

New Species of Fossil Birds Found at Pu'u Wa'awa'a

by Jon G. Giffin¹

The ahupua'a of Pu'u Wa'awa'a is located in north Kona, Hawai'i, 18 miles from Kailua-Kona and 22 miles from Waimea. This large parcel is owned almost entirely by the State of Hawai'i. It is situated on the northern slope of Hualalai, a dormant shield volcano. Hualalai is the third youngest of the five volcanoes on the island. The summit of this mountain reaches a height of 8,271 feet above sea level. Lavas of Hualalai are primarily Holocene in age, but some deposits date to late Pleistocene (Moore and Clague, 1991). The most prominent landmark at Pu'u Wa'awa'a is a large furrowed hill composed of trachyte. This formation is known as Pu'u Wa'awa'a cone.

The lands of Pu'u Wa'awa'a are well known for their diverse forests and abundance of rare plants. These forests also provided a variety of habitats for birds and supported an unusually rich avifauna. At least 23 species of native birds are known to have existed in the uplands of Pu'u Wa'awa'a. Unfortunately, many of these are now historically extinct or represented only by prehistoric osseous material. Fossil remains of birds are exceedingly important to ornithologists. Their presence allows insight into former relative abundance, geographic range, and habitat preference. Fossil deposits are also valuable because skeletal material from most extinct and extant endangered Hawaiian species is extremely rare in museum collections.

In late July, 1992, I discovered bird fossil deposits in a lava tube at Pu'u wa'awa'a. This cave system begins at approximately 6,200 feet elevation and extends downhill almost two miles to 4,300 feet elevation. Large sinkholes provide easy access to the tube at several points. Small skylights are also scattered along the passage. These openings acted as natural pitfalls for trapping flightless and volant birds. Geological formations (speleothems) found in the cave include lavacicles, lava stalactites, and stalagmites. Charcoal from torches is found throughout the lava tube and is the only indication of previous human use. Since no name could be



Skeleton of a flightless prehistoric goose from Umi'i Manu Cave, Hualalai Volcano, Island of Hawai'i. Photo by Jon G. Giffin.

found for the cave, the term "Umi'i Manu" (Hawaiian: bird trap) was coined to identify it.

Umi'i Manu Cave is the most significant avian fossil site yet found on the island of Hawai'i. Fossil remains of several species of endemic Hawaiian birds are present in this well developed lava tube. The most exciting discovery was a new species of prehistorically extinct flightless goose (unknown generic affinity). This bird is the largest Hawaiian land animal known to date. It was evidently over twice the size of the modern Nene (*Nesochen sandvicensis*) and probably evolved from different ancestral stock (S. Olson, pers. comm.). This very large Hawaiian goose had massive legs, reduced wings and a heavy body. Remains of 30 individuals were scattered throughout the cave from 4,500 to 6,140 feet elevation. The goose probably became extinct after Polynesians first settled the island and certainly before the arrival of Europeans. Remains of other prehistorically extinct and previously unknown birds were also recovered from the cave. These include a relatively large, flightless rail (*Porzana* sp.),

a slender-billed crow (*Corvus* sp.) and a long-billed 'akialoa (*Hemignathus* sp.). The prehistoric species were probably similar in appearance to the Moho (*Porzana sandwichensis*), 'Alala (*Corvus hawaiiensis*) and 'Akialoa (*Hemignathus obscurus*), respectively. However, they were significantly larger than their historically known congeners and exhibit different bill characteristics (S. Olson, pers. comm.). All four prehistoric species may be new to science. The existence of the very large goose and large rail had been previously suspected by Olson and James (1991), but only a few bone fragments had been recovered prior to this discovery. The slender-billed crow and large 'akialoa were unexpected.

Remains of several historically extinct birds were also found in the cave. These are provisionally identified as Kioea (*Chaetoptila angustipluma*), Moho or Hawaiian Rail (*Porzana sandwichensis*) and Hawai'i 'O'o (*Moho nobilis*). Very little information is available on the former geographic distribution of these species. None of the birds was known to inhabit the Pu'u Wa'awa'a area

until now. These fossils, if correctly identified, provide important new distributional records. Additionally, very few of the specimens listed above were ever collected by early ornithologists. Only four Kioea and seven Hawaiian Rails are preserved in museum collections and all are study skins or mounted specimens rather than skeletons. Hawai'i 'O'o were more frequently collected, with 134 individuals being catalogued (Banko, 1979 and 1981).

Modern bird (extant species) remains are scattered throughout the cave. These include both endangered and common taxa. Rare species are of greatest interest. Among these are 'Io (*Buteo solitarius*), Nene, Koloa maoli (*Anas wyvilliana*), Ua'u (*Pterodroma phaeopygia sandwichensis*) and possibly a Palila (*Loxioides bailleui*). The fact that Koloa maoli utilized this area in the past is surprising since the cave is situated in a very arid and scrubby a'ali'i (*Dodonaea viscosa*)--naio (*Myoporum sandwicense*)--mamane (*Sophora chrysophylla*) woodland. Today, these native ducks are typically associated with wetland habitats including ponds and streams. The occurrence of Palila, 'Oma'o (*Myadestes obscurus*) and Ua'u is significant because these species no longer occur on Mt. Hualalai. They are still present at other locations on the island of Hawai'i, however.

It is not known why birds entered Umi'i Manu Cave. They probably fell into vertical sinkholes or were chased into them by predators. Birds may have also taken shelter in caves during violent storms. Being unable or unwilling to fly or walk out, they would wander into the passage, become lost, and die. Surveys conducted from August through October, 1992, revealed the skeletal remains of 226 individual birds, not counting historically introduced species. Most of these were associated skeletons, lying exposed on the cave floor. A few others were buried in alluvial deposits. Bones of 42 individuals were collected during the surveys and sent to Bishop Museum for classification and preservation. The remainder were identified, counted, and then left in the cave for future collection. All species identifications were made by Storrs Olson and Helen James of the Smithsonian Institution and Carla Kishinami of Bishop Museum. I tallied the number of individuals by species as they were identified. A detailed study of the unnamed forms is currently underway by zoologists and avian paleontologists at the Smithsonian Institution. Diagnosis of the fossil remains will take some time, but will eventually result in the description

Table 1. Vertebrate remains** found in Umi'i Manu Cave, Pu'u Wa'awa'a, Hawai'i.

<u>Extinct Prehistoric Species</u>	<u>Number of Individuals</u>
◇Very large Hawaiian goose (unknown generic affinity)	30
◇Large Hawaiian Rail (<i>Porzana</i> sp.)	6
Slender-billed Crow (<i>Corvus</i> sp.)	1
Unidentified crow (<i>Corvus</i> sp.)	6
Long-billed 'Akialoa (<i>Hemignathus</i> sp.)	4
<u>Extinct Historic Species</u>	
#Hawai'i 'O'o (<i>Moho nobilis</i>)	2
#Kioea (<i>Chaetoptila angustipluma</i>)	2
#◇Moho or Hawaiian Rail (<i>Porzana sandwichensis</i>)	12
<u>Extant Species</u>	
*Ua'u or Dark-rumped Petrel (<i>Pterodroma phaeopygia sandwichensis</i>)	98
*Nene or Hawaiian Goose (<i>Nesochen sandwicensis</i>)	37
*Koloa maoli or Hawaiian Duck (<i>Anas wyvilliana</i>)	13
*'Io or Hawaiian Hawk (<i>Buteo solitarius</i>)	1
Pueo or Short-eared Owl (<i>Asio flammeus sandwichensis</i>)	1
'Elepaio (<i>Chasiempis sandwichensis</i>)	1
'Oma'o or Hawaiian Thrush (<i>Myadestes obscurus</i>)	6
*#Palila (<i>Loxioides bailleui</i>)	1
'Amakihi (<i>Hemignathus virens</i>)	2
'Apapane (<i>Himatione sanguinea</i>)	3
<u>Introduced Species</u>	
Erckel's Francolin (<i>Francolinus erckelii</i>)	1
Unidentified game birds	4
Rat (<i>Rattus</i> sp.)	20+
Dog (<i>Canis familiaris</i>)	1
Pig (<i>Sus scrofa</i>)	3
Goat (<i>Capra hircus</i>)	7+
Sheep (<i>Ovis</i> sp.)	1
Domestic Cattle (<i>Bos taurus</i>)	
** Identifications by S. Olson, H. James, and C. Kishinami.	
◇ Flightless species	
* Endangered species	
# Tentative identification	

and naming of several new species.

Counts of native bird remains in Umi'i Manu Cave indicate that non-passerines are much more abundant than passerine species. The number of native birds found by family group is as follows: Procellariidae (petrels) 98, Anatidae (waterfowl) 80, Rallidae (rails) 18, Fringillidae (Hawaiian honeycreepers) 10, Corvidae (crows) 7, Muscicapidae (old world flycatchers, Australian flycatchers, and monarchs) 7, and Meliphagidae (honeyeaters) 4. Accipitridae (hawks) and Strigidae (owls)

were represented only by one skeleton each. The two most abundant species were the U'au (98) and Nene (37). A preliminary list of vertebrates identified to date by S. Olson, H. James, and C. Kishinami is presented in Table 1.

Bird-bone aging must await radiocarbon dating results. However, volcanology offers a means of obtaining generalized maximum ages for them. A detailed geologic map of Hualalai was prepared by Moore and Clague (1991). This map indicates that Umi'i Manu

Cave formed in a pahoehoe and 'a'a lava flow that erupted from an unnamed vent. No exact age is available for that eruption, but the flow is estimated to be 3,000-5,000 years old (Holocene). David Clague (pers. comm.) indicated that the cave flow and a similar one near Pu'u Wa'awa'a Ranch headquarters may be from the same eruption. This latter flow was radiocarbon dated at 3,610±200 years before present. It would take several hundred years for suitable bird habitat to develop on a new flow, so all bird remains in Umi'i Manu Cave are probably less than 3,000 years old.

The present-day fauna of Umi'i Manu Cave has not been fully surveyed yet. However, some information on cave life has been obtained incidental to fossil bird work. The only vertebrates noted were the Barn Owl (*Tyto alba*) and 'Apapane (*Himatione sanguinea*). Barn owls roost on cave ledges and 'Apapane nest below skylights. The invertebrate fauna appears to be much more diverse and consists of molluscs and arthropods. A nonnative terrestrial snail (*Oxycheilus* sp.) is living on the cave floor, usually below skylights. A single, empty shell of the common, native arboreal snail (*Succinea* sp.) was also collected. Empty shells of three other gastropods await identification (Michael Hadfield, pers. comm.). Some of the molluscs were associated with bird skeletons and may have been carried into the cave in their digestive tracts. Several species of arthropods have been recovered from the dark zone of the cave. Some of these are endemic. None of the insects and spiders identified to date are obligate cave dwellers (Francis Howarth, pers. comm.).

Acknowledgements

Numerous individuals contributed their time and expertise to the bird fossil project. This paper would not have been possible without their efforts. I wish to thank Robin Hulce for sharing his knowledge of cave locations with me. Fred Stone, Robert Pyle, Ken Wood, and Matthew Kishinami assisted with the search and collection of specimens. Robert Covington helped with all phases of the project including transportation of investigators, cave exploration, and fossil search and collection. Hulali Covington translated suggested cave names from English to Hawaiian. Special thanks are extended to William "Buck" Cobb and Barbara Schaefer for volunteering their services. They provided personal caving equipment for our use, assisted with the initial exploration of Umi'i

Manu Cave, collected fossil specimens, and offered training tips on vertical rope techniques. The identification of fossil birds would not have been possible without the considerable expertise of Storrs Olson, Helen James, and Carla Kishinami. S. Olson and H. James also provided valuable comments on the manuscript. Reviewers Lynne Matusow, Alan Ziegler, and Fern Duvall II gave many helpful suggestions for manuscript improvement.

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- 'State of Hawaii'
Division of Forestry and Wildlife
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Research Grants

The Hawaii Audubon Society makes grants for research in Hawaiian or Pacific natural history. Awards generally do not exceed \$500 and are oriented toward small-scale projects within Hawaii'i. Special consideration will be given to those applicants studying the Northwest Hawaiian Islands, dryland forests, and aeolian systems on Hawaii'i.

The deadlines for receipt of grant applications are 1 April and 1 October. For an application form send a self-addressed stamped envelope to Grants, Hawaii Audubon Society, 212 Merchant Street, Suite 320, Honolulu, HI 96813. For more information, call Phil Bruner, (808) 293-3820 (W).

Waimanalo Beach Cleanup

by James Bordenave

On Saturday, 10 October, 1992, three members of the Hawaii Audubon Society and two guest non-members spent the morning at Waimanalo Beach participating in the statewide beach cleanup. The five—Mary Bell, James Bordenave, Casey Jarman, Lisa Nangasser, and Lance Tanino—spent four and a half hours combing the beach in search of plastic, glass, cigarette butts, old tires, and other debris.

They started out at 8:30 a.m., working in the constant heat of the sun beating down on them, determined to accomplish what they had set out to do. It wasn't easy, but I'd have to say we all did a great job.

On behalf of all of us, I would like to thank the Waimanalo Anti-Litter League for the great sandwiches. And thank Mother Nature for allowing us to spot birds like the Black-crowned Night-Heron, Wandering Tattler, and the ever present bulbul. Just imagine if they had gotten into the rubbish first! They might have choked on some of the following rubbish that we collected.

Plastic: 51 food bags/wrappers, 7 other bags, 1 soda beverage bottle, 5 bleach cleaner bottles, 2 oil lube bottles, 10 miscellaneous bottles, 54 caps/lids, 772 pieces, and 193 other.

Styrofoam: 11 buoys, 20 cups, 3 pieces packaging material, 38 pieces, 1 plate, and 35 other.

Glass: 3 beverage bottles, 1 food jar, 1 light bulb, 6 pieces, and 1 other.

Rubber: 3 balloons, 2 tires, and 22 other.

Metal: 1 bottle cap, 6 beverage containers, 1 pull tab, 1 wire, and 11 other.

Wood: 3 other.

Cloth: 14 clothing.

Other: 135 cigarette butts, 1 cigarette lighter, 9 cups/utensils, 3 diapers, 49 fishing lines, 25 fishing lures/floats, 36 fish nets, 4 light sticks, 108 rope pieces, 2 six-pack holders, 4 strapping bands, 105 straws, and 9 toys.

Moving?

Please allow four weeks for processing address changes. Because our records are kept in order by zip code, we need both old and new addresses.

Kaua'i Wildlife Habitats Assessed After Hurricane 'Iniki

by Ron Walker

During a brief reconnaissance of Kaua'i on 30 September, 1992, I found widespread damage to forested areas and stream courses. Wetland habitats appeared relatively intact and the Alakai Wilderness Preserve seemed to sustain only moderate damage. In native forest areas, much of the canopy was stripped of leaves, flowers, and fruits. However, the storm was selective, leaving many pockets of fairly healthy forest which may provide a haven until the damaged areas recover.

Native forest birds such as the 'Apapane and 'I'iwi, which depend on nectar from flowers, may be severely impacted in hard hit areas. Fruit eating species such as the Kama'o (Kaua'i Thrush) and 'O'u may also find their main food supply wanting. Forest birds which are less selective and specialized in their diets, including the 'Amakihi and 'Anianiau (Small Kaua'i Thrush) may have a greater chance of recovery. Another concern is that although 'Iniki did not strike during the native forest bird nesting season, the breeding season is about to start, and these tree dwelling species will very likely have difficulty finding suitable nesting sites.

Tom Telfer, Kaua'i Wildlife Biologist, has expressed concern about the status of four extremely endangered forest birds—the 'Akailoa, Nukupu'u, 'O'o'a'a (Kaua'i 'O'o), and 'O'u, which prior to the hurricane were already on the verge of extinction. Another concern is that many native birds may seek relatively unaffected lowland areas for food and become exposed to mosquitoes which carry avian diseases. He noted that lowland endangered waterbirds such as the Hawaiian Stilt, Coot, Gallinule, and Nene may not have been severely impacted as many were seen returning to wetlands a week after the storm.

A less obvious problem created by 'Iniki is the escape of exotic caged birds as a result of damage to residential areas and their potential establishment on Kaua'i. As we have seen on O'ahu, escaped cage birds can become a serious pest to crops, become vectors of avian diseases, and compete with native birds for natural resources.

I saw a number of Cattle Egrets, doves, Mynahs, sparrows, and cardinals in the impacted areas, so it seems as though exotic birds associated with lowland areas have adjusted well in the aftermath of 'Iniki. Also,

seabirds will probably survive the storm fairly well as they feed at sea. The only exception may be the endangered Newell's Shearwater which nests in burrows on the midlevel slopes. Telfer noted that there was widespread destruction of the Uluhe fern slopes they favor, which will soon erode with the coming of the winter rains and then be vulnerable to invasion by nonnative weeds.

The Division of Forestry and Wildlife, in conjunction with other federal and state agencies, is planning more detailed assessments of Kaua'i's wildlife and forests. Actual impacts on waterbirds, forest birds, seabirds, and general wildlife populations will be known following those more intensive on-the-ground studies.

Ron Walker is Wildlife Program Manager, Division of Forestry & Wildlife, Honolulu, Department of Land and Natural Resources. This article is reprinted from Hawai'i's Forests and Wildlife, Vol. VII, No. 3, Fall 1992, the quarterly newsletter of the Hawai'i State Division of Forestry & Wildlife—Ed.

People's Water Conference

Hawaiian Homelands Reserved Water Rights and the State Water Code will be the focus of the 9th annual People's Water Conference, Saturday, 13 February, in Likeke Hall on the grounds of Kawaihāo Church. The conference will bring into focus the pressing issues involving Hawaiian water rights as they affect the implementation of the 1987 Water Code, according to Martha Black, conference chair.

"As the 100th year observance of the overthrow of the Kingdom of Hawai'i begins, Hawaiians will be pressing for greater self-governance and a share of the critical resources, like water, to support their future development," says Alan Murakami of the Native Hawaiian Legal Corporation.

For more information call Martha Black, 395-2127, or Richard Port, 941-9624.

HAS Contributes to Hurricane Relief

The Hawaii Audubon Society recently donated more than \$5,600 to help with hurricane relief at national wildlife refuges on Kaua'i and O'ahu. The U.S. Fish and Wildlife Service plans to spend \$5,000 at Kilauea Point National Wildlife Refuge on Kaua'i. These monies will be used for Nene habitat restoration at Crater Hill. Also, \$600 will be spent for supplies to enable scientists to carry out necessary studies on birds at the James Campbell National Wildlife Refuge on O'ahu. Major monies for infrastructure repairs at both refuges have been appropriated by Congress and should be available shortly.

Mahalo Donors!

The Hawaii Audubon Society thanks the following members and friends for their generous contributions. This list reflects donations received through 4 December.

Mary Louise Jeffrey Akaka, Anne Ashford, W. M. Bush, George Campbell, Elizabeth Castro, M. Lucille Charles, Arthur and Nancy Costa, 1st Lt. Andrew Doehring, Barbara Earle, Mrs. Yoshiko Ebisu, Clifford Faria, Dr. Wayne S. Hansen, Sibyl Heide, David Hill, Robert B. Hill, Noboru Hirayama, Peggy Hodge, Andrea Huber, Kealakekua Development Corp., Virginia D. Koch, Keith Leber and Carol Lubbers, and Virginia A. Lyon.

Also, Wilhelmina Markiewicz, Elizabeth Medeiros, Cristina Meier, Albert Moscotti, Evelyn Peck, Mrs. M. L. Randolph, Jennifer Saville, Winona Sears, Peter Sharpe, Catherine Summers, Joyce Sweeney, David and Mary Taira, Lance Tanino, Dr. Floyd Tilton, Eric Vanderwerf, Karen Victor, Ernest Willers, and Mr. and Mrs. Donald Young.

Mahalo Volunteers!

The Hawaii Audubon Society thanks Reginald David, Sadie Doyle, Barbara Gurney, B. Macaulay, Lynne Matusow, Joan Miller, Christi Moore, Vaughn Sherwood, Joyce Stanney, Minh-Chau Trinh, and Marjorie Ziegler for participating in our mailing party on 28 November, 1992. Their hard work enabled us to mail ballots, dues renewals, and our fundraising appeal to 2,700 members.

Greenprint

Audubon Hawai'i
Conservation News

Volume 5 No. 1 • Jan/Feb 1993

Endangered Species Act: Legislative Outlook For 1993

by Dana Kokubun

President-elect Bill Clinton will not be alone when he heads for Capitol Hill on January 20th.

Almost one out of four members of the 103rd Congress will be new, and key environmental committees in both houses will have new chairpersons.

These changes will affect several key environmental issues: the Clean Water Act; reauthorization of the Endangered Species Act; the ancient forests/spotted owl controversy; and biodiversity protection.

The new administration will almost certainly tackle economic issues first. However, Clinton

may not take up the ESA until the ancient forests issue is put to rest.

During the last Congress, Studts championed

position in September after the death of the former chair, Senator Quentin Burdick (D-NC). Conservationists have long

regarded Moynihan as a stalwart defender of the environment, and are optimistic about the changes of environmental bills in his committee.

The highest priority for

the Hawai'i State Office of National Audubon in 1993 is the reauthorization of the Endangered Species Act. With the greatest concern-

section which must be "reauthorized" every 5 years. During the reauthorization debate, however, other portions of the law become open for amendment. Originally enacted in 1973, the ESA has been reauthorized three times previously.

Congress failed to reauthorize the ESA on schedule in the 102nd Congress before its adjournment in early October, however, funding for endangered species programs is contained in appropriations bills for the Interior Department and other agencies through September 30, 1993.

In 1992, several measures besides Studts' ESA reauthorization



File photo

Spotted Owl Chicks

the ESA reauthorization bill favored by Audubon and other environmental groups. Hawai'i representatives Patsy Mink and Neil

"With the greatest concentration of endangered

species anywhere in the world, Hawaii 'i will benefit from a strong ESA, arguably more than any other state."

has said that one of his first priorities will be to bring environmentalists and loggers to the negotiating table to hammer out a compromise on ancient forests.

regional ancient forests controversy in the next Congress. It is speculated that the new chairman of the Merchant Marine and Fisheries Committee, Rep. Gerry Studds (D-MA),

Abercrombie cosponsored the Studds bill, which is expected to be reintroduced in a similar form next year.

In the Senate, Daniel Patrick Moynihan (D-NY) returns to Congress as chair of the powerful Senate Environment Committee. He was appointed to that

tribution of endangered species anywhere in the world, Hawaii 'i will benefit from a strong ESA, arguably more than any other state.

The ESA reauthorization will be the focus of an intensive public information campaign and grassroots mobilization effort. Called Project Ark, the purpose of Audubon's campaign is to strengthen the ESA, considered by many experts to be the nation's premier wildlife protection law. (see Greenprint Vol. 4 No. 4, July/August 1992)

The ESA provides for the recovery of endangered species of plants, animals, fish and insects by formal recognition of their endangered or threatened status and by requiring that a plan for recovery be devised and implemented. Part of the legislation also determines the funding ceiling for monies appropriated to carry out its provisions; technically, this is the

measure were introduced which either sought to strengthen or weaken the ESA. Like Studds' bill, some may resurface in the 103rd Congress. A summary of ESA legislation introduced last year is on the back page.



Local comedian Frank DeLima at PSA taping with Director Gerry Marzocco.

DeLima and Wilcox Help Audubon Spread Word About Alien Pests

Watch for our new 30 second alien pest public service announcement (PSA), "Boyscout", starring local comedian Frank DeLima and news anchor Leslie Wilcox as narrator. DeLima plays an overgrown scout who appears to be camping when he discovers alien pests such as pigs, snakes, and banana poka. Startled by such threats and "attacked" by pernicious hanging vines, he runs away in a panic, calling "Mommy!" The camera then reveals that he has been camping in his own backyard! As part of the Alien Species Alert Program, (ASAP), Audubon hopes to raise awareness about the alien pest problem in Hawaii 'i through the televised spots. The PSA was directed and edited by Gerry Marzocco and produced by Sheila Laffey.

Endangered Species Act Fact

The currently authorized funding ceiling for the basic endangered species program of the U.S. Fish & Wildlife Service is \$41.5 million. That amount is less than what Washington, D.C. area residents spent last year on Domino's Pizza!

(from the *Environmental Defense Fund, Washington, D.C.*)

What You Can Do

If you want to help with the Audubon Ark Project, the campaign to reauthorize the federal Endangered Species Act, sign up for our Audubon Activist Phone Tree by calling 522-5566.

Measures to Strengthen the Endangered Species Act

Endangered Species Act Amendments of 1992

(H.R. 4045) - Expedites species recovery by:

- * significantly increasing funding to implement the ESA
- * implementing stringent deadlines for recovery planning
- * giving priority to restoration and maintenance of entire ecosystems rather than a more costly species-by-species approach
- * broadening the scope of the ESA to make it more preventative

Introduced by: Rep. Gerry Studds (D-MA)

Number of cosponsors: 107

Endangered Species Act

Amendment of 1992 (S. 2953) - Strengthens the ESA by eliminating the provision which prevents citizens from filing lawsuits for 60

Measures to Weaken the Endangered Species Act

Balanced Economic and Environmental Priorities Act (H.R. 4058)

- * blocks federal actions to protect species until Secretary of Interior or Commerce has determined that conservation measures will not result in economic loss
- * provides compensation to businesses claiming any "losses" resulting from listing of a species as threatened or endangered

Introduced by: former Rep. William Dannemeyer (R-CA)
Number of cosponsors: 4

The Human Protection Act

(H.R. 3092) - Would significantly weaken ESA by eliminating a provision which requires the initial decision to list a species as either threatened or endangered to be based solely on scientific data. The bill would allow economic, social, and political factors to be considered in determining whether or not a species should be listed. (Because listing is a factual, biological determination of the number of species remaining and their chances for survival, non-biological considerations are not appropriate at this stage of the recovery process.)

Introduced by: Rep. James

We're Sorry!

If you received more than one letter requesting contributions from the Hawai'i State Office in early December, we sincerely apologize. Due to a miscommunication in our New York office, the normal procedure of purging duplicates was not done.

We regret the inconvenience to members and friends of Audubon and the waste of paper. We will do everything possible to ensure that the error is not repeated.

Thank you for your patience and understanding.



**Dana Kokubun,
Director**

emergency listings impossible

* transfers authority to grant exemption from the ESA from seven member "God Committee" to the Secretary of Interior alone

* gives the Attorney General veto power over any regulations enforced by the ESA that he/she believes will have private property takings implications

* allows trade in endangered species lacking a completed recovery plan

* abolish ESA protection for subspecies and populations

* lift restrictions on habitat destruction

* attempt to merely "maintain" rather than "recover" species

Introduced by: former Senator Steve Symms (R-ID)
Number of cosponsors: 6

Endangered Species Act Reform Amendments (H.R. 6134) - Introduced on October 5th,

days after giving notice to alleged violators of Act.

Introduced by: Senator Howard Metzenbaum (D-OH)
Number of cosponsors: 1

Environmental and Economic Stability Act (H.R. 5105)

* requires a detailed cost/benefit analysis for each proposed species prior to listing, thereby making

Number of cosponsors: 18

Introduced by: former Rep. Rod Chandler (R-WA)
Number of cosponsors: 10

1992 Progressive Endangered Species Act. (S. 3159) - Perhaps the most radical anti-ESA measure introduced this year, the Symms bill proposed to:

call for a thorough analysis of socioeconomic costs that would result from carrying out the Act's requirements before its regulations could be fully implemented.

Introduced by: Rep. Billy Tauzin (D-LA)
Number of cosponsors: 22

Education:

Paradise Pursuits Finals to be Televised in February



by **Sheila Laffey**



Photo by Sheila Laffey

Maui High School students (back row: Daniel Kauwe, and Coach Warren Liu; front: Lea Voss, Robert Yoshioka, and Becky Weeks) will compete in Paradise Pursuits finals on January 20, 1993. The team won a whale watching tour courtesy of Earth Trust after winning the Maui competition on December 5.

Two neighbor island teams will compete on January 20 at the KHON-TV studio against two Oahu contenders in Paradise Pursuits, the environmental quiz show for high school students funded by Hawaiian Electric Company.

Maui High School ('Akohekohe) emerged as that island's winner on a day of rainbow laden skies winning a whale watching tour courtesy of Earth Trust.

Following the competition, the Maui team members and coaches experienced some of their subjects first hand during an outing to Kanaha Wildlife Sanctuary led by scientist Dr. Renate Gassmann-Duvall and native plant expert Eda Kinnear.

And victory cries resounded through the halls of Hawaii Preparatory Academy (Palani) with a backdrop of Waimea mist. Their prize was a trip aboard the semi-submersible Nautilus. The other neighbor island teams which threw their hats into the ring were Seabury Hall (Koa) and Hana HS (Ma'o hau

hele or Hibiscus brackenrigei), on Maui and Kohala HS ('Amakihi) and Laupahoehoe HS (Kolea) on the Big Island.

The Oahu teams advancing to Round 2 are: Kalani (Pulelehua) Roosevelt ('Ohi'a) Kamehameha (Hui Lama) Iolani ('Io) University High School ('Akialoa) Moanalua (Mano)

Team names, in parenthesis, represent native species.

PARADISE PURSUITS AIRS ON KHON-TV

WHAT: Final rounds

WHEN: Tues., Feb. 2, 7-8 PM Sunday, February 7, 4-5 PM (re-broadcast)

WHERE: KHON-TV, Channel 2

Education, Programs, and Publicity Committees Need Chairs; Audubon Is Also Seeking a Recording Secretary

Three important Hawaii Audubon Society Committees, education, programs, and publicity, are seeking new chairpersons for 1993. We also need a recording secretary.

Recording Secretary: The member filling this position will become an HAS officer. Duties are attending board meetings (normally the second Monday of each month at 7 p.m.) and taking minutes and distributing them to board members. If interested, call Lynne Matusow, 531-4260 (H).

Publicity Committee Chair: This committee is responsible for sending news releases on all HAS activities to the media. The committee works closely with other committees to determine what activities need to be publicized, and prepares and distributes press releases. If you can spare four to five hours a month call Lynne Matusow, 531-4260.

Programs Committee Chair: This committee is responsible for running the general membership meetings six times a year. The committee finds guest speakers, prepares press releases concerning the meeting, conducts the meeting, and serves refreshments. Most of the work can be done from your home or office. If you can spare four hours a month to coordinate these activities, call Lynne Matusow, 531-4260 (H) or Phil Bruner, 293-3820 (W).

Education Committee Chair: The Education Committee is busy working with National Audubon Society to promote and run the Paradise Pursuits Quiz Show for high school students. The show is a means of educating Hawai'i teenagers about the state's environment. The show is televised twice a year.

In addition, plans are underway to have newspapers in the state publish a series of articles about Hawai'i's environment. The committee also judges the annual state science fair, at which HAS gives two prizes. This volunteer position will require five hours a month. For more information call Lynne Matusow, 531-4260 (H).

Also we need help in the following areas:

Phone Tree Coordinator. You will be responsible for maintaining the list of persons participating in the telephone tree and giving information to phone tree participants when calls need to be made. We need a self starter who is a good communicator and who can

devote four to eight hours a month for a minimum of a year. This work can be done from home. Some knowledge of environmental issues and legislators is a plus. To volunteer call David Hill, 943-2784 (H).

Phone Tree Callers. We are growing a phone tree—a chain of people who can make calls to decision-makers on environmental issues. This allows the environmental community to respond very quickly with public pressure on important issues. To join our phone tree, call David Hill at 943-2784.

Testimony Presenters. Here we need self-starters who can tactfully and effectively present testimony at the legislature, county councils, and hearings of governmental boards and agencies, usually on weekdays during daytime hours. If you can't write the testimony, we will have someone else do it. A knowledge of Hawai'i, including issues, politicians, and who the players are is a big plus. A minimum of four hours a month is required. To volunteer call David Hill, 943-2784 (H).

Recordkeeper. This position, which requires you to spend one morning or afternoon a week at the office, entails integrating our membership records with our fundraising records and locating telephone numbers of new members. To volunteer call Lynne Matusow, 531-4260 (H).

Volunteer Coordinator. This hardworking, gregarious individual will match volunteers with available jobs, see that volunteers are trained, and maintain contact with volunteers to see if they are happy or have suggestions for improving things, and plan volunteer recognition events. This job will take two hours or more weekly. To volunteer call Lynne Matusow, 531-4260 (H).

Office Staff. We would like to have our office open five days a week. People are needed for morning or afternoon shifts Monday, Tuesday, Thursday, and Friday. Among the duties are answering the telephone, distributing the mail, referring problems to the appropriate officer or committee chair, filing, and responding to routine correspondence. To volunteer call Lynne Matusow, 531-4260 (H).

Writers and Editors for 'Elepaio. A reporter is needed to write the monthly Volunteer Corner column. Also, if you can write stories, edit copy, and come up with

story ideas call Lynne Matusow, 531-4260 (H).

The above is only a partial list. If you have a particular skill or interest, call Lynne Matusow, 531-4260 (H). Who knows, maybe we have the right opening but haven't publicized it yet. All of the above are volunteer positions. Hawaii Audubon does not have paid staff.

Scholarships

The Hawaii Audubon Society will be awarding one undergraduate tuition scholarship of \$1,340 to a Hawai'i resident attending the University of Hawai'i for the 1993-94 school year. This scholarship, named the Rose Schuster Taylor Scholarship, is made available by the Yao Shen Trust, in honor of Rose Schuster Taylor. Terms of the trust require that recipients be Hawai'i residents, attending the University of Hawai'i, whose area of study is related to Hawaiian natural history, especially if it may lead to the better protection of native wildlife in Hawai'i. We will also be awarding the Clara Grenville Hatch undergraduate scholarship. This \$1,000 stipend for the 1993-94 school year is for a student at any college or university in the state whose area of study is related to Hawaiian natural history.

Applicants should submit the following information: name, address, telephone number, class year, and explain how their academic major relates to Hawaiian natural history. They should also discuss how they plan to apply their academic degree to further study or work experience in Hawaiian natural history, how their course of study will enable them to contribute to the better protection of native Hawaiian wildlife, and if they have made contributions to the study of Hawaiian natural history, especially to anything that might contribute to the protection of native wildlife.

Applicants should attach a transcript of their college or high school records and three letters of recommendation.

Applications should be sent to Phil Bruner, Chair, Scholarships and Grants Committee, Box 1775, BYU-H, La'ie, HI 96762, telephone 293-3820 (W). The application deadline is 1 May, 1993.

Arizona Nature Trip, 2-9 May, 1992

by Darlene Fiske

What do you need for a red-hot first class nature trip? A congenial group of travellers, pleasant accommodations, and good food. Add to that the green valleys and canyons of Southeastern Arizona. The pastel rocks and buttes changing colors throughout the day. Tall, regal saguaro cacti crowned with wreaths of white, pink, or yellow blossoms. Blazing clumps of golden columbines marching up the canyons. Clear streams rippling musically over shining rocks, lushly surrounded by gigantic cottonwoods and sycamores, rustling conversationally.

Then, throw in lots of birds. Well, the week's species total was 171, so you can see it is hard to pick out just a few superlatives. Every day was a highlight! Trees filled with clownish Acorn Woodpeckers chasing each other and chatting together. Six species of hummingbird (Arizona's specialty) in abundance. Two sightings of Elegant Trogon. How close do you want to get? Want a pair at the nest hole? Or a brilliant male sitting in the sun, showing off his red, turquoise, lime, iridescent blue-purple and green colors. Sunny glades ringing with the songs of Bell's Vireos, and multitudinous kingbirds and flycatchers. Acrobatic Pyrruloxias arcing out in circular flights after insects. Warblers—too many to count of Painted Redstarts, Audubon's, Lucy's, Grace's, and Olive (actually almost as orange as a Blackburnian). The same high count of Black-headed Grosbeaks and Western Tanagers.

Add to all that a "VIP" tour and lecture by the director of the Patagonia-Sonoita Creek Sanctuary. The opportunity to stay at the Southwestern Arizona Research Station—good accommodations, great food, and a chance to talk to the researchers and find out about their unique projects.

And, of course, you need a leader: Well, Reggie David is "the sun and the moon," as Tiger Lily said of Peter Pan. He planned beautifully and pointed out the birds by sight and song in a way that was hard to believe. And kept his group happy throughout the trip.

I wish all Hawaii Auduboners could have taken part. It was a truly "once in a lifetime" trip in every way. And, mostly, thanks to Reggie David.

Hawaii Audubon Society Publications

Hawaii's Birds by the Hawaii Audubon Society, 4th edition, 1989. Over 150 color photographs and illustrations. \$10.50 per copy (\$8.95 plus \$1.55 postage).

Please add \$1.00 for postage and handling for orders on the following:

Checklist of the Birds of Hawaii—1992 by R.L. Pyle. Lists all taxa naturally occurring in Hawai'i and introduced species that have established viable populations. Also includes all changes from the 1988 checklist. \$2.00.

Checklist of the Birds of the Mariana Islands by James D. Reichel and Philip O. Glass, 1991. Lists all taxa naturally occurring in the Marianas and introduced species that have established viable populations. \$2.00.

Checklist of the Birds of Micronesia by P. Pyle and J. Engbring, 1985. Lists all taxa naturally occurring in Micronesia and introduced species that have established viable populations. \$2.00.

Field Card of the Birds of Hawaii by R.L. Pyle and A. Engilis, Jr., 1987. A pocket-sized field card listing bird taxa found in Hawai'i, with space for field trip notes. \$.25; five or more, \$.20/copy.

Endangered Waterbirds of the Hawaiian Islands by R.J. Shallenberger, 1978. Hawaiian Stilt, Coot, Gallinule (Moorhen), and Duck, each described in two pages of photographs and text. \$1.00.

Posters, 43 x 56 cm., \$1.00 each.

Our Homes are Hawaii's Wetlands, 1984. Native wildlife of a Hawaiian marshland.

Hawaiian Forests Are More Than Trees, 1988. Hawaiian forest plants, invertebrates, birds, and the Hawaiian hoary bat. Booklet included.

Back Issues of 'Elepaio and Indices to 'Elepaio:

Vol. 1-40 — \$1.00 per issue, \$10.00 per volume.

Help Needed for 20-21 January Phonathon

Volunteers are needed for our fifth annual phonathon, scheduled for Wednesday, 20 January and Thursday, 21 January. Once again we will be calling members as a followup to our annual appeal mailing. Last year's event raised over \$7,000 for Hawaii Audubon's educational, conservation, and research programs.

If you can help us out either night, from 6:00 p.m. to 9:00 p.m., please call Lynne Matusow, 531-4260 (H). We will be calling from AT&T's offices in downtown Honolulu. For security reasons we must have a list of participants prior to the event. HAS will provide dinner from 5:00 p.m. to 5:50 p.m. at a nearby restaurant for those participating in the phonathon.

Vol. 41 to present — \$0.50 per issue, \$5.00 per volume.

Complete set (Vols. 1-51) — \$400.

Index Vols. 36-40 — \$2.50.

Index Vols. 41-45 — \$2.50.

*All back issues of 'Elepaio are at above cost plus applicable postage.

Send orders, with check payable to the Hawaii Audubon Society, to Hawaii Audubon Society, 212 Merchant St., Suite 320, Honolulu, HI 96813.

Bequests

A bequest to the Hawaii Audubon Society is an excellent way to help in our conservation efforts. George C. Munro, enthusiastic and tireless field ornithologist and naturalist, provided for a fund to be used exclusively for the protection of native dry forests. Today, the George C. Munro Fund provides money for research projects on such forests.

Although an attorney should be consulted in the drafting of your will, a model clause for bequests is set forth below.

"I hereby give, devise, and bequeath to the Hawaii Audubon Society, Honolulu, Hawai'i, the sum of _____ dollars (or set forth a description of property), to be used for the general purpose of said organization."

For more information and assistance, contact the Hawaii Audubon Society, 212 Merchant Street, Suite 320, Honolulu, HI 96813, (808) 528-1432.

Hawaii Audubon Society

212 Merchant Street, Suite 320
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Education:
Field Activities: M. Casey Jarman (as above)
Finance: Lynne Matusow (as above)
Grants & Scholarships: Phil Bruner,
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Membership: Robert Pyle, 262-4046 (H)
Programs:
Publications: Reginald David (as above)
Publicity:

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'ELEPAIO

ISSN 0013-6069

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The 'Elepaio is printed on recycled paper.

T-shirts for Sale

The Hawaii Audubon Society has a stock of T-shirts designed to spread the Audubon message. Not only are they attractive personal apparel, but they make excellent presents as well.

T-shirts bearing the Society's 'Elepaio logo are available in ash (gray) with a black design. We also have a few in aqua, navy, white, and beige. In addition, the "hot" Kolea (Pacific Golden Plover) T-shirts are also available. This T-shirt is white with a three-color design of the Kolea and native hibiscus. Proceeds from the Kolea T-shirt go to help HAS fund research on shorebirds in Hawai'i and elsewhere in the Pacific region.

T-shirts are \$12 each, plus \$2.00 per shirt for postage. They are available in medium, large, and extra large adult sizes only. When ordering T-shirts, be sure to list size and first, second, and third choice of color. To order T-shirts send your check, payable to the Hawaii Audubon Society, to Yvonne Izu, 2069 California Avenue, #20B, Wahiawa, HI 96786. Don't forget to add \$2.00 per shirt for postage. Insufficient postage will delay your order until the proper amount is remitted. T-shirts are not available at the HAS office.

HAS Dues for 1993

All amounts are in U.S. dollars.
Includes delivery of 'Elepaio.

Life Membership \$300.00

Payable in full or three equal installments. (The Board of Directors recently increased the amount of life dues. Those life members who are currently on the installment plan will be billed for their remaining payments at the old rate.)

Delivery to U.S. zip code addresses

Via bulk mail 6.00

(Not forwardable to new address)

Via first class mail 12.00

(Hawai'i residents: there is no significant time difference between bulk and first class mail to addresses within the state of Hawai'i.)

Junior Membership (18 and under) 3.00

Delivery to non-U.S. addresses:

Mexico (airmail only) 12.00

Canada (airmail only) 13.00

All other countries (surface mail) 14.00

All other countries (airmail) 24.00

Introductory dues for

National and Hawaii Societies: 20.00

(Includes delivery of 'Elepaio and Audubon Magazine as bulk or 2nd class mail to U.S. zip codes. Renewal, \$30 annually.)

Notice to Authors

'Elepaio invites submission of original scientific articles of between 1,500 and 3,000 words on the natural history of Hawai'i and the Pacific. Such articles are subject to peer review.

Scientific articles should be typewritten and double spaced. Four copies must be submitted. In addition, authors are asked to submit the article on a computer diskette, with a clear indication of the word processing program used. Because we have a Macintosh computer, we prefer you use that Macintosh compatible software, although we can convert DOS.

We do all layouts directly on the computer. For that reason, authors are asked to adhere to the following guidelines: only one space after periods; no indentations, except for paragraphs and tables; no underlines, if on a diskette underlines should be shown as italics; no bold face type; use upper and lower case, nothing is to be in all capital letters; Hawaiian glottals should be used; capitalization for all bird species should follow American Ornithologists' Union nomenclature; dates should be shown as date, month, year; and the address of all authors should be included.

Photographs/illustrations may be either color or black-and-white prints, 3.5 by 5 inches or larger. They should be clearly labelled as to subject and photographer/artist. Cropping lines (if needed) should be indicated. The originals of figures, maps, graphs, etc. should be clean and clear, with lettering large enough to remain legible after reduction to fit journal format. Submit two good-quality xerographic copies along with each original illustration.

Manuscripts should be sent to 'Elepaio, Hawaii Audubon Society, 212 Merchant Street, Suite 320, Honolulu, HI 96813.

Environmental Directory Available

In celebration of Earth Day 1990, the Hawaii Audubon Society published the Hawai'i Green Pages. The directory lists over 150 environmental efforts in Hawai'i. For a free copy, send a self-addressed stamped #10 envelope to Directory, Hawaii Audubon Society, 212 Merchant Street, Suite 320, Honolulu, HI 96813.

Calendar of Events

First Monday of Every Month

Monthly meeting of the Conservation Committee, 6:00 p.m., HAS office. To join or for more information call David Hill, 943-2784 (H).

January 10, Sunday

Board meeting, 8:30 a.m. Call Reggie David on Hawai'i, 329-9141 (W), for details.

January 17, Sunday

Fieldtrip to Ka'ena Point Natural Area Reserve led by Bill Gilmartin. This 3-4 hour hike features native plants, whales, and birds (including the possibility of nesting albatross). Meet at the State Library on Punchbowl Street at 7:30 a.m. or the end of the paved road at Mokuleia, past Dillingham Field, at 9:00 a.m. Bring lunch, water, hiking shoes, and sunscreen. For more information call Bill Gilmartin, 943-1221 (W).

January 20 and 21, Wednesday and Thursday

Annual phonathon, 6:00 p.m. to 9:00 p.m. See story on page 6.

February 2, Tuesday, 7:00 p.m.

February 7, Sunday, 4:00 p.m.

Semi-finals and finals of Paradise Pursuits Quiz Show for high school students, KHON-TV, Channel 2 on O'ahu. The 2 February telecast will be broadcast live. A rebroadcast will air on 7 February.

February 15, Monday

General membership meeting, Paki Conference Room, Bishop Museum, 7:30 p.m. Refreshments will be served. For more information see February 'Elepaio.

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