

# ENDANGERED SPECIES

## Technical Bulletin Reprint

Wildland Management Center  
School of Natural Resources  
The University of Michigan

### Current Status of the Hawaiian Crow

by

Fern P. Duvall and Sheila Conant

The Hawaiian Crow (*Corvus hawaiiensis*) or 'Alalā is the largest extant passerine endemic to the Hawaiian Islands. Two other endemic, undescribed *Corvus* species occur as fossils, but became extinct during the occupation of the Hawaiian Islands by prehistoric people.

This medium-sized corvid is now found only on the Island of Hawai'i. It is an extremely rare bird—only several individuals are known to still inhabit an approximately 75 km long non-continuous belt of minimally-disturbed native forest. The forest is a mesic, closed-canopy montane rainforest that occurs between 860 and 1800 m elevation on the slopes of two volcanoes, Hualalai and Mauna Loa, in the Districts of North and South Kona.

#### Rapid Decline

Until the early 20th century the 'Alalā was a numerous bird in all of its habitat: forested areas between 300 and 2450 m elevation from Pu'u Anahula to Kilauea Crater in Ka'u. By 1940 it was greatly reduced in numbers and was gone from the high and low elevational extremes. The U.S. Fish and Wildlife Service (USFWS) Hawai'i Forest Bird Survey estimated only 76 birds remained in 1978. Between 1980 and 1985 more than 81 percent of all known birds vanished; only five or six individuals are known to exist in the wild in 1986.

Unfortunately, even experts in the scientific community are unaware that so few wild crows exist. For example, a 1986 article (Sakai, H.F., C. J. Ralph, and C. D. Jenkins, *Condor* 88: 211-219) on the foraging ecology of the crow quotes estimates of about 50 to

90 birds. The 'Alalā received total legal protection in 1931, but was not listed as an Endangered Species by the federal government until December of 1982.

#### Synergistic Factors

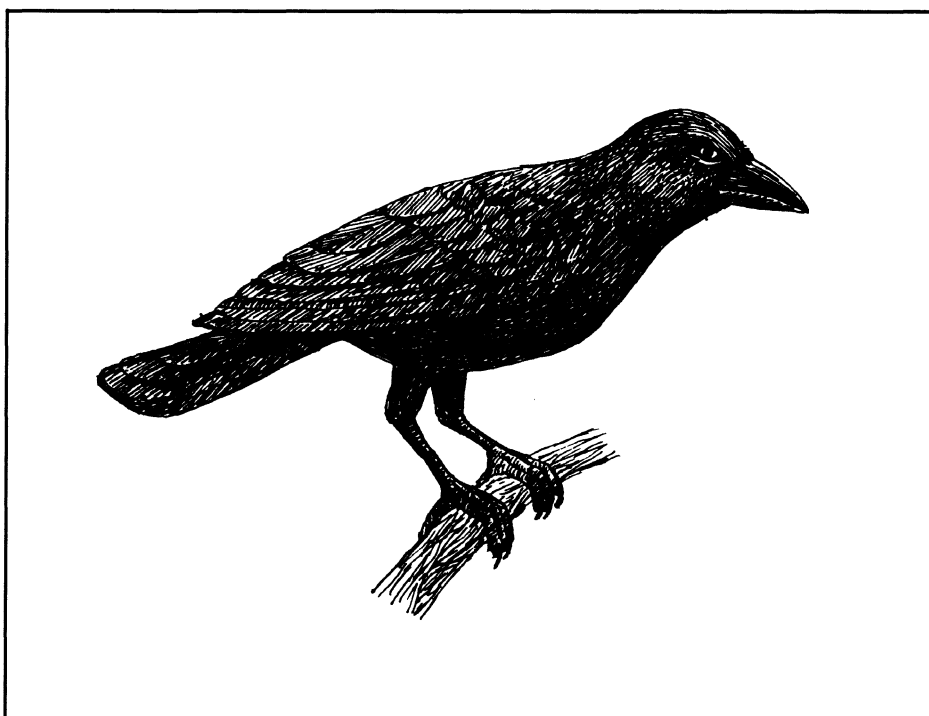
The 'Alalā decline was and is due to many synergistic factors. Of most consequence have been habitat degradation and loss, introduced avian diseases, low reproductive and fledging success rates, shooting, and predation of fledged young. Due to rapidly plummeting numbers in the wild, the Hawaii Department of Land and Natural Resources began securing individuals for a captive propagation program in 1976. These were added to a group of three individuals

Brought into captivity by USFWS personnel in 1973 to form the captive flock, which now includes five females and four males.

By 1983 nine birds were being maintained successfully at facilities at Pohakuloa. However, with only two breeding pairs active, flock configuration was inadequate and little success with inducing normal reproduction was made. Three fledglings hand-reared from artificially incubated eggs, which were transported off-site to the Honolulu Zoo in 1981, have been the only birds reared to date, and comprise one third of the captive flock.

It was determined that nearby U.S. military training actions, the biogeographical location of the

*Please turn to the next page*



Drawing by Sue Brown

The Hawaiian Crow, or 'Alalā: Only five or six individuals remain in the wild.

# Hawaiian Crow continued

facilities (i.e., in habitat unlike that known to be suitable for the birds), and the manner of housing the birds, as well as other factors produced captivity stress resulting in poor breeding performance in the flock. As a direct consequence, an excellent captive propagation facility is currently under construction in cooperation with the U.S. Army's 84th Engineering Battalion on the Island of Maui to better accommodate the propagation of 'Alalā and other endangered Hawaiian bird species also requiring such action. The 'Alalā will be moved to the new site later this year.

Studies of wild and captive 'Alalā provide some idea of the life history of the unusual crow. 'Alalā pairs defend nesting territories of about 0.5 miles radius during the breeding season from February to late July. All conspecifics, including offspring of past seasons, are excluded from these territories until nestlings fledge.

Nests are placed high, usually in Ohī'a (*Metrosideros collina*) trees;

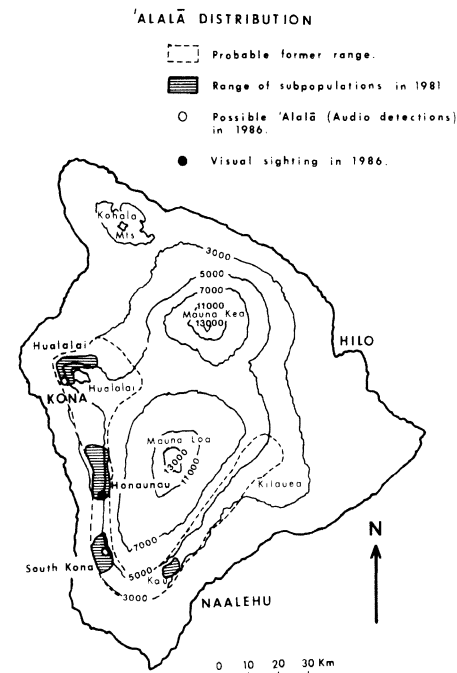
three to four lightly-speckled, blue eggs are produced per clutch. Only two young per nest have ever been recorded fledging. The chicks remain in the nest for almost six weeks and are still dependent upon some parental feeding for at least ten months.

Some juvenile traits (e.g., colors of bill and mouth lining, vocalizations, posturing) are retained for longer than 32 months and sexual maturity is delayed: females become mature in the second or third year, males in the fourth year.

**Unfortunately, very few people know there is a Hawaiian crow, much less that it is perched more precariously on the brink of extinction than the California Condor.**

When not breeding, 'Alalā form small flocks, thought to be familial groups composed of adults with their unemployed offspring from several years' production. Optimum flock size is thought to be eight to ten birds which roam over somewhat larger non-breeding home ranges. Unlike most other *Corvis* species, fruit and flower nectar comprise about half of this corvid's diet; the remainder is made up largely of isopods and arachnids.

Indeed recent behavioral studies have shown that 'Alalā, considered to be spirits by the early Hawaiians, are quite unique in comparison to other congeners with respect to certain behavioral configurations, ecological niche characteristics, and physical capabilities. This is probably a result of evolution in insular isolation resulting in specific adaptations to their upper canopy niche. The species prefers closed-canopy forests, and is highly arboreal in the upper canopy. 'Alalā can use their proportionately large feet to manipulate objects or climb about in a psittacine-like fashion. The characteristics of the 'Alalā to vocalize with loudest shrieks, yodels, growls, and wailing in complete



darkness during pre-dawn and after-dusk hours was certainly responsible for its renown as a "spirit."

At present this unique crow's recovery seems to rest now wholly upon the success of captive propagation of the species. No biologically appropriate preserve has yet been acquired. Essential habitat in the species' core range remains unsecured and is continually being degraded by cattle grazing, logging and other factors. There has been a notable lack of action on the part of state and federal agencies to determine the status of the few remaining wild 'Alalā, and to secure and protect suitable habitat.

Unfortunately, very few people in Hawaii and the rest of the nation even know there is a Hawaiian crow, much less that it is perched more precariously on the brink of extinction than the now world-renowned California Condor.

Dr. Duvall is an aviculturist with the Hawaii State Division of Forestry and Wildlife in charge of the Hawaiian Crow captive propagation program. Dr. Conant is a faculty member at the University of Hawaii where she teaches a course on endangered species. In addition, she conducts research on endangered Hawaiian birds.

## Endangered Species Technical Bulletin Reprint



A forum for information exchange on endangered species from

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# Evaluating the ESTB Reprint: Survey Results

In the spring of 1986, *Endangered Species Technical Bulletin Reprint* editor, Paul Larmer, conducted a survey of *Reprint* subscribers. The purpose of the survey was to learn more about who is reading the *ESTB Reprint* and why, to help the program better meet its goals of improved services for subscribers, and financial security and self-sufficiency.

The primary purpose of the *Reprint* program is to provide the public with current information on the federal endangered species program by making the U.S. Fish and Wildlife Service *Endangered Species Technical Bulletin* available by subscription. Results from the survey suggest that the continued availability of the *Bulletin* is important to subscribers.

## Readers Supportive

The importance of the *ESTB Reprint* to subscribers was reflected in the reported willingness of 79% of the survey respondents to pay fifteen dollars or more for a subscription if necessary. According to Larmer, the *Endangered Species Technical Bulletin Reprint* presently has just under 600 subscribers. However, revenues from subscriptions cover only about two-third of the costs of reprinting the *Bulletin*; over \$3,600 must be raised annually by the *Reprint* staff to cover expenses.

The program is currently heavily subsidized by grants from conservation organizations for printing costs, and by the School of Natural Resources at the University of Michigan for staff.

Financial self-sufficiency has been a goal of the *Reprint* program since its inception in 1983. According to Larmer, self-sufficiency is the only way of ensuring that important resources provided by the *Bulletin* remain available to the public.

Information from the *ESTB* is used by professionals in a variety of ways. Environmental and conservation groups, who make up 11.4% of subscribers, use the *Bulletin* for monitoring implementation of the Endangered Species Act by the U.S.F.W.S., and as a source of scientific information necessary for conservation efforts. Zoos and botanical gardens use the *Bulletin* to obtain and share information on captive propagation projects for endangered species. The *Bulletin* is an educational and research tool for those subscribers with academic interests. Corporations, consulting firms and small businesses find the *Bulletin* useful in identifying endangered species related issues which may affect their interests, and in preparing environmental assessment and impact statements.

A second purpose of the *Reprint* program is to provide a source of additional information on endangered species issues through the supplemental "yellow section" published by the School of Natural Resources at the University of Michigan. Responses to the survey showed that subscribers are positive about the current direction of the *Reprint* program. Forty-one percent of the respondents feel that the yellow section is a "very important" component of their subscription and

forty-three percent are "very satisfied" with its contents.

A large number of *Reprint* subscribers (199; 58.9% of those responding to the survey) feel that the yellow section should be expanded and many offered suggestions for improving the supplement. In response to a question about the type of information or articles in the yellow section desired by subscribers were the following: more articles on endangered plants, more book reviews, more information on changes in regulations and legislation affecting endangered species, more information on research in progress, more success stories, more international articles, more information on state efforts to conserve endangered species, more coverage of fishes, reptiles, amphibians and invertebrates.

## Future Plans

While there are currently no plans to expand the yellow section of the *Reprint*, new *Reprint* editor Pamela Eaton hopes to use the survey results to help make the yellow section more useful to readers by tailoring the contents to readers' interests.

As a result of the survey, Eaton is planning articles on the status of the Endangered Species Act reauthorization efforts, state programs for endangered species, and federal agency compliance with the Endangered Species Act. In addition, she hopes to publish special *Reprint* issues on plant conservation, current research, and international conservation efforts.

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## Subscription Information

I would like to subscribe to the *Endangered Species Technical Bulletin*. I have enclosed a check or money order for \$12.00 (outside U.S. \$17.00) for each subscription requested.

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# Resources. . .

## FUTURE MEETINGS

October 10-11. The thirty-third annual systematics symposium will be held at the Missouri Botanical Garden, St. Louis, Missouri. The topic of the symposium will be species diversity and will include general analyses of plants and selected groups of animals. For more information write: Systematics Symposium, Missouri Botanical Garden, P.O. Box 299, St. Louis, Missouri 63166.

October 15-17. The Wisconsin Regional Primate Research Center and the Milwaukee County Zoo will co-host "The Zoo-University Connection: Collaborative Efforts in the Conservation of Endangered Primates" at the Wisconsin Center, Madison, Wisconsin. Experts from research institutions, universities and zoos will discuss the important topics of reproductive biology, primate medicine, improvement of breeding success, conservation issues, exhibit design and education programs. For more information contact: Anne Savage, Director's Office, Wisconsin Regional Primate Research Center, 1223 Capital Ct., Madison, WI 53715-1299.

October 20-23. "Conservation 2100" will be held at the Rockefeller University, New York, New York. The focus will be current trends, the strategy of scientific research, wildlife and ecosystem management, and the political, cultural, and economic contexts in which conservation measures

must be carried out. For registration information contact: Wildlife Conservation International, New York Zoological Society, Bronx, NY 10460, telephone: (212) 220-6879.

October 21-24. 13th Annual Natural Areas Conference and 8th Annual Meeting of the Natural Areas Association will be held at the YMCA of the Ozarks, Potosi, Missouri. In addition to field trips, sessions will include presentations on natural areas management, research and monitoring, western and federal programs, remote sensing techniques, protection of wetlands and public relations. For details write: Natural Areas Conference, P.O. Box 180, Jefferson City, MO 65102.

October 24-26. "Globescope II: An International Forum" will be held at Tufts University, Medford, Massachusetts. The purpose of the conference is to bring together people from business, government, and the private sector to discuss critical long-term trends in global environment, development, population, and resources. For additional information contact: The Lincoln Filene Center for Citizenship and Public Affairs, Tufts University, Medford, MA 02155, telephone: (617) 381-3451 or 381-3291.

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Resource information was provided by Jane Villa-Lobos, Smithsonian Institution.

### DEAR READER,

A changing of the guard has occurred here this month as I have turned over my duties as editor/manager of the *Reprint* to Pamela Eaton. Pam is pursuing a Master's degree in natural resource policy at the School of Natural Resources. Before returning to school in Michigan in 1985, Pam worked for the National Park Service in Denali National Park, Alaska. She received her bachelor's degree in geology from Yale University in 1983. I am excited about the talents and enthusiasm that Pam is bringing to the *ESTB Reprint* program. Please contact her through the mail or by phone with your ideas and suggestions on how to improve this publication; I know she looks forward to your input.

I would like to thank all of you, our subscribers, for your support of the *Reprint* this past year. It has made my job both enjoyable and rewarding. The dedication of the subscribers to the *Reprint* gives me faith that preserving our diminishing living resources is possible. With such a dedicated readership I have high expectations for the *Reprint* program as it continues to strive for better coverage of endangered species issues and the attainment of financial self-sufficiency.

Paul Larmer  
*Reprint* Editor, 1985-86

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