



Migratory Shorebird Populations at Kosrae, Eastern Caroline Islands

by Floyd E. Hayes

The dispersal and abundance of migratory shorebirds through Micronesia is poorly understood. Baker (1951) provided a speculative discussion of migratory routes and origins of transient shorebirds found in Micronesia. Quantitative shorebird studies in Micronesia are previously reported from Palau (Baker 1951), Guam (Baker 1951, Jenkins 1981), and Ocean (Pearson 1962). From 31 August 1981 to 13 May 1982, I conducted a shorebird survey on Kosrae (5° N, 163° E) to study the seasonal population changes and to determine the relative abundance of each species.

METHODS

Forty-three counts were conducted during the survey. Thirty-four of these counts were conducted at Okat Harbor, where a new airport under construction provided a network of rocky dikes where shorebirds congregated during high tide and at dusk. Six counts were taken in September and October along a 3.6 km stretch of weedy beach at Tafunsak during low tide. Two counts were taken in September and December along the sandy and weedy flats of Walung during low tide, and one count was taken from the old runway, small gravel islets, and adjacent tidal flats near Lelu in December. All the data were combined for purposes of analysis.

The birds were observed through 7X35 binoculars, and were identified by consulting Peterson (1961), Falla et al. (1966), and King et al. (1975).

RESULTS AND DISCUSSION

Ten species of shorebirds were observed during the survey, four of which provided new sight records for Kosrae (Hayes 1985): Black-tailed Godwit (*Limosa limosa*), Bar-tailed Godwit (*Limosa lapponica*), Sanderling (*Calidris alba*), and Sharp-tailed Sandpiper (*Calidris acuminata*). These ten species were grouped into two categories based on their regularity of appearance: regular migrants and casual migrants.

Six species of shorebirds were considered regular migrants: Pacific Golden-Plover (*Pluvialis fulva*), Bar-tailed Godwit (*Limosa lapponica*), Whimbrel (*Numenius phaeopus*), Gray-tailed Tattler (*Heteroscelus brevipes*), Wandering Tattler (*Heteroscelus incanus*), and Ruddy Turnstone (*Arenaria interpres*). The numbers of these birds varied considerably, possibly due to shifting populations on the island, inter-island movements, time of day bias, changing habitat, tidal bias, or a combination of these factors. In February 1982, dredging operations at Okat Harbor began to fill the impoundments with sand and coral from the harbor, creating tidal sand flats which may have concentrated shorebird populations.

Table I gives the census data for regular migrants during the three-month periods of September-November, December-February, and March-May, which roughly correspond with the northern autumn, winter, and spring. Percent composition was computed by dividing the number of each species recorded by the total number of shorebirds censused. Tattlers (*Heteroscelus* spp.) are lumped together due to difficulty in identification.

Casual migrants accounted for only 0.21% of the total shorebird population, and include Mongolian Plover (*Charadrius mongolus*), Black-tailed Godwit (*Limosa limosa*), Sanderling (*Calidris alba*), and Sharp-tailed Sandpiper (*Calidris acuminata*). Two additional species of casual migrants have been recorded from Kosrae, but were not observed during actual counts: Greater Sand Plover (*Charadrius leschenaultii*) (Baker 1951), and Common / Spotted Sandpiper (*Actitis hypoleucos / macularia*) (Hayes 1985).

SPECIES ACCOUNTS

The following accounts include only those species observed during the survey. Due to my absence from the island during the summer months, the survey contains no data from this period. However, a U.S. Fish and Wildlife Service (USFWS) team visited Kosrae during the summer of 1983 while surveying native forest birds, and John Engbring (1983) has kindly provided me with a summary of their shorebird observations.

PACIFIC GOLDEN PLOVER (*Pluvialis fulva*)

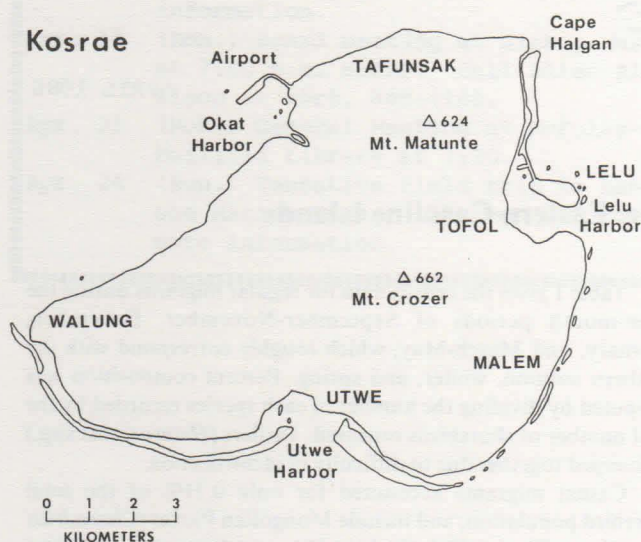
This recently recognized species (Connors 1983) was the third most common shorebird on Kosrae. The largest concentrations occurred in March and April. The maximum count was 35 birds at Okat Harbor on 9 March 1982. The USFWS team saw up to 12 birds at Okat Harbor on 1 July 1983.



Pacific Golden Plover

Photo by Greg Vaughn

Figure 1. Map of Kosrae, Eastern Caroline Islands.

**MONGOLIAN PLOVER (*Charadrius mongolus*)**

I briefly observed two winter plumaged birds at rest and in flight on 3 October 1981 at Okat Harbor. On 6 April 1982 I observed a breeding plumaged individual at rest and in flight for 30 min at Okat Harbor.

BLACK-TAILED GODWIT (*Limosa limosa*)

An individual in winter plumage was observed at rest and in flight at Okat Harbor on 13 December 1981. The USFWS team saw an overwintering bird in winter plumage at Okat Harbor from 1-17 July 1983.

BAR-TAILED GODWIT (*Limosa lapponica*)

Bar-tailed Godwit concentrations peaked in October with 13 birds present on 17 October 1981 at Okat Harbor. An estimated five individuals wintered along the beach between Okat Harbor and Walung. This species was recorded during only 34.9% of the counts. The USFWS team found three birds overwintering at Okat Harbor in 1983.

WHIMBREL (*Numenius phaeopus*)

Whimbrels were recorded during 81.4% of the counts, but the numbers recorded varied considerably since this species occurs in

flocks. The maximum count of 100 birds was at Kiul Island on 27 September 1981. The USFWS team saw up to 11 birds at Tafunsak on 5 July 1983.

GRAY-TAILED TATTLER (*Heteroscelus brevipes*) and WANDERING TATTLER (*H. incanus*)

Tattlers were the most abundant shorebirds on Kosrae. The two species are difficult to distinguish in the field by plumage, but are fairly easily separated by voice. An estimated 95% of the tattlers were *H. incanus*, and only 5% were *H. brevipes*. Gray-tailed Tattlers were heard during only 34.9% of the counts, and the maximum count of 35 birds occurred at Tafunsak on 2 October 1981. The USFWS team recorded a single Gray-tailed Tattler on the old runway at Lelu during the summer of 1983. The maximum count of Wandering Tattlers was 135 at Okat Harbor on 4 October 1981. The USFWS team found Wandering Tattlers to be fairly common during the summer of 1983.

RUDDY TURNSTONE (*Arenaria interpres*)

Ruddy Turnstones and Wandering Tattlers were equally abundant on Kosrae. The maximum counts of 160 turnstones at Okat Harbor on 27 February 1982 and 120 at Okat Harbor on 9 March 1982 suggest an influx of migrants. The USFWS team saw up to eight birds at Tafunsak on 17 July 1983, and six at Okat Harbor on the same day.

SANDERLING (*Calidris alba*)

A single bird at Okat Harbor on 14 November 1981 was the only individual recorded during the study. A bird observed at Tafunsak on 18 December 1981 was not recorded during a count. The USFWS team found a single bird at Okat Harbor on 1 July 1983, and possibly the same individual at Tafunsak on 3 July 1983.

SHARP-TAILED SANDPIPER (*Calidris acuminata*)

Single birds were recorded at Okat Harbor on 27 September 1981 and on four occasions in October 1981. Two birds were present at Okat Harbor on 16 October 1981. Individuals seen at Malem on 12 September 1981 and at Tofol on 22 November 1981 were not recorded during counts. No birds were observed after 22 November 1981.

SUMMARY

Ten species of migratory shorebirds, six occurring regularly and four occurring casually, were found in a population study during the northern autumn, winter, and spring of 1981-1982 at Kosrae, Eastern Caroline Islands. The relative abundance and seasonality of each shorebird species was determined, and the numbers of these birds were found to vary considerably due to a variety of factors.

Table 1. Census data for regularly migrating shorebirds on Kosrae.

Species	September-November				December-February				March-May				Mean number per count	Percent composition
	Low	High	Mean	SD	Low	High	Mean	SD	Low	High	Mean	SD		
<i>Pluvialis fulva</i>	3	30	11.6	7.7	0	30	10.2	7.6	7	35	19.8	8.6	13.1	10.7
<i>Limosa lapponica</i>	0	13	2.1	4.0	0	6	1.5	1.9	0	2	0.5	0.8	1.6	1.3
<i>Numenius phaeopus</i>	0	100	14.3	24.0	0	35	8.9	10.6	0	45	8.5	14.3	11.3	9.2
<i>Heteroscelus</i> spp.	5	135	56.1	34.5	10	100	53.6	32.5	6	81	37.1	24.5	50.9	41.6
<i>Arenaria interpres</i>	5	85	38.8	28.8	15	160	53.2	38.0	8	120	47.7	29.1	45.2	37.0
Number of counts	n=20				n=13				n=10				99.8%	

(remember that casual migrants accounted for 0.21%)

ACKNOWLEDGEMENTS

I thank N.J. Ball, D.G. Berrett, P.L. Bruner, J. Engbring, J.P. Galusha, J.M. Williams, and T.C. Williams for reviewing earlier versions of this paper. I also received helpful advice from C.J. Amlaner, G.L. Bradley, W.K. Hayes, and V.W. Howe.

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SECTORS COVERED

1. Wailua River to north side of Lihu'e, including airport road and holding ponds west of Lihu'e.
2. Nawiliwili Harbor, Hule'ia Stream, Menehune Fishpond, Kaua'i Surf Golf Course.
3. South of Lihu'e to Knudsen Gap Road, including Kipu Ranch and Waita Reservoir
4. 'Oma'o Road, Koloa Town, and Po'ipu
5. Pacific Tropical Botanical Gardens
6. Lihu'e Town
7. Kalaheo, including Kukiolono Park

Thirty observers, 24 in 15 parties, plus 6 at feeders. Observers were: Stephen Au, Pat Beck, Stuart Bradley, Sophie Cluff, Francis DeMartino, Zipporah Douglas, Madeleine Emrick, Leilani Fehr, Holbrook Goodale, Mary Jamis, Van and Jan Klink, Milton and Henri Kushkin, Dan, Hannah, Linda and Mary Moriarty, Irene Northrup, Gilbert and Muriel Parfitt, Robin and Lisa Rice, David and Winona Sears (Compiler), Virginia Siewertsen, Reva Stiglmeier, William Theobald, and Stephene and John Townsend.

Winona Sears

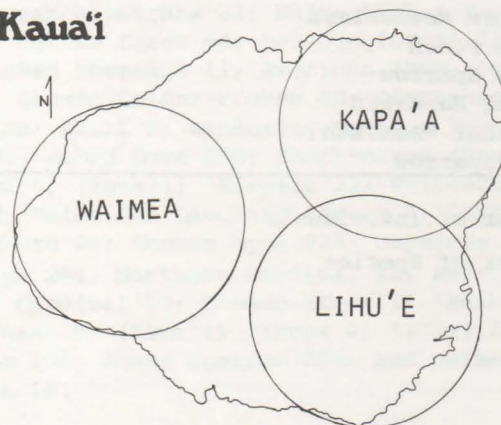
New count circles for the Kaua'i Christmas Count.

KAUA'I CHRISTMAS BIRD COUNTS - 1985

LIHU'E COUNT

Count day (21 December), as last year, was beautiful and clear, with clouds gradually increasing through the afternoon. There was better coverage this year. It may be significant that the count of Cattle Egrets was down; perhaps the "explosion" of the egret population has abated. The Warbling Silverbills that appeared last year were not observed this year. A single Killdeer was sighted again, after a lapse of several years.

Kaua'i



LIHU'E COUNT DATA

	Sectors	1	2	3	4	5	6	7	Total
White-tailed Tropicbird						8			8
Great Frigatebird						1			1
Cattle Egret	66	129	96	2261	81	17	75		2725
Black-crowned Night-Heron ('Auku'u)		2	6		1		1		10
Hawaiian Duck (Koloa)	2	11	8						21
Northern Pintail			6						6
Chukar						2			2
Red Junglefowl	3	11	7		19	9			49
Ring-necked Pheasant	1	5	10		1		6		23
(Green Pheasant)					1				1
Common (Hawaiian) Moorhen	4		5		2				11
American (Hawaiian) Coot	7	3	138		4				152
Killdeer			1						1
Lesser Golden Plover	68	49	36	47	10	4	1		215
Black-necked (Hawaiian) Stilt			1						1
Wandering Tattler	1	1	8						10
Ruddy Turnstone	18			34					52
Spotted Dove	33	137	31	1	150		32		384
Zebra Dove	117	117	323	131	42	62	14		806
Rose-ringed Parakeet							10		10
Common Barn-Owl					1				1
Short-eared (Hawaiian) Owl				1					1
White-rumped Shama	8	2	9	7	18	3	5		52
Greater Necklaced Laughing-thrush							1		1
Melodious Laughing-thrush	3	1	3		10		3		20
Northern Mockingbird		16			2		11		29
Common Myna	166	219	471	3	48	60	45		1012
Japanese White-eye	53	112	6	20	103	2	19		315
Northern Cardinal	27	13	5	11	20	5	9		90
Red-crested Cardinal	3	3		6	14	4			30
Western Meadowlark	9	5	7		3		18		42
House Finch	28	31	4		17	2	2		84
House Sparrow	62	252	10	89	17	30	7		467
Nutmeg Mannikin	340	176	45	216			15		792
Chestnut Mannikin				61	262		12		335
Java Sparrow			16			6			22
Number of Individuals	1019	1295	1252	2888	837	204	286		7781
Number of Species	21	21	24	14	25	12	19		36

KAPA'A COUNT

The 1985 Kapa'a Christmas Bird Count was conducted on 29 December in the traditional count area of northeastern Kaua'i. Eleven observers spending 12 party-hours in the field represented substantially more coverage than last year. But this is still considerably fewer hours afield than was customary on this count 5 to 10 years ago, and is much less coverage than this potentially rich area deserves. More observer help, particularly from O'ahu observers, could make this count much more meaningful and valuable in future years.

Highlights among the 28 species recorded this year included a total of 15 Laysan Albatrosses on the ground and in the air between Kilauea Point and Mokolea Point, and a high count of 632 Red-footed Boobies roosting on the slopes in and east of Kilauea Point National Wildlife Refuge. The Kilauea Point Natural History Association was a sponsor of the Count this year, and a number of its members took an active part in the counting and compiling.

SECTORS COVERED

1. Wailua Houselots
2. Kilauea Point south to Quarry Beach, Mokolea Point and Crater Hill.
3. Hanalei taro fields.
4. Princeville.

Eleven observers, 10 in 4 parties, plus 1 at a feeder. Mary Jane Moore, Rebekah Moore, Richard Moore, Warren and Ruth Peterson, Robert Pyle, Margaret Riddle, Barbara Robeson, Barbara Steenhof (Compiler), Willy Villanueva, and Grace Yoder.

BIRDS COUNTED

Laysan Albatross 15; White-tailed Tropicbird 9; Brown Booby 1; Red-footed Booby 632; Great Frigatebird 5; Cattle Egret 123; Black-crowned Night-Heron 7; Mallard 3; Hawaiian Duck 17; Red Junglefowl 22; Ring-necked Pheasant 5; Common (Hawaiian) Moorhen 5; American (Hawaiian) Coot 9; Lesser Golden-Plover 43; Black-necked (Hawaiian) Stilt 2; Wandering Tattler 6; Spotted Dove 22; Zebra Dove 273; White-rumped Shama 21; Melodious Laughing Thrush 10; Common Myna 179; Japanese White-eye 58; Northern Cardinal 61; Red-crested Cardinal 13; Western Meadowlark 18; House Finch 91; House Sparrow 65; Nutmeg Mannikin 241.

Total number of species 28; total number of individuals 1955.

WAIMEA COUNT

The Waimea Christmas Bird Count on Kaua'i was resumed again this year following only one successful count (in 1982) since the original series ceased after the 1977 count. Eight hardy observers took to the field on 28 December, devoting 27 party-hours of counting from the Koke'e highlands to the flats of Barking Sands.

Emphasis among the land birds was on the endemic forest birds. Six species of native Kaua'i forest birds were recorded, although the 'Amakihi total of only one individual was surprisingly low for the amount of forest covered. Twenty-two Laysan Albatrosses were found in the colony at Barking Sands, some on nests.

As with the other Kaua'i counts, more observer help would result in much higher totals of individuals and species. The Waimea and Kapa'a Counts are scheduled so as not to conflict with others in Hawai'i, in hopes that observers from O'ahu and other islands can come to Kaua'i for a weekend to help on these counts and enjoy some unique birdwatching opportunities.

The Waimea Count was reorganized this year with the active sponsorship of Hui O Laka, the guiding organization for the Koke'e Museum of Natural History.

Eight observers in 4 parties. Amber Glisson, Mariana Graham, Donna Lee, Betty Lumpkin, Joan Pratt, Leilani and Robert Pyle, Joe Wilkinson (Compiler).

BIRDS COUNTED

Laysan Albatross 22; White-tailed Tropicbird 3; Cattle Egret 44; Red Junglefowl 23; Ring-necked Pheasant 11; American (Hawaiian) Coot 2; Lesser Golden-Plover 40; Black-necked (Hawaiian) Stilt 2; Wandering Tattler 1; Spotted Dove 303; Zebra Dove 250; Short-eared (Hawaiian) Owl 5; (Kaua'i) 'Elepaio 22; White-rumped Shama 2; Melodious Laughing-thrush 4; Northern Mockingbird 24; Common Myna 274; Japanese White-eye 284; Northern Cardinal 12; Red-crested Cardinal 10; Common (Kaua'i) 'Amakihi 1; Anianiau 8; (Kaua'i) 'Akepa 4; 'I'iwi 25; 'Apapane 168; House Sparrow 200; and Nutmeg Mannikin 16.

RECENT OBSERVATIONS

AUGUST - NOVEMBER, 1985

(Editors' note: This article is the second of two excerpted from Bob Pyle's record of bird observations for the Hawaiian Islands. Sightings of seabirds and waterbirds were published last month. This April issue summarizes noteworthy observations of land birds. Refer to future issues of American Birds for a full account of all observations.)

GAME BIRDS - A new record for O'ahu was a Japanese Quail found freshly dead on the highway at Hale'iwa, on Oct. 27. The bird is now a specimen (BPBM 161938) at the Bishop Museum.

PARROTS THROUGH OWLS - Over the past 15 years, amazon parrots have often been reported from Honolulu, usually within a 10 km radius of Kapiolani Park where these birds frequently roost at night. Thus it came as a surprise when a flock of 15-20 amazons, identified as Red-lored Amazons, was reported from Pearl City on Aug. 17. This observation opens the question of how many flocks of these large parrots are in Honolulu and how far-ranging are they. On K., the flock of Rose-ring Parakeets in Kuliolono Park near Kalaheo now numbers around 40 birds; breeding has not been confirmed. Sightings of Short-eared Owls in the leeward islands include: one at French Frigate Shoals (Oct. 4) and one at Midway on Sand Is. (Nov 22) and Eastern Is. (Nov. 25).

INTRODUCED SONGBIRDS - Mockingbirds have taken up temporary residence at Tern Is., French Frigate Shoals, with one to three birds seen through the autumn. The female Great-tailed Grackle at Waipio, O., first seen in May 1980, appears to have opted for residence in Hawai'i rather than facing the long flight back to the mainland or hopping the next ship. She was observed on 9 occasions this fall, often in the company of mynas. Yellow-fronted Canaries, well established on the N slope of Hualalai, H., are now found at the coastal Makalawena Marsh, where 12 birds were counted on Sept. 14. Red Avadavats were reported in good numbers at the James Campbell National Wildlife Refuge, at the N tip of O'ahu. On Nov. 9, Warbling Silverbills were seen at Kanahele Pond and Wai'ale Res. in central Maui, indicating their further spread on that island.

NATIVE SONGBIRDS - The USFWS party conducting surveys of birds in the upper Hanawi drainage on Maui 12-17 Nov. reported seeing all species regularly encountered at that site. Virtually all birds were in adult plumage, that time of year being the onset of the breeding season. The super-rare Maui Nukupu'u was seen once on 13 Nov., a drab individual in a loose, mixed feeding flock of Maui Creepers, 'Amakihi, and Maui Parrotbills. Hanawi is famous as the location where the Po'ouli was discovered. This critically endangered species was seen in very low numbers almost daily on this trip. Two other endangered species were recorded daily: Maui Parrotbill with counts up to 6 and Crested Honeycreeper with counts of 20-50 per day. The more common species - 'Amakihi, Maui Creeper, 'I'iwi, and 'Apapane - were found in expected numbers.

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Compiled by Robert L. Pyle, 741 N. Kalaheo Ave., Kailua, HI 96734.

FORMER BOARD MEMBER HONORED

Carl McIntosh, former Hawaii Audubon Society Board member and 1983 recipient of the Society's Rose Schuster Taylor Scholarship, was honored as one of four semifinalists for "Student Employee of the Year" at a University of Hawaii luncheon on 20 March 1986. The next day he was presented with a plaque, a certificate, and a lei by researchers of the Hawaii Evolutionary Biology Program (HEBP). McIntosh has worked with HEBP researchers on various projects in evolutionary biology, as well as being a willing volunteer for research on golden-plovers and bulbuls. During 1985 he was a member of the Society's Board of Directors.

NO NA LEO 'OLE

Proposed Shoreline Development at Punalu'u

On 29 January 1986, Big Island Representative Mae E. Mull presented testimony on a request for zoning changes and a Special Management Area use permit by Hawaiiana Investment Co. Inc. for its proposed development at Punalu'u on the Big Island.

In the testimony Mull called attention to the fact that many of the coastal and wetland habitats no longer exist on the Big Island and that remaining areas should be carefully protected. Mull found that the environmental assessment and permit application lacked basic environmental information and expressed the view that the Land Use Commission did not have sufficient information to evaluate the proposed activities.

Mrs Mull went on to suggest that a map showing coastal vegetation zones, including native plant communities, should be submitted and impacts of development on native vegetation assessed. She also noted that no evaluation of the importance of aquatic biota in a brackish-water pond containing an endemic goby or o'opu and other native animals and plants had been provided. Finally Mull noted that part of the major brackish pond on the subject area was on Conservation District lands, and that the State Board of Land and Natural Resources' jurisdiction over the area would require that that board also grant a permit for the proposed construction.

Legislative Matters

Editors' Note: On 14 March 1986, Conservation Committee Chair Wayne Gagné presented the following testimonies on two pieces of legislation:

Senate Bill 2145-86 "Relating to protection of Hawaii's unique native flora and fauna."

The Hawaii Audubon Society, the local chapter of the National Audubon Society, is pleased to testify in support of passage of this bill.

A former DLNR employee, now retired, told me that the boundaries of the major land use districts (urban, rural, agriculture and conservation) were established in some instances on "best-guess" estimates under severe time constraints in the early days of Hawaii's land use zoning. Such boundaries thus do not always

reflect existing biologically sensitive areas such as high quality native watershed rain-forests or habitats of native biota. These boundaries were not meant to be cast in stone. But as a consequence, landowners having agriculturally-zoned forests are receiving tax incentives to remove such forests and place these areas into grazing or other uses. This continual erosion of forested areas helps render the survival of forest-dependent native plants and animals increasingly bleak, lengthening the list of endangered and threatened species and increases the difficulty of recovering already listed species in order to get them off the state and federal endangered species lists.

With our ever-increasing demand for water, forested areas of watershed quality, which function to help intercept and inject water into streams and the water table, need to be accordingly rezoned should they presently lie in other than the "P" subzone of the Conservation District. The Nature Conservancy of Hawai'i has already begun inventory of forested lands and could be approached by the appropriate state agency to help with this assessment for reclassification.

The state's Natural Area Reserves staff is charged with developing this information as well and could be specifically charged with this duty in the bill.

This concludes our testimony. Thank you for the opportunity to present it.

Senate Bill 1506, "A bill for an act relating to instream uses of water." This bill would establish minimum stream flow standards.

The Hawaii Audubon Society, the state chapter of the National Audubon Society, is pleased to testify in support of this bill.

While Hawai'i debates the pros and cons of a State Water Code, most of our streams remain vulnerable to dewatering without legislative protection.

The bill grandfathers existing uses pertaining to water utilization from such streams. But other uses, related to direct recreational uses of free-flowing streams, as well as the economic, aesthetic, educational, and scientific utilization of stream-dependent, native biota, and subsistence taro cultivation throughout the state, continue to be vulnerable to dewatering and/or detrimental alteration.

A significant number of our native stream inhabitants are diadromous, that is, they must have free passage to the ocean at some time in their life cycle in order to survive. The trend towards biological desertification of our

streams is alarming and comes as a direct result of stream dewatering and channelization at lower elevation.

There needs to be language added to the bill which specifically ties in directly related detrimental impacts from watershed deforestation and degradation by logging and introduced mammals, as well as stream pollution from these and other sources (e.g., oil contamination in Palolo's streams). Stream conservation and management measures cannot proceed in a vacuum from what may be happening in each stream's watershed or catchment area.

Minimum stream flow standards are now nationally recognized as a problem. Hawai'i can help lead the way in coming to grips with this issue.

This concludes our testimony. Thank you for the opportunity to present it.

9 FEBRUARY 1986 TRIP REPORT

The cool and clear morning promised a good day of bird watching as 30 hardy souls gathered with our leaders Bruce and Robin Eilerts for a North Shore birding bonanza. Soon, our group was en route to Dillingham Airfield in hopes of seeing Laysan Albatross. Stopping first at Mokule'ia Beach, we scanned the ocean for flying albatross only to find a single distant bird. However, our efforts were rewarded with 4 Humpback Whales frolicking not too far offshore. The group was thrilled as one of the 30-ton leviathans breached several times. Wrenching ourselves from the whales, we walked across the road to the airfield where albatross have been reported to roost. In no time we found three Laysan Albatross sleeping in the grass near the glider plane hanger. Tame, they allowed close approach and seemed not the least bit worried about small traffic of planes and gliders. Bruce was asked why more albatross are being reported in the main islands. He explained that the numbers of albatross have increased on the northwest chain so much that young birds returning to nest are unable to find nest sites. These displaced individuals, in seeking new nesting grounds, have made their way to the main islands, especially Kauai and Oahu. Unfortunately these birds are finding it difficult to nest. For example, many nesting birds on Kauai have been killed by feral dogs and on Oahu mongooses pose a threat.

As we watched the albatross, a small flock of frigatebirds soared overhead giving us the opportunity to identify juvenile, female, and male plumages. Although our party wanted to stay in hopes of observing albatross courtship, we had to leave for our next destination.

We arrived at James Campbell National Wildlife Refuge, Ki'i Unit, near Kahuku by 11:30. The weather was turning for the worse as the wind and clouds grew in intensity, and by noon the rain began to fall. But being in a birding spirit, we prevailed. We observed good numbers of stilt, coot, moorhen, and many wintering ducks, including a beautiful male Blue-winged Teal and a Lesser Scaup. We were even fortunate enough to find the resident Fulvous Whistling-Duck flock. Although now damp from the rain, we moved back to the beach, scanning the ocean for birds. A few Red-footed Boobies, a single Black-footed Albatross, and many flying specks were spotted. Rich Titgen, a zoologist at Bishop Museum, temporarily distracted by the intertidal fauna of the refuge, found out first hand just how strong the claws of a small crab were. We became aware of his dilemma when we heard his painful cries above the pounding surf.

Most of the group left Ki'i Unit for nearby Amoriant Aqua Farm where we found a rare Black-bellied Plover and six Canada Geese. Our apologies to all the tourists who stopped when they saw our group. They must have been hoping for something exciting, only to find we were just looking at birds.

By 3:30 the clouds started to close again, and rain began to fall. We all departed the North Shore for home. All must have reflected on the great birding experience and our good fortune in having the leadership of Bruce and Robin!

Andrew Engilis, Jr.

FEBRUARY PROGRAM: SLIDES FROM THE MEMBERSHIP

In the words of an old-time, popular radio announcer, "Tonight the program's going to be different," and that it was.

Instead of the usual program with slides by a guest speaker, Hawaii Audubon members and officers were encouraged to bring their best or representative slides to share with the rest of the membership. Among those contri-

buting slides were Phil Bruner, Bruce Eilerts, Andy Engilis, George Campbell, Marian Saunders, and Allen Allison.

Let it be said of Hawaii Auduboners, they have travelled widely, to far-off and exotic places spanning the Great Barrier Reef of Australia, Papua New Guinea, Micronesia, the leeward islands of Hawai'i, and even on an African safari. What happened to Alaska? I know a number of our people have gone there. Not only were they world travellers, but also photographers *par excellant*.

Slides ranged all the way from a pair of Red-crested Cardinals on Magic Island, to Christmas Island slides, to the Kookaburra of Australia, to Holland at tulip time, to stalking lionesses and migrating wildebeast on an African safari, to lizards of New Guinea. The slides fell into several categories, ranging from birds (what else?), mammals, plants, other vertebrates and invertebrates, and conservation/environmental pictures. There were also a few humorous ones of the landings at Manana Is., taken on an Audubon Society field trip.

Hawaii's native birds weren't neglected either, with slides of O'ahu and Kaua'i 'Elepaio, Nene on Maui, Po'ouli, and Hawaiian Stilts. There were adorable slides of a dozen or more tiny Sooty Tern chicks seeking shade on the Great Barrier Reef, and a fluffy, 2-day-old Fairy Tern chick. Among the more grisly shots were those of mummified human remains (Is this conservation?), suspended in limestone caves and on cliffs in Papua New Guinea. Offsetting these were beautiful scenery slides, including a spectacular sunset shot at French Frigate Shoals, falls on Kaua'i, Palau (Micronesia), and markets in Burma.

Great job, Hawaii Audubon photographers!

Betty L. Johnson

DONATION RECEIVED FOR GRANTS AND SCHOLARSHIPS

The Hawaii Audubon Society was recently very fortunate to receive \$1,000 from an anonymous donor to encourage undergraduate studies in natural history. The contribution was made in memory of Clara Grenville Hatch.

Grenville Hatch is known to Hawaii Audubon old-timers as a charter member of the Society, long-time editor of the 'Elepaio, and librabrian at Roosevelt High School, where she encouraged many young people to take an interest in natural history.

In accordance with the intentions of the donor, "the money will be applied to awards given by the Grants and Scholarship Committee." Donations such as this enable the Society to carry out its commitment to education and research within Hawai'i.

Mahalo to our generous donor!

PROGRAM LEADERS WANTED

Worksite: Ho'omaluhia, a 400-acre City and County botanic garden in Kaneohe, with a collection of more than 10,000 plant specimens from the tropical areas of the world. The facility includes a 32-acre flood control reservoir and a conservation reserve for Hawaiian plants and animals.

Duties: To include giving information at the visitor center and conducting nature awareness programs for visitors of all ages, with emphasis on ethnobotanic, conservation and environmental themes, mostly outdoors up to 19 hours per week.

Contact: Ho'omaluhia, telephone 235-6636. Located at the end of Luluku Road (closed Tuesdays and Wednesdays). P. O. Box 1116, Kaneohe, HI 96744.

PHOTOS NEEDED FOR ENDANGERED SPECIES PROJECT

Timothy Sutterfield, with the Division of Forestry and Wildlife, is preparing informational handouts with a photograph or drawing of endangered species. He is looking for original pictures or paintings of the following endangered species: Hawaiian Crow, 'Akiapola'au, Maui 'Akepa, 'O'o, 'O'u, Maui Parrotbill, Po'ouli, Nene, Maui Nukupu'u, Kaua'i 'Akialoa, Molokai Creeper, Oahu Creeper, Large Kauai Thrush, Molokai Thrush, Crested Honeycreeper, Palila, Laysan Duck, Laysan Finch, Nihoa Millerbird, Dark-rumped Petrel, and Newell's (Manx) Shearwater.

If you wish to submit an original picture or painting that you believe is of publishable quality, please contact Timothy Sutterfield at 548-2861 or write to him at Division of Forestry and Wildlife, 1151 Punchbowl Street, Honolulu, Hawai'i 96813.

WEEKDAY DOCENTS NEEDED

JAMES CAMPBELL

NATIONAL WILDLIFE REFUGE

HAS's Adopt-a-Refuge program is well underway. There are nine trained docents ready to lead tours on this refuge's Ki'i Unit. Six more people are in the final stages of training. During the months of February and March, four groups of students and adults were led by HAS docents.

Refuge staff are very pleased with number of volunteer docents and their enthusiasm. However, scheduling has been difficult. Most of the fifteen docents have jobs or are busy during the week. Docents are needed for the weekdays. Even if you are available only one day a week, your kokua is needed.

Volunteers are expected to lead at least three tours a year. The refuge staff and other docents will train people on what to say during a tour. This is a unique opportunity for HAS members to learn about the refuge and its endangered wildlife, while contributing to the education of others. For more information contact HAS Adopt-a-Refuge Chair, Phillip Bruner (W 293-3820, H 293-1022), or Jim Krakowski (W 546-5608, H 537-4633).

HAS NATURAL HISTORY SCHOLARSHIP AND GRANTS

The HAS Scholarship and Grants Committee is accepting applications for the 1986-87 HAS Tuition Scholarship and for HAS grants. The \$1,000 Tuition Scholarship is provided to lend financial assistance to outstanding undergraduates majoring in natural science, especially those interested in Hawaiian natural history. The application deadline for the 1986-87 school year is May 1.

In addition to the scholarship, grants are awarded to aid in research projects on Hawaiian or Pacific Natural History. Grants are aimed at small-scale projects or projects that receive funding from sources other than the Society, and generally do not exceed \$500. The deadline for grants to be awarded in summer/fall 1986 is April 1.

For information and application forms, write or call John Engbring, Scholarship and Grants Committee, P.O. Box 4443, Honolulu, HI 96813: phone (business) 546-7530.

APRIL 1985 FIELD TRIPS

Sunday, April 13

Palikea Trail, Waianae Mts.

Leaders: Audrey Newman, Mark Merlin

The leaders of this trip have made special arrangements for 20 Audubon members to hike the Palikea trail which is normally inaccessible to the general public. This trail in the south Waianae winds its way up knife-like ridges providing breathtaking views of Oahu. As the trail increases in altitude it passes from exotic to native forest where we can expect to find native forest birds such as 'Elepaio, 'Amakihi, and 'Apapane. This is a 5 mile, moderately hard hike, so wear good shoes. Bring a lunch and water, and rain gear just in case. You must have a reserved space for this trip, so phone Andy Engilis at 545-2993 for your spot. Meet at the State Library on Punchbowl Street at 8:00am.

TENTATIVE

Sunday, April 27

Kaneohe Marine Base

Leader, Bob Pyle (262-4046)

Bob says "tentative," because he is still waiting permission from the base commander to bring our group on base. This trip, one of our most popular, is highlighted by a visit to the Red-footed Booby rookery at Ulupau Head and to Nuupia Ponds, where one can find native and migratory waterbirds. Please phone Bob after April 14 to find out details of the trip and the meeting time and place. There will be no limit to the size of the group.

APRIL 21 PROGRAM

THE NATURE OF HAWAI'I

"The Nature of Hawai'i," a color-slide program by Big Island naturalist-photographer Bill Mull, features intimate glimpses of such super-Hawaiian plants and animals as mintless mints, nettleless nettles, briarless greenbriar, tree lobelias, dancing drosophila, killer caterpillars, happyface spiders, and technicolor tree snails. Mull is a Bishop Museum Research Associate in Entomology and a past president of the Hawai'i Audubon Society.

HAWAII AUDUBON SOCIETY

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(MANUSCRIPTS of articles and newsletter items may be sent to the Managing Editor at 954 Spencer St., Honolulu, HI 96822. Articles not subject to peer review MUST be received by the 15th of each month to be considered for publication in the next month's issue.

ISLAND REPRESENTATIVES

Kaua'i	Dr. David and Winona Sears	822-3045
Maui	(vacant)	572-1499
Hawai'i	Mae Mull	967-7352

ERRATA

Despite the best efforts of the editors and several proof-readers, some errors do slip through. We extend our apologies to Stewart Fefer, who's name was misspelt in the article: "The Status of Laysan Albatross on Kauai," 'ELEPAIO vol. 46, pp. 95-97.

MORE ICE CREAM!

Will be available at next month's paste-up of the 'ELEPAIO at Thane Pratt's house at 954 Spencer St. in Makiki. Paste-up will be held on Saturday, April 19 at 1:00 p.m.

Many thanks to Sheila Conant and David McCauley for helping with the April issue's paste-up. Thanks also to Sheila Conant for donating a steno stand and a very modern electric pencil sharpener to replace "The Turtle."

IF NOT A MEMBER, PLEASE JOIN US

JOINT MEMBERSHIP

(National and Hawaii Audubon Societies)

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Sustaining.....	50.00
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Contributing.....	250.00
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Special rates for full-time students and Senior Citizens (65 years of age or older) are available. Please write for application form.

LOCAL MEMBERSHIP

(Hawaii Audubon Society only)

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Junior (18 and under).....	3.00
Subscriber (non-Hawaii residents)....	6.00
Life (payable in three equal annual installments).....	150.00

All Local Memberships and Subscriptions are for a calendar year January through December.

CALENDAR OF EVENTS

- Apr. 13 (Sun.) Field trip to Palikea Trail
Waianae Mts. See page 116 for more
information.
- Apr. 14 (Mon.) Board meeting at Bishop Mus.
at 7:00 p.m. SHARP. Call Allen Al-
lison at work, 848-4145.
- Apr. 21 (Mon.) General Meeting at McKully-
Moiliili Library at 7:30.
- Apr. 24 (Sun.) Tentative field trip to Kane-
ohe Marine Base. See page 116 for
more information.

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