



## Fulvous Whistling-Ducks Breeding in Hawaii: A New Indigene or Another Exotic?

by N. Jack Leishman

### INTRODUCTION

The Fulvous Whistling-Duck (*Dendrocygna bicolor* Vieillot) is one of the most wide ranging of all water birds. It is found commonly throughout subtropical North America, from California to Florida; in south-central Mexico, the Caribbean islands of Cuba and Trinidad; northern South America from Columbia to the Guianas, eastern Brazil and northern Argentina; East Africa from Ethiopia to Natal South Africa; the Malagasy Republic; and south Asia from India to Burma (Delacour 1954, Johnsgard 1975).

The first sightings of these widely distributed ducks on O'ahu, in 1982, led to speculation about their method of arrival and concern over the possibility of their breeding in the Hawaiian Islands. In July 1984, breeding was confirmed with sightings of recently hatched young in and around the James Campbell National Wildlife Refuge (NWR) near Kahuku, O'ahu. This was the second record of a migrant duck species breeding in the Hawaiian Islands (Paton et al. 1984).

Fulvous Whistling-Ducks are also called Mexican squealers and were formerly known as Fulvous Tree-Ducks. They are bright tawny fulvous with a dark brown mantle and wings (Delacour 1954). In the water, they are easily identified by their long, upright necks with narrow neck "stripes" and their short-tailed appearance. In flight, long legs dangling beyond the body, a long neck with head at or below the body line, and slow, strong wingbeat help identify the species (Johnsgard 1975).

### O'AHU SIGHTINGS

The first confirmed observation of Fulvous Whistling-Ducks in Hawai'i was made on 6 January 1982 during the winter waterfowl count at the Punamano Unit of the James Campbell NWR near Kahuku, O'ahu. Six adult birds were seen by Robert Shallenberger and David Woodside of the U.S. Fish and Wildlife Service (David Woodside, pers. comm.). On the following Saturday (9 January), six birds were again sighted (all sightings, except as otherwise noted, are based on personal communications with Robert Pyle).

In June of 1982, two adult ducks were observed at the Ki'i Unit of the James Campbell NWR. Two birds, probably the same individuals, were seen regularly between 1982 and early 1984 at Ki'i and nearby Amorient Prawn Farm. On an outing sponsored by the Foster Botanic Gardens on 13 April 1984, seven birds were observed flying around and landing in the Ki'i ponds area. Peter Donaldson sighted nine whistling ducks at the same ponds on 16 April. Between April and July 1984 groups of two, three, four, or five birds were seen, but never as many as seven or nine.

On 25 July 1984 Peter Donaldson saw three adults with a group of 16 recently hatched chicks in one of the Amorient Prawn Farm ponds adjacent to the James Campbell NWR. This is the first known observation of breeding activity of Fulvous Whistling-Ducks in the wild in Hawai'i. On the following day (26 July) while working with a Youth Conservation Corp crew at James Campbell NWR, I saw two adult Whistling-Ducks with a group of ten young in one of the canals of the Ki'i Unit (Fig. 1). The young were very small, probably not more than 3 to 4 days old. (The distance between the above two sightings is about 0.2 Km).

On 27 July, David Woodside (pers. comm.) saw 16 young with two adults, also at the Ki'i unit where I had seen them the previous day. On Saturday, 28 July, at the nearby Amorient ponds, Bob Pyle and Andy Engilis sighted three adults with 15 young and another adult pair with a single young. At the monthly waterfowl count on 1 August, Peter Pyle, David Woodside and Jim Krakowski saw five adults with sixteen young also at the nearby Amorient ponds (Jim Krakowski, pers. comm.). It is uncertain whether the groups of ten and sixteen young observed at different times were the same birds or different broods.

Typical clutch size for Fulvous Whistling-Ducks ranges from 10 to 15 eggs, but sometimes 30 to 100 eggs are laid by several females in the same nest (Peter Paton, pers. comm.), making brood size and parent/offspring associations difficult to assess.



Figure 1. Fulvous Whistling-Ducks. James Campbell National Wildlife Refuge. 26 July 1984.

Photo by N. Jack Leishman



## KAUAI SIGHTINGS

Three sightings of Fulvous Whistling-Ducks also were made on the island of Kauai between 1983 and 1984. Peter Donaldson saw one whistling-duck at the Hanalei NWR on 8 November, 1983. Jim Krakowski (pers. comm.) sighted a pair of whistling-ducks on the Waialua River, at Paradise Pacifica, near Kapa'a, and a single duck on an impoundment of the Hanalei NWR in the summer of 1984.

## INDIGENOUS OR EXOTIC?

The presence of the Fulvous Whistling-Duck in Hawai'i leads to a number of questions concerning its arrival in the islands, its potential for population increase throughout the islands, and possible competitive interactions with other native waterbirds, particularly the Koloa (*Anas wyvilliana*), Hawaiian Gallinule, (*Gallinula chloropus sandvicensis*), and Hawaiian Coot (*Fulica americana alai*).

The first question, unanswered at this time is: is the arrival of the whistling-duck a natural occurrence or is it an escape from someone's domestic stock? There is currently a serious lack of monitoring of potential pest species in Hawai'i, especially animals being kept as pets or being raised for food. There is a need for increased effort on the part of the Department of Land and Natural Resources, State Department of Agriculture, and other involved and affected agencies to determine which wildlife species are being raised and whether these captive birds ever interact with native bird populations. Because of their extensive range and ability to fly long distances, it is possible the Fulvous Whistling-Duck arrived in Hawai'i on its own, and has become a new member of the indigenous fauna. This can not be argued adequately until a thorough inventory is made of birds held caged or captive in the State.

Whether indigenous or newly introduced, two questions will be prominent regarding management strategies involving this species. First, what is their potential for population increase in Hawai'i and second, how will this affect other native waterbirds? On the mainland, Fulvous Whistling-Ducks breed in fresh-water marshes in areas of dense vegetation such as cattails or rice fields, especially where dense weedy vegetation is present (Johnsgard 1975). The pond perimeters and canals at the James Campbell NWR appear to be ideal nesting habitat. One endemic species and two endemic subspecies of endangered waterbird that may interact with Fulvous Whistling-Ducks also inhabit this area: the Koloa or Hawaiian Duck; Hawaiian Gallinule; and Hawaiian Coot.

Although the favored habitat of Koloa is mountain streams (Berger 1981), they are still found in what remains of lowland wetland habitats. Feeding competition between the two duck species might occur if the whistling-duck population were to substantially increase. Competition for nesting sites, however, would probably be minimal to non-existent since Koloa are a ground nesting species (Berger 1981) while the Fulvous Whistling-Duck nests in emergent wetland vegetation (Delacour 1954).

Since the Hawaiian Gallinule nests in areas similar to those favored by the whistling-duck (Berger 1981), an increase in the whistling-duck population could pose a competitive threat to the extant gallinule population.

The Hawaiian Coot is usually observed to be a platform nester in open water areas, although a few individuals have been observed to nest in emergent vegetation, the same as the American Coot on the mainland, and thus could compete with the whistling-duck for nesting space (Jim Krakowski, pers. comm.).

Irrespective of the mode of arrival in the Hawaiian Islands, the Fulvous Whistling-Duck should be monitored closely to assess its breeding status and interactions with native species. Previous experience with escaped and purposely introduced organisms in Hawai'i has shown clearly that negative ramifications on the biota and ecosystems can occur.

## ACKNOWLEDGEMENTS

Special thanks to R.L. Pyle for the information on the history of sightings in Hawai'i, and to R.L. Pyle, S. Conant, J. Krakowski, P. Ashman, R.A. Coleman, and P.W.C. Paton for reviewing the manuscript.

45-637 Nawahine Loop  
Kaneohe, Hawaii 96744

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Fulvous Whistling-Ducks. Lowe Agricultural Farm, Kahuku, Oahu. 25 March 1983.

Photo by Peter Donaldson



## FOREST RESERVE LEGISLATION

*(Editor's note: The following article by F. R. Warshauer includes portions of 1985 Senate Bill No. 620 relating to forest reservations, as well as the text of Mr. Warshauer's 4 March 1985 testimony on this bill.)*

This upcoming state legislature session should see the third running of a pair (House and Senate) of bills designed to upgrade the remnant state forest reserve system. The effort, directed at significant increases in acreages and stewardship of the system, is a tried and true concept in Hawaii, as some of our older readership may recognize. The bill numbers may change as amendments are made, and interested readers are urged to call Rep. Virginia Isbell and Sen. Ann Kobayashi for the latest drafts. The meat of the bills should remain about the same, and this last year's testimony should serve to explain the purpose of the bill.

The following introductory section of 1985 Senate Bill 620 states its purpose, needs and expectations:

"SECTION 1. The legislature recognizes that Hawaii's water supplies are the most important natural resource which its citizens and visitors rely upon. It has long been known that all supplies of surface and ground water are ultimately derived from the watersheds on each of the major islands. Starting in the early part of this century considerable effort has been directed and funded by Hawaii's legislature to the task of securing the watershed areas as forest reserves and to protecting them from encroachment by exploitative development and from damage by livestock and other introduced animals. In the twenty-five years since statehood, accommodation of the water, land, and recreational needs of a burgeoning population and expanding economy has led to a serious threat to the security of the forest reserve system, to repeated water shortfalls, and to the inevitable erosion of the forest reserve system resulting from ever-increasing conflicts among the multiple demands and uses placed upon the lands supporting these forests. Uses which were considered detrimental fifty years ago have today become accepted and even desirable in order to accommodate the demands of various groups. The accumulation of detriments has put the future quality and quantity of water supplies in jeopardy.

The legislature desires to reaffirm to present and future generations the priority it places on the importance of securing as much of Hawaii's watershed land as possible into the forest reserve system. The state must monitor and manage these forests to ensure their physical and ecological stability for the long-term high productivity of surface water and ground water.

The legislature desires to clarify the duties of the department of land and natural resources with regard to the expansion, management and use of the forest reserve system and to direct appropriate agencies, boards, and commissions and to assist the department of land and natural resources in meeting the stated priorities and duties."

Testimony by F. R. Warshauer

Chairman Aki, members of the Committee-- S. B. 620 has two main purposes. First is to separate the management purpose of Hawaii's forest reserves (Chap. 183) from that of game management areas and public hunting areas. Other statutes address game and hunter management, and the redundancies and conflicts with forest reserves are herein removed. Second is to spell out enhanced stewardship duties of forest reserves designed to better enable the Department of Land & Natural Resources (DLNR) to monitor and manage these forest reserves, primarily for watershed purposes but also noting the compatibility with stewardship for Natural Area Reserves and native plant and animal sanctuaries.

S. B. 620 is not meant to be a criticism of DLNR management of forest reserves, but rather a vehicle to enable the department to reestablish as a priority the stewardship of the forest reserve system it inherited from Territorial days. This specific stewardship is a priority that needs highlighting in an agency as complex and as conflicting in directions as has become the DLNR.

Certain portions of the bill serve to delete redundant, conflicting directives which have as their primary management goal the sustained yield of game animals and their introduction, for the benefit of the hunting public only.

Also removed are instructions for the forest reserves to be made self-supporting. One cannot expect to make very much money on direct exploitation of forest reserve resources, and to try to do so introduces use conflicts which compromise the watershed purposes of forest reserves, not to mention their wildlife characteristics. A source of maintenance funding worth paying more attention



to is federal funding for forest-related activities. Figures taken from the 1982-83 DLNR annual report show that the "Federal Assistance" category brought in over 3/4 of a million dollars, over 22 times the amount listed under "Forest Product Sales" in the same table.

S. B. 620 directs the department to manage the forest reserves primarily for watershed purposes, as opposed to sustained-yield management of game. Nonetheless, public hunting is directed to be maintained, where doing so does not conflict with forest reserve intent, but the reduction of damaging mammals should be the primary goal. This bill insures that the priority of watershed purposes is established for forest reserves.

This aspect of the bill is consistent with the traditional intent that the primary purpose of forest reserves is to provide a reliable source of water. Forester C. S. Judd summed it up over 50 years ago when he wrote in bold type that "water, not timber, is the most valuable product of the Hawaiian forests." While I am unaware of any economic accounting of the cash value and development potential of the water that originates in Hawaii's forest reserves, I feel that it alone is enough to pay back the taxpayer the money spent in maintaining the forest reserves.

S. B. 620 directs the fencing of forest reserves and removal of livestock and other hooved mammals. Until several years ago this section, in nearly identical wording, was a part of Chap 183. One of the major focuses of forest reserve management in the first half of the century was the fencing and the removal of damaging ungulates from the forest reserves. Since then, those animals have not changed their damaging lifestyles, and remain or have regained entry into forest reserves in Puna, windward Mauna Kea, Ka'u, Kahikinui, west Maui, and probably others. The damage is significant. On east Moloka'i, a large tract of Moloka'i forest reserve has been nearly completely deforested by deer and feral pigs in the forty years since the animals gained entry. The forest reserve at Kahikinui on south Haleakala has lost nearly all its watershed values due to cattle and goats, and streams flow only when it rains heavily, flooding the channels makai. These forest reserve fences fell apart years ago. The list of examples could go on and on. The DLNR needs to be instructed to have protective fences built (only ten miles of fences were built in 1982-83), and the Legislature needs to provide financial assistance to do so. Where possible, other methods need to be better explored, such as having adjoining ranchers and landowners/lessees establish and

maintain fences in exchange for state income tax credits. I recently heard it suggested that Hawaii should seek legislation to allow similar tax credits for federal income taxes. The fencing task is large, perhaps inadvisable in certain areas, but needs to be returned at least to the degree that was maintained a generation or two ago.

S. B. 620 directs the department to consider hooved mammals as detrimental to forest reserves and Natural Area Reserves, but also to allow the public to aid in their removal by hunting and trapping. Feral cattle are still trapped out of private forests on windward Mauna Kea for sale for hamburger, and many hunters on the Big Island trap feral pigs to fatten for eating. This bill will have no effect on non-forest reserve Game Management Areas and Public Hunting Areas, and should do little to restrict hunter access to forest reserves.

S. B. 620 directs the department to try to prevent the spread of hooved mammals into forest reserves. As important, and related, the department is instructed to act to prevent the spread of diseases carried by mammals or borne by water into forest reserves. Keeping watersheds disease-free is important in providing pure water for drinking and livestock, a safe forest environment, helping to prevent the spread of certain livestock, diseases also carried by feral ungulates, and in containment of diseases already present. Certain areas of Kaua'i and the Big Island are known to harbor human-harming leptospirosis and brucellosis, respectively. The presence of brucellosis in certain Big Island forest pigs prevents that island from being certified "validated free" of swine brucellosis by the Department of Agriculture. Bovine tuberculosis affects people as well as ungulates, is present on east Moloka'i, and can apparently be spread by other ungulates unless contained. Other organisms, such as possibly *Giardia*, are common enough in watersheds on east Moloka'i and parts of east Maui, at least, to make people sick. The department needs to do more in assisting studies of watershed diseases and to manage the forests to prevent their spread and reduce their incidence if possible.

S. B. 620 emphasizes actions already initiated by the department--the protection of forest reserves from noxious and damaging plants, utilizing biological control methods in some cases. This clarification would point out the department's role in an area previously performed by the Department of Agriculture.

S. B. 620 directs the department to avoid large-scale application of pesticides to for-



est reserves. Recent revelations about water contamination by chemicals previously thought to be safe should attest to the wisdom of this preventative measure.

S. B. 620 directs the department to consider Natural Area Reserves and sanctuaries for native wildlife and plants to be compatible with forest reserves in terms of management.

S. B. 620 specifically directs the department to monitor the condition and stability of forest reserve ecosystems in terms of physical and biological conditions important to the long-term production of pure water from these forests. Early detection of problems that now occur throughout parts of Hawaii's forests, followed by corrective action, is urgently needed of the prioritization provided in this bill.

S. B. 620 directs the department to spell out ways it can acquire more forest land into the forest reserve system, both public and private, and to seek economic incentives to recruit private forests into the system. Over the last few decades many tracts of private and public holdings have been withdrawn from forest reserve status. For example, in 1946 the Big Island had nearly 130,000 acres of private land dedicated as forest reserve, but by 1975, 98% of this had been withdrawn. Big Island public lands have been removed from forest reserve status or use at Honomalino, Ka'u and Nanawale, for example, and subsequently they have been grazed, leased out for sugar cane or cleared for papaya cultivation. Other tracts of state forests could be set aside as forest reserves (or Natural Area Reserves and sanctuaries) if the directive to do so were given by the Legislature. If not set aside as a forest reserve or otherwise encumbered, state forest lands fall under control of the Division of Land Management, and are thus subject to be leased for other purposes usually not compatible with watershed purposes. Examples of this problem occur in north Kona, a region deficient in forest reserves but with a very rapidly expanding requirement for water.

S. B. 620 requires the department to formulate and periodically update a flexible management plan to execute the duties outlined in Chap 183 and in this bill, adding the wisdom of outside agencies and the public to that of the department. This planning is needed. The state's functional plan for water resources lacks substantive discussion of watershed forests and the forest reserve system necessary to maintain them.

When Hawaii's Land Use law was effected, it took the old forest reserve and watershed forest lands and lumped them with other land under the Conservation District classification. Since then, the various demands on these lands have caused many uses to be accepted, including some which are not conducive to the long-term maintenance of watershed values. New threats have also appeared--various forest pests and the prospects of real estate speculation. Many decision makers consider Conservation District lands as a "garbage can" designation, awaiting rezoning and permit-granting for other uses. Additionally, each year, lately, bills are introduced to amend or do away with land use designation process. The net affect has been and will continue to be the degradation of Hawaii's watershed forests.

Please remember that the quality of forest reserves determines the quality of water released by the forests, as well as how and when it is discharged (reliable vs. "feast or famine"), and to a more limited extent the quantity of water produced. More important to the issue of water quantity is that of the total amount of forest reserves--the more acreage set aside as forest reserve, the more long-term water productivity Hawaii has. In an age where in an instant, native forests can be chewed up to burn for electricity, we need an enhanced mechanism to protect our watershed forests. An added benefit is that adequate protection of these watershed forests automatically provides the most comprehensive protection for the numerous species of native organisms, rare and otherwise, which inhabit them.

If this Legislature legislates a priority of forest reserve acquisition and management--a re-establishment of former tradition--then, hopefully, subsequent Legislatures will find it easier to support financially such a commitment.

Please decide favorably on this bill.  
Thank you.

*Rick Warshawer*  
P. O. Box 192  
Volcano, HI 96785



## WAIKIKI AQUARIUM SPRING 1986 ACTIVITIES

The Waikiki Aquarium announces its educational activities and courses for Spring 1986. Families and adults enjoy learning while having fun on fascinating night or day reef walks. Activities for adults also include one-day field studies on Hawaiian coastal plants and shore and water birds. Courses for adults range from two to ten sessions in length and cover a wide variety of topics including Hawaiian seaweeds, miniature marine life, coral biology, Hawaiian reef fishes, and adaptations of Hawaiian marine life. An evening lecture series focuses on exciting current topics in marine biology. Brochures and registration information are available, please call or write the Waikiki Aquarium Education Department, 2777 Kalakaua Ave., Honolulu, HI 96815; phone (808)923-9741.

## JANUARY PROGRAM HAWAIIAN STREAM ECOLOGY

This month's speaker, Andy Yuen, will be giving a presentation about "Research on Hawaii Stream Ecology." The January meeting will take place on the FIFTH WEDNESDAY of the month, JANUARY 29, at 7:30 p.m., at the Moiliili-McCully Library. Andy is a Fisheries Biologist with the Environmental Services Office of the U. S. Fish and Wildlife Service. As a masters degree student at the University of Hawaii he conducted research on native Hawaiian stream fishes. His talk will feature some of the new techniques (IFIM) used in determining ecological requirements of native gobies and other stream organisms. PLEASE NOTE THE UNUSUAL MEETING TIME.

## 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

## MAHALO FOR DONATIONS

Many thanks to the people and organizations listed below, and to those we may have overlooked. Your support through donations is vital to the success of Hawaii Audubon Society.

William Adams, Barbara Adams-Pederson, Cindy Alberts, Susan Janke Baeslack, Janet Sue Bartlett, Eugene B. Bradley, Tim Burr, L. Commeau, Gavin Cort-Brackett, D. Crawford, Mrs. Don Davidson Jr., D. Day, Mary Dillingham, Steven Donovan, Arthur Edwards, D. Ferro, Bob Figy, Priscilla Fuller, Keith Fukumoto, J. Galley, Hawaii Federation of Garden Clubs, Loren Hays, Sibyl Heide, C.C. Herzfeld, Mrs. William C. Hodge (in memory of William C. Hodge), Doris Hope, Wendy Icassara, M. Jacke, Christine Jones, Roberta Kakazu, Mrs. A.E. Lake Farmer, K. Kaimanu Lepson, P. Lewellyn, The Lloyd/Moore Foundation, Daniel Luten, George-Ann Maxon, Steven Melander-Dayton, Dan Moriarty, R.D. Mc Cabe, David Mc Elroy, Richard Palmer, Peter Paton, William Perreira, James Rennard, Chandler Robbins, Katherine Rothschild, Robert Russell, William Schipper, Saniye Schwalbaum, F. Shantz, John Sincock, J.R. Siphron, Judy R. Snyder, Jean-Marie Spoelman, Mrs. M. James Termondt, James Thropp, R.W. Van Sant Jr., Ron Walker, Robert Western, Sidney White, Edith Wilcox, Erika Wilson, Terry J. Witt, Yale University.



## JANUARY FIELD TRIPS

Wednesday, January 8

Night Reef Walk

Leader: Arnold Suzumoto (847-3511 weekdays)

Arnold is an Ichthyologist at Bishop Museum and an expert on reef organisms and has lead many reef walks. The reef can be more exciting by night as many shy creatures such as octopus, spanish dancers, and many nocturnal fish become more active. This trip is taking advantage of an exceptionally low tide so there should be a great deal of reef exposed for us to explore. Participants should be prepared to get wet and protect against the cold.

There will be a limit of 12 participants for this trip so please phone Andrew Engilis (Field Activities Chairman) at 545-2993 for your reservation, meeting time and place, and other important trip information.

Sunday, January 19

Field Identification Workshop

Leader, Andrew Engilis, Jr (545-2993)

Join Andy at Bishop Museum to hone your birdwatching skills. The beginner and expert alike can benefit from studying specimens to learn tricks in field identification. Andy will be using the museum specimens of water and introduced birds to teach and show differences in such look alikes as Black and Brown Noddy, Pectoral and Sharp-tailed Sandpiper, and many others. As an added bonus Andy will set-up and discuss many of New Guinea's spectacular birds.

Because of the room size, there will be a limit of 20 participants so call Andy for your reservation, meeting place and time, and other important trip information.

## FREE COOKIES!!

Can be had at the February paste-up for the 'Elepaio on 18 January at my house at 954 Spencer St in Makiki. We plan to start at 1:00 p.m. Anyone interested in helping with typing, proof reading or paste-up is welcome. Call me at 524-8464 for more information.

Thane Pratt

## HAWAII AUDUBON SOCIETY

## BOARD OF DIRECTORS

Because ballots were mailed late, results of this year's election will not be published until February. Unopposed candidates are listed below:

President	Phillip L. Bruner
1st V. P.	Andrew Engilis
Treasurer	Mary Engilis
Rec. Secy.	Tim Ohashi
Cor. Secy.	Michael Hall

## 'ELEPAIO

With the January issue comes a change in the editorship of the 'Elepaio. The new editors would like to express their heartfelt thanks to the previous editors Peter Galloway and Marie Morin for four years of dedicated and capable service to the Hawaii Audubon Society. Marie Morin has been especially helpful during the transition period. Many thanks also to the volunteers who over the years have helped and who we hope will continue to assist us.

Editors	Sheila Conant, Scientific Editor
	Thane K. Pratt, Managing Editor

Production	Lee Bauer, Marie Morin, Robert Pyle, Susan Schenck, Joel Simasko
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## EDITORIAL POLICY

Notice to contributors: The 'Elepaio invites authors to submit scientific articles on natural history of Hawaii and the Pacific. Scientific articles are subject to peer review. The 'Elepaio also serves as a newsletters to inform members of conservation issues, society events, and other subjects of interest to members. Contributors should be aware that all articles, trip reports, notices, etc. MUST be submitted typewritten and double-spaced. These may be sent to the Managing Editor at 954 Spencer St, Honolulu, HI 96822. Articles not subject to review MUST be received by the 15th of each month to be considered for publication in the next month's issue.



### CALENDAR OF EVENTS

- Jan. 4 (Sat.) Volcano, Hawaii Christmas  
Count, L. Katahira (967-7416).
- Jan. 8 (Wed.) Night Reef Walk, Honolulu.  
A. Suzumoto (847-3511, wk. days).
- Jan. 13 (Mon.) Board meeting at 3663 Alani  
Dr. at 5 p.m. Potluck dinner. (call  
S. Conant, 988-3960 or 948-8241-w).
- Jan. 19 (Sun.) Field Identification Work-  
shop, Bishop Museum, (call Andy  
Engilis 545-2993).
- Jan. 29 (WED.) General meeting at McCully-  
Moiliili Library at 7:30 p.m.  
NOTE DIFFERENT MEETING TIME!

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