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COMMON MYNAS ATTACK BLACK NODDIES AND WHITE TERNS ON MIDWAY ATOLL

By Gilbert S. Grant

Common Mynas *(Acridotheres tristis)* are opportunistic feeders that were introduced to Hawaii in 1865 (Berger 1972). The species was introduced to Sand Island, Midway Atoll in the early 1970's (according to civillian workers on Midway), and by 1980 the Myna population there included at least 500 birds (Grant and Pettit 1981). Insular tameness due to the historical lack of predators is characteristic of Midway's native seabirds. Since Mynas are known to take Wedge-tailed Shearwater *(Puffinus pacificus)* eggs on Kauai (Byrd 1979; Byrd and Moriarty 1980), it was of interest to document Myna/native bird interactions on Midway.

BLACK NODDY

At 1830 h on 16 May 1981 on Sand Island I saw a Black Noddy *(Anous tenuirostris)* entangled with a Myna fall to the ground. The Noddy appeared to have one of the Myna's feet in its beak. A second Myna appeared and pecked at the tern's head, but the tern soon escaped. The following evening at the same nest a similar scuffle resulted in the Black Noddy's chick (*ca.* 10 days old) falling to the ground. A second tern chick was found on the ground in the same location later that evening. On 18 May both chicks were still alive in the morning, but by 1400 h both were dead. The eyes, brain, and dorsal neck muscles of the smaller chick had been eaten. Rats *(Rattus rattus)* are rarely seen during daylight hours on Sand Island, therefore the chick was probably partially eaten by mice (*Mus musculus)* or Mynas. The second chick lacked visible external injuries.

Beginning at 1820 on 18 May I watched a pair of Mynas harass a Black Noddy brooding an 8-10 day old chick. One Myna distracted the adult tern from the front while the other Myna dropped down on the tern's back and pecked its head. The adult noddy and the Myna fell out of the nest and struggled on the way to the ground. The tern escaped and returned to its nest, but the Mynas attempted unsuccessfully several more times that evening to dislodge the tern from its nest. Three days later I found a live Black Noddy chick on the ground below the nest where the 18 May observations were made. The adult tern was perched 15 cm from its now empty nest.

On 22 May I found two additional Black Noddy chicks (less than 10 days old) on the ground in the same area as the earlier observations. One chick was dead without visible external injuries and the other was still alive. I did not see Mynas attack live tern chicks on the ground, but they were seen catching flies around the carcasses of dead chicks.

WHITE TERN

Mynas were also observed harassing White Terns *(Gygis alba)* on several occasions. On 20 May 1981 I watched as a Myna approached an adult White Tern. The tern attacked with beak and spread wings apparently defending its nearby chick and displaced the Myna. On 22 May I saw a Myna attack an adult White Tern perched on an ironwood *(Casuarina equisetifolia)* limb. Both fell toward the ground before separating. White Terns appeared to intently watch Mynas in their vicinity.

Many broken Black Noddy and White Tern eggs were found on the ground during the spring of 1981. Some eggs had puncture marks in the shell. It is not known if these eggs were taken from the nests by Mynas or simply fell to the ground and were punctured there by Mynas or Ruddy Turnstones *(Arenaria interpres).*

In summary, Common Mynas were observed attacking both adult Black Noddies and White Terns. Several Black Noddy chicks fell or were dislodged from their nests as a result of Myna behavior. These observations suggest that the Common Myna may have an impact on the nesting success of Black Noddies and White Terns on Midway Atoll. Additional documentation and study are needed to evaluate the impact of the introduced Myna population on Midway's native seabirds.

ACKNOWLEDGMENTS

My stay on Midway Atoll was supported by National Science Foundation Grant #PCM 76-12351-A01 administered by G.C. Whittow. Thanks are due to CDR J.C Barnes, Commanding Officer, U.S. Naval Air Facility Midway Atoll and to RMC Callender and the base game warden staff for invaluable aid during my stay on Midway.

thank R. Shallenberger and V. Byrd for helpful suggestions on the manuscript.

LITERATURE CITED

Berger, A.J. 1972. Hawaiian Birdlife. Univ. Press of Hawaii, Honolulu.

Byrd, G.V. 1979. Common Myna predation on Wedge-tailed Shearwater eggs. 'Elepaio 39:69-70.

Byrd, G.V. and D. Moriarty. 1980. Treated chicken eggs reduce predation on shearwater eggs. 'Elepaio 41:13-15.

Grant, G.S. and T.N. Pettit. 1981. Birds on Midway and Kure Atolls during the winter of 1979-1980. 'Elepaio 41:81-85.

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1981 HONOLULU CHRISTMAS BIRD COUNT

Robert L. Pyle

Forty-eight observers were out on the trails and in the wetlands on Sunday, December 20, counting birds for the 38th annual Honolulu Christmas Bird Count. Total counting effort was about the same as last year: 23 parties spending 110 party-hours in the field, compared to 111 party-hours last year. Weather was reasonably good in the morning, but then deteriorated badly as an approaching storm system brought steady rains beginning in mid-afternoon.

The 19,427 birds counted was a bit lower than last year's 20,226, but still third highest on record for the Honolulu count. The all-time high of 22,641 birds was set in 1967. Forty-eight regular species (excluding non-established exotics that we don't officially count) were found this year, up from last year's 44 species, but still below the 52 to 55 species recorded in 1975 through 1979.

Native forest birds were found in about the same numbers as last year, although no 'I'iwi were seen this year. Among the introduced species, Barred Dove (3694) and Common Myna (2917) continued to be far ahead of all other species in total numbers. Golden Plover, House Sparrow, Spotted Dove, Red-vented Bulbul and Red-footed Booby, in that order, also topped 1000 in totals counted. The counts of Barred Dove, Rock Dove and Red-crested Cardinals were the only ones to set new all-time highs this year.

Several unusual species were found on this year's count. Ron Walker had 4 Canada Geese at Kaneohe Marine Corps Air Station, a reflection of the remarkable number of these stragglers seen on Oahu, Kauai and Maui since November. Ron also found a Caspian Tern there, in the same spot and behaving just the same way as the Caspian Tern that was there through 1979 and early 1980, and which was Hawaii's first know record of this species. Bill Miller and Dave Woodside identified two Lesser Scaup at Kaelepulu Pond, and Peter Donaldson found a Pintail and a Bufflehead at Salt Lake. Mike Ord heard a Gray Francolin on Na Laau Trail again this year, and one Yellow-faced Grassquit was heard and glimpsed on Halawa Ridge Trail by Frank Howarth.

Poor viewing conditions in the afternoon kept totals several hundred below the usual levels for Great Frigatebirds and Red-footed Boobies on Moku Manu, although 12 Blue-faced Boobies and 80 Brown Boobies are quite high counts for those species. Because of the moderate rain and greatly reduced visibility in late afternoon, Ron Walker's count of 214 Cattle Egrets returning to the colony at Kaneohe was hardly one-fifth the total of birds known to roost there.

Although Indian Hill Mynas are not included in the official count totals, perhaps the most remarkable observation on this year's count was eight of these birds found by Leilani Pyle at Lyon Arboretum. From a high count of a dozen or more released there a decade or two ago, numbers sighted have gradually decreased to only 2 seen in the past year or two. Breeding was never confirmed, and these birds were never considered to be an established population. Now, suddenly, 8 are seen, with sightings of a flock of this size by Arboretum staff both before and after the Christmas Count. It isn't known whether these are newly released birds, or whether they represent much more breeding by the remnant population there than had hitherto been suspected. Other free-roaming birds found in various park areas but not included in the official count totals included 3 domestic geese, 46 Mallards, 1 Pekin Duck,

HONOLULU CHRISTMAS COUNT - 1981

Sectors	1	2	3	4	5,6	7	8	9	10	Total
Blue-faced Booby	.	.	.	.	.	.	.	12	.	12
Brown Booby	.	20	.	.	.	.	.	59	1	80
Red-footed Booby	.	12	.	.	.	.	.	1051	.	1063
Great Frigatebird	.	.	.	.	1	.	.	364	1	366
Cattle Egret	.	.	.	.	.	12	339	214	117	682
Black-crowned Night-Heron	.	.	.	.	.	8	6	29	3	46
Canada Goose	.	.	.	.	.	.	.	4	.	4
Koloa (Hawaiian Duck)	.	.	.	.	.	.	6	.	4	10
Pintail	.	1	.	.	.	.	.	.	.	1
Lesser Scaup	.	.	.	.	.	2	.	.	.	2
Bufflehead	.	1	.	.	.	.	.	.	.	1
Gray Francolin	.	.	.	.	1	.	.	.	.	1
Ring-necked Pheasant	.	.	.	.	.	1	.	.	.	1
Hawaiian Gallinule	.	.	.	.	.	1	8	.	2	11
Hawaiian Coot	.	12	.	.	.	4	5	.	7	28
American Golden Plover	21	420	67	130	44	118	78	494	249	1621
Wandering Tattler	.	1	.	1	1	4	2	7	1	17
Ruddy Turnstone	.	31	.	9	9	11	3	248	50	361
Sanderling	.	.	.	.	.	.	.	10	.	10
Hawaiian Stilt	.	6	.	.	.	3	7	76	.	92
Pomarine Jaeger	.	25	.	.	.	.	.	.	.	25
Caspian Tern	.	.	.	.	.	.	.	1	.	1
Hawaiian (Black) Noddy	.	.	.	.	.	.	.	6	.	6
White Tern	.	.	.	.	5	.	.	.	.	5
Rock Dove	.	519	.	134	.	14	71	24	2	764
Spotted Dove	31	113	105	278	113	111	151	256	235	1393
Barred Dove	28	570	86	926	904	142	346	267	425	3694
Hwa-mei	.	.	.	.	.	4	3	2	1	10
Red-whiskered Bulbul	.	5	64	88	6	.	.	.	.	163
Red-vented Bulbul	17	262	32	133	64	212	40	102	297	1159
Mockingbird	.	3	.	.	2	1	.	.	.	6
Shama	37	13	36	54	2	5	8	5	35	195
Japanese Bush-Warbler	.	.	2	7	.	2	.	.	8	19
Oahu 'Elepaio	8	2	1	3	.	.	.	.	.	14
Common Myna	8	543	33	611	428	227	486	322	259	2917
Japanese White-eye	156	143	173	184	54	61	15	70	114	970
Oahu 'Amakihi	30	31	32	66	.	.	.	.	.	159
'Apapane	102	3	11	37	.	.	.	.	.	153
Spotted Munia	.	24	36	4	.	11	26	34	179	314
Black-headed Munia	.	5	.	.	.	.	.	.	.	5
Java Sparrow	.	84	4	51	12	.	.	.	.	151
House Sparrow	16	511	8	302	209	145	94	188	131	1604
Red-crested Cardinal	8	170	14	75	95	50	17	63	60	552
Northern Cardinal	15	47	36	65	12	27	9	32	42	285
Saffron Finch	.	2	.	.	.	.	.	.	.	2
Yellow-face Grassquit	1	.	.	.	.	.	.	.	.	1
Yellow-fronted Canary	.	.	.	.	11	.	.	.	.	11
House Finch	51	78	99	80	82	17	2	13	18	440
No. of Individuals	529	3657	839	3238	2055	1193	1722	3953	2241	19,427
No. of Species	15	30	18	21	20	25	22	27	24	48

56 Muscovy Ducks, 1 Junglefowl, 4 domestic peafowl, 5 Red-crowned Parrots and 2 large, white cockatoos (at Lyon Arboretum, heretofore considered to be Salmon-cresteds). All these are no doubt escaped captive birds; none are known to have established viable breeding populations here, although peafowl are established at the opposite end of Oahu.

Sectors Covered

1-A: Aiea Trail: John Obata, Susan Schenck
B: Halawa Ridge Trail: Omer Bussen, Frank Howarth, John Hall
2-A: Sand Is., Salt Lake, Tripler AMC, Ft. Shafter, Moanalua Gardens, Lagoon Dr. Park: Peter Donaldson, Ed and Sui-Ping Carus
B: Alewa Trail, Kamehameha School: Chuck Burrows, Dan Vitiello
C: Nuuanu, Foster Gardens, Iwilei: Jack and Alice Mitchell
3-A: Manoa Cliffs Trail (west), Pauoa Flats to overlook, Round-top Dr.: Wayne Gagné, Yvonne Ching, Sam Gon
B: Manoa Cliffs Trail (east), Aihualama Trail, Manoa Falls Trail: Peter Galloway, Charlene Talbot
C: Punchbowl Cemetery: George and Jean Campbell, Betty Johnson
4-A: Manoa Valley residential: Sheila Conant, Audrey Newman
B: Lyon Arboretum: Leilani Pyle
C: Woodlawn Trail, Puu Pia Trail: Pat Conant, John Engbring, Karen Asherman
D: Wa'ahila Park and Ridge Trail, St. Louis Hts.: Maile Stemmermann, Norris Henthorne
E: Ala Moana, Ft. DeRussy, Ala Wai: same party as Area 3-C
5-A: Honolulu Zoo grounds: Peter Luscomb
5-B, & 6: Kapiolani Park, Naa Laau Trail, Paiko Lagoon: Mike Ord, Sean McKeown
7-A: Waimanalo, Bellows AFB, Kaelepulu Pond: Dave and Ulalia Woodside, Bill Miller
B: Maunawili: Dick and Kendall Smith
8-A: Lanikai: Peggy Hodge, Mary Grantham
B: Kawainui Canal, Kawainui Dyke, Hamakua Drive: Maura Naughton
C: Kawainui Marsh, Quarry Road, Kapaa Landfill: Rick Coleman
9 : Kaneohe Bay Dr., Kaneohe MCAS, Moku Manu: Ron Walker, Larry Hirai
10-A: Ho'omaluhia Park: Bob Pyle, Martha McDaniel, Wilfred Ho
B: Haiku Valley, Ahuimanu, Heeia, Kam Highway, Old Pali Rd.: Tim Burr, Ronni Tomihama, Al Samuelson, Bob Pyle (part)

Forty-eight participants in 23 parties. Total party-hours 110 (76 on foot, 32 by car, 1 by canoe, 1 by horse). Total party miles 286 (62 on foot, 219 by car, ½ by canoe, 4½ by horse).

Habitat Coverage: parks and residential 38% of party-hours, mountain forest 32%, lowland woods and scrub 15%, marshes and ponds 11%, and beach and ocean 4%.

CRITICAL HABITATS AT POHAKULOA TRAINING AREA

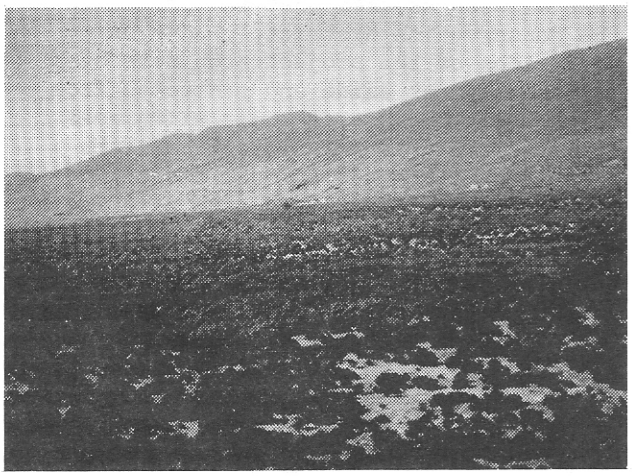
On 16 April 1982, the Hawaii Audubon Society Board of Directors submitted the following testimony on House Resolution 181 requesting the U.S. Army to report on the status of the fire hazard management plan for the Pohakuloa Training Area, Island of Hawaii:

The Hawaii Audubon Society strongly supports House Resolution 181.

Part of the Pohakuloa Training Area (a portion of the areas shown as Area 1 and Area 6 on U.S. Army Support Command Hawaii (USASCH) maps) lies within the designated critical habitat of the endangered bird, the Palila (*Psittirostra bailleui*). Another part, Kipuka Kalawamauna, (part of the area shown as Area 5 on USASCH maps), forms the entire designated critical habitat of three endangered plants (*Haplostachys haplostachya*, *Stenogyne angustifolia*, and *Lipochaeta venosa*) and is the only place in the world that the first two of these plants occur in the wild. (A few plants of the *Lipochaeta* have also been found just outside the PTA boundary northwest of Area 5).

Fire is currently the major threat to the three endangered plants in Kipuka Kalawamauna. A fire burning out of control in the Kipuka could cause the extinction of two of the plants, and a dangerous decrease in the population of the third. Fire in Areas 1 and 6 could not only damage the periphery of the Palila critical habitat in these areas, but could quickly spread upslope on Mauna Kea into the heart of the critical habitat in the mamane-naio forest on the mountain above PTA.

The fire hazard at Pohakuloa is often very high. There are two major reasons for this, the climate and the vegetation.



Pohakuloa Training Area. Māmane-naio forest in Area 1, part of the critical habitat for the Palila. View is from Pu'u 'Oma'okoili looking northwest, with Mauna Kea in the background.

photo by C.H. Lamoureux

The Pohakuloa Training Area lies mostly at an elevation above the atmospheric temperature inversion layer. It is thus in an area of both low rainfall and relatively low humidity. Average annual rainfall over most of PTA is less than 20 inches, and for part of the area is less than 15 inches. The weather station at Pohakuloa near Area 1 and Area 6 showed an annual average rainfall of 15.14 in. over the 29 year span from 1938 to 1966. A station located at Pu'u Ke'eke'e (nearer to Kipuka Kalawamauna) for 10 years (1952-1961) showed an annual average 11.99 in. At Pohakuloa, on average, about one month in six had no recorded rainfall, at Pu'u Ke'eke'e about one month in four was without rain. At Pohakuloa, on average, 40% of the months have total rainfall of less than 0.5 in.; at Pu'u Ke'eke'e , 48% (almost one month out of every two) are similarly dry. At Pohakuloa, during one year in every two (15 out of 29) there are drought periods during which less than half an inch of rain falls in any month for five or more consecutive months, and in two of every three years (20 of 29) there is a drought of four or more consecutive months. (Data from State of Hawaii, DLNR, DOWALD, Report R 34, An Inventory of Basic Water Resources Data: Island of Hawaii. 1970). Such frequent drought conditions contribute significantly to the fire hazard.

The vegetation is a second factor in the fire hazard. As human use of Pohakuloa has increased, so has the number of noxious weeds and grasses in the area. Most important here is the fountaingrass (*Pennisetum setaceum*). This grass is spreading into PTA from the west. It is unpalatable to cattle, sheep, and even goats, so is rarely eaten. It grows well even in dry areas, springing up after rains, developing into large clumps of grass which then dry out during subsequent drought periods. The grass clumps grow so close together that a continuous mat of highly flammable material is produced. The fountain grass helps to spread fire widely and rapidly. Other plants, such as scattered native trees and shrubs which are in the area are killed by the fire. The fountaingrass, which is fire adapted, resprouts rapidly after a fire, again forming a thick mat, which can prevent the establishment of seedlings of the native species, which then die out. Thus, rather quickly, areas dominated by native species can be replaced by nearly pure stands of fountaingrass, which not only contributes to loss of native biota but further increases the fire hazard.

For these reasons, it is imperative that a fire hazard index system be deve-

Haplostachys haplostachya var. *angustifolia*. This plant, the only living member of an endemic Hawaiian genus of the mint family, is confined to Kipuka Kalawamauna in the Pohakuloa Training Area. It is one of 3 endangered plants for which Kipuka Kalawamauna is the critical habitat.

photo by C.H. Lamoureux

loped and used by USASCH at Pohakuloa Training Area; that fire control and fire fighting plans be developed and implemented; that water transport and storage facilities be enhanced; that appropriate fire breaks be developed and maintained; and that plans for adjusting training schedules in response to fire hazard be developed and implemented.

In addition, there is one further action which should be a part of these plans. A number of firing points are located in Area 1 and in Kipuka Kalawamauna, both areas of high fire hazard and areas within the designated critical habitat of endangered bird and plant species. These firing points are places from which weapons are fired during training exercises. We urge that the firing points in these two areas be moved to nearby areas of lower fire hazard and outside designated critical habitat for endangered species. This action would both help to protect endangered species, and would lower the possibility of training programs setting fires. It makes little sense to build a firebreak around a sensitive area, yet continue to carry on activities, such as weapons firing, which increase the risk of fire inside the firebreak.

GEOTHERMAL PROJECT IN THE KAHAUALE'A FOREST

In the pursuit of profitable alternative energy, the east rift zone of Kilauea volcano on the Big Island looks like a gold mine because of its natural production of hot steam that can be converted to electricity. The Campbell Estate's forested lands astride the southeast rift zone are now proposed for intensive geothermal development. In November 1981 the Society requested to be a consulted party in the preparation of an environmental impact statement (EIS) for the estate's Kahauale'a Geothermal Project in the Puna District of the Big Island. These comments were made by the Big Island Representative to the Chief Executive Officer of the James Campbell Estate:

> The Society's concerns focus on the significant impacts that can be expected from industrial construction in a roadless wilderness area that is located in the conservation district. Lands on both sides of the project area have been permanently set aside and protected from development because of their wilderness qualities, and as rain forest habitats of native plants and animals straddling the active southeast rift zone of Kilauea volcanoe. Kahauale'a lands possess the same remarkable attributes as do the Hawaii Volcanoes National Park lands abutting on one side and the state-owned Wao Kele 'O Puna Natural Area Reserve lands abutting on the other side.
>
> Because of the prevailing wind direction, we are especially concerned with the harmful impacts of air pollution and noise pollution emanating from the industrial project onto National Park lands and onto native wildlife habitats. By its Master Plan, the Volcanoes National Park has been authorized to acquire Tract 22, a long, wide stretch of Campbell Estate lands abutting the Park from Thurston Lava Tube southeast to the Rift Zone. This authorization indicates that the relatively undisturbed Kahauale'a lands meet the high standards of the National Park Service for wilderness acquisition.
>
> We are also concerned with the negative impacts of industrial development on the habitats of native plants and animals within the extensive Kahauale'a Geothermal Project Area itself. The locations of newly-found (undescribed) plant species, and rare and potentially endangered plant species should be pinpointed in the project area. This calls for an intensive plant survey by qualified botanists.
>
> The two-mile-apart transects for the bird surveys of the U.S. Fish and Wildlife Service give general data, but an intensive survey appears mandatory to determine species present, population sizes and distribution. The endangered 'O'u has been sighted in the project area.

The draft EIS on the project is expected to be released about the beginning of May. Society members are encouraged to express their concerns about industrial development within a relatively intact native forest by writing to James Campbell Estate, 828 Fort Street Mall, Suite 500, Honolulu, Hawaii 96813.

Mae E. Mull
Island of Hawaii Rep.

MARCH FIELD TRIP REPORT: BISHOP MUSEUM CLOSED COLLECTION

After presenting a brief update on the Eel Bill before the State legislature, Dr. Alan Ziegler opened the closed Bishop Museum collections for a group of 12 HAS members led by Maile Stemmermann.

Those present were treated to close looks at the extensive collections of endangered and extinct Hawaiian endemic bird species. Maile began by discussing the evolution and adaptive radiation of Hawaiian Honeycreepers, using the Psittirostine species (Amakihi, Creepers, etc.) as an example. She also showed specimens of the other Honeycreepers, the Hawaiian Meliphagids, Thrushes, Rails, and the 'Alala. Also seen were the Kioea, the Bishop's 'O'o, Greater and Lesser Koa finches, Laysan Honeycreeper, and Rails.

Special thanks to Dr. Alan Ziegler and the Bishop Museum for the access to their collection.

Maile Stemmerman

SCHOLARSHIPS ANNOUNCED BY THE NATIONAL AUDUBON SOCIETY

A scholarship program for high school, college and graduate school students has been announced by the National Audubon Society Expedition Institute. The 1982 scholarships are designed to defray a student's expenses while attending school, or for a project or summer program of the student's choice. Application forms and instructions are available until August 15, 1982 by sending a self-addressed stamped #10 envelope to: Scholarship Committee, National Audubon Society Expedition Institute, RFD #1, Box 149B, Lubec, Maine 04652. The financial aid and multiple scholarship grants, ranging in amounts from $100 to $200 are made available by Audubon to help young people take advantage of learning opportunities throughout the nation.

Recipient's reactions to the financial assistance has been positive. They report that the Audubon Expedition Institute scholarships have made possible the fulfillment of their immediate education and career goals such as attending schools, summer camps, workshops and travel programs, photographing endangered Alaskan wildlife, interning in conservation organizations, or participating in the Expedition Institute.

ALOHA TO NEW MEMBERS

We welcome the following new members and encourage them to join in our activities.

Joint (National and Hawaii): Stanley Adams, Honolulu; Akers, Kula; Barbara Beard, Honolulu; Michael Bland, Kaneohe; Peter Boynton, Kailua-Kona; Mr. and Mrs. E. Cathcart, Volcano; Mark Collins, Volcano; Gary Cummins, Honolulu; Ms. Anne N. Davenport and Family, Kailua; Dereck L. Dietz, FPO San Francisco; Mrs. W. C. Dozier, Kailua; Stewart I. Fefer, Kaneohe; S. Filosa, West Hill, Ontario, Canada; Bernard Fitzpatrick FPO San Francisco; Mrs. W. Fitzroy, Kailua; D.J. Nelson Family, Ewa Beach; Gene Gangl, Honolulu; Gordon T. Gota, Hilo; Jim Gross Family, Kapaa; Scott Hare, Kurtistown; Mr. and Mrs. Stan Herder, Honolulu; Hayes Hertford, Kapaa; Mae Hunter, Kihei; Mrs. C.K. Kapu, Kaneohe; Terrence L. Monroe, Honolulu; August B. Mundzak, Honolulu; Doris H. Nakahara, Wahiawa; Mrs. S. Okamoto, Honolulu; Ellen Rayer, Hauula; J. Rodeheaver, Pearl City; Andy Schwartz, Honolulu; Karen Story, Honolulu; E. Sugai, Kurtistown; Jeanette Tapio, Aiea; Kristin Tolton, Honolulu; Monte L. White, FPO San Francisco; Supt., USS Arizona Memorial, Honolulu; Whittemore Whittier, Honolulu; Mrs. Madelyn and Barbara Wilson, Honolulu; Dr. V.G. Clark Wismer Honolulu.

Kammy Wong

NOTE TO CONTRIBUTORS TO THE 'ELEPAIO

All contributions concerning natural history and conservation are welcomed, especially those pertaining to the Pacific area. The Editorial Committee wishes to encourage especially material from the various Pacific Islands, such as the Trust Territories, Guam, Samoa, and other areas. Articles on all natural history subjects are solicited.

It would facilitate the processing and review of your contribution if it could be submitted typewritten and double spaced, although this is not a requirement. All articles of a scientific nature are sent out for comments to at least two reviewers familiar with the subject.

To insure proper handling and rapid publication of your contribution, it should be mailed to the co-editors, and sent to Marie Morin, 1415 Victoria St., #1515, Honolulu, HI 96822.

"ROOTING OUT INVADERS"

BIG ISLAND PROGRAM

Dan Taylor, Chief of Resource Management at Hawaii Volcanoes National Park, will present a new illustrated program on "Rooting Out Invaders in the Park" on Saturday, May 15, at 7:30 p.m. in the Hawaii Volcanoes National Park Auditorium.

Restoring the habitats of native plants and animals to hospitable living conditions is the primary goal of Park managers today. In working toward this objective, the Park has a number of ongoing action programs to control or eliminate some of the aggressive foreign invaders that have taken over and damaged native habitats in the last two hundred years since the arrival of continental man and his pest species. Both failures and successes -- such as the almost complete elimination of feral goats -- will be featured in Taylor's program.

As the quality of forests outside the Park deteriorates, increased value is placed on the biological treasures housed within the Park, including Hawaiian honeycreepers and other native birds, tree-sized lobelias, endemic flowering mints and a company of rare ferns. The survival of these unique Hawaiian organisms is threatened by a hardy troupe of exotic introductions. Taylor will illustrate current campaigns against European feral pigs, tropical American banana poka, Himalayan raspberry, *Myrica faya* from the Azores, African fountaingrass, and North American mosquitoes.

This is the tenth program in a Hawaiian natural history series sponsored jointly by the Hawaii Audubon Society and Hawaii Volcanoes National Park. These programs feature up-to-date information and insights about natural Hawaii, presented by specialists involved in current field work.

The programs are free of charge and everyone is invited.

Mae Mull

REPRINTS OF ARTICLES

Reprints of articles in the *'Elepaio* are available to authors and others at the following rate if ordered before publication date: for 100 copies, $10 per page of the article. For each additional 100 copies, add $3.00 per page.

MANANA ISLAND FIELD TRIPS

The annual Manana Island field trips have been so popular that the Society is once again planning two trips in 1982. The first trip in May will permit observations of nesting terns and noddies. The second trip in August will feature Wedge-tailed Shearwater and Bulwer Petrel chicks. Both trips will be joint Audubon-Sierra Club outings.

The trips are scheduled on two Sundays, May 9 and August 15. If weather is bad, we will go the following Sundays, May 16 and August 22. Be prepared to get wet; seal your camera gear and binoculars well in double plastic bags or waterproof containers. Also, please wear tennis shoes or tabis; a jump from the boat without them can provide a painful introduction to sea urchins.

Trip leaders will be Rob Shallenberger and Audrey Newman. The cost for the ride will be $5, to be paid in advance. We'll meet at the Makai Pier, just north of Sea Life Park at 7:30 a.m. and return around 1 to 2 p.m. Each trip is limited to 15 people, so call Audrey soon to reserve a place (521-1724, 546-5608).

MAY PROGRAM:

WILDLIFE IN INDONESIA

The Monday, May 17 general meeting at McCully-Moiliili Library will feature a program by Dr. Charles Lamoureux, University of Hawaii Professor of Botany. His talk, *Wildlife in Indonesia*, will feature natural history slides taken in the jungles of Indonesia during two sabbatical leaves. The meeting begins at 7:30 p.m. Everyone is invited to attend.

PACIFIC SEABIRD SYMPOSIUM

The Ninth Annual Meeting of the Pacific Seabird Group will be held December 1-3, 1982, at the Hawaiian Regent Hotel in Honolulu. Symposium topics will be (1) the ecology of tropical seabirds and (2) human disturbance and effects of predation on seabirds. The symposia will be one-half day each. In addition, there will be several paper sessions related to Pacific seabirds. People interested in receiving more information on this meeting should contact Stewart I. Fefer, U.S. Fish and Wildlife Service, P.O. Box 50167, Honolulu, Hawaii, 96850.

CORRECTION

The author of *Observations of White-fronted Geese at Waipio, Oahu* in the March 1982 *'Elepaio* was incorrectly identified as Bruce Bickle. The correct spelling of the author's name is Bruce Bikle.

JUNE 'ELEPAIO PASTE-UP

The June edition of the *'Elepaio* will be pasted-up beginning at 5:30 p.m. on May 18 (Tuesday) at the home of Marie Morin, 1415 Victoria Street #1515. Call Marie at 533-7530 beforehand, in order to obtain the building security number for the apartment.

VOLUNTEERS NEEDED

Want to get involved? Typists to help with *'Elepaio* preparation are needed, as well as people who would like to follow and write up current conservation issues. Call Peter Galloway at 988-6522 or Marie Morin at 533-7530.

IF NOT A MEMBER, PLEASE JOIN US

JOINT MEMBERSHIP
(National and Hawaii Audubon Societies)

Individual	$ 25.00
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Supporting	100.00
Contributing	250.00
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(Hawaii Audubon Society Only)

Regular	$ 6.00
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(payable in three equal annual installments)

New members who send in dues between January and September will receive, if they request them, all back issues of the *'Elepaio* for that year. After September, the dues are counted for the following year.

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CALENDAR OF EVENTS

May 9 (Sunday). Field trip to Manana Island. Meet at Makai Pier north of Sea Life Park at 7:30 a.m. Call Audrey Newman (521-1724 or 546-5608) to reserve a place on the boat.

May 10 (Monday). Board meeting at the home of Norris Henthorne, 2832 Kihei Place #3, Honolulu, at 7 p.m. (734-7562). All members are welcome.

May 15 (Saturday). Dan Taylor on *Rooting Out Invaders in the Park*, 7:30 p.m. in the Hawaii Volcanoes National Park Auditorium.

May 17 (Monday). Regular meeting, featuring Dr. Lamoureux on *Wildlife in Indonesia*. McCully-Moiliili Library, 2211 S. King Street, 7:30 p.m.

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ADDRESS CORRECTION REQUESTED

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