

# 'alala live on in Hawaiian forest

Contention over the fate of a dozen endangered crows in Hawaii seems to have been dispelled (for the time being) by sweep reason and a US National Academy of Sciences inquiry.

In the koa forests of the McCandless ranch on the Big Island of Hawaii live eleven 'alala, the last known members of their kind in the wild. Another ten 'alala live in a breeding colony on the island, but their success at producing chicks has not been great. Once a dominant species of crow (*Corvus hawaiiensis*) in the Hawaiian archipelago, conservationists call the 'alala a "classic indicator species" or model for efforts to save as many as twelve other species of Hawaiian forest birds from extinction.

As all too often these days, the preservation of endangered species is a challenge not only to science but also to the legal system as proponents of one course or another end up in court. And so it has been with the 'alala, whose case has been a *cause celebre* in Hawaii for the past decade. In an unusual but gratifying turn of events, the long-running controversy appears to be on the verge of resolution thanks to an independent scientific analysis of the issues by a committee of the US National Academy of Sciences (NAS).

It seems that various plans to save the 'alala in the wild, drawn up by both federal and state officials, were never implemented because the owners of the 64,000 acre McCandless cattle ranch, which is home to 11 'alala, refused to allow authorities on the property. The ranchers, acting on the advice of their own scientific advisers, took the position that the best way to preserve the 'alala was to leave them alone. Environmentalists, on the other hand, wanted to capture the birds and send them to the breeding colony on the theory that the genetic diversity of the wild 'alala would be just what was needed to improve reproductive success of the captive colony.

It was at this juncture that the US National Audubon Society and its Hawaiian affiliate went to court, suing the US Fish and Wildlife Service for its failure to protect the 'alala under the Endangered Species Act. Audubon argued that fish and Wildlife ought to have the authority to overrule the private property interests of the McCandless ranch owners. At this point, Fish and Wildlife persuaded the NAS to step in with a thorough analysis of the literature and a site visit to the ranch. The outcome has been something of a surprise.

The NAS committee, chaired by W. Donald Duckworth of the Bishop Museum in Honolulu, took issue with the logical presumption that there is a connection between reproductive failure in the breeding colony and the inevitable loss of genetic

variation that accompanied the decline of the once thriving 'alala population.

"Recent DNA analysis shows the captive flock to be moderately to highly inbred," the Duckworth committee concluded, but added that because the wild birds on the McCandless ranch live in close geographical proximity to the forests from which the captive birds were taken "the addition of wild adult birds from the ranch...for genetic

birds." "A dramatic correlation between loss of understory habitat and decline of an 'alala population occurred in the late 1970's on Hualalai [island]," when understory vegetation was removed and exotic pasture grasses were planted, the committee observed.

However, its analysis of the history of the 'alala also revealed that the bird's population decline began before 1900 in areas that were not cleared for ranching, thereby ruling out a simple cause and effect relationship between habitat alteration and the 'alala.

The NAS's review of other environmental causes of the birds decline — the introduction in Hawaii of the predatory mongoose, for instance, or the incidence of viral or bacterial disease — also ruled out clear-cut explanations for the accumulating loss of the 'alala during the past 90 years. Wisely, the committee concluded that it could not explain the decline and said: "Even if a great deal is known about a species, we might not know the right things."

In the end, the Duckworth committee posed a compromise resolution that seems to commanded the respect of all parties. Essentially supporting the McCandless owners' view that the 'alala should be left alone, the NAS nevertheless recommended that researchers be permitted to take the first clutch of eggs from the nest every spring for hatching in the breeding colony. Only outstandingly temperamental females fail to produce a second clutch after losing their first, so that the population both in captivity and in the wild will thereby be increased. "Ranchers often know and understand the natural history of their properties extremely well," the committee concluded, and "need to be respected" in the process of protecting endangered species. (Throughout much of the dispute the ranch owners were cast as the bad guys for keeping the good-guy environmentalists off their property.)

Beyond the recommendation to retrieve the first clutch of eggs, there are the expected recommendations for more and better facilities for studying the 'alala and for continued analysis of its habitat.

Meanwhile, the parties to the lawsuit are busy studying the NAS's study and, according to all reports, are approaching common ground. The lasting lesson of the case is that dispassionate scientific analysis has challenged the prevailing wisdom about the role of genetic variation in preserving the species and may just have brought about an unexpected compromise that everyone involved (the 'alala included) can live with.

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An adult 'alala glistens in the sunlight.

reasons alone would be expected to provide no more than a very minor measure of new genetic variation...."

The committee's analysis also contradicted assumptions that the McCandless birds were dying off at an unusual rate. Recent sitings of banded birds on the ranch revealed that the survival of adult birds is consistent with that for other crows. (By contrast, adult 'alala off the ranch had become extinct during the past two decades.) The data showed the reproductive rate of the McCandless birds to be normal, given the small size of the population, and attributed reproductive failure during the 1970s and 1980s among other wild populations to adult mortality rather than breeding incapacity.

"These observations amounted to an entirely fresh interpretation of the data", says Donna M. Gerardi of the NAS Board on Biology that managed the study.

The committee's analysis of the broader issue of species decline and habitat loss also produced some fresh observations. It is, for instance, logical to associate a loss of forest habitat and, in this case, the fruit-bearing trees that support the 'alala with the bird's imminent extinction. The forests of the McCandless ranch, where 'alala nest in the upper branches of the 'ohi'as trees and feed on fruits such as the 'ie'ie, mamaki, ho'awa and pilo, offer a natural habitat for the

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