'ELEPAIO

Journal of the Hawaii Audubon Society

For the Protection of Hawaii's Native Wildlife

VOLUME 43, NUMBER 7

JANUARY 1983

A Preliminary List of Foods of the Po'o-uli

by Paul H. Baldwin and Tonnie L. C. Casey

The Po'o-uli (*Melamprosops phaeosoma*) of Maui was discovered only recently (Casey and Jacobi, 1974) and remains one of the least known of Hawaiian honeycreepers. Its range is on the order of two square miles of mountain rain forest on the relatively inaccessible, upper windward slopes of Haleakala, as Casey observed it in the summers of 1973 to 1976. This bird was inconspicuous as it foraged in the understory and lower parts of trees, which ranged from 5 to 30 m in height. Since it seemed unlikely that direct observation of this localized and rare bird would yield complete information as to the foods it seeks, Casey obtained the alimentary tracts of the individuals of Po'o-uli collected in the summer of 1973 and submitted them to Baldwin for identification of the food contents. The results of the identification of foods contained in the two type specimens are presented here. They serve to point out certain main features of the Po'o-uli diet.

METHODS

The contents of the alimentary tracts from the two specimens (hereafter referred to as samples no. 1 and no. 2) were sorted and measured. Many fragments of the food objects could be identified at various levels from class to species with use of standard keys and descriptions, as well as Hawaiian references, and together with general insect physical reference material. The sizes of foods reported are either direct measurements or, as with most of the arthropods, approximations extrapolated from measurable body parts. These estimates provide an idea of the size (body length in arthropods) of dietary items ingested. The number of individuals estimated from each taxon is the smallest number required to yield the particular constellation of fragmentary remains; for instance, if several elytral (wing cover) remains of a given sort of beetle included three duplicate basal pieces, i.e. shoulder plus hinge, all from the left side of the body, then three individuals would be tallied, whereas if the three basal pieces were two left and one right then two individuals would be tallied.

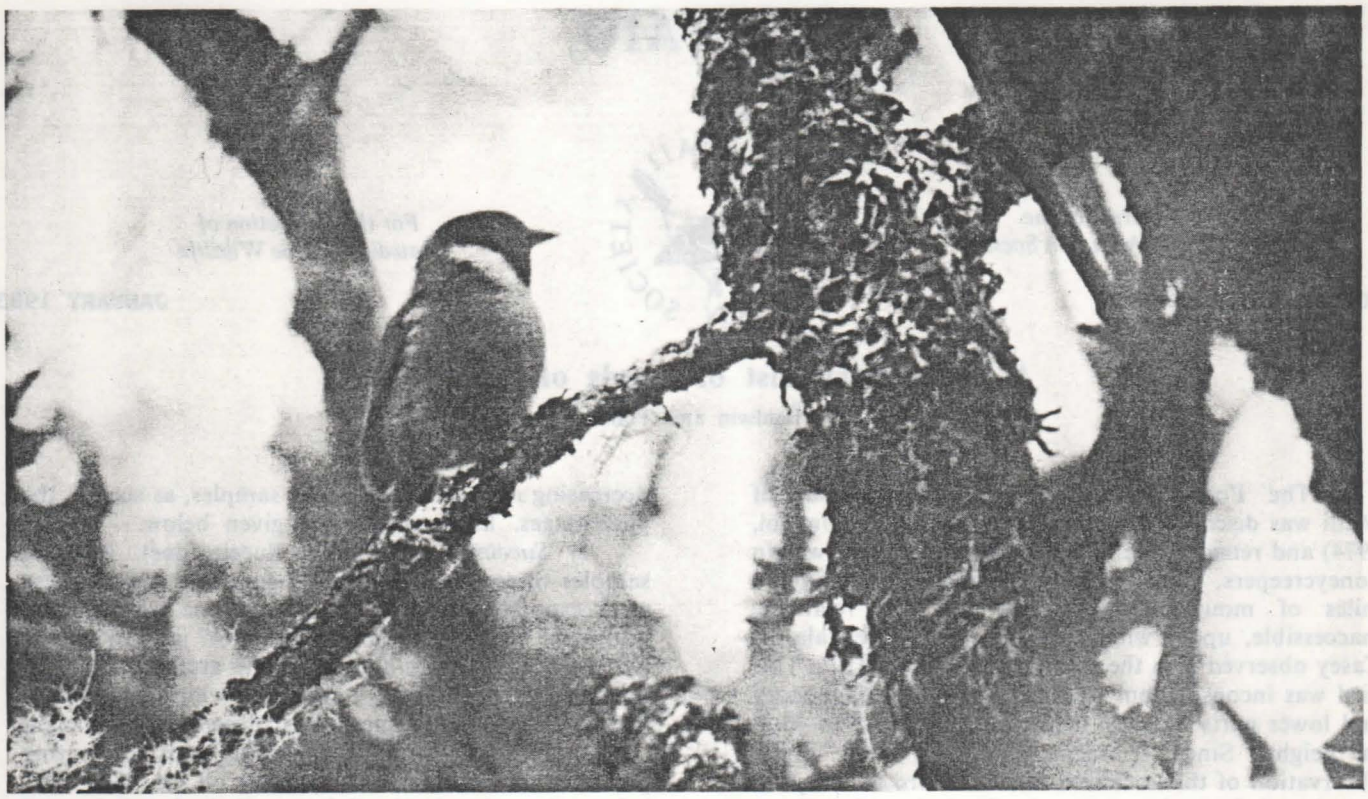
RESULTS

The results of this study are presented in Table 1 as a list of identifications of foods, along with the number, size, and percentage of food types. The items are arranged approximately in the order of their decreasing representation in the samples, as seen in the percentages. Explanations are given below.

1) *Succinea* sp. (family Succineidae). In both samples there was a total of 72 succineid snails. These were estimated from 24 jaws plus one whole body, minus the shell, in sample no. 1 and 47 jaws in sample no. 2. Each jaw bore a square plate attached near the outside edge of the arch, a condition which is unique to the succineids. Just one jaw is present in each snail, the jaw being a chitinous apparatus used for cutting plant tissues. Y. Kondo, in a letter of June 22, 1976, informed us that in the living snail the jaw is located just inside the upper lip. The average width of jaw was 1.19 mm and the average length (with accessory plate)

Po'o-uli habitat in Koolau Forest Reserve, Maui

Photo by Rob Shallenberger



Po'o-uli in Koolau Forest Reserve *Photo by Howard Hunt*

was 1.17 mm. Since no succineid shells were found, it appears possible the Po'o-uli ate only the body and rejected the shell; however, C. C. Christensen in comments to the editors, 9 August 1982, suggested another possible explanation for the absence of shells: stomach acid may have dissolved away the calcarious material from the fragile succineid shell, leaving non-calcareous parts only.

2) *Nesopupa* two species, (Pupillidae), *Tornatellaria* sp., and *Tornatellides* sp., (Achatinellidae) and *Zonitoides arboreus* (Zonitidae). In all, 221 snails of minute size (2-4 mm) were consumed, as revealed by 58 jaws and one whole snail in no. 1 and 162 jaws in no. 2. This estimate assumes that each jaw represents one snail (Y. Kondo (pers. comm.) wrote that "in most pulmonates it is a single jaw... in very juvenile pulmonates twin jaws have been found which in the adult become single"). The tiny arcuate jaws had an average width of 1.08 mm and length of 0.59 mm. Since shell fragments were abundant and some whole and nearly whole shells were present, it appears the Po'o-uli took the shell along with the snail. The shells were probably partially crushed as they were eaten.

3) Snout beetles (family Curculionidae). Fragments of snout beetles were abundant in both samples. Body size ranged from 2.4 to 9.0 mm, and wide variation was seen in length and width of snouts representing several kinds of weevils. C. J. Davis paid particular attention to the snout beetles and noted that both large and small *Proterhinus* sp. (Aglycyderidae) occurred in both samples. He recognized the presence of other weevil types. He searched for evidence of the bark beetle *Nesotocus* (family Scolytidae), "abundant at times on olapa," but reported the "femurs and tibiae were close but much too small" (pers. comm., Feb. 2, 1977).

4) Predaceous ground beetles (family Carabidae). Specimen no. 1 contained many elytral fragments that were either smooth or ridged, indicating the presence of at least two species, both approximately 4.0 mm in length. Specimen no. 2 yielded carabid parts representing perhaps four types which varied in size between 4 and 9 mm and averaged 5.5 mm in length.

5) Souring beetles (family Nitidulidae). Two species were represented in no. 1, three individuals of one species averaging 3.0 mm in length and one of another species 3.2 mm in length. Four species of well preserved souring beetles could be distinguished in no. 2. Average sizes of the four species were 4.6, 5.0, 2.3, and 3.0 mm respectively, as revealed in nine individuals. C. J. Davis (pers. comm.) confirmed the above identifications but had insufficient reference material to go beyond family level.

6) Parasitic wasps (families Ichneumonidae and Braconidae?). Eight individuals were represented in both stomachs by numerous black and orange fragments of appendages and body parts. Most remains were of ichneumonid wasps, although some might have been braconid.

7) Lepidoptera larvae. Consumption of seven

individuals was shown by the presence of 11 small mandibles of mittlike shape.

8) Araneida (spiders). Fragments such as fangs, claws, legs and a cephalothorax were found.

9) Wood borer beetle larvae (family Cerambycidae?, long-horned beetles). Three larvae were represented by larval mandibles of scooplike shape, characteristic of wood borers.

10) Predaceous beetle larvae (family Staphylinidae?, rove beetles; or family Carabidae?). Four larvae were indicated by larval mandibles of predaceous type with piercing teeth (projections).

11) Leafhopper (family Cicadellidae). One hopper was indicated by an abdomen.

12) *Leialoha mauiensis* (Muir)? (family Delphacidae, planthoppers). One individual was represented by head capsule, scutellum, and tibial calcar (see Zimmerman, 1948, vol. 4, pp. 134, 139-143).

13) Planthopper (family Delphacidae). One hopper was represented by a head capsule and other parts.

14) *Pseudoclerada*? sp. (family Miridae, leaf bugs). One specimen was indicated by a porrect (extended forward) head capsule (Zimmerman, 1948, vol. 3, p. 201 ff).

15) Seed bug (family Lygaeidae, tribe Orsillini). One individual was represented by a scutellum, head capsule, and other fragments.

16) *Cepheus* sp. (family Cepheidae, oribatid mites). One individual was found of this genus, members of which, according to T. A. Woolley, are xylophagous and associated with bark and wood.

Table 1. Food items from alimentary tracts of the two Po'o-uli, with numbers of individuals, percentages and sizes.

Name of food item	Number in #1	Number in #2	Percent of total*	Est. body length, mm
1) *Succinea* sp. (snail)	25	47	15.5	8.7†
2) *Nesopupa* two species (snail) *Tornatellaria* sp. (snail) *Tornatellides* sp. (snail) *Zonitoides arboreus* Say (snail)	59	162	47.5	2—4‡ shell, tip to base
3) Snout beetles (Curculionidae; including *Proterhinus* spp., Aglycyderidae)	23	62	24.1	2.4-9§
4) Predaceous ground beetles (Carabidae)	7	7		4-9
5) Souring beetles (Nitidulidae)	4	9		2.3-5
6) Parasitic wasps (Ichneumonidae)	4	4	1.7	6-14
7) Lepidoptera larvae	7	0	1.5	5-20
8) Spiders	3	1	0.9	1.7-11.5
9) Wood borer beetle larvae (Cerambycidae?)	2	1	1.5	8
10) Predaceous beetle larvae (Staphylinidae? or Carabidae?)	0	4		5-10
11) Leafhopper (Cicadellidae)	1	0	0.7	4
12) *Leialoha mauiensis* (Muir)? (planthopper)	0	1		6
13) Planthopper (Delphacidae)	0	1		6
14) *Pseudoclerada*? sp. (leaf bug)	0	1	0.4	5.3
15) Seed bug (Lygaeidae)	1	0		5
16) *Cepheus* sp. (oribatid mite)	1	0	0.4	1
17) *Scheloribates* sp. (oribatid mite)	1	0		1
18) Springtail (Entomobryidae)	1	0	0.2	3.5
19) Green lacewing larva (Chrysopidae)	0	1	0.2	9
20) Arthropods, unidentified	4	4	1.7	2-5(?)
21) *Cheirodendron trigynum* (olapa) seeds	13	4	3.7	3.9
Totals	156	309	100.0	

*Percent of total food items with samples combined, i.e. 465 items.
†Measurement of one whole body removed from shell.
‡Range based on measurement of several whole or nearly whole shells.
§Range, see text; same applies to food items 4 through 20.

17) *Scheloribates* sp. (family Scheloribatidae, oribatid mite). One individual was found of this genus, which is known for "climbing on things," according to T. A. Woolley (pers. comm.). The exoskeletons of this and the preceding mite were both lacking sensillae, hairs, and some of the appendages.

18) Springtail (family Entomobryidae). One individual was represented by an exoskeleton.

19) Green lacewing (family Chrysopidae). One larva was indicated by larval mandibles, trumpet empodium and other fragments.

20) Arthropods, unidentified. Fragments of eight small arthropods, probably all insects, were recorded.

21) *Cheirodendron trigynum* (olapa, a tree). This tree is common in the mountain rain forest where the Po'o-uli lives. It produces loose clusters of fruits. J. D. Jacobi sent herbarium specimens of the fruit collected on Maui at the locality where the Po'o-uli occurs. The fruits averaged 4.6 x 4.5 mm in size, and each fruit contained three seeds. Both specimens of Po'o-uli foods contained broken fruits, seeds, and fragments of rind or fruit covering. The quantity of these remains suggested that five fruits were represented in sample no. 1 and two fruits in no. 2.

DISCUSSION

The above data, although derived from a very limited sample, enable us to draw some tentative conclusions about the diet and feeding of the Po'o-uli. The birds eat food of both animal and plant origins. Snails appear to be very important, for the number of snails ingested represented 63 percent of all the food items, although just what part of the total food biomass these snails contributed was not determined. The Po'o-uli appears to be unique among Hawaiian honeycreepers, and indeed among all native Hawaiian song birds, in eating molluscs in such quantity as to form the majority of the observed foods. In his species accounts Berger (1972) makes no reference to the eating of land snails by Hawaiian honeycreepers. However, Van Riper and Scott (1979, p. 65) cite a record reported by Henshaw in 1902 of a minute land snail in the gut of one Hawaiian thrush (*Phaeornis obscurus*).

Arthropods likewise formed a large fraction of the foods, 33 percent of all items recorded from the two birds. Insects made up more than 90 percent of the arthropod component. More than half (55 percent) of the arthropods recovered were snout beetles. Lesser amounts were eaten of other beetles, small wasps, small caterpillars and other larvae, while only one or two examples were taken of various bugs, hoppers and springtails. Other arthropods ingested were a very few spiders and oribatid mites. It is noteworthy that no flies (Diptera) were recorded in the sample. Flycatching or hawking tactics were not much used by the Po'o-uli in its foraging, yet wasps were taken in small numbers. The estimated size, i.e. the approximate length as extrapolated in most cases, of all these insects and related arthropods totalling 155 individuals ranged from 1 to 20 mm, with mean of 5 mm and standard deviation 4 mm. Insects 10 mm or over in length were a minor fraction (six percent) of the arthropods eaten, although their contribution to the food biomass may have been significant.

Food taken from plants was a minor part of the Po'o-uli diet. Only 3.7 percent of food items were parts of olapa fruits. Nectar, if taken, would not show up with the methods used in the analysis. Neither pollen nor such tiny flower insects as thrips were present in the samples, however. Casey watched the Po'o-uli feeding on many occasions within low trees and understory plants but never saw the birds feed at flowers.

ACKNOWLEDGMENTS

Assistance in the identifications was received from the following persons and is gratefully acknowledged: Clifton J. Davis checked all Coleoptera an identified *Proterhinus*, James D. Jacobi kindly assisted with olapa (*Cheirodendron trigynum*) seeds, Yoshio Kondo worked out the snails (Pulmonata), Tyler A. Woolley identified the mites (Acarina), and Howard E. Evans advised on some of the immature insects. We wish also to thank Carl C. Christensen, Wayne Gagne', Stephanie Nagata, Carol Pearson Ralph, and Charles van Riper III for their excellent comments and suggestions for improving the manuscript.

LITERATURE CITED

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

Casey, T. L. C. and J. D. Jacobi. 1974. A new genus and species of bird from the Island of Maui (Passeriformes: Drepanididae). B. P. Bishop Mus. Occ. Papers XXIV (12): 215-226.

Van Riper, C. III and J. M. Scott. 1979. Observations on distribution, diet and breeding of the Hawaiian Thrush. Condor 81: 65-71.

Zimmerman, E. C. 1948. Insects of Hawaii. Univ. of Hawaii Press, Honolulu.

9501 Colony Drive
Redwood Valley, California 95470

3243 Beaumont Woods Place
Honolulu, Hawaii 96822

CHANGE OF ADDRESS?

Are you moving and is your address changing? Are you receiving duplicate *'Elepaio* issues? Has your *'Elepaio* stopped coming altogether, even though you paid your dues? Please notify the Hawaii Audubon Society at P.O. Box 22832, Honolulu, Hawaii, 96822. The sooner the Society is notified about the situation, the more time, money, and effort are saved.

NORTH HALAWA VALLEY FIELD TRIP FEBRUARY 15, 1982

by Peter Donaldson

Twelve people were on hand for this hike along North Halawa Stream. The weather was beautiful, with sunny skies, warm temperatures and fresh southwest winds. The water level in the stream had dropped from high levels earlier in the winter. This was fortunate, since the trail crosses the stream several times.

North Halawa Valley has been used for agricultural purposes since ancient Hawaiian times. On our hike, we saw evidence of this long-term activity and the disturbance it has produced. We passed the remains of ancient taro terraces, crumbling aquaducts once used to irrigate sugarcane, house foundations, and a Portugese oven of more recent origin. As a result of agricultural activity, exotic plant species dominate the lower valley. We saw mango, breadfruit, mountain apple, passionfruit, guava, banana, taro, ironwood, and eucalyptus - all exotic plants.

The birds we encountered were all exotics. We saw Spotted Munias, House Sparrows, Spotted and Barred Doves, and Red-vented Bulbuls near the trailhead. Along the trail we saw many Northern Cardinals, Shamas, and Japanese White-eyes; we also heard 2 Japanese Bush-Warblers. Gray's Swiftlets have been seen in N. Halawa Valley, but we were unable to find any. These birds, which catch insects on the wing, are best seen near dawn or dusk. The bright sunshine and fresh winds which made our hike so pleasant probably reduced our chances of seeing any swiftlets. In the stream were more exotic species: guppies and tadpoles.

We hiked about two miles up the valley and then stopped for an early lunch under some huge old mango trees. Further up the valley, native plants begin to dominate, and some native birds can be seen; but, the trail becomes overgrown with hau branches and is hard to follow. So, we turned around after lunch and hiked back to the trailhead by 1:30 p.m.

Sadly, it may soon be impossible to take this pleasant hike along North Halawa Stream. The U.S. Department of the Transportation has given final approval to build the H-3 freeway through N. Halawa Valley. The new freeway will follow the route we walked on this hike.

HELP WITH THE 'ELEPAIO

Would you like to help with production of the February *'Elepaio*? Please call Marie at 533-7530. No experience necessary: we will train!

HURRICANE IWA: REQUEST FOR OBSERVATIONS

Some preliminary observations suggest that Hurricane Iwa (named after the 'Iwa, or Great Frigatebird), which passed the Hawaiian Islands on November 23, had some significant impacts on the wildlife and habitats of Kauai and Oahu. For example, coral reefs on parts of Oahu have apparently been severely damaged (e.g., see Honolulu Advertiser, 11 December 1982, p.A3).

This is a rare opportunity to observe impacts of a hurricane in both terrestrial and marine habitats. If you noticed interesting or unusual wildlife behavior before, during, or after the storm, or significant habitat or population changes resulting from it, we would like to hear from you. Please write down and mail your observations to: Iwa Observations, Hawaii Audubon Society, P.O. Box 22832, Honolulu, Hawaii 96822. Be sure to include with each observation all the available relevant information such as location, time, direction, duration, species involved, etc. Observations of impacts on, or behavior of, single species, both native and exotic, are of particular interest.

NATURAL HISTORY MAGAZINE FEATURING HAWAI'I

The latest issue of Natural History magazine is devoted to the natural history of Hawai'i. The entire issue features articles on topics ranging from the formation of our next island to our unusual forms of wildlife to the uncoverings of anthropologists in the relationships between man and the natural environment. This landmark issue is sure to become a collector's item. If you are interested in purchasing a copy, Hawaii Audubon Society has copies available for $2.00 plus 50¢ postage. Just send your name, address and payment in check to: Hawaii Audubon Society, P. O. Box 22832, Honolulu, Hawaii 96822.

Suzan Harada

HAWAIIAN HAWK POSTERS

The Hawaiian Hawk color posters ("Pulama, Conserve Native Wildlife") are still available for sale from the Conservation Council for Hawaii at a minimal cost. All proceeds are being used to pay for the printing and distribution of thousands of wildlife week packets to local classrooms. Write to: CCH, P.O. Box 2923, Honolulu, HI 96802.

WHALE WATCHING SEASON AGAIN

It's whale watching season in Hawaii again. Hawaii's visiting humpback whales will soon face the daily onslaught of researchers, photographers, divers, boaters, tourists, aircraft and other whale enthusiasts. Once again this year, the National Marine Fisheries Service will make every effort to protect the whales on their annual migration and stay in Hawaii.

Humpback whales, Hawaii's official State marine mammal, migrate to local waters from northern waters to mate, give birth, and nurse their young. They congregate in Hawaiian waters between December and May. Based upon counts from previous years, the Hawaii population of humpbacks is estimated to be between 400 and 600 whales. This year, researchers will again conduct population counts and obtain behavioral information so that we can better understand the impacts of human activities on humpback whales.

Because of their low numbers, humpback whales are an endangered species. They are legally protected by the Endangered Species Act of 1973 and the Marine Mammal Protection Act of 1972. The National Marine Fisheries Service is mandated to enforce these Acts that protect the humpback whales. Violators of either Act can be fined up to $20,000 and may receive sentences of up to one year in prison.

Last year, special agents of the National Marine Fisheries Service received 25 complaints of whale harassment. Legal action was taken in 13 of these cases. NMFS agents will be monitoring humpback migration throughout the Hawaiian Islands again this season. If you see harassment of a whale, please call the Island Answering Service, Maui, at 244-7572. On Oahu call 955-8831. All information received will be treated confidentially upon request.

BY-LAWS AVAILABLE

Copies of the new HAS by-laws, incorporating 1982 amendments, are now available. To obtain a copy, please send a written request to Hawaii Audubon Society, P.O. Box 22832, Honolulu, HI 96822.

MEMBERS WELCOME AT BOARD MEETINGS

The Board encourages members to attend and participate in the monthly Board meetings. It is a good way to get more involved in conservation issues and in the workings of the Society.

RENEWAL REMINDER

Local Hawaii Audubon Society memberships (except life members) and *'Elepaio* subscriptions are due for renewal on 1 January, 1983. The dues remain at $6.00 for the 12 months of 1983. Dues for junior members (18 years and under) remain at $3.00. Any membership not paid by the end of February will be dropped from the rolls.

Hawaii Audubon Society members who are also members of National Audubon Society should NOT send dues at this time. These joint memberships are automatically renewed with the National membership.

Send your check to: Hawaii Audubon Society, P.O. Box 22832, Honolulu, Hawaii 96822.

'ELEPAIO BY AIRMAIL

Members and subscribers wishing to have the *'Elepaio* sent by airmail to addresses outside Hawaii may now obtain this service by remitting the additional amount needed to cover airmail postage costs. These amounts for 12 monthly issues are:

U.S. and territories and Canada- $4.50
Central America, Carribean - $12.50
South America, Europe, Africa, and Pacific Area - $14.50

CALL FOR BIRD FEEDER AND HOUSE DESIGNS

A new book, tentatively titled *The Audubon Society Handbook for Attracting Birds*, will include innovative homemade designs for bird feeders, houses and baths. The author, Stephen W. Kress, is looking for improvements to standard models of feeders and houses, and original designs for any homemade bird-attracting creations. Novel approaches to repelling squirrels, cats and nuisance birds are also welcome. In addition to the handbook, some of the submitted material may be selected for articles in the Cornell Laboratory of Ornithology's new magazine, *The Living Bird Quarterly*. The designers of selected plans will be acknowledged in the book and articles.

Mail detailed plans with measurements (and photographs if available) to: Dr. Stephen Kress, Cornell Laboratory of Ornithology, 159 Sapsucker Woods Road, Ithaca, New York 14850.

JANUARY PROGRAM: BIRDS OF HO'OMALUHIA

The guest speaker for our Monday 17 January meeting will be Martha McDaniel, the Program Co-ordinator for Ho'omaluhia. Her talk, entitled *Birds of Ho'omaluhia*, will include slides of the City and County's recently created botanical and recreational park, which is located at the base of the Koolau Mountains near Kaneohe.

The meeting will be held at McCully-Moiliili Library at 2211 S. King St., Honolulu, at 7:30 p.m.

JANUARY FIELD TRIP: KAPIOLANI PARK

The Sunday, 9 January field trip will be to Kapiolani Park, Honolulu, to look for exotic birds.

Interested persons should meet at 7:00 a.m. (NOT 7:30) at the parking lot between the archery range and tennis courts on Paki Drive. Bring lunch, water, rain gear, and interested friends! For more information, call Mike Ord at 737-2535.

XIX CONGRESSUS INTERNATIONALIS ORNITHOLOGICUS - FIRST ANNOUNCEMENT

At the XVIII International Ornithological Congress in Moscow the International Ornithological Committee accepted the invitation of the National Museum of Natural Sciences of Canada and of the Canadian ornithological community to hold the XIX Congress in Canada. The Congress will be held in Ottawa, Canada, from 22-29 June 1986. It elected Dr. Prof. Klaus Immelmann (West Germany) as President of the Congress. Dr. Henri Ouellet (Canada) was designated as Secretary-General.

Details about the general and scientific programs, field excursions, and other activities during the Congress will be available later.

Those interested in participating in the Congress are urged to inform the Secretariat in order to obtain announcements and application forms. Correspondance should be addressed to: The Secretary-General, Dr. Henri Oeullet, XIX Congressus Internationalis Ornithologicus, National Museum of Natural Sciences, National Museums of Canada, Ottawa, Ontario, Canada, K1A OM8.

ELECTION RESULTS

Results of the recent HAS mail-in balloting were announced at the 20 December meeting. The following officers and board members were elected to serve for 1983:

President:	Robert Pyle
1st Vice-President:	Charles Lamoureux
2nd Vice-President:	Wayne Gagné
Treasurer:	Norris Henthorne
Recording Secretary:	Suzan Harada
Corresponding Secy.:	Thea Johanos
Directors:	Patricia Avery
	Phillip Bruner
	George Campbell
	Erma Ikawa
	Marie Morin
	Marion Saunders

IF NOT A MEMBER, PLEASE JOIN US

JOINT MEMBERSHIP
(National and Hawaii Audubon Societies)

Individual	$ 25.00
Family	32.00
Sustaining	50.00
Supporting	100.00
Contributing	250.00
Donor	500.00
Life (single payment)	1500.00
Dual Life (single payment)	2000.00

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

LOCAL MEMBERSHIP
(Hawaii Audubon Society Only)

Regular	$ 6.00
Junior (18 and under)	3.00
Subscriber (non-Hawaii residents)	6.00
Life	150.00

(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.

CALENDAR OF EVENTS

Jan. 9 (Sun.) Field trip to Kapiolani Park. Meet at 7:00 a.m. at the park (see p. 59). Leader: Mike Ord (737-2535).

Jan. 10 (Mon.) Board meeting at the home of Bob Pyle, 741 N. Kalaheo, Kailua, at 7 p.m. (262-4046). Park in the driveway or on the lawn under the coconut trees, not on the shoulder of the road.

Jan. 17 (Mon.) General meeting, featuring *Birds of Ho'omaluhia*, by Martha McDaniel. McCully-Moiliili Library, 2211 S. King St., Honolulu, at 7:30 p.m.

TABLE OF CONTENTS

Vol. 43, No. 7, January 1983

HAWAII AUDUBON SOCIETY
P. O. Box 22832
HONOLULU, HAWAII 96822

ADDRESS CORRECTION REQUESTED

Non Profit Organization
U. S. POSTAGE
PAID
Honolulu, Hawaii
Permit No. 1156

HAWAII AUDUBON SOCIETY