

## A Description of the First Live Po'ouli Captured

by Paul E. Baker<sup>1,2</sup>

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**ABSTRACT**—The Po'ouli (*Melamprosops phaeosoma*) is an endangered Hawaiian honeycreeper found only on Maui, Hawai'i. It was rare at the time of its discovery in 1973, but by 1997 was on the brink of extinction with fewer than six individuals left. Two specimens were collected for the description of the species, but both proved to be immature by comparison with a pair of adults at a nest. Until 1997 no Po'ouli had ever been captured alive, and consequently descriptions of adult Po'ouli were produced from field observations. In 1997, I captured an adult male Po'ouli, which is described here for the first time. Detailed comparisons of the plumage of this adult with that of an immature specimen and previous descriptions of the species are discussed in this paper, as are differences in plumage between adult and immature males and females that may aid the sexing and ageing of birds in the field. (Received 23 August 1997, accepted 17 March 1998).

Discovered in 1973, the Po'ouli (*Melamprosops phaeosoma*; pronounced Po-oh-oo-lee) is a critically endangered Hawaiian honeycreeper found only at high elevation on northeastern Maui. Little is known about this elusive species (Engilis et al. 1996, Kepler et al. 1996). Two hatch-year birds were collected, preserved as specimens, and described in



Figure 1

1973 (Casey and Jacobi 1974), but the only descriptions of adult birds are from field observations (Engilis et al. 1996).

Between December 1995-May 1997, members of the Maui Critically Endangered Species Project studied the ecology of the Po'ouli in the Hanawi Natural Area Reserve, east Maui. This research involved banding of Po'ouli, but my early attempts at capturing Po'ouli failed because of their rarity. I often observed Po'ouli associated with Maui Parrotbill (*Pseudonestor xanthophrys*), so I captured, banded, and released Maui Parrotbill to determine with which individuals Po'ouli were associating.

### METHODS

On 15 January 1997, while on a ridge at 1700 m elevation in Unit 3 of the reserve, I heard a pair of Maui Parrotbill ap-

proaching me. I set up one 6 m mist net and used playback of Maui Parrotbill calls and song to lure the birds to the net. The female Maui Parrotbill approached the net with an adult male Po'ouli close behind. The Po'ouli disappeared among the foliage in a nearby 'ohi'a (*Metrosideros polymorpha*) tree, but the Maui Parrotbill flew away. A minute later the Po'ouli reappeared in the same tree and flew straight into the mist net. This was the first Po'ouli ever captured.

I measured maximum leg width to determine band size, then banded the bird with both a US Fish and Wildlife Service metal band and plastic color bands for later field identification. I took standard biometrical measurements of maximum unflattened wing chord, exposed culmen, tarso-metatarsus,

and tail as described by Pyle and coworkers (1987). I also recorded bill width and depth at the edge of the nostrils nearest the skull, skull length measured from the back of the head to the bill tip, and mass (g). I noted plumage and soft part colors following a morphology list designed by H. Baker for general field and museum use and the recommended format used for plumage description in Birds of North America species accounts, with colors from Smithe (1975). I then photographed and released the bird.

No detailed descriptions of the museum specimens of Po'ouli have been made, although Casey and Jacobi (1974) and Engilis and coworkers (1996) gave a good generalized description. I examined the holotype Po'ouli specimen (# 147112) in the Bishop Museum, Honolulu, collected

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*Po'ouli continued from page 25*

17 September 1973, and made a detailed description for comparison with the live bird (adult male). The holotype has been kept in a closed drawer in a specimen tray since its preparation to minimize fading.

## RESULTS

Morphometrics of live bird: Band size 1B was best fit. Age and sex: Adult male. Sex was determined by plumage characteristics (Casey and Jacobi 1974; Engilis et al. 1996, pers. obs.), and by observation of the bird's behavior, which included presenting nesting material to a female Maui Parrotbill. Breeding status: I examined the bird for the presence of either cloacal swelling or a brood patch and determined that the bird was not breeding. Wing length: 72 mm. Exposed culmen: 15.32 mm. Bill depth: 7.61 mm. Bill width: 6.33 mm. Skull length: 34.13 mm. Tarsus length: 24.92 mm. Tail length: 36 mm. Mass: 26.2 g. No body fat, lesions, food in crop, or molt. Some wear of remiges and rectrices, but not heavy. Figure 1 shows the plumage of the adult male.

Plumage description of adult male (taken from the live bird in the field): forehead, supercilium, eyeline, lores, and naries: Jet Black (89). Crown: Glaucous (79) with feathers at front more Light Neutral Gray (85). Nape: Grayish Horn Color (91). Rictals: None. Rictal flanges: Blackish Neutral Gray (82). Upper back: mix of Glaucous (79) and Raw Umber (123). Lower back and rump: Raw Umber (123). Scapular: Sepia (119) with Hair Brown (I 19A) edging. Uppertail coverts: Verona Brown (223B) with hints of Antique Brown (37) and Raw Sienna (136). Rectrices: ground color Sepia (119), edged with Verona Brown (223B) with hints of Antique Brown (37) and Raw Sienna (136). Undertail coverts and crurals: Cinnamon (39). Vent: Pale Horn Color (92). Foremost flank feathers: pale grayish off-white ground color, overlain by dirty Pale Horn Color (92) and pale Tawny Olive (223D). Rearmost flank feathers: dark version of Cinnamon (39). Belly: pale grayish offwhite ground color, overlain by dirty Pale Horn Color (92). Breast: Smoke Gray (44). Throat: lower throat white, upper throat and chin: Jet Black

(89). Auricular: white, almost forming a complete collar round the back of the neck where it fades into pale gray. Malar: Jet Black (89). Lesser coverts: Sepia (119) with Hair Brown (I 19A), and edged with Grayish Horn Color (91). Alula, median, carpal, and primary coverts: Sepia (119) with Hair Brown (I 19A) edging. Greater coverts, primaries, secondaries, and tertials: Sepia (119) with Raw Umber (123) edging. Wing lining: dirty Smoke Gray (44). Underside of flight feathers dirty silvery gray.

Description of soft parts: Iris: Mars Brown (223A)-Verona Brown (223B). Ring of skin around eye, culmen, maxilla tomium, maxilla, mandible, mandibular tomium, and gonys: Blackish Neutral Gray (82). Tongue, inside of mouth, and bill: Pink (7). Legs and toes: Warm Sepia (221A). Claws: Sepia (219). Pads of feet: Warm Buff (118).

Plumage description of immature (holotype) for comparison (taken from specimen): Forehead: dull brown-black not as

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intense as Jet Black (89), with Dark Drab (I 19B) tips. Crown: darker Olive-Brown (28) with feathers at front Dark Drab (I 19B). Nape: richer version of Olive-Brown (28) with tone of Prout's Brown (121 A). Supercilium: a dark, richer version of Sepia (119), with Dark Drab (I 19B) tips. Eyeline: a dark, richer version of Sepia (119) with Dark Drab (I 19B) tips. Lores: dull black with Dark Drab (I 19B) tips. Narials: Drab Gray (I 19D) to off-white. Rictals: None. Rictal flanges: Blackish Neutral Gray (82). Upper back: darker Prout's Brown (121A). Lower back: Cinnamon Brown (33). Scapular: darker Prout's Brown (121A). Rump and undertail coverts: Cinnamon (123A). Uppertail coverts: Warm Sepia (221A). Rectrices: darker Prout's Brown (121A). Vent, crurals, and foremost flank feathers: pale Tawny Olive (223D). Rearmost flank feathers: Cinnamon (123A). Belly: paler version of Tawny Olive (223D) than around crurals and vent. Breast: upper breast Drab Gray (I 19D). Shoulders: brownish Drab Gray (I 19D). Throat: upper throat mix of Sepia (119) feathers and lower Drab Gray (I 19D) feathers tipped with Cinnamon-Brown (33). Chin: Mix of Sepia (119) feathers and Cinnamon-Brown (33) tipped feathers. Auricular: upper feathers dark Grayish Brown (20), lower feathers pale Tawny Olive (223D). Malar: pale Tawny Olive (223D). Lesser, median, greater, and carpal coverts: a warmer brown version of Prout's Brown (121A). Primary coverts and alula: Vandyke Brown (121). Primaries: basic Fuscous (21), edged with Army Brown (219B). Secondaries and tertials: basic Fuscous (21), edged with Prout's Brown (121A). Wing lining: Difficult to examine, seemed off-white with heavy wash of pale Tawny Olive (223D).

Description of soft parts: Iris: dark brown (Casey and Jacobi 1973). Ring of skin round eye: no information. Culmen, maxilla, mandible, and tomia: almost Jet Black (89); darker than Blackish Neutral Gray (82). Gonys: tip Pale Horn Color (92). Tongue: no information. Inside of mouth and bill: no information. Legs and toes: Natal Brown (219A). Claws: pale Natal Brown (219A). Pads of feet: pale Natal Brown (219A) with a grayish tinge.

## DISCUSSION

This description of an adult male Po'ouli resembles the previous description of an adult male taken from field observations (Engilis et al. 1996), but is more detailed. The description by Engilis and coworkers (1996) has a few notable differences from my description: they report nape as "crown behind mask gray, merging on the nape to dark brown," and belly as white, but I found the nape on the adult male I caught to be Grayish Horn Color (91), and the belly a dirty Grayish Horn Color (91). They also describe the pale auricular area as a patch, whereas I found that it seems to extend in a collar almost all the way round the back of the neck, turning into a very pale gray at the back of the neck. They describe the bill as glossy black, and legs as dark pink-brown, whereas the male I captured had a Blackish Neutral Gray (82) bill, distinct from black, and Warm Sepia (221A) colored legs.

Having examined both an adult male, and an immature male (holotype) in the hand I have determined that there are a number of differences between the plumage of the adult male and that of the immature male. The crown of the immature is dark Olive-Brown (28), rather than pale gray, while its mask is dull rather than glossy, and is a dark, rich Sepia (119), with brownish tips to some feathers, rather than Jet Black (89) as on the adult male. The mask on the immature is not very extensive, and in fact above the eye only the supercilium is dark colored and part of the mask, whereas the mask is very extensive on the adult male, extending a long way behind the eye as well as a long way above and below the eye. The back of the immature is a darker shade of brown, the nape is a rich Olive Brown (28), not Grayish Horn Color (91), while underparts are pale Tawny Olive (223D), not grayish white.

Engilis and coworkers (1996), stated that the plumage of the immature male resembles that of the adult female. From my examination of the immature male and descriptions of the adult female (Engilis et al. 1996, Pratt et al. 1997), there appear to be two key differences which may help to discriminate between adult females and immature birds in the field. Adult females are grayish on the crown with medium gray underparts,

whereas the crown of the immature male is dark Olive-Brown (28), with pale Tawny Olive (223D) underparts. Differences in crown color may be the more reliable feature to separate the two age groups (pers. obs.), because color seems to be an age related difference, whereas underpart color is more likely to be variable within and between age/sex groups (pers. obs.; T. Pratt, pers. comm.).

Although the adult male I captured differed from the immature holotype in plumage it was almost identical in morphometrics to the paratype, except for exposed culmen length (adult = 15.32 mm, paratype = 14.5 mm). The mass of the paratype is unknown, but the holotype had a mass of 25.5 g (Engilis et al. 1997) and the adult a mass of 26.2 g. Although it had less mass the holotype was slightly larger in morphometrics than the adult male and paratype.

My description of an adult male also suggests that the adult male may be distinguished from the adult female in the field by crown color which is Glaucous (79) Light Neutral Gray (85) over the whole crown for males, and is a grayish band on the front of the crown merging into Olive-Brown (28) toward the rear of the crown for females. Adult male Po'ouli can also be distinguished by their Cinnamon (39) leg feathering (gray on the female) and Cinnamon (39) undertail coverts, which are buff-gray on females (Engilis et al. 1996, pers. obs.). The underpart colors and sizes of mask referred to by Pratt and coworkers (1997) may also be useful indicators of sex.

There are no descriptions of the plumage of immature females (Pratt et al. 1997), but it is probably very similar to the plumage of the immature male as in many other honeycreeper species (pers. obs.). The holotype specimen was determined to be a male by Engilis and coworkers (1996), but the paratype could not be sexed. Overall size may help to indicate sex of birds in the field because the only adult female seen during this study was noticeably smaller than the adult male that was seen feeding it.

## ACKNOWLEDGMENTS

Thanks to Thane Pratt and office staff of

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*Editor's note: More recent population data on the Po'ouli is available; see 'Elepaio, Vol. 59, No. 1, February 1999, pp. 3,5.*

## Paradise Pursuits 1999 Corporate and Prize Donors

By Sylvianne Yee, Paradise Pursuits Coordinator

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# Wild Maui Parrotbill Egg Hatched in Captivity

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A bright spot in the often gloomy story of Hawai'i's native forest birds is shining on Maui this week (March 23): biologists have successfully located a Maui parrotbill nest, collected and transported the single egg to the Maui Bird Conservation Center at Olinda, and hatched the only chick of its species in captivity. Fewer than 500 Maui parrotbills are estimated to remain in the wild, all in the Hanawi Natural Area Reserve and The Nature Conservancy's Waikamoi Preserve.

The nest, only the second one to be found during the past two years, was discovered in the Hanawi Natural Area Reserve by the State of Hawai'i's Maui Forest Bird Project crew. The egg was collected on Friday by staff of the Maui and Keauhou Bird Conservation Centers, both operated by The Peregrine Fund.

"The gourmet jelly bean-sized egg was in the last stages of incubation when we collected it," said Alan Lieberman, co-director of The Peregrine Fund's programs in Hawai'i. "The 1.54-gram chick hatched on Sunday morning, and it appears to be healthy."

Although it will be some time before the chick's sex can be determined, scientists are hoping it is a male. The only other Maui parrotbill hatched in captivity is a

female and is being maintained at the Keauhou Bird Conservation Center on the Big Island.

"Having a breeding pair in captivity would allow us to learn a great deal about the species and its life history," Lieberman said. "With so few birds remaining in the wild, and in such a rugged and remote area, we really know very little about the species."

The Maui parrotbill (*Pseudonestor xanthophrys*) is named for its large, hooked parrot-like bill, which it uses to split branches apart and pry beetle and moth larvae from the wood. It measures about 5 1/2 inches long and is olive green above with a yellow throat, breast and abdomen.

Since many forest bird species are known to lay a second clutch of eggs if the first eggs do not hatch, collecting eggs and hatching them in captivity is a technique frequently used to increase population sizes. Offspring produced by captive pairs may be released back into the wild once their habitat is secured.

"The Maui forest bird crew will be monitoring the pair to see if re-nesting occurs," said Paul Conry, wildlife program manager for Hawai'i's Division of Forestry and Wildlife within the Department of Land and Natural Resources. "The crew's major emphasis is on predator control, which benefits all of the endangered forest bird and plant species within the Hanawi Natural Area. They work under incredibly difficult circum-

stances—in very rugged terrain and often in miserable weather conditions. Events such as finding a Maui parrotbill nest and helping collect a fertile egg make their efforts worthwhile," he added.

Historic records indicate that the parrotbill was once found in dry koa forests on the northwest slopes of Haleakala. When most of its koa forest habitat was cleared for timber, agriculture, or cattle ranching, the population was restricted to less-preferred wet 'ohi'a forests. Population numbers have continued to decline as the species is threatened by habitat degradation caused by feral ungulates, alien predators such as rats, and avian diseases spread by mosquitoes.

Maui parrotbill fossils also have been found in dryland lowland habitats on the north coast of Moloka'i, but the species apparently disappeared from the island as a result of clearing and burning of lands by early Hawaiians.

Partners in the Maui forest bird project include Hawai'i's Department of Land and Natural Resources, the U.S. Geological Survey's Biological Resources Division, The Peregrine Fund, and the U.S. Fish and Wildlife Service.

source: joint news release dated 03/23/99, by The Peregrine Fund, Hawai'i State Department of Land and Natural Resources, and US Fish and Wildlife Service, Pacific Island Ecoregion

## 'Aiea—1999 Paradise Pursuits Champs

by Sylvianne Yee, Paradise Pursuits Coordinator

In only their second year of competition, the team from 'Aiea High School has captured the 1999 Paradise Pursuits championship crown. 'Aiea played atough team from Hilo High School, last year's Paradise Pursuits champs, in an exciting final game at KITV-4 on Saturday, April 17. The other two finalists were teams from Kamehameha and Maui High Schools. 'Aiea coach Jason Brennan said, "I didn't expect to win this year as the other teams were so strong. I was just happy that our team made it to the finals."

For their winning effort, team members Nicholas Alexander, Alia Thompson, Cory Yap, and Shu Zong Chen won an all expenses paid service trip to another island donated by the Sierra Club Hawai'i Service Trip Program, dining certificates from Sheraton Waikiki hotel, gas coupons from Tesoro Hawaii, and original art prints from artist Daniel Van Zyle. In addition, Coach Brennan won a gift certificate from JC Penney's. Congratulations to all of the teams who participated in Paradise Pursuits and to our 1999 Paradise Pursuits Champions, 'Aiea High School!



'Aiea High School—Paradise Pursuits Winners



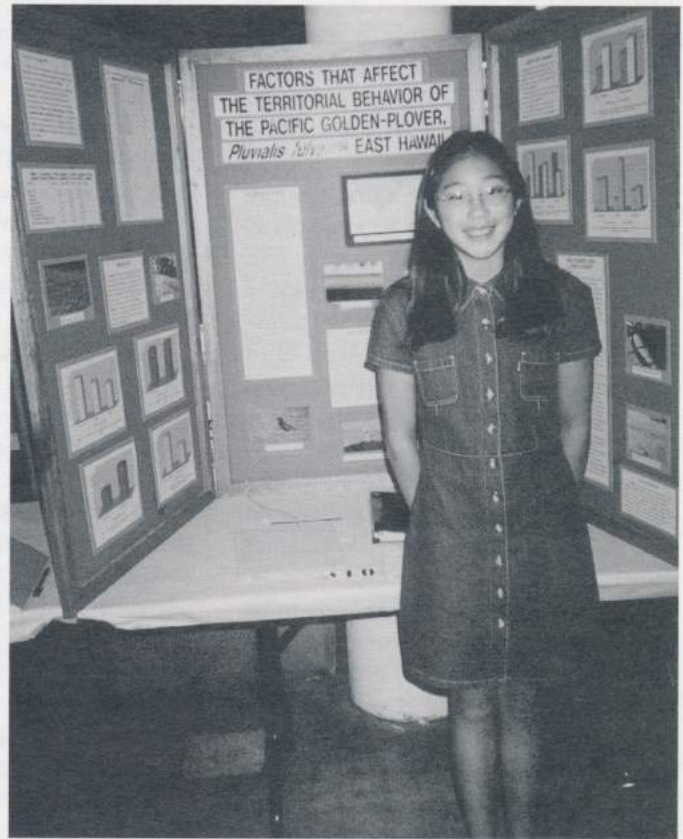
# Hawaii Audubon Society Awards For Student Research

by Wendy Johnson, Education Committee Chair

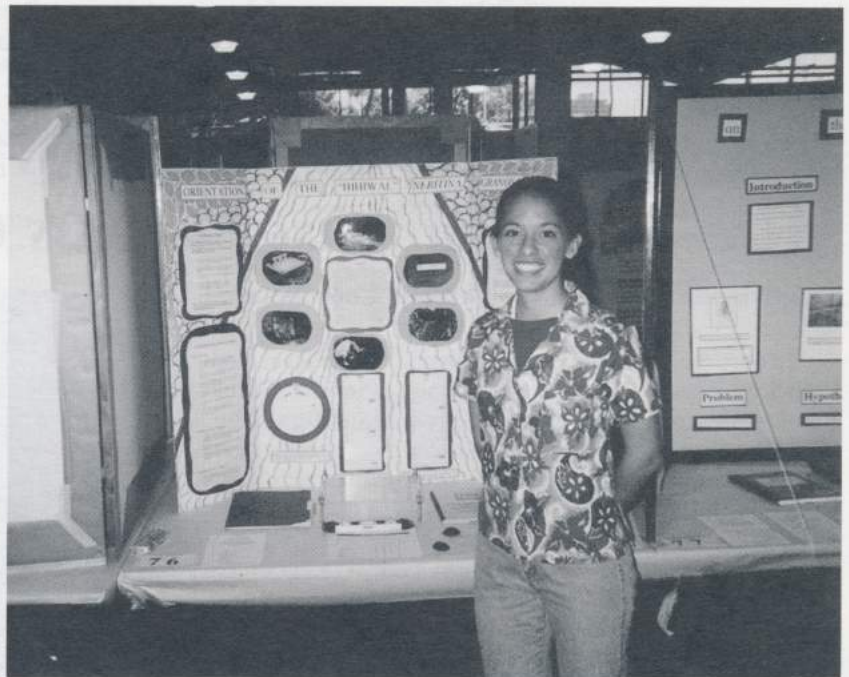
The Hawaii Audubon Society presented two awards for outstanding research relating to Hawai'i's natural history at this year's 42nd Hawai'i State Science and Engineering Fair. At the end of March, representatives of the Hawaii Audubon Society's Education Committee joined other agency judges in studying the exhibits and interviewing students on the subject of their original research.

Elisa Nishimoto, a senior at St. Joseph High School in Hilo, received the HAS Senior Division Research award for her project, "Orientation of the Native Mollusk, *Neritina granosa*, to Current and Mucous Trails". Working at Kolekole Stream near Honoumouli on the Big Island, Elisa monitored the movements of *Hihiwai* in response to various environmental factors. The investigations were conducted at night because one of Elisa's first discoveries was that *Hihiwai* are more active in the dark. Placed on a clear Plexiglas surface underwater, the snails consistently oriented themselves to move against the current. This positive rheotactic response is a determining force in the unique life cycle of the *Hihiwai*, and provides a compelling argument for the maintenance of adequate stream flow as one aspect of habitat protection for these native organisms. Elisa also found, after repeated trials, that *Hihiwai* can differentiate between their own and conspecific mucous trails. A mollusk placed on the mucous trail of another snail of its own species would follow that trail, but would ignore its own mucous trail if it was encountered. Elisa is motivated to conduct further *Hihiwai* studies because this discovery raised as yet unanswered questions about the sex of the test organisms and possible reproductive significance of this behavior.

The HAS award for outstanding Junior Division Research relating to Hawai'i's natural history went to a project submitted by Whitney Nekoba, a seventh grader at Waiakea Intermediate. Whitney spent many hours in the field while studying "Factors that Influence the Territorial Behavior of the Pacific Golden Plover, *Pluvialis fulva*, in East Hawai'i." Plovers were observed at 60 different sites on the Island of Hawai'i and territorial behavior was correlated to a variety of environmental conditions, both singly and combined. Whitney's bird watching activities included taking data on the time of day, weather conditions, disturbance levels, and the presence of competitive foraging species. The plovers did increase their territorial behavior when other birds like the common mynah and the noddy tern were nearby, probably because their presence indicated a good source of food was available. Weather and other factors also played a role in determining the level of interspecific interactions. Whitney is interested in expanding her project in the future, but her data about the natural history the Pacific Golden Plover already provides valuable information about the territorial behavior of these winter visitors to Hawai'i.



The HAS award for outstanding research in the Junior Division went to the project submitted by Whitney Nekoba.



Elisa Nishimoto's project received the HAS award for outstanding Senior Research relating to Hawai'i's natural history.



# Kaua'i Endangered Waterbirds and Wetland Taro Growers May Finally Reap Benefits From Federal Wildlife Program

by Jon Schlegel, Soil Conservationist, United States Department of Agriculture, Natural Resources Conservation Service

Kaua'i wetland taro growers have persevered through floods, hurricanes and disease (pocket rot). A cost incentive program may be a win/win situation for taro farmers and endangered waterbirds. The WHIP (Wildlife Habitat Incentive Program) wildlife goal for coastal wetlands is to create open water habitat for four species of endangered waterbirds and the Nene goose (*Branta sandvicensis*). The waterbirds the WHIP Program will benefit are the Hawaiian Coot (*Fulica alai*), Common Moorhen (*Gallinula chloropus sandvicensis*) Black-necked Stilt (*Himantopus mexicanus knudseni*) and Koloa Duck (*Anas wyvilliana*).

The Kaua'i Natural Resource Conservation Service ("NRCS") field office has most of the State of Hawai'i's restored wetlands projects for waterbirds on 60 plus acres. This is the most significant wildlife endeavor attempted by Hawai'i's NRCS in the last 25 years. The amazing feat is that with the help of Fish & Wildlife Service



Pictured in taro field is third generation rice and taro farmer, George Koga. George doubles as a surveyor in his spare time.

refuge personnel, volunteers and Kaua'i's staff this may become a reality. When a 70 year old taro grower helps with a topographic survey you know something special is about to happen. Funding for

next year seems to be on track for another round of sign-ups. Eighteen people have already expressed an interest for 1999 WHIP funds.

Now that sign-ups, plans, contracts, etc. are behind us, we're looking forward to engineering designs being approved. Farmers are revving up their mowers in anticipation of expanding their acreage by planting more huli-taro.

Adam Asquith, biologist for the Fish & Wildlife Service on Kaua'i, takes a quote from "Field of Dreams" when he says, "Build the lo'i and the waterbirds will come."

We could have doubled the wetland habitat for waterbirds with a reduced restriction on long term leases, less government documentation requirements and/or greater incentives for farmers.

An added benefit of this cost share money for wetland taro growers is the multiplier effect that this has on jobs, irrigation supplies, etc. Volunteers and supporters wanting to help with this program can call Jon Schlegel at 808-245-6513.

## Update on Partnership Talks

by Wendy Johnson, President

An article in the December 1998/January, 1999 'Elepaio introduced the concept of a possible three-way partnership between the Hawaii Audubon Society, the National Audubon Society and the Hawaii Nature Center. A series of talks in February between board representatives of HAS and HNC did not result in significant progress toward creating a workable partnership model. In March, the Hawaii Audubon Society's First Vice-President, Dr. John Harrison, was invited by the National Audubon Society to attend their quarterly board meeting in Memphis, Tennessee. Dr. Harrison participated in committee meetings and discussions which reflected goals and objectives very similar to those of our organization. It was decided that partnership talks should be reopened in April, with NAS and a mediator joining HAS and HNC "at the table." HAS representatives are committed to exploring new options for sustaining and effectuating our mission. Comments and questions from members are welcome at the HAS e-mail address: hiaudsoc@pixi.com or mailed to us at 850 Richards Street, Suite 505, Honolulu, Hawai'i 96813.

## May Field Trip to See O'ahu 'Elepaio

The May field trip will be a hike into Pia Valley. Eric Vanderwerf will again lead us into one of the few remaining places on O'ahu where we can see the 'Elepaio.

"The 'Elepaio is an active bird, catching insects on the wing in the forest understory and gleaning insects from vegetation; it often perches on the sides of tree trunks. A fearless bird, it will often follow hikers through the forest and can usually be attracted by "pishing" or imitating its call. 'Elepaio is the friendly guardian spirit of canoemakers in Hawai'i." (from *Hawaii's Birds*, 1997, Hawaii Audubon Society, p. 60)

Wear sturdy shoes or hiking boots, and bring water, sunscreen, rain gear, and binoculars. Call Mary Gaber at 247-0104 for reservations and further information. A donation of \$2.00 will be appreciated.





MAY 1999

# 'ELEPAIO

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## Calendar of Events

### Thursdays, May 6 and June 3

Education Committee monthly meeting, 7 p.m. at BaLe Sandwich Shop in Manoa Marketplace (near Safeway). For more information, call chairperson Wendy Johnson, 261-5957.

### Mondays, May 10 and June 14

Conservation Committee monthly meeting at the HAS office at 5:45 p.m. For more information, call chairperson Dan Sailer, 455-2311.

### Mondays, May 10 and June 14

HAS Board meeting, always open to all members, 6:30 to 8:30 p.m. at the HAS office.

### Sunday, May 16

The May field trip will be a hike into Pia Valley. Eric Vanderwerf will again lead us into one of the few remaining places on O'ahu where we can see the 'Elepaio. Wear sturdy shoes or hiking boots, and bring water, sunscreen, rain gear, and binoculars. Call Mary Gaber at 247-0104 for reservations and further information. A donation of \$2.00 will be appreciated.

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