



Global Re-introduction Perspectives: 2011

More case studies from around the globe
Edited by Pritpal S. Soorae



IUCN/SSC Re-introduction Specialist Group (RSG)





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Published by: IUCN/SSC Re-introduction Specialist Group & Environment Agency-ABU DHABI

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Citation: Soorae, P. S. (ed.) (2011). *Global Re-introduction Perspectives: 2011. More case studies from around the globe*. Gland, Switzerland: IUCN/SSC Re-introduction Specialist Group and Abu Dhabi, UAE: Environment Agency-Abu Dhabi. xiv + 250 pp.

ISBN: 978-2-8317-1432-5

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Cover design & layout by: Pritpal S. Soorae, IUCN/SSC Re-introduction Specialist Group

Produced by: IUCN/SSC Re-introduction Specialist Group & Environment Agency-ABU DHABI

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A trial conservation translocation of the mangrove finch in the Galápagos Islands, Ecuador

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Introduction

Mangrove finch (*Camarhynchus heliobates*) is one of the 13 species of Darwin's finch endemic to the Galápagos Islands. It is the rarest breeding bird in the archipelago with an estimated population of around 100 individuals. Once widespread throughout mangroves of the two western Islands, Isabela and Fernandina, it is now primarily confined to two small areas of mangrove, (Playa Tortuga Negra and Caleta Black: total area 30 ha), 5 km apart on the north west coast of Isabela. A remnant population of no more than a few individuals remained on the south east coast of the island in 2009. This severe decline in range has occurred during the last 100 years for reasons which are largely unknown. The main threats come from predation by introduced black rat (*Rattus rattus*) and loss of nestlings through introduced parasitic bot fly (*Philornis downsi*). The finch will also potentially suffer in future from loss of genetic diversity, contact with introduced pathogens, climate change effects and stochastic events such as land uplifts. The mangrove finch is classified by IUCN as Critically Endangered and protected under the Special Law for the Galápagos Province, general environmental legislation from Ecuador, and regulations from the Galápagos National Park Service.

Goals

- Goal 1: Develop translocation techniques with wild-caught mangrove finches.



Mangrove finch © Michael Dvorak
BirdLife Austria

Birds

- Goal 2: Transfer up to 10 individuals, a mixture of males and females with emphasis on juveniles.
- Goal 3: Follow initial establishment of all birds by radio tracking, thus determining the immediate fate of translocated mangrove finches.
- Goal 4: Establish individuals in a new location and confirm breeding within two years thus creating a geographically distinct population and increasing the currently restricted range of the species.

Success Indicators

- Indicator 1: Arrival at release site of all individuals in good health.
- Indicator 2: Persistence of monitored birds at release site until transmitters stop functioning, a maximum of 22 days determined by battery life of transmitters.
- Indicator 3: Observations of translocated birds for several months following translocation.
- Indicator 4: Persistence of birds into the next breeding season confirmed by observing territory establishment, made evident by calling birds.
- Indicator 5: Breeding of released individuals at new site.

Project Summary

Feasibility: Galápagos National Park (GNP) is responsible for management of native and endemic fauna on the Islands and mangrove finch conservation is undertaken through a partnership of GNP, Charles Darwin Foundation (CDF) and Durrell Wildlife Conservation Trust. Restoration of Playa Tortuga Negra (PTN) and Caleta Black (CB) has seen finch productivity and overall numbers increase. The current restricted range and absence from former sites makes this a fitting species for translocation. Primary habitat is established mangrove of three tree species (*Rhizophora mangle*, *Laguncularia racemosa* and *Avicennia germinans*) flooded at high tide. Sites in western Isabela are further unique in Galápagos as tall (25 m) trees grow behind a 5 m high beach protecting them from open sea



Mangrove finch source habitat

© Francesca Cunninghame CDF

where leaf-litter remains within the mangrove. Identical habitat within the birds' historic range is rare and Bahia Urbina, 25 km south of PTN, was chosen as the trial release site through our ability to control rats, proximity to the source population and suitability for post-release monitoring. Urbina lacks large areas of leaf-litter, a popular feeding resource for finches, however, dead wood, another important source of food, was abundant.

The decision to transfer birds directly between source and receptor sites was made by stakeholders following a workshop in 2008. Use of captive-raised individuals was decided against following a trial with closely related woodpecker finch (*C. pallidus*) on Santa Cruz where high-standard aviaries fitted with mosquito-proof netting did not prevent captive birds from suffering with Avi Pox virus. Most finches recovered following treatment but, as it was unclear whether they remained disease transmitters, it was considered too risky to hold and release mangrove finches where they may become a risk to wild populations. Thus, a planned captive program was rejected for direct translocation. Although studied in the wild there was no knowledge about mangrove finch behavior in captivity; prior to the translocation, birds had only been handled for ringing, measuring and blood sampling. It was therefore decided to hold birds for the minimum time and transfer and release all individuals on the same day as capture.

Implementation: Ten mangrove finches were caught over three days at PTN using playback and mist-nets. Only nine were transferred to avoid removing a significant number of breeding aged adults from the source population. A total of five juveniles (sex unknown) and four adults (tentatively identified as two males and two females) were successfully transported to the release site. All birds were fitted with individual metal and color rings and radio transmitters glued to the scapulars prior to being placed in individual transfer boxes built using fine mesh covered by a loose curtain to reduce over-heating. Birds, given perches of locally sourced mangrove and live insects as a food source, were transferred by speedboat and small dinghy. As release was on the same island as capture, disease-screening prior to release was minimal as this would otherwise have involved holding birds until results were available. A veterinarian was present to assess for obvious health problems and all birds were classified as healthy. The field team consisted of staff and volunteers from the CDF, GNP and Durrell, including local Islanders.

Post-release monitoring: Transmitter battery life allowed a maximum 22 days telemetry monitoring during which period birds were tracked twice-daily by staff camped at the release site. Several transmitters became prematurely detached as adults were in moult and juveniles had many blood-feathers reducing the area to which transmitters could be glued. One juvenile finch was sighted back at PTN on the second day while all other birds initially dispersed locally. Two individuals resided in a stand of mangrove trees 5 km north of the release site while the others remained in direct proximity to the release point. One juvenile was subsequently found dead nine days after release and three transmitters that had fallen off were recovered. Once the transmitters stopped, monitoring of color-ringed birds was conducted by direct observation and through listening surveys using playback to illicit response. Field-trips to the release site were conducted monthly and for four consecutive months no finches were seen or heard. However, with onset of the breeding season five months following transfer, one adult male was observed singing at the release site. One month later this individual was observed back at the source population where another adult male

was also found to have returned. In April 2011, 11 months after transfer, one of the adult females was confirmed back at PTN and no mangrove finches have been detected at the release site since November 2010. There is confirmation that four of the nine individuals have returned to the source population and these birds are frequently observed there. Juveniles of this highly cryptic species are not believed to become reproductively active, and sing, for over one year and the whereabouts of four individuals (three juveniles and one adult female) remains unknown.

Major difficulties faced

- No habitat similar to that of the source population exists today on Isabela Island, therefore, mangroves open to the tide were the only option as a release site. The presence of both the main threats (introduced rats and *P. downsi*) at all potential release sites means that thorough and regular control is necessary for the protection of any new established populations. The logistical difficulties in controlling rats in large areas of mangroves meant that the chosen release site had to have a relatively small area. At present no large scale control method is available for *P. downsi*.
- The small number of finches available from the source population and an inability to reliably confirm the sex of individuals in the field meant that 80% of the birds released were of unknown sex.
- The short life of transmitters coupled with the cryptic nature of mangrove finches and difficulties accessing the mangroves meant that long-term monitoring through observation was difficult. The small number of individuals within a large area made it impossible to confirm the absence of birds and this was further complicated by birds only reliably singing during the breeding season (November - April). Females never sing and the age at which juveniles start singing is unknown, therefore, listening surveys are inadequate for monitoring and regular visual observations are extremely difficult outside the breeding season.
- Strict quarantine regulations in Galápagos prohibited the use of invertebrate food only available on other islands and it was therefore necessary to capture invertebrates at the source site to feed birds during the transfer period.
- The isolation of both the source population and the release site (minimum six hours by speedboat from the primary settlement on the island) makes both regular monitoring and predator control an expensive exercise. This will be most apparent once international funding for the project comes to an end in 2012 and GNP take over management of the species.

Major lessons learned

- The durability of the birds during transfer once established in the transport boxes means that future release sites further from the source population can be chosen. This was especially noted with juveniles that were observed feeding whilst being transported in a noisy speedboat in rough seas (i.e. in otherwise stressful conditions). Adults were more prone to stress during long handling periods as required for fitting transmitters.
- Regardless of the reluctance of birds to disperse and transfer between the two mangrove forests studied for several years at the source population, mangrove

finches are capable of flying large distances (22 km) across open lava fields. Site fidelity appears to be strong both in juveniles and adults.

- The importance of release timing to encourage breeding at release sites. Releasing birds directly prior to onset of breeding is likely preferable so that individuals establish territories at new site before they individually disperse large distances during non-breeding season.
- It is probably very important to confirm that both males and females are transferred.
- Tasks of post-release monitoring were achieved solely by staff and volunteers via international funding, this is not sufficient for the future. Further capacitating GNP staff is required for the long-term management of mangrove finches.



Transfer boxes © Brent Barrett CDF

Success of project

Highly Successful	Successful	Partially Successful	Failure
		√	

Reason(s) for success/failure:

- The successful transport of all individuals to the release-site and holding in captivity for up to 10 hours increases our understanding of the durability of the birds necessary for future conservation management decisions.
- The initial establishment of seven individuals observed feeding and to be in good physical condition (capable of making long distance flights back to source population) suggests that the chosen release site supplied ample food for the mangrove finches regardless of differences to the source habitat. This increases our ability to choose future sites potentially further from the source population, therefore, reducing the risk of birds returning home.
- We have been successful in determining the whereabouts of five of the nine released individuals 12 months following the translocation. This knowledge is essential for planning any future translocations.
- The apparent lack of permanent establishment and breeding at the release-site results has so far resulted in a failure to increase the geographic range of this incredibly range restricted species. However, the results are highly encouraging for a future translocation using lessons learned during this trial.

Acknowledgments

This publication is contribution number 2040 of the Charles Darwin Foundation for the Galapagos Islands.

References

Dvorak, M., Vargas, H., Fessler, B. & Tebbich, S. 2004. On the verge of extinction: a survey of the Mangrove Finch *Cactospiza heliobates* and its habitat on the Galapagos Islands. *Oryx* 38: 1 - 9

Fessler, B., Vargas, H., Carrion, V., Young, R., Deem, S., Rodriguez-Matamoros, J., Atkinson, R., Carvajal, O., Cruz, F., Tebbich, S., & Young, H. G. (Eds.). 2010. Galapagos Mangrove Finch *Camarhynchus heliobates* Recovery plan 2010 – 2015, Durrell Wildlife Conservation Trust, Charles Darwin Foundation, Galapagos National Park Service.

Fessler, B., Young, H. G., Young, R. P., Rodrigues-Matamoros, J., Dvorak, M., Tebbich, S. & Fa, J.E. 2010. How to save the rarest Darwin's finch from extinction: The Mangrove Finch on Isabela Island. *Phil. Trans. Roy. Soc. Lond. Ser B* 365: 1019 - 1030

Fessler, B., Dvorak, M., Vargas, F. H. & Young, G. H. 2011. Recent conservation efforts and identification of the critically endangered Mangrove Finch *Camarhynchus heliobates* in Galapagos. *Cotinga* 33: 27 - 33

Fessler, B., Loaiza, A. D., Tebbich, S. & Young, H. G. 2011. Feeding and nesting requirements of the critically endangered Mangrove Finch *Camarhynchus heliobates*. *J. Ornithol.* 52: 453 - 460