Introduction

Translocation is the intentional release of wildlife in order to augment, re-establish, or establish a population (Griffith et al. 1989, IUCN/SSC 2013), and this method can be particularly effective for species with a low propensity for dispersal. Translocations are successful when a self-sustaining population is created and success is more likely when there are a large number of founders, the rate of population increase is high, and there is little ecological competition at the release site (Griffith et al. 1989). Positive outcomes are more likely in high quality habitat and within the species’ core historical range, and wild-caught animals are more likely to succeed than captive bred animals (Wolf et al. 1998).

In 2014, we began a five-year translocation project with the goal of re-establishing breeding Common Loon (Gavia immer) populations within its indigenous range in both southeastern Massachusetts and southern Minnesota. This effort aims to develop methods and evaluate the effectiveness of Common Loon chick translocation as a conservation strategy for loons and other diving bird species. We anticipate these methods will serve as a basis for future translocation projects in Wyoming where the long-term stability of the isolated population is uncertain.

Common Loon Historic and Current Breeding Range

Loons as Candidates for Translocation

- Long-lived species
- Low dispersal rates, poor colonizers
- Delayed onset of maturity (remain on ocean for ~3 years after fledging)
- Highly territorial
- Sensitive nesting period
- Low fecundity (1-2 chick broods, low-re-nesting rate)
- Chicks do not leave natal lakes until 10-11 weeks of age or older

Methods

Selection of Study Lakes

- Source Lake Criteria
  - Lagoon pairs with historically high productivity
  - Two-chick broods (no perceived reproductive failure for adults)
- Release Lake Criteria
  - Robust fish populations with varying prey sizes
  - Presence of high quality foraging habitat
  - Proximity to other suitable breeding sites
  - Good shoreline nesting and brooding habitat
  - Located within historic range

Capture & Transport

Nocturnal capture technique using spot-light and dip-net technique (Evers 1993)

- Minimize chase time to reduce stress
- Post-capture processing:
  - Physical exam by veterinarian
  - Morphometrics in weight
  - Initial blood sample
  - Subcutaneous fluids administered
- Transport:
  - Minimize transport time
  - Minimize heat stress (climate control) and ambient noise

Captive Rearing or Direct Release

Captive rearing of younger chicks (4–6 weeks old)

- Direct release of older chicks (> 9 weeks old)

Captive Rearing Specifications

- Chicks housed in 12’x24’ aquatic pens lined with fine mesh aquaculture netting
- Fed live, locally available, native fish species using feeding blind to minimize habituation
- Perform time activity budgets hourly

Monitoring

- Locate chicks multiple times daily on release lake
- Survey adjacent lakes after loons fledge

Health Assessment

Blood samples are collected before and after captivity to monitor the health of the chicks. To ensure translocated chicks will not introduce pathogens into the release areas, additional samples are collected for disease surveillance including avian influenza and hemoparasites (such as malaria).

Results from these tests will also be incorporated into the North American Loon Health Study, a continent-wide effort to understand loon health.

Findings & Effort to Date

To date, 21 wild-caught loon chicks have been translocated within MN and to MA. Our success to fledging rate for both sites is 95% (20 of 21 chicks).

<table>
<thead>
<tr>
<th>Release Site</th>
<th>MN</th>
<th>MA</th>
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<tr>
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<td>Direct Release</td>
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<tr>
<td>Total</td>
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</table>

Figure 2. Numbers of Common Loon chicks translocated in each focal region, 2014-2015. (*1 chick stuck power line from release lake, euthanized; **1 chick was brought to rehabilitation center for lethargy two days after release, had severe anemia and other abnormal health parameters (e.g. low lymphocyte and glucose levels), chick died day 5, necropsy revealed emaciation syndrome but no other abnormalities.)

Path Forward

- Continue translocation of loon chicks in study regions in 2016 and 2017
- Determine effectiveness of both translocation methods (captive rearing or direct release)
- Survey lakes for returning translocated loons until 2020 and beyond
- Establish inter-agency working groups in study regions
- Investigate potential for translocation of loons in the west, specifically WY
- Establish baseline health data for loon chicks and continue to advance understanding of loon health through the North American Loon Health Study
- Relieve stressors in source regions through management, policy, outreach, and research

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Literature Cited


Figure 3. Comparisons of time activity budgets among chicks in the pen, after release from the pen, after direct release, and in the wild, 2014-2015.

Studying the History of Common Loon Breeding

Figure 1. Historical and current breeding range of the Common Loon and current (red arrows) and possible translocation sites (blue crosses) in the United States.

Study Sites

Minnesota (source population for translocation: northern MN)

- Loons formerly nested throughout state and into northern IA

- Loon population started retracting in late 1800’s

- Western and southern-most counties currently experience low occupancy rate

- Largest population of Common Loons (~12,000 adults) in continental U.S.

Massachusetts (source population for translocation: NY & ME)

- Loons extirpated from state in late 1920s, last known pair documented on Great Quittacas (1872)

- Natural recolonization documented in 1975 on Quabbin Reservoir

- Currently 45 territorial pairs

Wyoming (exploring potential translocation effort)

- Population is concentrated in northwest corner of state in Yellowstone NP and National Forests

- 17 territorial pairs as of 2015, rarest breeding bird in WY

Closest loon population is 200+ miles away in MT

Restore the Call: Multiregional Translocation of Common Loon (Gavia immer) Chicks

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14.000 years ago, the last glaciers in the Loon’s range retreated, leaving a legacy of lakes that have since supported breeding Common Loons. Minturn, Wyoming.