

# GLOBAL RE-INTRODUCTION PERSPECTIVES

*Re-introduction case-studies from around the globe*



**Edited by  
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**Cover photo:** Clockwise starting from top-left:

- Formosan salmon stream, Taiwan
- Students in Madagascar with tree seedlings
- Virgin Islands boa

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## Release of captive-reared Hawaii creeper and Hawai`i Akepa into Kipuka 21 on the Big Island of Hawai`i, USA

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### Introduction

Hawaii Akepa (*Loxops coccineus coccineus*) and Hawai`i creeper (*Oreomystis mana*) are endemic Hawaiian honeycreepers restricted to high elevation Ohia and Koa forests on the island of Hawai`i. Both species are Red Listed by the IUCN and are listed as endangered at the federal and state level. The entire Akepa population was recently estimated at 14,000 individuals and Hawaii creepers between 2,500 and 10,000 individuals. Both species historically occupied wider ranges but habitat destruction and degradation caused by logging and introduced feral ungulates reduced the amount of available suitable habitat. Severe population declines were further attributed to predation from introduced black rats (*Rattus rattus*) and mongoose (*Herpestes auropunctatus*), and the spread of mosquito-borne avian diseases, such as pox and malaria. As a result, bottleneck populations of these birds reside at higher elevations where these diseases have not advanced. Kipuka is the Hawaiian term for an island of mature forest surrounded by younger lava flows resulting in isolation from proximal forest patches. The Kipuka 21 release site is located at mile 21 along Saddle Road between the Mauna Loa and Mauna Kea volcanoes, which rise to 4,267 m on either side. The region is characterized by these scattered kipukas, which have remained relatively isolated since the lava receded and cooled providing vital late

successional vegetation for nesting sites.

### Goals

- Goal 1: Successfully release 12 Hawai`i Akepas and six Hawai`i creepers in habitat protected by fencing to exclude feral ungulates and a grid system of bait boxes to control mammalian predators with the objective of establishing a resident population in an area with high public outreach.
- Goal 2: Successfully monitor the survival of released birds and



Hawai`i Creeper (*Oreomystis mana*)

provide supplemental food to birds post-release through the 2008 breeding season.

- **Goal 3:** Reduce time and space allocated to these species at the Keauhou Bird Conservation Center (KBCC) in order to concentrate programmatic resources on higher priority target species.

### Success Indicators

- **Indicator 1:** All birds are successfully transported and released without incident.
- **Indicator 2:** Birds continue to be re-sighted in the region and are present near the hack tower post-release.
- **Indicator 3:** Breeding is confirmed by one or both species at the Kipuka 21 site.



**Kipuka 21 - release site**

### Project Summary

Hawai'i Akepa and Hawai'i creeper inhabit wet mesic forest consisting primarily of Ohia and Koa on the island of Hawai'i. Hawai'i Akepas are insectivorous and forage high in the canopy, using their unusual crossbill to pry open leaf and flower buds in search of arthropods. Akepa are obligate cavity-nesters dependent on areas with mature trees to provide adequate nesting cavities. The sexes are dimorphic; males are bright orange-red with black wings and have short, yellow bills and long, notched black tails while females are dull green-yellow with dark wings and tails and a yellow breast band. Fully grown, Akepa weigh only 10 g while newly hatched chicks can weigh <1 g. At the KBCC, Akepa were offered several cavity-nesting constructions in their aviaries including a box nest constructed from wood and large diameter PVC pipe cut to simulate a cavity nest. Ten of these constructed cavities were placed high in the canopy near the release aviary in order to provide the birds nesting options they might recognize.

Hawai'i Creepers are bark-pickers typically seen foraging on thick trunks and branches of trees probing for insects. The sexes are monomorphic with olive-grey upperparts and paler underparts with pale chins and throats, black masks that extend from the base of the bill to behind the eyes, and straight bills. Adults generally weigh 12 - 14 g. Both sexes exhibit territoriality which had to be accommodated by hard releases to reduce the amount of time individuals occupied the aviary together. In September and October of 2007, twelve Hawai'i Akepas and six Hawai'i creepers were released into Kipuka 21 with the objective of establishing resident breeding populations. A release aviary was erected on a raised platform with predator-proof flashing to soften the transition from a captive life. A 150 m x 150 m rat grid with bait boxes containing diaphacinone were placed every 25 m to protect the core habitat. Five release events were staggered over the course of a month. Birds were secured in special carriers and transported from KBCC to the release site in a KBCC vehicle following

## Birds



**Release aviary at Kipuka 21**

established protocol. A researcher from KBCC remained in the Kipuka full time to monitor the birds in the aviary and provide food and care until the release. Three “soft release” events were accomplished, in which the birds were allowed to acclimate in the release aviary for 10 days. Two “hard release” events were accomplished, in which birds were provided food in the release aviary and held for an hour to monitor behavior. Post-release, supplemental food was provided outside the aviary to further soften

the transition. Supplemental food was offered in several locations on platforms affixed to the outside of the aviary to reduce resource competition among released birds. Monitoring of released birds indicated that birds possessed the skills necessary for survival. Although the birds had been in captivity since hatch, individuals began foraging for insects immediately post-release, successfully finding and consuming invertebrates within minutes of release.

Released birds continue to return to the hack tower for supplemental food. No transmitters were used due to the birds’ small size, but re-sights were effective using binoculars and observing birds as they fed. Additionally, periodic hikes through the 15 acre fenced area confirmed the presence of released birds. The Kipuka 21 will continue to be monitored as supplemental feeding is reduced over time. Not all of the released birds have been seen since the release but many have been documented at the hack tower and on two occasions, release birds were observed outside the boundaries of the Kipuka. Plans for Kipuka 21 include a parking lot, bathrooms, viewing areas, trail access, and interpretive signs. The isolated forested area contains many native birds including: ‘Oma’o, ‘Elepaio, ‘Amakihi, ‘Apapane, and ‘I’iwi. High native species diversity coupled with the natural beauty and ease of access will no doubt draw many visitors. Kipuka 21 will remain a valuable public outreach opportunity as well as good publicity for native Hawaiian species conservation.

### Major difficulties faced

- The logistics of packing all supplies down into the area was demanding and the food was perishable and needed to be replaced periodically. Supplies were hiked in and the release tower constructed on site.
- Our staff was relatively small, so staffing on site was minimal.
- No transmitters were used. The birds’ habits of foraging high in the canopy combined with frequent inclement weather made re-sighting difficult.

## Major lessons learned

- The key to success was cooperation and close coordination with government agencies.
- It was important to keep a plan that was easily adaptable. As situations arose and certain aspects of the project took more or less time than planned, it was important to adjust to accommodate and take advantage of this time, especially with a limited staff.
- Often, coordination and communication as a staff and with other agencies required the most time, but it remains vital. As an example, through talking with a trail construction coordinator who works in the Kipuka, trail work volunteers have commenced searching for released birds, which will lead to valuable survival data.

## Success of project

Highly Successful	Successful	Partially Successful	Failure
√			

### Reasons for success/failure:

- All birds were successfully transported to the release site and released from the cage without incident.
- The majority of the released birds returned to the hack tower for supplemental food post-release.
- The release event will remain useful as public outreach for endangered Hawaiian birds, for the Keauhou Bird Conservation Center, and for the eventual opening of Kipuka 21 to the general public.