



Opportunistic Nectarivory in some Introduced Hawaiian Birds

C. John Ralph

Nectar is an extremely rich energy source for many species of birds, and is the major food item for some groups, such as hummingbirds (*Trochilidae*). When especially rich sources of nectar are available, some species not normally considered nectarivorous will also take nectar (e.g. Fisk and Steen 1976). This note documents the use of nectar by several species in Hawaii not normally associated with nectar feeding.

Methods

From 3-11 March 1981, I observed a flowering Tigers Claw tree (also known as the Indian Coral Tree or Wiliwili-Haole, *Erythrina variegata* var. *orientalis* (L.), on the grounds of the State Office Building, on Punchbowl and Beretania Streets, downtown Honolulu. The tree was 9 m tall with an average canopy diameter of 10 m. In Hawaii, this species loses its leaves in January and February. Leaf loss is followed by the appearance of many bright red flower clusters up to 0.5 m long that spread horizontally from the branch ends (Neal 1965). The flowers are quite open, making the nectar available to unspecialized nectarivores. During the eight-day period of observation, the tree had about 75 flower clusters. In an effort to quantify the birds' use of the flowers, I took 44 one-minute counts of all birds using the flowers in the tree. I took these counts at irregular intervals from 06:00 to 17:00, but no counts were less than 20 minutes apart.

Results

In the eight-day period, I saw six species feed at the flowers, presumably for nectar (Table 1). Other species were present at or near the flowers, but did not repeatedly probe into the corolla. I presumed that they did not take nectar. In previous years I have also observed the following species to feed at the flowers in the same tree: House Finch (*Carpodacus mexicanus*); Java Sparrow (*Padda oryzivora*); Northern Cardinal (*Cardinalis cardinalis*); and Nutmeg Mannikin (*Lonchura punctulata*). Only the cardinal has been previously reported feeding at flowers (Russell 1951). The House Finch is a common user of sugar water feeders in North America (e.g. Spofford and Fisk 1977), but has only rarely been reported at flowers (Baldwin 1953:298). These four species are all relatively rare in the downtown area, and thus would be expected to be seen only rarely feeding at this flowering tree.

In the first three hours of the day, the Common Myna (*Acridotheres tristis*) was the most common bird feeding at flowers (Fig. 1). Its use gradually declined from an average of 9.0 birds per census period, between 06:00 and 07:00, to 5.0 between 09:00 and 10:00. Meanwhile, combining all other species, their use increased from 2.3 birds, between 06:00 and 07:00, to a high of 5.2 birds, between 08:00 and 09:00. By noon, use by all species had dropped

off; both mynas and all other species combined averaged about one bird visiting the tree per census period.

Approximately 50 aggressive encounters occurred during the period of observations. Most of these were myna:mya interactions, but about five were myna:Red-vented Bulbul (*Pycnonotus cafer*), with the myna the victor. Upon about 20 other occasions, a myna flew into a flower clump and another species immediately left the vicinity. This was observed with the Japanese White-eye (*Zosterops japonicus*), the Red-vented Bulbul, and the House Sparrow (*Passer domesticus*).

TABLE 1. Frequency of occurrence of birds feeding at a single *Erythrina* tree.

Species	Total Birds Observed	Per Cent of Total
Red-whiskered Bulbul (<i>Pycnonotus jocosus</i>)	1	0.3
Red-vented Bulbul (<i>Pycnonotus cafer</i>)	19	6.1
Common Myna (<i>Acridotheres tristis</i>)	195	62.9
Japanese White-eye (<i>Zosterops japonicus</i>)	40	12.9
House Sparrow (<i>Passer domesticus</i>)	54	17.4
Red-crested Cardinal (<i>Paroaria coronata</i>)	1	0.3

Discussion

The white-eye family (*Zosteropidae*) is well known as nectar feeders, (e.g. Beehler 1980) and the Japanese White-eye is a highly opportunistic feeder in Hawaii (S.G. van Riper, pers. comm.; Ralph, unpubl. data). Most of the other species documented here, however, are not known in the literature to be nectarivorous. I have seen the white-eye, and both the Red-vented Bulbul and Red-whiskered Bulbul (*Pycnonotus jocosus*), come to sugar water feeders at my former residence in Honolulu. It is interesting that when presented with this apparently rich food source, mynas, finches, and weaver finches all desert more traditional foods to partake of nectar. As many authors have shown in other areas (e.g. Wolf 1970, Colewell et al 1974, Gill and Wolf 1975), competition for such food sources can be intense. Indeed, it appeared from the diurnal pattern of foraging, that the much larger mynas possibly excluded other species in the early morning hours. Only when the nectar levels had possibly declined to the point where the myna numbers were fewer, did these other species come in to feed.

Perkins (1903:394) remarked on the abundance of the myna in the native forest in Hawaii, stating that it was the most common bird in Hawaii. If this was indeed the case, the myna's broad foraging niche could well have placed it in direct competition with

the native nectarivores, in addition to its nest robbing predilections that Perkins mentioned.

It should be noted that intensive and brief competition may have little to do with the species overall adaptive strategy. Willis (1966) felt that, because food is often exceedingly abundant at such fruiting or flowering trees, competition is low. Terborgh and Diamond (1970), however, felt otherwise because often such productive trees are quite scarce spatially and temporally. I suspect that, in fact, *because* such trees as these are usually scarce (as opposed to the abundance of flowering trees in Hawaiian native forests: Carpenter and McMillan 1976), this local and brief resource plays little role in the life of most individuals of most species. The thought of a normally urban, open field or pasture-foraging myna "competing" in any realistic sense with a cardinal, a white-eye, or weaver finch, strains one's credulity. Rather, in most cases, the occurrence of an abundant nectar source should probably be looked upon as only as significant to the species' adaptation as ice cream stores are to the average human—nice, not necessary, and even perhaps unhealthy for some.

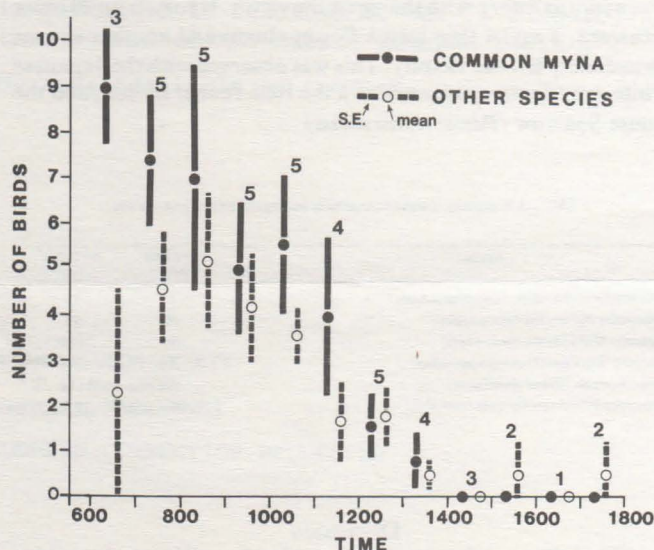


Fig. 1. Average and standard error of the mean number of birds using a flowering tree during various time periods. Number of samples of each time period are shown above.

Acknowledgements

I received helpful comments on this manuscripts from Sheila Conant, Cameron B. Kepler, Carol Pearson Ralph, Charles van Riper III, and Stuart L. Pimm.

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U.S.D.A. Forest Service
Pacific Southwest Forest and Range Experiment Station
Institute of Pacific Islands Forestry
1151 Punchbowl Street
Honolulu, Hawaii 96813
(Present address:
Redwood Sciences Laboratory
U.S. Forest Service
1700 Bayview Drive
Arcata, California 95521)

ERRATA

The Editors apologize for the printer's errors which appeared in Doris J. Alcorn and John R. Henderson's paper entitled "Resumption of Nursing in 'Weaned' Hawaiian Monk Seal Pups". The paper appeared in the August 1984 issue of 'Elepaio (Vol. 45, No.2).

The fourth paragraph, last sentence, under the Laysan Island section should read: "They were together on 12 April, and on 15 April nursing was observed." (The word "nursing" was omitted.)

Under Conclusions, second paragraph, the last sentence should read: "However, the observation at Lisianski of temporary nursing of a weaned pup by a female whose own pup was alive indicates that females do accept such pups despite the presence of the natural pup." (The word "not" should be deleted.)

Turkey Sighting on Keauhou Ranch, Volcano, Hawaii

Howard F. Sakai¹ and J. Michael Scott²

The Wild Turkey (*Meleagris gallopavo*) was introduced to Hawaii in 1815 (Caum 1933). The first birds were from domestic stock (Hewitt 1967). They became well established on all the main islands. Population levels remained high until 1938 when a precipitous decline occurred (Schwartz and Schwartz 1949). In 1946-1947 they were believed to be restricted to a small population mostly on leeward Hawaii (Schwartz and Schwartz 1949). *M. gallopavo gallopavo* (Turlock turkey) were released at Kulani: in February 1958 four males and six females, and in May, two males and two females were released by the State Division of Fish and Game. Subsequent introductions of *M. g. intermedia* (in 1962 and 1963) and *M. g. merriami* (no release date available) were released at the Pohakuloa and Hale Pohaku area, Island of Hawaii, by the State Division of Fish and Game. This resulted in increased numbers and a range expansion, and by the 1970's a hunting season had been established. A recent survey described this species as "well established throughout Kona and the upper slopes of Mauna Kea" (Scott et al. in prep.). Turkeys were not found on the eastern slopes of Mauna Loa, nor have extensive observations by many observers over the last 15 years resulted in sightings of this species in this area.

Our sighting of three turkeys, *M. gallopavo intermedia*, (two toms and one hen) on 12 July 1983 is the first report of these birds occurring in the Volcano area (Fig. 1). The turkeys were sighted in Keauhou Ranch, 9 km NNE of Route 11 on the Puu Oo trail, approximately 3 km SW of Kulani Cone at approximately 1500 m elevation. The turkeys were feeding along the edge of an open pasture when first sighted, but hurriedly moved towards cover when we stopped the vehicle. About 25 m from the turkeys were two

unbanded Hawaiian Geese (*Nesochen sandvicensis*). Game birds already established in the area and verified by the Audubon Society's Christmas Bird counts (Katahira 1978) include Ring-necked Pheasant (*Phasianus colchicus*), Kalij Pheasant (*Lophura leucomelana*), California Quail (*Callipepla californica*) and Blue Pheasant (*Phasianus colchicus versicolor*).

Interviews with the ranch manager and Bishop Estate land manager indicated that no turkeys had been released on Keauhou Ranch (Ken Dillingham and William Stayton, pers. comm.). Sometime in 1980, Gordon Cran (pers. comm.) reported seeing a few turkeys on the NW portion of Kapapala Ranch, which is roughly 20 km NE of Kahuku Ranch. Turkeys were very rare in the drier ohia (*Metrosideros collina*) and koa (*Acacia koa*) forests above the NW portion of Kau Forest Reserve, but were common on adjacent Kahuku Ranch and the upper slopes of Mauna Kea in the mamane (*Sophora chrysophylla*) — naio (*Myoporum sandwicense*) ecosystem (Scott et al. in prep.). However, no turkeys were observed in the 1984 Audubon Christmas bird count (Larry Katahira, pers. comm.) of the Volcano and Keauhou Ranch area, which implies that Wild Turkeys are not common in this area.

We speculate that the turkeys we observed immigrated to Keauhou Ranch from either Kahuku Ranch, which is roughly 40 km SSW of our sighting, or from the Mauna Kea population, which is about 25 km N (Fig. 1). There are enough forested and grassland areas between Keauhou and either of these areas to provide food and shelter for birds dispersing across a distributional gap. This sighting confirms the Wild Turkey's expansion of its range into a previously unoccupied area of Hawaii. Only time will tell how well they will further establish themselves and perhaps further expand their range.

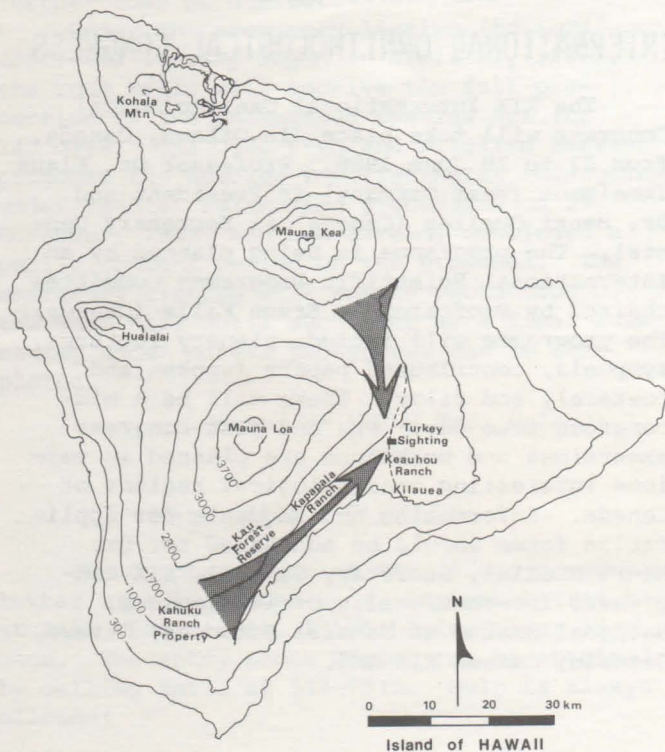
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We thank Bill Rosehill, William Stayton, the trustees of Bishop Estate, and especially Ken Dillingham, for access to the property. We also thank C. John Ralph, Ronald Walker, Charles van Riper III, Marie Morin, and John Griffin for their comments on the manuscripts.

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FIGURE 1. Possible turkey dispersal pattern into Keauhou Ranch, Volcano, Hawaii.



¹Redwood Sciences Laboratory
 USDA Forest Service
 1700 Bayview Drive
 Arcata, CA. 95521

²Patuxent Wildlife Research Center
 U.S. Fish and Wildlife Service
 Condor Research Center
 2291 A Portola Rd.
 Ventura, CA. 93003

(Previous address: Patuxent Wildlife Research Center
 U.S. Fish and Wildlife Service
 P.O. Box 44
 Hawaii National Park, HI. 96718)

MANANA ISLAND FIELD TRIP REPORT

-JULY 1984-

Manana Island, lying about a mile off the Makapu'u Peninsula, is one of Hawaii's most accessible seabird colonies. On 15 July 1984 a joint trip consisting of 27 Sierra Club and Hawaii Audubon Society members took advantage of calm seas to visit this colony.

The black juveniles of the Sooty Terns flew overhead, heralding the conclusion of a successful breeding season. Onshore, we found the tern colony largely deserted. The large flocks reported earlier had departed for the pelagic portion of their existence. However, the Brown Noddies were still incubating eggs around the periphery of the cinder cone. The Wedge-tailed Shearwaters were conspicuously active in shallow burrows. A large number of abandoned eggs had collected downslope of the eastern colony. A Bulwer's Petrel chick, newly hatched and fluffy, and one adult were located within old mortar shell holes: inadvertent habitat improvement by the military. Around midday, eight Red-tailed Tropicbirds began their aerial displays by seeming to fly backward.

The heat of the day signaled the time for our departure. Perhaps future visits could occur during the late afternoon to coincide with the return of roosting birds.

Mark J. Rauzon



Wedge-tailed Shearwaters.

'Elepaio Photo File

VOLUNTEERS NEEDED

Volunteers are always needed, for a variety of Audubon jobs both large and small!

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

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

And, a big Mahalo to Lee Bauer for volunteering to take over Kathy Harrington's old job!

2ND ANNOUNCEMENT

INTERNATIONAL ORNITHOLOGICAL CONGRESS

The XIX International Ornithological Congress will take place in Ottawa, Canada, from 22 to 29 June 1986. Professor Dr. Klaus Immelmann (West Germany) is President and Dr. Henri Ouellet (Canada) is Secretary General. The programme is being planned by an international Scientific Programme Committee chaired by Professor J. Bruce Falls (Canada). The programme will include plenary lectures, symposia, contributed papers (spoken and posters), and films. There will be a mid-congress free day. Pre and post-congress excursions and workshops are planned in various interesting ornithological regions of Canada. Information and requests for application forms should be addressed to: Dr. Henri Ouellet, Secretary General, XIX Congressus Internationalis Ornithologicus, National Museum of Natural Sciences, Ottawa, Ontario, Canada K1A 0M8.

GUAM RAIL: TEMPORARILY LISTED AS ENDANGERED

The Guam Rail (*Rallus owstoni*) is a flightless bird with relatively long legs and small wings. The upper parts are largely dark in color, the throat and upper breast are near gray, and the lower parts are blackish with white barrings. The species is known only from the Territory of Guam in the Western Pacific Ocean. It formerly occurred in grassy areas, forests, and marshlands throughout the island. A drastic numerical and distributional decline began about 1971. A 1983 survey indicated that fewer than 100 individuals survive and that these are distributed in several small, discontinuous groups in extreme northern Guam. The reduction probably has resulted in part from destruction of native habitat by human activity, but the overall rapid decline in recent years is suspected to involve some factor in addition to habitat loss, such as predation or disease.

Fewer than 100 Guam Rails are estimated to remain in the species' only known habitat, upland grassy areas in the vicinity of Anderson Air Force Base, Guam. Habitat modification, predation by an introduced snake species, and disease are suspected as contributing factors to the species' overall decline in recent years. An Air Force proposal to clear brush for security purposes in an area inhabited by the rails could have resulted in further loss of habitat.

Under the emergency listing (*Editors' note: the listing began on April 11, 1984*), the Guam Rails will receive the full protection of the Endangered Species Act for 240 days. The U.S. Fish and Wildlife Service proposed the species for listing as endangered under regular rulemaking procedures on 29 November, 1983, and had already concluded a public comment period on the proposal. The emergency listing will ensure protection of the Guam Rail until such time as a final rulemaking under normal procedures can be completed.

Based on USFWS News Release

HELP WITH 'ELEPAIO

The October issue of the 'Elepaio newsletter will be pasted-up 22 September (Sat.) at 1415 Victoria St. #1515 beginning at 12 noon. The entry phone number can be obtained by calling Marie at 533-7530. Help is always welcome!

335 HAWAIIAN INVERTEBRATES CONSIDERED FOR ENDANGERED LIST

The Interior Department's U.S. Fish and Wildlife Service has published a notice of review that identifies over 1,000 species of invertebrate animals as candidates for possible addition to the U.S. list of endangered and threatened species. The notice, published in the May 22, 1984 Federal Register, is the first such candidate list drawn up for invertebrates. Publication of the candidate notice does not constitute formal proposal of the species for addition to the endangered species list, however.

The candidate list of invertebrates is dominated by 335 species whose habitat is limited to the unique ecosystems of the Hawaiian Islands. These, and many other invertebrates on the list, represent animals that have evolved in very specialized areas--caves, wind-swept sand dunes, and isolated springs, for example. These restricted habitats, in many cases, make the species that much more vulnerable to natural or man-made disruptions.

The Fish and Wildlife Service has invited the submission of public comments and additional scientific data. That information can be sent to the Director (OES), U.S. Fish and Wildlife Service, Dept. of the Interior, Washington D.C., 20240. Available biological information on individual candidate species can be obtained from the endangered species coordinators in Service regional offices, located in the section of the country where the species are found (Portland, Oregon; Albuquerque, New Mexico; Denver, Colorado; Twin Cities, Minnesota; Atlanta, Georgia; Newton Corner, Massachusetts; and Anchorage, Alaska).

Based on USFWS News Release

WAIKIKI AQUARIUM: WEATHER IN THE PACIFIC

The Waikiki Aquarium is sponsoring a series of Natural History lectures. The September lecture will be given by Dr. E. Dixon Stroup of the Dept. of Oceanography at U.H. Manoa, Oahu. His talk is entitled "Ocean, Weather, and Climate in the Pacific". He will explain the role that the ocean has as a weathermaker.

The lecture is Wednesday, 19 September, at 7:30 p.m. in the Waikiki Aquarium foyer. Phone 923-4725 for more information. A \$1.50 donation will be appreciated.

SEPTEMBER FIELD TRIP: WAIPIO WATERBIRDS

The Sunday, 9 September, field trip will visit Waipio Peninsula on Oahu. The trip will feature Hawaii's endangered endemic waterbirds, plus some regular migrants.

Participants are advised to wear appropriate footwear for the certain mud. Also, you might want to bring along binoculars and/or a spotting scope, a field guide, water, a hat, and perhaps a snack.

Participants should gather by 7:00 a.m. at the Hawaii State Library (corner of Punchbowl and King Streets) where directions and carpooling will be available. The trip leader is Bob Pyle; if you need more information, he may be reached at 262-4046.

ALOHA TO NEW MEMBERS

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

Joint (Hawaii and National): Gordon-Akemi Daniells, Haiku; Grace F. Fuller, Honolulu; D.H. Graham, Jr., Honolulu; Hirahrar Transfer Inc., Honolulu; Island Paradise School, Honolulu; Patrick J. Kelly, Kailua; R. Lindley, Kailua-Kona; Andrew Masters, Honolulu; Dennis Sasaki, Keneohe; Mrs. Hilda H. Voss, Kihei; Banna Whara, Honolulu.

Kammy Wong

BACK ISSUES OF 'ELEPAIO

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

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

50¢ per issue, \$5.00 per volume

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\$350.00 for the complete set



PUBLICATIONS OF THE SOCIETY

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

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

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

CHECKLIST OF THE BIRDS OF HAWAII by R. L. Pyle (1983). An authoritative compilation of all species naturally occurring in Hawaii as well as those introduced by man which are currently established as viable populations. Gives each species' status.
(Postpaid).....\$2.00

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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:

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Central America, Caribbean.....\$12.50
S. America, Europe, Africa, Pacific
and Asia.....\$14.50

SEPTEMBER PROGRAM: HAWAIIAN MONK SEAL RESEARCH

The guest speaker for the Monday 17 September Hawaii Audubon general meeting will be William Gilmartin, Project Director for endangered Hawaiian Monk Seal research with National Marine Fisheries Service.

He will report on research results which he and his team have accomplished; for the past several years his workers have spent many months on Laysan, Lisianski, and other leeward islands, monitoring the reproduction of this extremely rare seal.

The title of Dr. Gilmartin's talk is "Hawaiian Monk Seal Research and Recovery".

The meeting will be held at MANOA LIBRARY at 2716 Woodlawn Dr. at 7:30 p.m. If you have friends that are interested, bring them along!

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

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

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CALENDAR OF EVENTS

- Sept. 9 (Sun.) Field trip to Waipio Pen.
with Leader B. Pyle. See page 22.
- Sept. 10 (Mon.) Board meeting at the home
of Alan Ziegler at 45-636 Liula
Place, Kaneohe. Begins at 7:00 pm.
Call 247-5318 for information.
- Sept. 17 (Mon.) General meeting at the
MANOA LIBRARY AT 2716 WOODLAWN DR.
William Gilmartin on *Hawaiian
Monk Seal Research and Recovery*.
Meeting begins promptly at 7:30pm.

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