of successful breeders. Of all the nests examined, 21 (2.8%) contained unhatched eggs, many of which were broken or pecked open. We did not observe Common Mynas (Acridotheres tristis) on the island during our visit, but we did observe them on nearby Moke'ehia (Kepler et al. 1984) and it is possible that some of the eggs had been eaten by these birds (Byrd 1979).

The shearwater's breeding phenology seemed to be similar to other Hawaiian colonies (Richardson 1957, Shallenberger 1973, Kepler and Kepler 1980, Kepler et al. 1984). Ten nestlings were weighed and measured (Table 2). The mean age was estimated to be 27 days, suggesting a peak of hatching during the first week of August and a fledging period beginning in early November. Adults began to return to the colony around dusk (1900), but most did not return until 2000. Surveys of about half of the island at 2100 and



Figure 1. Aerial view of Hulu Island, looking southeast at the steep western side of the island. Note the small islets to the SE of Hulu. *Photo by C.B. Kepler*

HULU ISLAND MAU Source USGS Kahakuloa and Wailuku Qua

Figure 2. Hulu Island, Maui, Hawaii. Shaded areas on Maui and Hulu Island indicate Wedge-tailed Shearwater nesting areas. Crosses on Hulu Island indicate Bulwer's Petrel nests. Access point for swimming to Hulu from Maui is indicated by the letter "a".

0200 revealed over 700 adults resting on the surface. In many areas the density of these birds was greater than two per square meter, indicating that a substantial non-breeding population makes use of the island.

Bulwer's Petrel (Bulweria bulwerii). This species nests in natural crevices throughout the island but is not abundant because of a limited amount of suitable habitat. Four nests were located and all contained nestlings in various stages of development (Table 2). Three nests were in rubble on the low northern terrace of the island. the fourth was in a crevice within the main shearwater colony. No adults were seen or heard, and adults did not respond to imitations of their calls as they had done earlier in the season (Kepler et al. 1984). Two of the chicks were nearly fully feathered and appeared to be within two weeks of fledging. If these chicks began hatching in mid-July, as they did on nearby Moke'ehia in 1981 (Kepler et al.

1984), it would indicate a nestling period of about eight weeks for the species. Based on an examination of the available habitat, the breeding population is estimated to be between 10 and 25 pairs.

OTHER SEABIRDS RECORDED:

White-tailed Tropicbird (Phaethon lepturus). One bird flew over the adjacent coastline on 28 August. We found no evidence of nesting.

Great Frigatebird (Fregata minor). One adult female flew over the adjacent coastline on 27 August. No signs of roosts or nest sites were noted in the vicinity of the island.

OTHER BIRDS:

Golden Plover (Pluvialis dominica). Several groups of 5 to 20 birds circled the island in the evening. Birds roosted on the northern terrace and on adjacent islets.

Ruddy Turnstone (Arenaria interpres). Groups of 5 to 10 birds, often with other shorebirds, circled the island in the evening. Turnstones probably roost on Hulu and adjacent islands. The sternum and wings of one adult were found. The bird was probably killed by an owl, perhaps the introduced Barn Owl (Tyto alba).

Wanderling Tattler (Heteroscelus incanus). Small groups, often with other shorebirds, circled the island in the evening. Tattlers undoubtedly roost on Hulu and adjacent islets.

Zebra Dove (Geopelia striata). One individual flew by the island on 27 August.

Spotted Dove (Streptopelia chinensis). One individual was seen on the island on 27 August.

OTHER VERTEBRATES: We saw no sign of mammals or mammalaian predation and no sign of vertebrates other than birds on the island.

FACTORS AFFECTING THE ISLAND: Hulu Island and its seabird populations show little sign of disturbance. Aside from some evidence of owl predation on the roosting shorebirds, we

TABLE 1. Plants of Hulu Island, Maui, Hawaii.

SPECIES	COMMON NAME	RELATIVE ABUNDANCE*	STATUS [†]
Chloris inflata	swollen fingergrass	C C	Х
Digitaria adscendens	Henry's crabgrass	0	X
Eleusine indica	wiregrass	0	Х
Tricachne insularis	sourgrass	А	Х
Setaria verticillata	bristly foxtail	U	Х
Cyperus phleoides	none	R	E
Fimbristylis pycnocephala	none	U	E
Atriplex semibaccata	Australian saltbush	А	Х
Chenopodium oahuense	'aweoweo	С	E
Sesuvium portulacastrum	'akulikuli	С	Ι
Portulaca oleracea	purslane	А	X
Cocculus sp.	huehue	U	E
Abutilon grandifolium	hairy abutilon	R	X
Waltheria indica	'uhaloa	0	I
Lantana camara	lantana	0	Х
Lycium sandwicense	'ohelo-kai	С	Ι
Solanum nigrum	popolo	U	Х
Scaevola taccada	naupaka-kahakai	U	Ι
Emilia fosbergii	red pua-lele	U	Х

*Relative abundance: A = abundant, C = common, U = uncommon, O = occasional, R = rare.

[†]E = endemic, I = indigenous, X = introduced



found no other signs of predation or mortality due to unnatural causes. It is unlikely that mammalian predators could reach Hulu on their own and we found little evidence that boaters or fishermen frequented the island. Like nearby Moke'ehia, the most serious long term threat to the seabirds is habitat loss resulting from erosion of the fragile, burrow-riddled soil that remains on the island. Although Hulu island is protected by its isolation, we propose that it be formally protected as a seabird sanctuary by agreement between its present owners and one of the conservation agencies operating in Hawaii.

ADDITIONAL NESTING AREA DISCOVERED ON THE ADJACENT MAUI COAST: While returning from Hulu Island on 28 August, we observed what appeared to be burrows below the cliffs that form the adjacent Maui coastline. We landed and discovered a small Wedge-tailed Shearwater colony (Figure 2). This is the only known shearwater colony on the island of Maui. The colony is located in a talus slope that extends about 150 m along the coast from sea level to a height of nearly 20 m. The slope is backed by 20 to 30 m cliffs that extend into the ocean on both ends. These cliffs form an effective barrier between the colony and the remainder of Maui. The colony seemed to be undisturbed and we saw no evidence of predation on the shearwaters. We estimated there were about 100 burrows in the colony, and noted non-breeding adults, incubating adults, and nestlings at various stages of development during our brief (20 min.) survey of the site. Shearwaters were nesting in excavated burrows in soil and in natural cavities in the boulder talus. No evidence of nesting Bulwer's Petrels was found, although there appeared to be much suitable habitat.

TABLE 2.Measurements* of Wedge-tailed Shearwater andBulwer's Petrel nestlings, Hula Island, Hawaii, 27 August 1981.

	Wedge-tailed Shearwater	Bulwer's Petrel
N	10	4
Weight (g)	271.4 81.6 133.0 - 410.0	136.3 16.3 114.0 - 149.0
Wing Length (mm)	49.4 9.5 35.1 - 58.8	140.0 15.0 127.0 - 153.6
Tarsus Length (mm)	35.2 5.5 29.5 - 39.3	29.2 1.1 28.0 - 30.1
Culmen Length (mm)	27.1 3.5 21.6 - 31.9	20.1 0.8 19.1 - 21.1
First Primary Length (mm)		84.6 12.1 71.5 - 97.4
Central Retrix Length (mm)		67.5 8.8 55.8 - 75.1

*Data are presented as: Mean

Standard Deviation Range

Acknowledgements

We thank Jitsumi Kunioki for logistic and shore support, Derral Herbst for confirmation of our plant identifications, Tom Hauptman of Sunair Copter, Inc., for providing an aerial view of West Maui's offshore islands, and R.M. Walker, J.M. Scott, D.Q. Thompson, S. Conant, C.J. Ralph and R.B. Goodloe for helpful comments on the manuscript.

Literature Cited

- Byrd, G.V. 1979. Common Myna predation on Wedge-tailed Shearwater eggs. 'Elepaio 39: 69-70.
- Kepler, C.B., and A.K. Kepler. 1980. The birds of Molokini Island, Maui. 'Elepaio 40: 147-151.

Kepler, C.B., A.K. Kepler, and T.R. Simons. 1984. Hawaii's seabird islands, No. 1: Moke'ehia, Maui. 'Elepaio 44: 71-74.

Richardson, F. 1957. The breeding cycles of Hawaiian seabirds. Bernice P. Bishop Mus. Bull. 218: 1-41.

Shallenberger, R.J. 1973. Breeding biology, homing behavior and communication patterns of the Wedge-tailed Shearwater, *Puffinus pacificus*. Unpbl. Ph.D. thesis, University of California, Los Angeles.

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Sighting and Feeding Behavior of a Peregrine Falcon in the North Central Pacific

by Steven H. Kramer

The Peregrine Falcon (*Falco peregrinus*) is cosmopolitan in distribution, up to 22 subspecies being recognized throughout the world (Hickey 1969). Many of the subspecies are long-distance migrants, resulting in records of this falcon even in the most isolated (from a continent) archipelagos like Hawaii. Since 1961, there have been seven reports of Peregrine Falcons from the Main Hawaiian Islands, specifically Hawaii, Oahu, and Kauai islands (Berger 1981). Three additional sightings, including a specimen identified as *F. p. pealei*, have occurred in the Northwestern Hawaiian Islands (Clapp and Woodward 1968).

On 13 November 1982, a Peregrine Falcon landed on the NOAA (National Oceanic and Atmospheric Administration) vessel Townsend Cromwell at Kanmu seamount (31°51'N, 173°09'E). This location is 870 km West Northwest from the nearest land, Kure Atoll in the Northwestern Hawaiian Islands. It was identified from a photograph (Fig. 1) as a 4 to 5 month-old female of either the Asian subspecies F. p. japonicus or one of two North American forms, F. p. anatum or the pale morph of F. p. pealei (C.M. White, Brigham Young Univ., Provo, Utah pers. comm.). Two factors increase the probability that the bird was from North America: 1) the prevailing surface winds in the area were from the East (Fig. 2); 2) the bird appeared (in a photograph) to have had a band on its right tarsus, and banding efforts have been far greater in North America than in Asia. Peregrine Falcons are known to land on vessels (Voous 1961; Hickey 1969; Craddock and Carlson 1970; Rogers and Leatherwood 1981), and "hitch-hiking" between vessels also occurs (Craddock and Carlson 1970; Rogers and



Figure 1. Peregrine Falcon on the forward mast crosstree on the NOAA ship *Townsend Cromwell*, 13 November 1982. *Photo by Steven Kramer*



Figure 2. "Prevailing surface winds at time of sighting"

Leatherwood 1981). Interestingly, the departure of the falcon from our vessel, which was operating at various courses and speeds, coincided with the passing of another vessel within 9 km of us.

While associated with our vessel, the falcon caught two stormpetrels (Oceanodroma leucorhoa or O. castro), the only species of small seabird observed in the area. The falcon took the prey by a low level, high speed, wave-top approach. Apparently the wave trough offered concealment until just before the prey was seized. Both successful attacks were made from a downwind, quartering direction. The falcon was unsuccessful in several attempts to take storm-petrels from an upwind and a higher altitude approach. Rogers and Leatherwood (1981) report similar feeding behavior for a Peregrine Falcon at sea.

Literature Cited

- Berger, A.J. 1981. Hawaiian Birdlife. The University Press of Hawaii, Honolulu, 260 p.
- Clapp, R.B., and P.W. Woodward. 1968. New records of birds from the Hawaiian Leeward Islands. Proc. U.S. Nat. Mus. 124(3640):1-39.
- Craddock, D.R., and R.D. Carlson. 1970. Peregrine Falcon observed feeding far at sea. Condor 72:375-376.
- Hickey, J.J. 1969. Peregrine falcon populations, their biology and decline. The University of Wisconsin Press, Madison, Milwaukee, and London, 569 p.
- Rogers, W. and S. Leatherwood. 1981. Observations of feeding at sea by a Peregrine Falcon and an Osprey. Condor 83:89-90.
- Voous, K.H. 1961. Records of the Peregrine Falcon on the Atlantic Ocean. Ardea 49:176-177.

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WAIPIO CHRISTMAS BIRD COUNT

-1984-

David Bremer

The Waipio, Oahu, Christmas Bird Count (CBC) took place on 22 December, 1984. The weather was generally clear with little wind, although there was some rain on Poamoho Trail only. No new species (except one escaped Cockatiel) were seen this year, but some interesting observations were reported. For example, the White-faced Ibis was seen at the Pearlridge watercress farm and not in Sector 1 where the bird is usually found.

Two Red-billed Leiothrix were heard in the valley immediately west of the cabin at the summit of the Poamoho Trail by Wayne Gagne, who has had frequent contact with this species on Maui. Gagne also observed two of these birds on the Manoa Cliffs Trail during this year's Honolulu CBC. He commented that the Leiothrix, which have been observed on only one prior Waipio CBC, may be rebuilding their Oahu population or they may have been overlooked during previous counts.

Pueo (Short-eared Owl) may be becoming more common on Waipio peninsula. Last year was the first Waipio CBC record of the Shorteared Owl, and this year two or possibly three were present. These owls were observed in the course of the regular daytime count. I failed to spot any Barn Owls this year when owling in Kipapa gulch from 5 to 6 a.m. On Kipapa Trail, John Wheatley found many regurgitated pellets indicating the presence of owls with an apparent dietary preference for rats.

Although the overall plover count was higher this year than last, two parties commented that the species seemed less prevalent this year compared to last. In Sector 1, twice as many Lesser Golden-Plovers were seen in 1984 compared to 1983; however, the count was lower in Sectors 2,4, and 6 this year. Perhaps the 1984 drought induced a shift from residential areas to wetlands.

Some other apparent changes in number or distribution were noted. Species which appear to be expanding their ranges include the Java Sparrow, Red Avadavat, and Common Waxbill. Fewer mannikins were reported and Yellowfaced Grassquits were not seen. Temporary fluctuations in seed-eating populations may have resulted from the 1984 drought.

An increase in native forest birds seen on Palehua may have been due in part to having spent more time on that 1.5 mile trail during the 1984 CBC. The difficult Kipapa Trail yielded five 'Apapane and two 'Elepaio, while Poamoho accounted for the remaining 67 'Apapane and 15 'Amakihi.

The sighting of four Moorhens (Hawaiian Gallinules) in Sector 2 resulted from visiting two irrigation reservoirs (located in an area scheduled to be developed as the Waikele housing project) which were not included in previous counts. In one reservoir, just north of the H-2 above the Oahu Sugar Mill, two Moorhens were subsequently (12/29/84 to 1/1/85) observed to be taking turns incubating at a nest. Whether the nest was present on 12/22/84 (CBC day) is not known, though two birds had been observed in that vicinity. On return to the site on 1/4/85, the nest was no longer present, though two adult Moorhens were seen again.

A partially leucistic Red-vented Bulbul accompanied by a normal bird of the same species perched for several minutes in a tree bordering an athletic field at the end of Noheaiki St. in Waipio Gentry. The birds then flew north into some denser vegetation. On 1/12/85 and 1/28/85, I observed the bird in the same general area, again paired with a normal Red-vented Bulbul. The affected bird has a black head, black outer tail feathers, and a red vent; however, the back, sides, breast, belly, and wings were mostly white. A touch of white was present at the auriculars. The middle tail feathers also were white. This pattern might be explained on the basis of absence of the normal "smoke-brown" pigmentation.

A 13% increase in total birds tallied in 1984 may be attributed to a slight change in procedure by the Joao party. Riding in the back of a pickup truck driven by Arthur, the party spotted 2320 birds. In 1983, covering the same distance by automobile, the party counted 1142 birds.

OBSERVERS

Party	A:	George Campbell, Carl McIntosh,
		Mike Ord, Robert Pyle
Party	B:	Peter Donaldson, Steven Walker
Party	C:	David and Sarah Bremer, Joseph Ezaki,
		Nora Furuno
Party	D:	Arthur and Betty Joao, Janice and
		Paul Sweet
Party	E:	Mark Hanzawa, John Wheatley
Party	F:	Patrick Ching, Jay Munns, Maura
		O'Conner, Jill Sondeen
Party	G:	Stewart Fefer, Wayne Gagne, Cynthia
		and Jim Krakowski, Dick Wass
Party	H:	Celestino Aguon, Sheila Conant,
		Audrey Newman

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WAIPIO, OAHU CH	HRISTMAS	BIRD) COL	UNT -	- 198	34			
SPECIES SI	ECTORS 1	2	3	4	5	6	7	TOTALS 1984	1983
egret, sp. (Snowy or Little)									1
Cattle Egret	83	144		22	2	34		285	215
Black-crowned Night-Heron('Auku'u)	21	1						22	25
White-faced Ibis		1	· .	11.		10.0		1	1
Green-winged Teal	3							3	1
Mallard	3					100		3	5
Hawaiian Duck(Koloa)	20							20	8
Northern Pintail	6							6	12
Northern Shoveler	46							46	51
Eurasian Wigeon								A LONG PORCE V	2
American Wigeon								LAN SALE (PAIN	2
duck, sp.								And the second second	4
Osprey								Prior and and	1
Erckel Francolin							6	6	
Ring-necked Pheasant	1							1	1
Common(Hawaiian) Moorhen	2	4						6	3
American(Hawaiian) Coot	53	6				2		61	118
Black-bellied Plover	2							2	
Lesser Golden Plover	277	80	1	80	65	5		508	416
Black-necked(Hawaiian) Stilt	164	9						173	191
Wandering Tattler	9	3		1		1		14	9
Ruddy Turnstone	74							74	30
Sanderling	74							74	57
<pre>sandpiper,sp. (Least Sandpiper or Long-to Stint)</pre>	ed 2							2	1
Pectoral Sandpiper	2							2	
Sharp-tailed Sandpiper	2							2	
sandpiper, sp.	1							1	
Dunlin	2							2	4
Long-billed Dowitcher									6
dowitcher, sp.	4							4	
Ruff	2							2	
Rock Dove	2	83		17	2			104	73
Spotted Dove	107	183	10	51	21	73	2	447	444
Zebra Dove	159	359	3	177	67	268	21	1054	875
Barn Owl								and a second second	4
Short-eared(Hawaiian) Owl	2							12	1
Eurasian Skylark	20	2			15	1		38	18
Red-vented Bulbul	47	316	56	12	2	31	3	467	409
Japanese Bush-Warbler		3	2	3			21	29	17
Oahu 'Elepaio			2				6	8	4
White-rumped Shama	11	8	44	7	1	3	4	78	88

No. of Individuals No. of Species

Yellow-faced Grassquit

Red-billed Leiothrix

Northern Mockingbird

Red-crested Cardinal

Great-tailed Grackle

Nutmeg Mannikin(Spotted Munia)

Japanese White-eye

Northern Cardinal

Common Myna

House Finch

'Apapane

Oahu 'Amakihi

House Sparrow

Chestnut Mannikin

Red Avadavat

Java Sparrow

Common Waxbill

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SECTORS COVERED

- Waipio peninsula and Honouliuli National Wildlife Refuge (Party A); Waiawa National Wildlife Refuge (Party B).
- Aiea-Pearl City (Party B); Seaview-Crestview (Party C); Waipahu (Party D).
- Kipapa Trail (Party E); Manana Trail (Party F); Poamoho Trail (Party G); Waimano Trail (Party B).
- Mililani-Wahiawa (Party C); Poamoho lowlands (Party G).
- 5. Schofield-Wheeler (Party C).
- 6. Kunia plain (Party D).
- 7. Palehua Trail (Party H).

There were twenty-eight observers in eight parties. Total party-hours were 49: 31 by foot, 18 by car, plus 1 hour owling. Total party-miles were 215: 36 by foot, 179 by car, plus 2 miles owling.

Habitat coverage (% of party-hours): parks and residential 38%; mountain forests 31%; lowland woods and scrub 15%; wetlands 11%; and agricultural 5%.

WARBLING SILVERBILL REPORTED ON KAUAI

Andrew Starrett

(The following notes are taken verbatim, with very minor editing, from letters of 13 July and 8 August 1984 written by the author to Robert L. Pyle.)

The June 'Elepaio just arrived in the mail and, while reading the note on the Oahu Warbling Silverbill record, I recalled having seen that species on Kauai this past January. I understand that you do not know me; thus I am sending these notes so that you may alert bird folk in that area to watch for this bird. Perhaps its occurrence on Kauai can be verified and documented.

In mid-morning of January 8, 1984, with time to kill between hotel checkout and plane departure, my son and I drove down to the south shore area of Kauai. We drove east on Poipu Road past the resort areas and, as far as I can determine from the limited maps at hand, we were approaching the junction with the road on the right leading to the Kiahuna Plantation Gardens. Just west of that junction, on the lawn south of Poipu Road, we noticed a small flock of dark brown finches which we took to be Nutmeg Mannikins with some paler birds mixed in. We stopped for a look, and discovered both Nutmeg Mannikins (Lonchura punctulata) and Chestnut Mannikins (L. malacca), with the paler individuals being young Nutmegs. This sets up the rest of the story, as I had thought that the lighter birds might have been Warbling Silverbills (Lonchura malabarica), and stopped to check for that reason.

We then continued to the end of the paved road, drove out on dirt roads to the beach and then headed back. It was on the return, headed west on Poipu Road, that we saw a small group of birds in the bushes on the north side of the road. I remember my comment at the time that "those are silverbills". They were grayish, with contrast between darker upper and lighter lower parts (wings, back, tail compared to breast). They had prominent, but not huge, light gray bills and a sleeker, more long-tailed look than the other two Lonchura have. The contrast with the others was fresh since we had just seen both of the big-billed brown species a few minutes earlier. My recollection is of only a few individuals, perhaps four at most, which were active and touchy, taking off as I left the car. I do not recall hearing any vocalizations, and I am usually aware of sounds from birds.

The best I can do with location is Poipu Road (paved) somewhere between the east end of the resort area and the Kiahuna turnoff that I mentioned, since I recall checking for the other finches again after we had seen the silverbills. The vegetation along the north side of the road there was undeveloped scrub with bushes 2-3 meters in height.

My kids have been raising finches for a number of years. For this reason, my son also is familiar with a variety of species of *Lonchura*, including silverbills and both of the mannikins seen on Kauai. The other common cage trade silverbill, the Gray-headed (*L. griseicapilla*), has a pale rump which I did not notice on the Kauai birds.

At the time of the observation I had made the unwarranted assumption that the birds were known from Kauai, and did not bother to check the Audubon Society guide *Hawaii's Birds*. Had I done so, I would have been a little more careful about making notes concerning the observation.

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MARCH MEETING REPORT

At the 18 March 1985 meeting, Steve Berendson, with a Master's degree from the University of Massachusetts in bobcat ecology, was the principal speaker with a slide show on bobcats of western Massachusetts. He is temporarily with the U.S. Fish and Wildlife Service in Honolulu working on water bird habitat in Hawaii. He was introduced by Peter Stine.

Steve began his program with general information about fauna and flora of western Massachusetts through the changing seasons. Habitat consists of low mountains, hills, open fields, and forest lands. A bit of the coastal region was shown, with Herring Gulls and harbor seals. The Connecticut River bisects Massachusetts, and there are many areas of lakes, streams, marshes, and other wetlands. Great Horned Owls, Ruffed Grouse, Wild Turkeys, Common Loons, Black-and-white Warblers, and Oven birds were among the birds shown, also many beautiful butterflies. Mammals included black bears, fawns of white-tailed deer, chipmunks, squirrels, skunks, raccoons, moose, and beavers. Opossums there are at the northern limit of their range.

Steve's two-year study of the bobcat was to determine if it is an endangered or threatened species; similar studies were being made of black bears and Golden Eagles, the latter being fledged and fed from hacking towers. Bobcats prefer a habitat with plenty of cover and availability of prey, mainly chipmunks, cottontail rabbits, snowshoe hares, squirrels, some birds (especially Wild Turkeys), and porcupines. They sometimes feed on deer carcasses. Competition for prey comes from coyotes, red foxes, and black bears.

Steel-jaw and spring traps are outlawed in Massachusetts, so catching bobcats is not easy. Skunks are most frequently caught in the box traps, as well as racoons, but Steve caught 18 bobcats, which were tranquilized, weighed, measured, and equipped with radio collars of different frequencies for tracking. He also tracked their footprints in the snow. He determined that there are about 500 bobcats in western Massachusetts, for which there is a closed hunting season and a bag limit of 50 cats, although 35 are the most that have been caught. His data from the study is still being evaluated, and has not yet resulted in endangered or threatened listing.

A question and answer period followed the presentation.

Betty L. Johnson

RECOVERY PLAN FOR THREE TERRESTRIAL

NWHI BIRDS

The Northwestern Hawaiian Islands Passerines Recovery Plan, for the Laysan Finch, Nihoa Finch, and Nihoa Millerbird, was approved 4 October 1984 and is described in the February 1985 Endangered Species Technical Bulletin (Vol. X, No. 2).

These three species are endangered, not because their populations are significantly lower than historical levels, but because of their extremely limited natural habitats. Therefore, the foundation for the recovery program will be protection of the delicate ecosystems that support the birds.

Copies of recovery plans become available for purchase about 6 months from their date of approval. Requests should be made to the Fish and Wildlife Reference Service, 1776 E. Jefferson Street, Suite 470S, Rockville, Maryland 20852; telephone (800) 582-3421.



(Editors' note: In Hawaii, subtract 6 hours from Eastern and 3 hours from Pacific to obtain the local times.)

H-3 FUNDRAISER

A fundraiser will be held by Transit Challenge on Wednesday, 15 May, from 5 to 8 p.m at Skate Plaza at the Chinese Cultural Plaza on S. Beretenia St. There will be food and live entertainment. Tickets for the fundraiser are \$25; please contact Rick Ziegler at 235-5650 for more information. Other donations can be sent to the Sierra Club Foundation, H-3 Highway Legal Fund, c/o P.O. Box 11070, Honolulu, HI 96828. The fundraiser and donations will help them to pay for costs of the legal battle against H-3.

1985 AUDUBON ECOLOGY CAMPS/WORKSHOPS

For more than forty years the Society has conducted adult programs in ecology and natural history. One and two-week adult sessions are filled with activities that meet the learning and recreational needs of teachers, beginning and advanced naturalists, chapter activists, students, and others with an interest in the environment. Conducted at beautiful sites located in Maine, Connecticut, Wisconsin, and Wyoming, these programs are also available for University credit. A special focus, in addition to the traditional adult programs, is the special sessions for children in Maine and Wyoming, as well as the one for families in Wisconsin. Additionally, special subject sessions are also scheduled for participation by individuals wishing to study a particular area of interest.

For a fully-detailed color brochure on the programs, write to Audubon Camps and Workshops, 613-A Riversville Road, Greenwich, CT 06830.

5-YEAR INDEX NOW AVAILABLE!

The 5-year 'Elepaio index (for Volumes 36-40) is now available. It may be obtained by sending a \$2.00 check or money order (made out to "Hawaii Audubon Society") to: Hawaii Audubon Society, P.O. Box 22832, Honolulu, Hawaii 96822. This small fee covers the cost of reproducing the index and also includes postage.

POSTCARDS, ANYONE?

A volunteer is needed for a modest but very worthwhile task which can be done at home. Until recently the Society sold postcards of a monk seal and green turtle(endangered species) resting on a beach. This very popular item promoted wildlife conservation both educationally and financially. Unfortunately, when the stock of cards sold out, we lost the services of the volunteer who handled the sales. Since that time we have had requests for the cards but have had no one to handle them. If HAS has a volunteer from Oahu to handle this mailing assignment, the Board of Directors will explore a resumption of this project. For details, call George Campbell, 941-1356.

BACK ISSUES OF 'ELEPAIO

Current prices for back issues of '*Elepaio* are listed below. Actual pastage charges for shipping will also be added on to these prices.

Vol. 41, No. 1(July 1980) to present:

50¢ per issue, \$5.00 per volume

Vol. 1 through 40(1939 to 1979):

\$1.00 per issue, \$10.00 per volume (5 or more volumes: \$8.00 per volume)

Vol. 1 through 43 (complete set: 1939 to June '83)

\$350.00 for the complete set

'ELEPAIO BY AIRMAIL

Members and subscribers wishing to have the 'Elepaio sent by airmail to addresses outside Hawaii may now obtain this service by remitting the additional amount needed to cover airmail postage costs. These amounts for 12 monthly issues are: U.S. and territories and Canada......\$4.50 Central America, Carribean.....\$12.50 S. America, Europe, Africa, Pacific

and Asia.....\$14.50

MAY PROGRAM:

ALLIGATORS IN THE EVERGLADES

The 20 May general meeting will feature a talk and slide show program by Peter Stine on "Alligators in Everglades National Park".

Peter currently works as a U.S. Endangered Species Biologist in Honolulu, but in the past he has worked in Everglades Nat. Park on an alligator ecology study. The talk will focus on the role that alligators play in the ecology of the Everglades.

The meeting will be held at the McCully-Moiliili Library at 2211 S. King St., Honolulu, beginning at 7:30 p.m. on Monday, 20 May. Everyone is welcome to attend!

MAY FIELD TRIP: PAIKO LAGOON

The Sunday, 12 May field trip will be to a state wildlife sanctuary, Paiko Lagoon, on Oahu. This field trip usually features shorebirds and, if lucky, the endangered Hawaiian Stilt.

Participants should meet at 8:00 a.m. next to the State library on Punchbowl St., or at 9 a.m. at Paiko Lagoon at the makai end of Kuliouou Road.

This field trip should be finished by noontime. Be sure to bring sneakers or tabis (for mud), sun protection (hat and/or sunscreen), water, and binoculars. Call Suzan Harada (845-6704) for more information.

HELP WITH 'ELEPAIO

The June issue of the '*Elepaio* will be put together 25 May (Sat.) at 1415 Victoria St. beginning at noon. Call Marie at 533-7530. Help is always needed and welcome! Proofreaders and typists are especially needed to help out prior to the 25th, even if you have only an hour or two to share.

VOLUNTEERS NEEDED

Volunteers are always needed, for a variety of Audubon jobs both large and small! One of our most pressing needs is to find two to four volunteers who are willing to be trained for mailing the 'Elepaib newsletter. Volunteers must be dependable; ideally, volunteers will alternate months, so that it will not be time-consuming. The main mailing activities include attaching stick-on address labels, and sorting the newsletter by zip codes. This is an ideal job for retirees, but any eager hands are welcome! We presently have two to three volunteer mailers, but they need more help. Call George Campbell at 941-1356 for more information.

Also, 'Elepaio newsletter especially needs typists. If you have as little as one hour a month to spare, consider volunteering to be a typist. Call Marie at 533-7530 after 5 p.m.

PUBLICATIONS OF THE SOCIETY

HAWAII'S BIRDS by the Society (1984). This is the best field guide to our birds, and includes colored illustrations of all native and well-established nonnative species..... \$4.95 plus postage: 85¢ (surface mail) or \$1.03 (air). Hawaii residents only: add 20¢ for tax.

FIELD CHECKLIST OF BIRDS OF HAWAII by
R. L. Pyle (1976). A pocket-size field
card listing 125 species found in Hawaii
with space for notes of field trips.
(Postpaid).....\$.25
 (ten or more, 10¢ per copy)

GUIDE TO HAWAIIAN BIRDING by members of the Society and edited by C. J. Ralph (1977). Where to go and some idea of what you are likely to see. For the islands of Kauai, Oahu, Lanai, Molokai, Maui and Hawaii (Postpaid).....\$1.50

CHECKLIST OF THE BIRDS OF HAWAII by R. L. Pyle (1983). An authoritative compilation of all species naturally occurring in Hawaii as well as those introduced by man which are currently established as viable populations. Gives each species' status.

(Postpaid) \$2.00

HAWAII AUDUBON SOCIETY

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Dual Life (single payment)	2000.00

Special rates for full-time students and Senior Citizens (65 years of age or older) are available. Please write for application form.

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Subscriber (non-Hawaii residents)	6.00
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installments)	150.00

All Local Memberships and Subscriptions are for a calendar year January through December. New Local Members and late-renewing members who send in dues through September may obtain all previous issues of 'Elepaio in that calendar year, upon request and reimbursement to the Society for mailing costs. Dues received after September are applied to membership extended through the following calendar year, but do not include previous issues of 'Elepaio in the current year.

CALENDAR OF EVENTS May 12 (Sun.) Field trip to Paiko Lagoon, Oahu. See announcement on page 120 of this issue for meeting place, time, and contact phone number. May 14 (Tues.) Board meeting at 2497 Makiaki Heights Dr., Oahu, at 7:00 pm. Cal Dave Boynton at 335-5008 for more information. May 20 (Mon.) General meeting at McCully-Moililil Library, 2211 S. King St. Speaker will be Peter Stine on Alligators in Everglades Nat. Park. Beeting starts at 7:30 pm. See page 120 for more details.

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