Introduction

In an effort to strengthen loons at the southern extent of the species’ range and restore loons to their former habitat, we developed novel methods for translocating and captive rearing. With the exception of wild birds being temporarily housed for rehabilitation, loons are typically not kept in captivity. Loons are challenging to house due to their specific behavioral and physiologic needs, special housing and feeding requirements, and susceptibility to stress-related disease. Although loon captive rearing methods have been previously described, there is a need for improved husbandry techniques that avoid human habituation.

As part of the first-ever loon translocation effort, 13 common loon chicks were partially reared in captivity in southeast Massachusetts, USA from 2015-2017. The goal of this translocation effort was to restore a breeding population of common loons to southeast Massachusetts in an area that historically held loon territories prior to their extirpation in the late 1800s.

Chick Selection and Translocation

Chicks were translocated from wild populations in New York State and Maine. Chicks from two-chick broods were selected for capture and translocation at 4-8 weeks of age. This age range allowed chicks several weeks of exposure to their natural parent and sibling loons prior to translocation, while still ensuring chicks were young enough to be reliably captured. Once captured, chicks were weighed and given a physical examination, and a blood sample was collected for sex-determination and baseline health analyses (complete blood count, plasma biochemistry, and Aspergillus panel). Subcutaneous crystalline fluids (Lactated Ringer’s Solution, 50ml/kg) were administered, and chicks were then placed in individual suspended net-bottom carrier boxes for transport.

Demonstration of Efficacy: Health, Survival, and Reproduction

Thirteen loon chicks were reared in the pens for an average of 23 days (range = 16-28 days) and all remained clinically normal and gained substantial weight during the captive rearing process. Supported by a lack of observed clinical symptoms, mortalities were observed, and all chicks behaved normally and demonstrated successful foraging following release. Between 2018-2020, six of the thirteen (46%) reared chicks returned to the release area as adults. Two loons were observed to have formed a territorial pair in 2018 and 2019. In 2020, one of the translocated loons paired with an unbanded loon that dispersed from the existing Massachusetts loon population and successfully hatched one chick in southeastern Massachusetts.

Rearing Methods and Pen Design

Captive Rearing Pens

Rearing pens were rectangular enclosures built with chain-link fence panels set in a natural lake, lined with 1/16” mesh Delta knotless aquaculture netting (Figures 1 and 3) to reduce the risk of loon entrapment and allow water to flow freely between the lake and pens. Pens were enclosed with avian guard netting to protect chicks from predators. Fabric around the outside of the pen prevented chicks from seeing open water. Two feeding blinds (Figure 5) were constructed on the dock in between the pens with a PVC feeding pipe extending into each pen, allowing staff to deposit live fish during feeding sessions without being seen by the chicks.

Feeding of Chicks

Chicks were primarily fed live farm-raised golden shiner (Notemigonus crysoleucas) and supplemented with prey harvested from the lake. The feeding pipe was positioned approximately 0.5-1m above the surface of the water within the rearing pen (Figure 4), causing the fish to splash as they entered the water. This visual and auditory cue stimulated chicks to investigate and pursue the fish which replicated behavior observed in wild loon chicks. Younger chicks (<5 weeks of age) or chicks slower to develop hunting proficiency were offered impaired live fish. As chicks grew and refined their skills, larger un-impaired fish were provided.

Release Criteria & Post-release Monitoring

Criteria for release included: 1) minimum age of 9 weeks; 2) complete contour feather development with adequate water-proofing; 3) proficiency at catching live fish; and 4) no signs of disease or other impairment. Prior to release, chicks were re-captured from the rearing pens and weighed, given a physical examination, and a blood sample was collected for comparison to initial values obtained at capture from the wild. Each chick was banded with a metal USGS leg band and a unique combination of color leg bands, and monitored on the release lake until fledging.

Future Directions

- Utilize methods for recovering loons lost during the 2003 Buzzards Bay oil spill (Bouchard Barge 120).
- Apply methods as part of conservation actions to restore or strengthen loon populations in other parts of the species range.
- Evaluate opportunities to apply these methods to related species or species with similar natural histories that make traditional husbandry difficult.

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