

'ELEPAIO

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1978 HONOLULU CHRISTMAS BIRD COUNT

by Robert L. Pyle, Compiler

Strong winds were the order of the day for the 35th consecutive Honolulu Christmas Count, conducted December 17th. Steady trades of 15-20 knots at lower elevations and much stronger in higher mountain areas interfered markedly with landbird counting throughout the count circle. Conditions were particularly wretched in the high mountain forests, where all party leaders independently reported winds gusting to 50 or 60 knots with driving intermittent rain through much of the day.

Nevertheless, the count totals overall were surprisingly high: 16,204 individuals, second only to the count high of 16,393 recorded in 1976, and 55 species, equalling the all time high for the Honolulu count. This was achieved with observer coverage almost identical with last year: 37 observers in 17 parties (37 in 18 in 1977), and 102 party hours (103 in '77) distributed among five habitat types in percentages exactly the same as last year. This year-to-year uniformity in coverage, including the same party leaders covering their same areas in the same way each year, insofar as possible, adds very significantly to the value of the counts for indicating trends in bird populations.

The high species total included several scarce waterbirds that were new for the Honolulu count. Greater Scaup and Western Gull are real rarities in Hawaii, having been recorded fewer than five times previously in the state. Lesser Yellowlegs and Dunlin had not been found before on the Honolulu count, although they do occur in Hawaii each winter in very small numbers. The seven White Terns spotted in the Kapiolani Park area this year are notable because only one White Tern had previously been recorded on the count (in 1970). Although these terns are regular in Kapiolani Park most of the year, they seem to disappear for a few weeks each winter around Christmas Count time. Red-footed Boobies normally remain well offshore when at sea, but

this year birders along the windward coast found good numbers working southward just beyond the surf, probably pushed close to shore by the strong ENE winds.

Among the landbirds, two Yellow-faced Grassquits on Halawa Ridge marked the first occurrence of this species on the Honolulu count, although they were found last year on the Waipio count. Three Red-billed Leiothrix along Old Waimanalo Road was a heartening return to the count of this species, which had been so abundant in years past. Totals for most of the landbird species were lower than last year, including particularly the two bulbuls, which normally would perch on exposed tree tops and electric wires. The reduced numbers seen probably reflect their avoiding exposed areas because of the wind, rather than any diminution in their rapidly increasing populations on Oahu.

Escaped cagebirds seen this year by the count participants included 17 feral Mallards in Kailua, 1 Indian Peafowl in Kaneohe, 2 Black-hooded Parakeets (Nanday Conures) in Kapiolani Park, 1 Rose-ringed Parakeet in Waimanalo, 2 Salmon-crested Cockatoos in Lyon Arboretum and 2 Indian Hill Mynas in upper Manoa. These species are not known to have established viable breeding populations in the wild, and thus cannot be included on the official count.

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NOTES ON LESS COMMON SPECIES

Greater Scaup. A bird in brown plumage found by the Roy Larsen party at Salt Lake. The rounded head and the prominent wing stripe extending virtually to the wing tip, were noted. The bird was studied at leisure through a telescope in good light. No other ducks were present for size comparison. This is a

new species for the Honolulu count. It was seen subsequently by other observers.

Western Gull. Found at Paiko Lagoon by the Bob Beck party and studied later at close range in excellent light by numerous observers (R. Larsen, M. Ord, R. Pyle et al.). A large gull with dull black mantle showing a brownish tinge to the feathers in good direct sunlight. No white spots in the primary tips. Eye was dark, bill was yellow (no black) with a red spot on the lower mandible, and legs were bright pink. Considerable pale gray mottling on the head, neck, and underparts extending as far as the legs. In flight, it showed a broad, ragged, dark band on the tail, about 1 cm from the tip. It probably was a sub-adult bird in its third winter. Slaty-backed, Black-tailed, Lesser Black-backed and Southern Black-backed (Australia, etc.) Gulls all have a light eye, and the last three have yellow or greenish legs. The Western Gull is a rare straggler to Hawaii, and a new species for the Honolulu count.

Red-billed Leiothrix. Three birds were heard scolding, and one of them was seen well, in thick undergrowth on Old Waimanalo Road one mile from Kalaniana'ole Highway (R. Pyle). The calls are distinctive and the plumage pattern is unmistakable. This was one of the more abundant species on the Honolulu count through 1967, then dropped to 18 in '68, and to zero in '69. Since then, it has been found on only four counts, and only one or two birds each time.

Yellow-faced Grassquit. Two birds were found by the Omer Bussen party on Halawa Ridge, near where two were seen in August 1977. The main population is 6 miles outside the count circle on Manana Ridge, where the species was first discovered in 1974. It has been seen there regularly since 1977, in numbers up to 40. The population seems viable, and may have been established for ten years or more on Manana Ridge.

Sectors Covered

- 1- A Aiea Trail: John Obata, Frank Cassel, Susan Schenck
- B Halawa Ridge: Omer Bussen, Frank Howarth
- 2- A Sand Island, Salt Lake, Ft. Shafter, Moanalua Gardens, Tripler Hospital: Rey Larsen, John Shipman, Paul and Tuko Tveten
- B Nuuanu Valley: Alice and Jack Mitchell
- C Kapalama Campus, Alewa Ridge Trail: Charles Burrows, Laurie Imbleau, Jaan Lepson
- 3- Manoa Cliffs Trail, Punchbowl: Larry Hirai
- 4- A Woodlawn Trail: Sheila Conant, Peter Galloway, Margit Anonsen
- B Waiakeakua Stream, University & Mid-Pacific campuses: Peter Galloway, Margit Anonsen
- C Lyon Arboretum: Leilani Pyle
- D Waahila Ridge Trail: Maile Stemmermann
- 5 Kapiolani Park, Na Laau Arboretum: Michael Ord
- 6 Diamond Head Crater to Paiko Lagoon: Bob Beck, Jack Green, Susan Wilson
- 7 Waimanalo, Bellows Field, Kaelepulu: David and Ulalia Woodside, Robert Pyle
- 8 A Lanikai: Carmelle Crivellone, Mary Grantham
- B Kawainui Dike, Kailua: Don and Doris Huddleston, Alline Singrey
- 9 A Kaneohe Bay Dr., Kaneohe MCAS, Moku Manu: Ronald Walker
- B Kawainui Marsh, Quarry Road, Dump: Brent Giezantanner
- 10 Ahuimanu, Haiku, Kaneohe, Old Pali Rd.: Tim Burr, Allan Samuelson, Dan Snider.

Habitat Coverage: Mountain forests, 35% of party-hours; parks and residential, 35%; lowland woods and scrub, 15%; marshes and ponds, 10%; beach and ocean, 5%.

Thirty-seven observers in 18 parties.

Total party-hours 102 (71 on foot, 31 by car).

Total party-miles 276 (68 on foot, 208 by car).

SECTORS

	1	2	3	4	5	6	7	8	9	10	Total
Blue-faced Booby	6	.	6
Brown Booby	.	14	.	.	7	2	.	4	27	4	58
Red-footed Booby	5	6	100	292	1266	.	1669
Great Frigatebird	.	22	.	.	1	7	2	41	512	.	585
Cattle Egret*	(32)	(98)	1145	(98)	1145
Black-crowned Night Heron	.	4	.	.	.	1	12	3	26	2	48
Hawaiian Duck (Koloa)	6	18	2	.	26
Pintail	11	8	.	19
American Wigeon	18	.	.	18
Northern Shoveler	5	.	.	.	5

	SECTORS										Totals
	1	2	3	4	5	6	7	8	9	10	
Greater Scaup	.	1	.	.	.	.	.	.	.	.	1
Ring-necked Pheasant	.	.	.	.	.	.	1	.	.	.	1
Hawaiian Gallinule	.	.	.	.	.	.	1	13	1	.	15
Hawaiian Coot	.	6	.	.	.	.	2	7	4	1	20
Golden Plover	22	187	44	4	18	20	107	96	574	350	1422
Black-bellied Plover	.	.	.	.	.	.	.	.	1	.	1
Lesser Yellowlegs	.	.	.	.	.	.	.	.	2	.	2
Wandering Tattler	.	2	.	.	.	2	3	4	12	1	24
Ruddy Turnstone	.	27	.	.	.	9	7	13	88	79	223
Sanderling	.	1	.	.	.	10	.	.	28	.	39
Dunlin	.	.	.	.	.	.	.	.	1	.	1
Hawaiian Stilt	.	17	.	.	.	.	3	4	92	.	116
Pomarine Jaeger	.	40	.	.	.	.	.	.	.	.	40
Western Gull	.	.	.	.	.	1	.	.	.	.	1
Ring-billed Gull	.	.	.	.	.	.	.	.	1	.	1
Gull (sp?)	.	.	.	.	.	.	.	.	1	.	1
Black Noddy	.	.	.	.	.	.	.	.	33	.	33
White Tern	.	.	.	.	7	.	.	.	.	.	7
Rock Dove	7	155	.	5	.	42	7	17	12	3	248
Spotted Dove	14	137	75	41	72	15	21	87	140	442	1044
Barred Dove	24	588	161	72	250	48	48	180	211	807	2389
Barn Owl	.	.	.	.	.	.	.	.	.	1	1
Melodious Laughing-Thrush	.	.	.	.	.	.	.	.	.	1	1
Red-whiskered Bulbul	.	2	2	9	.	.	.	.	.	.	13
Red-vented Bulbul	12	61	.	10	7	3	117	113	91	134	546
Mockingbird	.	.	1	.	1	.	1	.	.	.	3
Shama	13	4	4	20	.	.	2	2	19	17	81
Japanese Bush Warbler	.	.	.	.	.	.	.	.	.	9	9
Oahu 'Elepaio	10	.	.	6	.	.	.	.	.	.	16
'Apapane	99	1	.	13	.	.	.	.	.	1	114
Japanese White-eye	139	65	14	173	6	35	33	31	119	108	723
Common Myna	11	763	115	203	440	19	74	287	560	144	2616
Oahu 'Amakihi	28	2	.	44	.	.	.	.	.	.	74
'Apapane	99	1	.	13	.	.	.	.	.	1	114
Lavender Fire-finch	.	.	.	.	9	.	.	.	.	.	9
Orange-cheeked Waxbill	.	.	.	.	.	.	.	.	6	.	6
Red-eared Waxbill	.	.	.	.	.	3	.	.	.	.	3
Spotted Munia	10	68	7	42	15	365	.	52	50	93	702
Java Sparrow	.	7	2	9	116	7	.	.	.	.	141
House Sparrow	2	455	37	65	220	.	62	73	169	133	1216
Saffron Finch	.	.	.	.	6	.	.	.	.	.	6
Yellow-faced Grassquit	2	.	.	.	.	.	.	.	.	.	2
Red-crested Cardinal	12	59	8	22	96	5	26	20	25	23	296
Northern Cardinal	14	12	9	28	5	15	14	1	42	12	152
Yellow-fronted Canary	.	.	.	.	10	.	.	.	.	.	10
House Finch	40	32	3	57	70	1	6	.	37	5	251
Individuals	459	2732	482	823	1361	616	663	1387	5311	2370	16,204
Species	17	27	14	18	20	21	26	25	33	23	55

*Cattle Egrets observed in sectors 7,8 and 10 (shown in parentheses) are not included in the totals for those sectors, since they may well have been among the egrets counted returning to the roost in sector 9.

[illegible]

	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
White Tern	.	1	.	.	.	.	.	.	.	7
Rock Dove	.	.	.	.	8	25	468	78	209	248
Spotted Dove	678	534	619	627	578	573	1072	1145	780	1044
Barred Dove	1694	1298	1275	1809	1438	1519	1557	2091	2201	2389
Salmon-crested Cockatoo	.	.	.	1	.	.	.	.	.	2
Red-crowned Parrot	.	.	4	2	9	3	1	.	2	.
Eclectus Parrot	.	.	.	1	.	.	.	.	.	.
Nanday Conure	.	.	.	.	.	.	.	.	1	.
Rose-ringed Parrot	.	.	.	1	2	3	3	.	1	1
Shell Parakeet	.	3	.	.	2	.	.	.	.	.
Black-hooded Parakeet	.	.	.	.	3	1	.	.	.	2
Indian Peafowl	.	.	.	.	.	.	.	.	.	1
Barn Owl	.	.	.	.	.	1	1	2	1	1
Hawn (Sh-ear) Owl (Pueo)	.	.	.	.	.	1	.	.	.	1
Melodious Laughing-thrush	3	.	.	1	4	.	7	10	1	1
Red-billed Leiothrix	.	.	1	1	.	.	2	.	.	3
Red-whiskered Bulbul	.	.	4	.	.	2	5	77	17	13
Red-vented Bulbul	7	7	26	56	14	50	212	453	744	548
Mockingbird	4	2	7	13	10	7	7	11	10	3
Shama	7	9	55	36	66	63	161	303	133	81
Japanese Bush Warbler	.	.	8	4	10	3	63	113	8	9
Oahu 'Elepaio	22	4	27	21	12	21	14	27	23	16
Japanese White-eye	227	287	487	561	419	497	1099	1960	953	723
Common Myna	4267	2981	2659	2427	2295	2473	2211	1929	2173	2616
Hill Myna	1	.	.	.	.	.	.	4	3	2
Oahu 'Amakihi	44	22	98	34	22	32	103	171	128	74
Oahu Creeper	.	.	.	.	.	.	1	1	.	.
'Apapane	17	9	59	11	24	70	72	103	145	114
Red-cheeked Cordon-bleu	4	6	3	17	1	2	7	9	5	.
Blue-headed Cordon-bleu	12	8	.	.	.	.	1	.	.	.
cordon-bleu (sp?)	.	.	.	.	.	.	5	.	.	.
Lavender Firefinch	6	7	14	40	1	4	34	11	22	9
African Firefinch	4	2	.	.	.	.	.	.	.	.
Orange-cheeked Waxbill	24	27	14	15	5	.	33	22	3	6
Red-eared Waxbill	12	13	13	19	7	.	48	18	2	3
Red Munia	.	.	.	.	.	.	.	.	3	.
Spotted Munia (Ricebird)	238	451	438	369	172	665	348	354	747	702
Black-headed Munia	.	.	.	.	.	.	.	.	5	.
Java Sparrow	4	11	4	24	38	42	45	231	206	141
Pintailed Whydah	7	5	1	1	1	18	1	5	1	.
House Sparrow	1294	1222	1459	2538	778	868	841	1068	1112	1216
Red Bishop	9	6	4	3	1	.	.	.	.	.
Golden Bishop	2	1	.	1	.	.	.	.	.	.
Senegal Combassou	1	.	.	.	.	.	.	.	.	.
Saffron Finch	3	13	5	24	.	7	8	7	9	6
Yellow-faced Grassquit	.	.	.	.	.	.	.	.	.	2
Northern Cardinal	94	74	152	204	108	131	216	364	281	152
Red-crested Cardinal	158	202	186	298	139	246	188	211	246	296
Yellow-fronted Canary	1	5	4	3	2	4	5	8	4	10
White-rumped Serin	6	9	3	.	.	.	.	.	.	.
House Finch	110	107	187	156	184	242	231	487	308	251
No. of Individ. Birds	13236	10454	13218	14559	9574	10263	12008	16393	15542	16204
No. of Species	53*	51	50	52	48*	44	54*	55*	52	55*

Excluded: Unidentified +scaup and duck; #duck; #duck, gull, cordon-bleu, and *gull.

LIHUE, KAUAI CHRISTMAS BIRD COUNT

by Winona Woon Sears, compiler

The Black-necked Stilt was conspicuous for its absence, and the migratory ducks apparently had not arrived as yet. We had seen a few at Anahola River mouth and some in taro patches at Hanalei (all in Kapaa circle) and in checking a week or so before Count Day had seen a couple of pintails at Waita, but not on or near Count Day. They were not to be seen that day and the large raft of ducks usually on Waita "had not yet arrived."

We have added some feeding areas as a separate area, and they are all in Lihue. The other areas as approximately the same as last year, except done by four parties instead of six.

21° 59'N 159° 26'W, center near Halfway Bridge; area and habitat coverage as described 1972; elevation 0 to 1000 ft. Dec. 16; 7 a.m. to 6 p.m.; A.M. mostly cloudy; P.M. partly cloudy. Temp. 70° to 80° F. Wind NE, 15-35 mph. Total party hours, 27.25 (14.5 on foot, 8.75 by car) plus 15 at feeders; total party-miles, 117.5 (9.5 on foot, 108 by car). (In count area Count Week but not seen Count Day: Barn Owl, Black-necked Stilt)

Areas Covered

1. Wailua River to north side of Lihue, including airport road and holding ponds west of Lihue to Wailua Falls.
2. South side of Lihue, including Kauai Surf golf course, Nawiliwili Harbor, to Knudsen Gap Road, including Waita Reservoir.
3. Omao Road to Koloa, including Poipu and all in-town area.
4. Pacific Tropical Botanical Gardens and Lawai Valley.

LIHUE, KAUAI, CHRISTMAS COUNT, 16 December 1978

	Areas					
	1	2	3	4	5	Total
White-tailed Tropicbird	.	.	.	1	.	1
Cattle Egret	26	158	249	1	6	440
Black-crowned Night Heron	.	13	.	1	.	14
Mallard	.	1	.	.	.	1
Hawaiian Duck (Koloa)	2	2	.	.	.	4
Red Junglefowl	.	.	.	4	1	5
Ring-necked Pheasant	.	8	4	1	.	13
Erckel's Francolin	.	.	.	2	.	2
Com. (Hawaiian) Gallinule	17	15	.	7	.	39
Am. (Hawaiian) Coot	1	12	2	.	.	15
Am. Golden Plover	68	81	9	9	4	171
Ruddy Turnstone	16	4	.	.	.	20
Wandering Tattler	2	1	.	.	.	3
Sanderling	4	.	.	.	.	4
Rock Dove	4	5	.	.	.	9
Spotted Dove	7	32	3	30	5	77
Barred Dove	46	106	22	122	78	374
Short-eared Owl (Pueo)	1	.	.	.	.	1
Mockingbird	.	.	.	3	1	4
Melodious Laughing-thrush	1	1	.	1	3	6
Shama	1	5	3	3	4	16
Com. Myna	145	164	60	39	47	455
Japanese White-eye	12	22	30	41	36	141
Spotted Munia	4	26	5	21	15	71
House Sparrow	27	64	34	25	65	215
W. Meadowlark	1	9	6	.	1	17
Red-crested Cardinal	.	1	7	.	2	10
Northern Cardinal	5	6	7	9	12	39
House Finch	14	43	14	.	8	79
No. of individual birds	404	779	455	320	288	2246
No. of species	21	23	15	18	16	29

5. Four feeding areas in Lihue.
(Rest of circle from Pac. Trop. Bot. Garden
west again not covered)

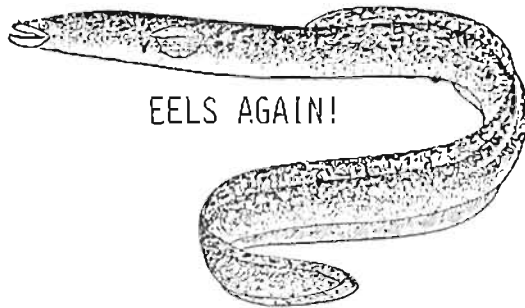
Terry Anderson, Myrna Campbell, Sophie
Cluff, Eleanor and H.C. Dalton, Zipporah
Douglas, Winters and Bernice Fehr, Jane Klink,

George and Pearl Lockwood, Gil and Muriel
Parfitt, David and Winona Sears, Virginia
Siewertsen, Reva Stiglmeier.

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LIHUE CHRISTMAS BIRD COUNT 1971-1978

	1971	1972	1973	1974	1975	1976	1977	1978
Newell's Shearwater	.	.	+	.	.	.	.	.
White-tailed Tropicbird	2	+	8	3	.	18	2	.
Great Frigatebird	1	18	+	.	1	.	.	.
Cattle Egret	.	.	.	.	15	246	341	440
Black-cr Night Heron	3	6	6	1	7	9	15	14
Mallard	.	.	.	.	.	10	.	1
Hawaiian Duck	27	26	5	2	10	58	49	4
Pintail	70	+	.	.	10	371	122	.
Green-winged Teal	.	.	.	.	.	.	31	.
Northern Shoveler	.	.	.	.	.	55	6	.
Redhead	.	.	.	.	.	.	1	.
Lesser Scaup	.	.	.	.	.	1	.	.
Greater Scaup	.	.	.	.	.	.	3	.
Peafowl	.	.	.	2	.	.	.	.
Red Junglefowl	25	2	1	3	13	14	45	5
Ring-necked Pheasant	6	15	6	17	7	13	14	13
Erckel's Francolin	.	.	.	.	.	.	7	2
Hawaiian (Com) Gallinule	18	17	9	23	21	16	31	39
Hawaiian (Am) Coot	16	24	4	30	204	346	283	15
Killdeer	.	.	.	.	.	.	1	.
Amer. Golden Plover	85	116	149	210	213	186	114	171
Black-bellied Plover	.	.	.	.	.	1	.	.
Ruddy Turnstone	21	14	18	15	19	51	18	20
Wandering Tattler	3	+	1	2	9	5	5	3
Lesser Yellowlegs	.	.	.	.	1	.	.	.
Sanderling	.	.	.	.	4	.	.	4
Sandpiper (sp?)	.	.	.	.	.	2	.	.
Hawaiian (Bl-n) Stilt	31	64	+	9	2	33	13	.
Ring-billed Gull	.	.	.	.	.	.	1	.
Rock Dove	.	.	.	.	.	.	.	9
Spotted Dove	39	70	126	67	65	97	68	77
Barred Dove	219	396	334	576	379	683	471	374
Barn Owl	.	.	.	2	.	.	.	.
Short-eared Owl	2	1	1	1	1	.	1	1
Mockingbird	1	2	10	3	12	2	10	4
Gr. Neckl. Laugh. Thrush	.	1	.	.	19	.	.	.
Melodious Laugh. Thrush	10	18	23	8	57	33	12	6
Shama	9	18	27	17	42	37	29	16
Common Myna	203	340	244	452	366	267	414	455
Japanese White-eye	51	159	188	133	288	265	288	141
Spotted Munia	190	115	118	261	312	366	336	71
House Sparrow	36	77	64	137	42	109	115	215
W. Meadowlark	5	11	22	16	33	39	25	17
Red-crested Cardinal	+	2	3	10	8	12	14	10
Northern Cardinal	22	27	40	71	77	96	42	39
House Finch	43	50	51	131	107	131	103	79
Total Species	26	25	24	27	30	32	34	29
Total Birds	1148	1589	1458	2201	2344	3674	3030	2246
Observers	4	7	9+1	11	11	11	21	13
Parties	1	3	5	7	4	6	6	4
Feeders	.	.	1	.	.	3	.	4



Three bills supporting introduction of Anguillid eels (Unagi) have been introduced to the Tenth Legislature of the State of Hawaii. They are House Bill 507 and Senate Bill 1038, which would amend present Hawaii Revised Statutes to allow the introduction of Anguillid eels. Senate Bill 759 would appropriate an as yet unnamed amount for the "importation of eels ...for experimental or other scientific purposes."

PAST ATTEMPTS TO IMPORT EELS

The Hawaii Audubon Society strongly opposed importation of live Unagi, a voracious carnivore, in 1973-74 and this, in part, resulted in the addition of these eels to the statute that prohibits the introduction of several specified organisms (including Anguilliform eels), "or any other animal...that is detrimental or potentially harmful to agriculture...or to natural resources including native biota or has an adverse effect on the environment as determined by the board [of Land and Natural Resources]." In the Eighth Legislature (1977) there was an attempt to revise this law by removing eels from the list of things specifically prohibited. This move to allow Unagi introduction was again met with overwhelming opposition by the HAS, other conservation groups, and concerned citizens. *Many legislators felt the proposed amendment was killed because of the tremendous number of phone calls opposing the bill that were received by lawmakers.*

Eels are back again, and the HAS, other conservation groups, scientists, and citizens are again testifying against the proposed legislation. Society Vice-President Maile Stemmermann presented the following testimony at a February 14 joint hearing of the House Committees on Agriculture and on Water, Land Use, Development and Hawaiian Affairs:

VICE-PRESIDENT STEMMERMANN'S TESTIMONY

The Hawaii Audubon Society is strongly opposed to HB 507: we feel that the importation of Anguillid eels as allowed by the bill represents a grave danger to Hawaii's native waterbird fauna, its stream biota, and even its aquaculture industry.

Available evidence clearly indicates that Anguillids readily escape from captivity and are capable of wide dispersal through fresh and salt water as well as overland. In addition, these eels are voracious and opportunistic predators; they have been known to feed on almost every group of aquatic animals they contact.

The devastating effect of eel introduction on native Hawaiian stream biota is obvious and has been presented to you in other testimony. The Hawaii Audubon Society is quite concerned about these problems, but we are even more alarmed at the Anguillids' potential to extirpate Hawaii's four endangered waterbirds (The Hawaiian Duck, the Hawaiian Gallinule, the Hawaiian Coot, and the Hawaiian Stilt). Each of these species is native to Hawaii and found nowhere else in the world. Reports show that Anguillids in Australia readily prey on ducklings. It is entirely possible that such predation on the young of our four endangered Hawaiian species could reduce their already dwindling numbers to the point of extinction. Recent population exceeds 3000 birds: certainly not enough to withstand sustained eel predation. If Unagi are imported, we stand to lose not only our priceless native freshwater biota, but also the hundreded of thousands of dollars of both State and Federal funds that have been



Fig. 1. A mountain stream on O'ahu: habitat for several small native freshwater animals.

Photo by Robert Shallenberger

spent in propagation, study, and habitat preservation for these species.

Eel damage is by no means limited to the native biota. Aquaculture ventures such as Prawn and Oyster culture may be endangered not only by direct predation, but also by spread of any of the 30 known diseases and parasites of the Unagi. Likewise, the State's sport fisheries in Nu'uuanu and Wahiawa Reservoirs may be effectively and quickly destroyed.

We feel that numerous questions have yet to be answered, for example: Is there a market for *Anguilla*, and is it economically feasible to raise it in Hawaii? Exactly what safeguards are proposed to keep these animals in captivity? Is Hawaii's invaluable native biota worth the risks on economic grounds? We feel that a good deal more thought should enter into the introduction of eels, particularly with respect to the latter question, than has been done in the past. That the State should allow the entry of a noxious species is bad enough, but what is worse is that they should do so on the basis of vague promises of its economic success.

Hawaii has had more than its share of ecologically and economically damaging animal introductions: the Mosquito, the Giant African Land Snail, and the Ta'ape are good examples. The anguillids, imported to supply foreign gourmet markets have the potential to be far worse than any of the earlier introductions. It is not by whim that this group of organisms was placed on the list of prohibited imports: it's time that the few people interested in raising them here realized that fact and kept them out.

The Hawaii Audubon Society respectfully suggests that these committees review the evidence presented against the introduction of Anguillids in 1973, 1977, and again today, and do not approve HB 507.

Mahalo.

OTHER FACTORS

Some important points not covered by Stemmermann, but raised in other testimony should be mentioned.

John Farias, Jr., Chairman of the State Board of Agriculture, pointed out that the removal of eels from the prohibited list did not necessarily mean they could be introduced. He noted that a thorough review process would have to determine that eels would not be potentially harmful to agriculture or native biota before

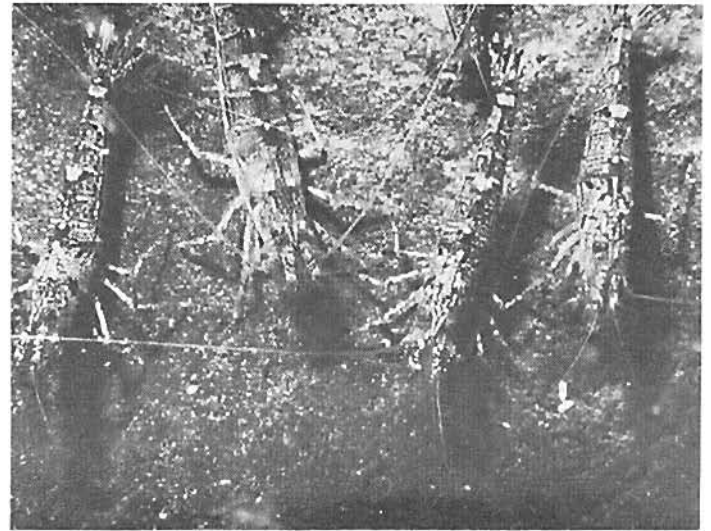


Fig. 2. Opae kala'ole (*Atya bisculata*), a native freshwater prawn.

Photo by John Ford

they could be brought in. In view of the Board of Land and Natural Resources recent approval of a permit to log hapu'u in unique, fragile rain forest (see article this issue), this statement does not inspire confidence in such a review process's concern for native biota. Farias also suggested raising eels somewhere else besides O'ahu because of strong, negative public sentiment of O'ahu residents. Environmentally, O'ahu would actually be the best place because it has the least to lose, its streams having the greatest degree of pollution and depletion of native biota.

Representatives of the State Department of Land and Natural Resources (DLNR) feel it would be no problem to keep eels from escaping and that it is highly unlikely they would establish breeding populations. (The eel they suggest importing is *Anguilla rostrata*, which is indigenous to eastern North America and breeds in the Sargasso Sea.) According to limnologist and former HAS Vice-President John Ford, aquaculturists who raise Unagi find it virtually impossible to keep them from escaping. DLNR representatives presented no evidence that any aquaculture operations have been successful at preventing eel escape. Escape, then seems a foregone conclusion. Although it is unlikely eels would migrate to and breed in the Sargasso Sea and then return to Hawaii, breeding is not necessary to provide enough eels to cause considerable ecological havoc. First of all, when eelers (small eels) are imported to raise (a "feedlot" type operation),



Fig. 3. O'opu nakea (*Awaous stamineus*), a native freshwater goby.

Photo by John Ford

they cannot be identified. There is certainly a chance that shipments of 50,000 to 100,000 eels from sources, most of which get their eelers from all over the world, would contain species that breed in the Pacific.

In addition, biogeographer Dr. Robert Kinzie (University of Hawaii) points out that an escape rate of less than 1 per cent could allow sufficient numbers of this long-lived (20-30 years), potentially large (up to 5 pounds) eel to exceed (in total weight) the amount of top carnivores now present in all our fresh water aquatic ecosystems. It is estimated that at least several million eels would have to be imported for the venture to be profitable. Unagi are known to eat virtually any organism small enough to capture, and some larger.

FEASIBILITY STUDY NEEDED

Economic questions must be raised. Proponents of the legislation and appropriations repeatedly talk about a "multi-million dollar" industry. However, they cite only one feasibility study, which was published by Japan Airlines (JAL) in 1975. The airline company found Hawaii to be the "best place in the world" to raise Unagi. It is interesting to note that the company stands to profit considerably from this venture. Proponents cited no unbiased economic studies of potential markets and cost-benefit analyses. In 1977, two years after the JAL study, former Senator Jean King quoted a United Nations aquaculturist as describing the Japan market (the one Hawaii would depend on as "rather limited" because Taiwan was supplying most of its eels.

Another economic problem is that there is the possibility that carnivorous eels could damage presently highly successful aquaculture projects by actually eating the organisms being cultured, or bringing in serious diseases and parasites. Proponents have not addressed this question at all.

Legislators should demand firm, current data on economic feasibility before approving this legislation, much less its support with our tax dollars.

SOCIETY MEMBERS CAN HELP!!

By the time you receive your 'Elepaio, it is likely that legislation will have passed the House of Representatives, so we need to concentrate on the Senate in opposing Senate Bills 1038 and 759.

PLEASE KOKUA! Last time numerous phone calls stopped this legislation, so please call any or ALL of the following legislators and tell them you oppose the introduction of Unagi, even by the State for experimental purposes! DO IT SOON!

To call your own Senators or Representatives, you may call the Legislative Information Office at 533-1762 for phone numbers. You may also want to call the members of the Senate Committee that will hear the bill to encourage them to "kill" the bill in committee. These Senators are:

T. C. Yim, Chairman, Economic Development Committee - 548-4771
 Dante Carpenter - 548-7887
 John Carroll - 548-6390
 Steve Cobb - 548-3157
 Mary George - 548-4107
 Stanley Hara - 548-4163
 Joe Kuroda - 548-7412
 Norman Mizuguchi - 548-6204
 Pat Saiki - 548-3867
 Mamoru Yamasaki - 548-6512
 Patsy Young - 548-3287

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For the Protection of Hawaii's Native Wildlife

HAWAII AUDUBON SOCIETY

P.O. Box 22832
Honolulu, Hawaii 96822

The Hawaii Audubon Society is at a crossroads.

The extent to which our many members are willing to commit time and talents in fulfilling our conservation and education goals will determine whether we stay with the status quo or work aggressively for something better. Unquestionably, we are already an important leader in the conservation movement in Hawaii. Yet we have not begun to fully realize our potential. In the four decades of our history many notable accomplishments have resulted from the efforts of a dedicated few. Our membership doubled with chapterization, yet we have not seen the effect of this change in our programs or in our overall effectiveness as a conservation organization. We have a small but eager group of Board members and others working hard to stay afloat and looking for ways to more effectively involve our membership in the fun, the frustration and the satisfaction that is all part of HAS.

We have established several committees to focus our efforts most productively. The ongoing and potential directions of these committees are discussed briefly below. In this way perhaps you will be able to see where your talents will best fit in. We welcome involvement from all our members, but we are particularly interested in seeing our retired members and young student members pitch in. Please take the time to read on and answer the questions. Then fold the paper, staple it and mail it to HAS. We'll be in touch with you. Aloha.

Committees:

Conservation - This is a major focus of HAS and requires constant effort to remain effective. In particular, assistance is needed in researching specific issues, developing testimony, attendance at public hearings and meetings, monitoring and reporting on the status of individual issues (including synopsis for the 'ELEPAIO), coordination with other conservation groups, etc. People with ideas and time to make them work are needed as we plan and develop new conservation directions. Exciting possibilities in the near future include a water-bird refuge in Kailua, Wildlife Week exhibits, legislative workshops, habitat cleanup campaigns, participation in wildlife field studies and community conservation awards.

Education - Many consider this area our greatest contribution and the possibilities are virtually endless. We are exploring several different education ideas, including volunteer lecture series, sound-slide show productions, cooperative programs with the DOE, teacher workshops, educational aids and many more. Help is needed now with the conception, planning and implementation of these ideas.

Field Trips - Our monthly field trips have always been a major attractant for members, but we are exploring many ways to provide additional opportunities and to increase the enjoyment and research value of our field trip program. We'll be expanding the number of trips, trying new areas and trails (including weekend trips to other islands, pelagic trips, overnight trips on Oahu, etc.). We'll also be working at ways to improve and standardize our methods of recording field trip data to further increase the research value of information published in the 'ELEPAIO. Help is needed in planning, conducting and reporting of trips, organizing files on specific trip locations, coordinating access to private lands, and much more.

Program - We have had some wonderful speakers in the monthly HAS meetings, but we have not nearly tapped the potential available to us. We are particularly interested in expansion of the HAS programs to include notable guest lecturers and wildlife filmmakers. We need help in planning for speakers and topics, coordination with other groups, making preparations for lecture halls, preparation of refreshments, and publicity.

Sales - This activity consumes a great deal of day-to-day time in maintaining records, answering inquiries, distributing materials and other activities. We haven't begun to effectively exploit our potential sales markets for our publications. We need help in the ongoing chores and in the development of new markets through effective planning, advertising and other efforts.

Fund Raising - This committee will be focusing its efforts on the planning and development of new projects that will bring in funds to support our education and conservation activities, as well as our scholarship and research grant program. Potential fund raisers under consideration include new publications, HAS T-shirts, natural history tours, wildlife benefits, art and photo shows, etc. We need your help with ideas and people with time and energy to make those ideas happen.

Publicity - We have been sorely lacking in effective publicity and need to develop a program for rapid and wide dissemination of information on HAS activities through radio, newspapers, TV and other media. We need help in planning, development of contacts, coordination with other groups and anything else necessary to spread the word.

Scholarship/Grant - HAS has been active in the support of wildlife research and has administered scholarships for outstanding students in natural history fields. We are now in the midst of a reevaluation of our review criteria for research proposals, selection of students for scholarships and development of ways to expand our capability to assist in research.

How much of your time can we count on to work on HAS committees?

Can you attend informal evening meetings at the homes of committee members?

Are you willing to work sometimes on weekends?

Which committees would you like to participate in?

Do you have any specialized expertise that you would like to contribute to HAS?

Can you recommend any interested friends as potentially active members of HAS?

What ideas do you suggest for HAS to more effectively involve its membership?

Do you have any other suggestions to increase our effectiveness as a conservation group, improve our educational role or just have more fun enjoying the natural world?

Name _____

Stamp

Address: _____

Phone: _____

Hawaii Audubon Society

P.O. Box 22832

Honolulu, HI. 96822

HAPU'U LOGGING TO GO AHEAD

The Board of Land and Natural Resources (BLNR), on February 9, approves commercial logging operations of hapu'u or tree ferns in the hitherto relatively untouched Kilauea Forest "Reserve," Ka'u, Big Island. The new 300 acre site is adjacent to a 150 acre logging site presently being harvested by Niu Nursery. The approval is despite the strong opposition of the Society, and against the recommendation of the Division of Forestry of the Department of Land and Natural Resources (DLNR), and the pointing out that this action appears to be in violation of the law.

MAS Big Island Representative Mac Mull, who reviewed the draft and revised Environmental Impact Statements (EIS) for the hapu'u logging project ('Elepaio 38:75-76, 39:72-75), wrote to the BLNR just before their decision-making meeting on February 9 in a final attempt to strengthen the case against approval of this controversial Conservation District Use Application (CDUA). In her letter she provided several important informational items, summarized below:

1. In the revised EIS the "uniqueness of this hapu'u forest" was an unresolved issue. Evidence now exists that establishes the 300 acre logging site as part of a unique ecosystem (The Keahou-Kilauea Forest) that has been assigned "top priority" for potential acquisition by the U.S. Fish and Wildlife Service, in part because it has as many endangered species as any known site in Hawai'i, and possibly the world. The Forest is considered the most important area for acquisition as a wildlife refuge in all the western states, including Hawai'i. Protecting an area of such significance is in conformity, in fact, is a prescribed policy of the State of Hawaii, as outlined in the Hawaii State Plan (1978).
2. Mae Mull clarified that allegations that the Nature Conservancy would log koa if they acquired the area were unsubstantiated. Mr. Henry Little, a Conservancy Vice-President, pointed out this would be contrary to Nature Conservancy policy.
3. Mrs. Mull reported she has direct knowledge of the occurrence on the logging site of three plant species on the June 16, 1976, Federal Register list of proposed endangered plants:
 - (1) *Tetraplasandra kawaiensis* var. *grandis* ('oho). Three of the only four known living trees occur on the project site.



Fig. 1. An aerial view of the Kilauea Forest Reserve, approximately 5000 ft. This virgin, uncut forest is to be logged for hapu'u.

Photo by Greg Vaughn

- (2) *Pleromontia hawaiiensis* var. *hawaiiensis* ('oha-kepau) is a rare lobeliad in the proposed logging area.
- (3) *Nothocestrum longifolium* var. *rufipolosum* ('aiea). The tree found by Mae and William Mull on the project site may be the only specimen known to occur on the windward side of Hawai'i Island.
4. Mae Mull questioned the statement in the botanical report that it did not seem probable that the endangered *Viola menziesii* occurs on the site. She pointed out that the upper portion of the logging site appears to be a part of the same vegetation type in which *Viola* was first rediscovered in 1974 by Dr. Wayne C. Gagne. She called for a thorough search for the species on the site.
5. Since last summer two species previously unknown to science have been discovered on the logging site. A new species of ma 'ohi 'ohi (a mint), which will be described as *Stenogyne lactea* sp. nov. (in ed.) in a future publication by Dr. Harold St. John, was found by F. R. Warshauer. This plant is unknown except from the logging site. William Mull found a new and remarkable species of *Drosophila* fly in association with the aforementioned *Tetraplasandra* tices. *Drosophila* expert Dr. Kenneth Kaneshiro described the new fly as a "giant form," the largest in its species group. Dr. Kaneshiro and Dr. Hampton Carson, who

has written to the BLNR opposing approval of the CDUA, are excited by this new discovery. Although one of the conditions of the permit requires loggers to notify Drs. Carson and Kaneshiro when operations near the *Tetraplasandra* trees where the new fly was found, it is unlikely that avoiding logging in the small area near the trees will afford protection for the fly's habitat as an intact ecosystem.

In light of such compelling evidence that the logging site is part of a truly unique but poorly studied Hawaiian ecosystem, it is most unfortunate that the BLNR has approved the permit for hapu'u logging.

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*Mae E. Mull
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Fig. 2. Kilauea Forest Reserve on a typically misty day.

Photo by Mark Collins

LEGISLATIVE UPDATE

State Senator John Carroll (a former Representative) has introduced two pieces of legislation aimed specifically at halting logging (of hapu'u and other trees) in the Kilauea Forest Reserve. One is a Senate Bill (783) that would forbid "present and future harvesting of trees" in the Reserve; the other is a Senate Concurrent Resolution (24) that would cause the Senate and the House to direct the State Department of Land and Natural Resources (DLNR) to "perform whatever action may be necessary to legally halt the harvesting of any trees /including hapu'u/ in the Kilauea Forest Reserve." Big Island Representative Mae Mull has suggested to senator Carroll that he also introduce an appropriations bill to support research by University of Hawaii College of Tropical Agriculture to find a suitable orchid potting medium other than hapu'u. It is clear that hapu'u is not a renewable resource, due to its extremely slow growth, and alternatives must be found for a growing orchid industry in Hawaii.

If you support this legislation, as well as research support for new orchid potting media, please call or write your senators to express your views.

Senator Carroll has also introduced a Senate Bill (649) that would halt all commercial fishing (presently allowed by permit) in the Leeward Hawaiian Islands. While this legislation is well-intended, it provides no means for the Division of Fish and Game to conduct their much-needed study of fisheries resources in the Leeward Islands. While the HAS has always opposed commercial fishing in the Leewards because of potential depletion of seabird food resources and accidental introduction of rats to islands, there should be some allowance for commercial fishing in conjunction with scientific studies. At present the Division of Fish and Game can conduct such studies only with the cooperation of commercial fishermen because they are unable to finance all the experimental fishing themselves. We would support legislation that would allow this cooperative arrangement to continue.

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FIRST RECORD OF A TIGER SHARK OBSERVED FEEDING ON A HAWAIIAN MONK SEAL

by George H. Balazs and G. Causey Whittow

Although large sharks (Fig. 1) are known to be predators of certain pinnipeds (Nishiwaki 1975, Ellis 1976), the extent and significance of such predation on the endangered Hawaiian monk seal, *Monachus schauinslandi*, have not been well established. Scars (Fig. 2 and 3) and, to a lesser extent, wounds (Fig. 4) suggestive of shark attacks have for a number of years been noted on monk seals in the Northwestern Hawaiian Islands (Kenyon and Rice 1959, Wirtz 1968, and numerous observations of other workers, including our own). However, the first documented recovery of monk seal parts from the stomach of a shark (tiger shark, *Galeocerdo cuvier*) was only recently made during predator-prey studies of these two species at French Frigate Shoals (Taylor and Naftel 1977, 1978).

Few direct observations have been reported of interactions between Hawaiian monk seals and sharks. Wallace (1973), during a visit to Southeast Island at Pearl and Hermes Reef, observed an adult seal and shark "thrashing in shallow water," after which "the shark turned tail and swam off, beaten." A short time later the seal came ashore with no visible signs of injury. In June 1974 one of us (GHB) watched a subadult seal and a large tiger shark pass within six meters of one another while traveling in opposite

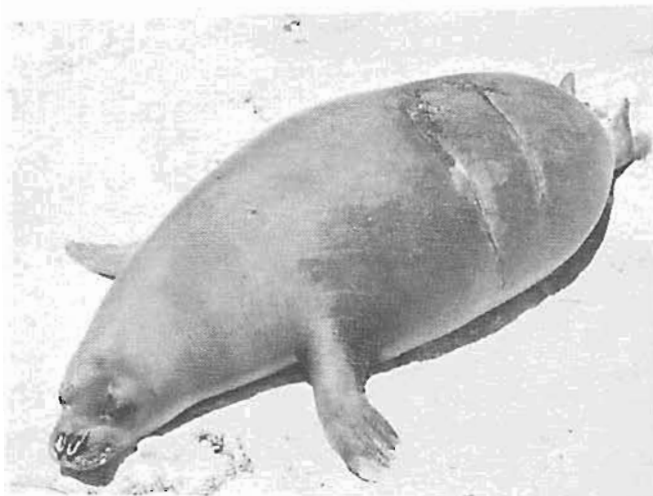


Fig. 2. Adult female Hawaiian Monk Seal at French Frigate Shoals with a scar suggestive of an attack by a large shark.

Photo by George H. Balazs

directions off East Island at French Frigate Shoals. Neither animal exhibited a change in course nor appeared to display interest in the other. Rice (1964), Taylor (1973), and Johnson and Johnson (1978) reported similar circumstances of seemingly unaltered behavior when sharks and monk seals were seen swimming in proximity. Coleman (1977) and Skillman (1977) observed an interesting reversal of traditional roles at Maro Reef when a weak and presumably sick adult monk seal consumed the protruding internal organs of a dead gray reef shark (*Carcharhinus amblyrhynchos*) left hanging from the stern of the research vessel *Townsend Cromwell*.

On 6 December 1977, during the course of field studies of the thermal ecology of basking green turtles (*Chelonia mydas*) at French Frigate Shoals, we made the first direct observations known to us of a shark feeding on a Hawaiian monk seal. At 1600 hours of that date, we arrived at Whale-Skate Island by small boat and observed a tiger shark approximately three meters in length exhibiting violent undulations in water not over 2.5 meters deep immediately off the west shore. Turbid water conditions commonly present in this area prevented a clear view of what was transpiring beneath the surface. Thrashing activity continued to take place at 5-10 minute intervals, at which time the tail of the shark frequently

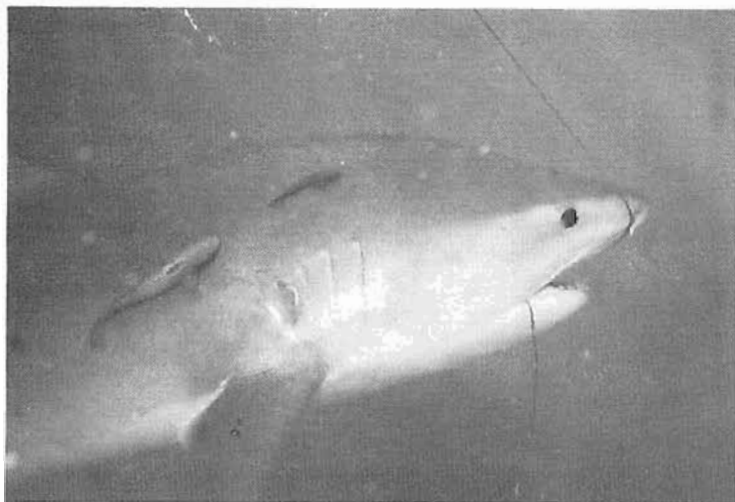


Fig. 1. Large tiger shark captured at French Frigate Shoals during investigations of predation on the Hawaiian Monk Seal conducted by Taylor and Naftel (1978).

Photo by Leighton R. Taylor

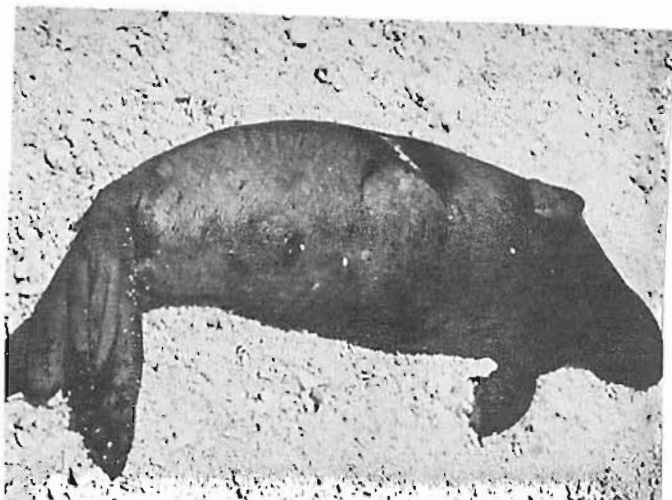


Fig. 3. Adult male Hawaiian Monk Seal at French Frigate Shoals with a scar suggestive of an attack by a large shark.

Photo by George H. Balazs

came well out of the water. During one of these high activity periods, the shark's entire head also emerged and we saw the body of a monk seal with brown pelage clenched in the shark's jaws. There were no indications that the seal was still alive, and no signs existed of water discoloration from blood loss which would be indicative of a recent shark attack. Several severed sections of intestine were, however, seen floating in the vicinity. Inspection of these pieces revealed that putrefaction had not yet taken place. During the non-thrashing periods, the shark was seen slowly swimming away from the feeding site for distances of up to approximately 100 meters. Subsequent observations from the boat at close range revealed that the seal was not being transported by the shark during these movements. The shark's repeated return to the feeding site did not appear to be affected by the boat's presence. Cyclic periods of high activity, when the shark was apparently tearing pieces from the seal, and movement away from and back to the feeding site, were observed until 1645 hours when we had to leave the area. Two days later, on 8 December, Coast Guard personnel from the French Frigate Shoals Loran Station on Tern Island made a brief visit (authorized by the Fish and Wildlife Service) to Whale-Skate Island. No signs of the shark or remains of the monk seal were found at that time (CWO T. Harris, personal communication).

One of the several important unanswered questions resulting from our observations is whether the seal was actually killed by the shark or only served as food after death

resulted from other causes. It is not uncommon to find a small number of dead seals on the beaches at French Frigate Shoals. Severely emaciated animals in which death seemed imminent have also been occasionally noted. The ingestion by sharks of moribund seals or dead seals washed back into the ocean by high tides and waves must therefore be considered a distinct possibility. It would also be of value to know the length of time the observed feeding activity continued before satiation occurred or the seal was totally devoured, either by the single shark or additional sharks that may have frequented the area following our departure.

Further information on the interactions of monk seals and sharks is necessary. We therefore encourage researchers of all disciplines working in the Northwestern Hawaiian Islands to publish or make known through other means any such observations that may be made.

Acknowledgements

These observations were conducted in conjunction with grants received from the National Geographic Society, the State of Hawaii, Office of the Marine Affairs Coordinator, and the University of Hawaii Sea Grant College Program (04-7-158-44129). We are grateful to the Fourteenth Coast Guard District for logistical support and assistance, and to Mr. J. Brent Giezantanner, Refuge Manager of the Hawaiian Islands National Wildlife Refuge which encompasses French Frigate Shoals. We also thank Dr. Leighton R. Taylor, Director of the Waikiki Aquarium, and Captain Gary L. Naftel for reviewing a draft of this paper and making helpful suggestions.



Fig. 4. Recently weaned Hawaiian Monk Seal at French Frigate Shoals with a fresh wound suggestive of a shark attack.

Photo by George H. Balazs

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GREENPEACE HARP SEAL ALERT

Greenpeace Hawaii has requested Hawaii Audubon Society aid in publicizing the plight of the Canadian harp seals. Set for March 12, 1979, is a seal harvest with a quota of 170,000 newly born seal pups. International conservation interests have been severely critical of this practice in the past, but to no avail. For more information on the harp seal problem, call Greenpeace Hawaii at 537-9505. To protest the harvest directly, write to Prime Minister Pierre Trudeau, Office of the Prime Minister, Ottawa, Canada K1A 0A2.

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: W.C. Ambrose, Kapaa; T. Arinaga, Wahiawa; Howard Bowman, APO San Francisco; Nancy Branch, Kahuku; Joseph Carson, Honolulu; R.E. Craighead, Pearl City; Alice Dewey, Honolulu; James Dobesh, Tamuning, Guam; Ronald Geedman, Agana, Guam; Mr. & Mrs. Edward Golden, Kailua; Evelyn Haswell, Honolulu; Robert Hawkins, Honolulu; Paul Hoist, Captain Cook; Mary C. James, Honolulu; James Matthews, Honolulu; Diane Mehlinger, Kula; Charles Miya-shiro, Honolulu; Charles Moore, GMF, Guam; Jon and Mary Nelson, Honolulu; Robert Osserman, Stanford, CA; Irene Parker, Altadena, CA; Susan Schenck, Aiea; Linda Soma, Honolulu; Capt. J.F. Tanner, Honolulu; Pamela Truscott, Kaneohe; Chris Wille, Agana, Guam; Joel Yarbrough, FPO San Francisco.

Local Regular: Betty Wolfram, Honolulu.

Subscribers: Henry Armistead, Philadelphia, PA; Buteo Books, Vermillion, SD; Don Cunningham, Dallas, TX; Lewis Rems, Sisters, OR.

MAHALO FOR CONTRIBUTIONS

MAHALO NUI LOA to the following members who have generously sent contributions to the Society, ranging from \$2.00 to \$22.00:

Claudia Belcher, Charles Dunn, Hubert & Mabel Frings; Lois Luten, George-Ann Maxson, Helen Morris, Dr. & Mrs. William Myers, Jean Marie Spoelman, Ora Stroborg, James Thropp, James van den Akker, Helen Whorton, Erika Wilson.

MARINE BENTHIC ALGAE COLLECTED FROM KURE ATOLL, MARO REEF AND NECKER BANK, NORTHWESTERN HAWAIIAN ISLANDS

by George H. Balazs

An important component of the life history study of the Hawaiian green turtle (*Chelonia mydas*) currently underway involves the determination of food sources utilized by this marine herbivore at various locations throughout the 2600 kilometer Archipelago. This is being accomplished through the noninjurious sampling of stomach and mouth contents of turtles captured alive from shallow-water feeding pastures, and by the dissection of salvaged dead specimens. Results of this research to date indicate that sub-adult turtles less than 70 cm in carapace length residing at select sites in the main Hawaiian Islands feed regularly on the red algae *Pterocladia capillacea* and *Amansia glomerata*, and green algae of the genera *Codium* and *Ulva*. In the Northwestern Hawaiian Islands, samplings have suggested that green algae of the genera *Codium* and *Caulerpa* are heavily utilized.

Concomitant with the need to know the specific kinds of algae used by Hawaiian *Chelonia* is the necessity of determining the marine flora present at locations identified or suspected of hosting aggregations of foraging turtles. For the Northwestern Hawaiian Islands, Laysan is the only location where thorough algal collections have thus far been made (Tsuda, 1965). While some collections have been carried out at Nihoa, Necker, French Frigate Shoals, Lisianski, Pearl and Hermes Reef, Midway and Kure (Howe 1934, Buggeln 1965, Tsuda 1966), Tsuda (1966) has emphasized the need for additional work at these locations. No information has been presented on the types of algae found at Maro Reef, Gardner Pinnacles or the numerous named and unnamed shallow banks located throughout the northwestern portion of the Archipelago.

During the course of research activities, I have had the opportunity to make algal collections at Kure (28°25'N, 178°20'W), Maro Reef (25°25'N, 170°35'W) and the bank surrounding Necker Island (23°35'N, 164°42'W). In January of 1977, with the assistance of Dr. Mark Yunker, I collected algae within the lagoon at Kure in depths ranging from a few centimeters to 14 meters. Collections were made at Maro Reef and Necker Bank in August of 1977 in depths ranging from 18 - 36 meters with the assistance of Captain Gary L.

Naftel of the R/V *Easy Rider*. The identification of specimens as they appear in the following lists was kindly carried out by Dr. Maxwell S. Doty and Dr. Isabella A. Abbott of the University of Hawaii Botany Department, and Dr. Dennis J. Russell of the Miller Science Learning Center, Seattle Pacific University. Voucher specimens are present in Dr. Doty's herbarium and in my own collection at the Hawaii Institute of Marine Biology. Those species already reported by earlier investigators are preceded with an asterisk. All others represent new records.

KURE ATOLL

Chlorophyta (green algae)

**Microdictyon setchellianum* Howe
Codium reediae Silva

Phaeophyta (brown algae)

**Turbinaria ornata* (Turner) J. Agardh
**Dictyota acutiloba* J. Agardh
Dictyota sp.
Sargassum hawaiiensis Doty et Newhouse

Rhodophyta (red algae)

Dasya villosa Harvey
Ceramium hamatispinum Dawson
Amphiroa sp.
Spyridia filamentosa (Wulf.) Harvey
**Laurencia* sp.
Gelidiopsis intricata (C. Ag.) Vickers
Asparagopsis taxiformis (Del.) Coll. et Herv.

MARO REEF

Chlorophyta

Microdictyon setchellianum Howe
Halimeda discoidea Descaisne
Cladophora socialis var. *hawaiiiana* Brand

Phaeophyta

Padina crassa Yamada
Hydroclathrus clathratus (Bory) Howe
Dictyota acutiloba J. Agardh
Sargassum sp.
Dictyopteris australis (Sonder) Askenasy

Rhodophyta

Laurencia majuscula (Harvey) Lucas

NECKER BANK

Chlorophyta

Codium edule Silva
Codium mamillosum Harvey
Halimeda discoidea Decaisne
**Microdictyon setchellianum* Howe

Phaeophyta

Sargassum polyphyllum J. Agardh
Padina crassa Yamada

Rhodophyta

Polysiphonia scopulorum Harvey
Polysiphonia sp.
**Laurencia* sp.

ACKNOWLEDGEMENTS

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PUBLICATIONS OF THE SOCIETY

HAWAII'S BIRDS by the Society (1978). This is the best field guide to our birds, and includes colored illustrations of all native and well-established exotic species. \$3.25 plus postage: 48¢ (surface mail) or 67¢ (air). Hawaii residents only: add 13¢ 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, Molokai, Maui and Hawaii.
 (Postpaid) \$ 1.00

PRELIMINARY LIST OF THE BIRDS OF HAWAII by R. L. Pyle (1977). 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) \$1.00

ENDANGERED WATERBIRDS OF THE HAWAIIAN ISLANDS by R. J. Shallenberger (1978). Hawaiian Stilt, Coot, Gallinule and Duck, each described in 2 pages of photos and text. Covers description, ecology, status, and distribution.
 (Postpaid) \$.50

NATURAL HISTORY SCHOLARSHIP

The Hawaii Audubon Society is accepting applications for the Rose Schuster Taylor Scholarship, a one-year undergraduate tuition scholarship at the University of Hawaii. Its purpose is to lend financial assistance to deserving undergraduates majoring in natural science, especially those interested in Hawaiian natural history.

For further information, write to Dr. Sheila Conant, Scholarship Committee, Department of General Science, 2450 Campus Road, Honolulu, Hawaii 96822. Deadline for completed applications is April 1, 1979.

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Senior Citizens (65 years of age or older)
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Life. 100.00
(payable in \$25 annual installments)

NEW ZEALAND FILM--HUGE TURNOUT

All of us who regularly attend HAS meetings were pleasantly surprised at the incredible turnout for our January 27 lecture and film by Grant Foster. Weary from a whirlwind National Audubon lecture tour in the western states and Canada, Mr. Foster kindly agreed to give a show for HAS. His film, "Wilderness Trek through New Zealand", was eagerly received by more than 550 people that squeezed into the McCully-Moilili Library for two showings. Unfortunately, because of our failure to recognize the enthusiastic response we would get to this show, we did not arrange for a room large enough to comfortably accommodate those who turned out. We sincerely apologize to the hundreds who were turned away at the door, particularly those who may have been turned away at both showings. Using the response to this show as ammunition, we intend to approach the National Audubon Society with a proposal to attract more NAS lecture tour speakers to the Islands. In the future, we will spread the word more effectively and select a more appropriate location for the shows. So don't be discouraged by the shortcomings of our first effort!

R. J. Shallenberger

KOLOKO HONOKOHAU HISTORIC SITE

In last month's 'Elepaio (39:92) C. P. Ralph mentioned the newly established Kaloko-Honokohau National historic site. Through its Big Island Representative, Mae Mull, the HAS enthusiastically supported the National Parks and Recreation Act of 1978, which authorized the site, because the new park provides one of the few good Hawaii Island wetland habitats for the endangered Hawaiian Coot and Hawaiian Stilt. Before the Act was passed, Mrs. Mull corresponded with U. S. Senator Spark Matsunaga, advising him of the HAS's support of this bill and encouraging him to vote in favor of it. Senator Matsunaga was enthusiastic in his replies, thanking Mrs. Mull for the helpful information she provided, and sending her a copy of his lengthy and well-informed speech favoring the Act.

Sheila Conant
Department of General Science
University of Hawaii

FIELD TRIP TO WA'AHILA RIDGE

On March 11 there will be a field trip to Wa'ahila (St. Louis) Ridge via the Woodlawn trail. The first part of the trail is very steep, and, if it rains, may be slippery, so come prepared. Trip leaders Omer Bussen (262-5506) and Sheila Conant (988-6522) feel there is a good chance of seeing 'Amakihi and 'Elepaio. There will be two meeting times and places: 7:00 a.m. at the Hawaii State Library on Punchbowl Street and 7:30 a.m. in the Manoa Safeway Parking lot.



Incubating 'Elepaio. These birds are common on the Woodlawn Trail.

Photo by Sheila Conant

NATURAL HISTORY LECTURES

The Waikiki Aquarium is offering to the public a series of lectures on various topics of Hawaiian and Pacific natural history. Lectures are at 7:30 p.m. at the Aquarium. A donation of \$1.00 is suggested. The lectures in March are:

Paddling My Own Canoe -- March 13

Speaker: Audrey Sutherland

Audrey, author of *Paddling My Own Canoe*, is an accomplished outdoorswoman. She will discuss how the natural and archeological history of the islands can be explored in normally inaccessible places with a minimal environmental impact.

Humpback Whales in the Hawaiian Breeding Waters

Speaker: Dr. Lou Herman -- March 27

Dr. Herman is a professor of psychology at the University of Hawaii and a researcher in the field of cetacean behavior. He has made extensive field studies of the humpback whales' annual visit to Hawaiian waters.

For more information call 921-4725.

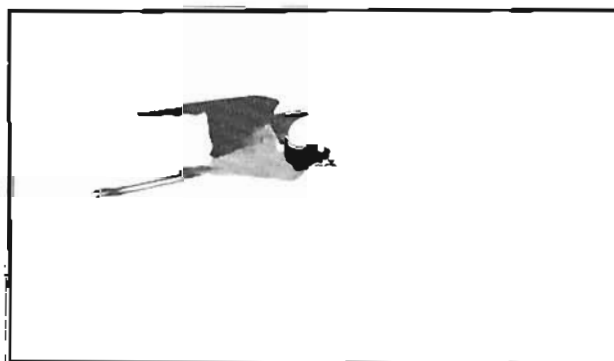
MARCH IS OUR 40TH ANNIVERSARY MEETING! COME HEAR ABOUT HAWAIIAN STILTS

The graceful, elegant, and endangered Hawaiian Stilt will be the featured attraction of the March 19th meeting. Mr. Rick Coleman will speak about "How Stilts Get Along, and How they Could Do Better." Mr. Coleman worked with the stilt while he was an employee of the U.S. Fish and Wildlife Service, and has been a frequent contributor to the 'Elepaio.

It is especially appropriate that Mr. Coleman, now a graduate student at Pennsylvania State University, will speak at our 40th anniversary meeting. His continuing work on the stilt, sponsored in part by the Society, symbolizes the Society's concerns for endangered Hawaiian wildlife. He will recount the results of his work, pointing the way to make the stilt again a common bird of Hawaii.

The meeting will be in the McCully-Moiliili Library at 2211 S. King St., on Monday, Mar. 19 at 7:30 p.m. Free, well lighted parking is available in the back. Refreshments served!

Come and help us celebrate 40 years of work "for the protection of Hawaii's native wildlife"!



STREAM LIFE FEATURED AT MEETING

The Conservation Council and the Hawaii Audubon Society will meet to hear aquatic biologist Dr. John Maciolek of the U. S. Fish and Wildlife Service speak on "The Natural History and Conservation of Aquatic Life in Hawaii's Streams." Dr. Maciolek has had considerable field experience working in Hawaiian streams, and his talk comes at a time when there is tremendous interest in aquaculture projects, such as the importation of Unagi, and their effects on fresh water ecosystems. The meeting will be held on March 8, at 7:30 p.m., at the McCully-Moiliili Library.

HAWAII AUDUBON SCHEDULE OF EVENTS

(For details, see inside back cover)

- March 6 (Tue.) Board Meeting at the home of R.L. Pyle, 741 N. Kalaheo Ave., Kailua (262-4046). Society members welcome.
- March 8 (Thurs.) Special meeting with Dr. John Maciolek on *The Natural History and Conservation of Aquatic Life in Hawaii's Streams*. McCully-Moiliili Library, 2211 S. King St., at 7:30 p.m.
- March 11 (Sun.) Field Trip to Wa'ahila Ridge featuring the 'Elepaio. Leaders: Sheila Conant (988-6522) and Omer Bussen (262-5506)
- March 19 (Mon.) Regular meeting. Our 40th anniversary meeting will feature Rick Coleman speaking on *How Stilts Get Along, and How they Could Do Better*. McCully-Moiliili Library, 2211 S. King St., at 7:30 p.m.

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