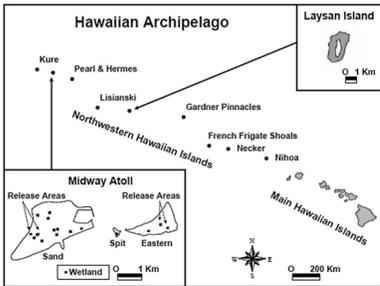


## Survival and Reintroduction of the Laysan Teal



Ducks eating brine flies. Photo courtesy of Ian Thomas, USFWS volunteer, 2013.



Map of Hawaiian Islands and study sites.



Ducks and other birds in habitat. Photo courtesy of Ian Thomas, 2013.

**The Challenge:** The Laysan Teal is an endangered, endemic, Hawaiian dabbling duck that has been pushed to the brink of extinction numerous times. The previous range includes the Main and Northwestern Hawaiian Islands, and its current range is less than 10 sq. km within the National Wildlife Refuges of Papahānaumokuākea Marine National Monument. This non-migratory waterfowl was eliminated from all the Hawaiian Islands except for Laysan by the 1860's through anthropogenic effects (i.e., introduced rats, shipwrecked mariners, etc.). The Laysan Island population was threatened when guano miners inhabited the island, hunted the duck, and introduced rabbits, devastating the native habitat until they were removed in 1923. Presently, extreme events (e.g., tsunamis, hurricanes, drought, or flooding), disease (e.g., Avian Botulism), sea-level rise, accidental predator or competitor introductions, are ongoing threats to this duck's survival.

**The Science:** Research has been conducted on Laysan Island by USGS and USFWS since 1998, focusing on population dynamics, survival, reproduction, genetics, foraging ecology, and habitat use to determine suitable reintroduction sites and methods. A successful reintroduction to Midway Atoll during 2004-5 has reduced the species' extinction risk from random catastrophes. Another translocation, to Kure Atoll, occurred during Sept of 2014 and sightings data indicate high post release survival so far. Successive outbreaks of Avian Botulism on Midway Atoll and the 2011 tsunami striking both Laysan Island and Midway Atoll have again threatened this species' survival, demonstrating the critical need for additional reintroductions. A survival analysis is currently underway to better understand the population effects and magnitude of the recent mortality events.

**The Future:** Possible sites for additional translocations include Lisianski Island and Kaho'olawe. However, either of these potential translocation sites must contain suitable habitat and be rat/predator free before any further steps can be taken. USGS will continue to provide scientific support to collect (when possible) and analyze data from Laysan Island, Midway Atoll, and Kure Atoll, with the ultimate goal of reintroduction of this species to more islands within its previous range, helping to ensure the persistence of this species over the long term.