

ABOUT BRI

Biodiversity Research Institute (BRI), headquartered in Portland, Maine, is a nonprofit ecological research group whose mission is to assess emerging threats to wildlife and ecosystems through collaborative research, and to use scientific findings to advance environmental awareness and inform decision makers.

BRI supports 11 research programs within three research centers including the **Center for Ecology and Conservation Research**, the **Center for Mercury Studies**, and the **Center for Loon Conservation**. Within these centers, BRI manages the following programs:

Taxonomic

- Loon Program
- Mammal Program
- Marine Bird Program
- Raptor Program
- Songbird Program
- Waterfowl Program



Ecosystems

- Arctic Program
- Tropical Program
- Wetlands Program

Environmental Issues

- Wildlife Health Program
- Wildlife and Renewable Energy Program

BRI has been conducting scientific inquiries for private sector and government clients nationwide and globally since 1998. Using both traditional and innovative approaches, our researchers collect, analyze, and interpret scientific results on how ecological stressors impact living systems.

By incorporating regional data and developing strategies for collecting additional data, BRI has effectively modeled such stressors on species and community distributions, phenology, adaptive strategies and population viability across tropical, temperate, and arctic biomes.

BRI's Wildlife Toxicology Lab has the capacity to analyze various tissue samples for mercury concentrations.

For more information on our capabilities and services, visit: www.briloon.org/services

BRI's LOON PROGRAM

BRI's Loon Program is dedicated toward a greater awareness of loon species worldwide. Since 1989, our biologists have monitored breeding, migratory, and wintering loon populations across North America. A basis for this work has been the discovery and widespread use of a replicable and safe capture method that permits regular banding and sampling of adult and juvenile loons.

BRI continues to identify threats to loon populations and develop collaborative research projects to help at-risk populations achieve self-sustaining levels.

Research Capabilities

BRI biologists are skilled in numerous diverse aspects of loon research including:

- **Surveys**—Conducting surveys on breeding loons to estimate abundance, reproductive success, feeding habits, and space use.
- **Capture and banding**—BRI researchers are experts in the safe and efficient capture and banding of loons. Techniques vary by species, season, and geographic region; all methods are approved by required permitting agencies.
- **Tracking device selection and fitting**—Tracking technologies are critical for acquiring important data on loon ecology. BRI staff are skilled in selecting appropriate tracking devices and safely fitting them to individuals.
- **Laboratory analysis**—BRI's Wildlife Toxicology Lab has the capacity to analyze various tissue samples for lead and mercury concentrations. Necropsies are performed by BRI veterinarians in our Wildlife Health and Pathology Lab.
- **Ecological analysis and modeling**—BRI staff have expertise in managing and analyzing large and complex multivariate datasets comprised of animal movement, demographic, contaminant, or other data.



Common Loon



LOON PROGRAM DIRECTOR

Vincent Spagnuolo

vincent.spagnuolo@briloon.org

Senior Advisors: David Evers

Program Staff: Alex Dalton, Bill Hanson, Shearon Murphy, Lucas Savoy, Tim Welch



276 Canco Road, Portland, ME 04103 • 207-839-7600

www.briloon.org/loons

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WHY STUDY LOONS

Loons are widely recognized symbols of northern wilderness and indicators of aquatic health. Landscape-level alterations, habitat disturbance, fishing practices, and pollution threaten loon populations across their range, but at both individual and population levels, loons are resilient and able to acclimate to many of these threats, often within the same generation.

The sustainability of loon populations over time will ultimately depend on our own awareness and response to minimize the many threats known across North America and their global range.



BRI's loon research stretches across the globe to include breeding areas, migratory corridors, and wintering regions of several species including the Common Loon, Red-throated Loon, Yellow-billed Loon, and Pacific Loon. Many of our studies investigate significant environmental threats to loon populations, through three primary focus areas: Contaminant Studies, Movement Studies, and Populations Dynamics.

Species We Study

Loon species emphasized in BRI's research include:

- Common Loon
- Yellow-billed Loon
- Red-throated Loon
- Pacific Loon

CONTAMINANT STUDIES

BRI began its long history of studying contaminants by documenting the exposure and effects of methylmercury in the Common Loon across North America. Research efforts have expanded to include additional contaminants (including lead, oil, and emerging organic pollutants) and species (including the Red-throated and Yellow-billed Loons). Overall research goals include the identification of biological mercury hotspots, conducting risk and injury assessments, and develop the use of loon species as biosentinels for monitoring contaminants in response to regulatory and other policy needs (e.g., Minamata Convention on Mercury).

Examples of contaminants monitoring projects include:

- Arctic Coastal Plain Loon Study
- NRDA (North Cape, Sanborn, Bouchard Barge, Deepwater Horizon)
- Common Loons in the Gulf of Mexico — Winter Ecology
- Common Loons on Massachusetts Reservoirs
- Common Loons in Saskatchewan

MOVEMENT STUDIES

Efforts to study and monitor the movements of loons across their life cycle help us learn critical information about their behavior and ecology. What is the breeding and wintering site fidelity of loons (important for managing populations)? What is the connectivity for various breeding populations with their wintering areas (important for pinpointing impacts during a marine oil spill)? What threats do breeding loon populations encounter during migration and winter (important for rare species like the Yellow-billed Loon)?

The answers to such questions are more than just interesting; they are needed to make responsible conservation and management decisions that affect both wildlife and humans.

Representative BRI projects with a focus on loon movements include:

- Arctic Coastal Plain Loon Study
- Determining Offshore Use of Red-throated Loons in the Mid-Atlantic United States



POPULATION DYNAMICS

Monitoring uniquely color-marked or satellite-tagged loons is paramount to continued understanding of population demographics and trends. Over time, the BRI's banding efforts have encompassed most of North America for the Common Loon (including 11 states and 8 provinces during the breeding season and 8 states during winter), three sites in the Yellow-billed Loon's breeding range (Alaska, Nunavut, and Northwest Territories), and many sites for the Red-throated and Pacific Loons (mostly in Alaska during the breeding season). As a result of research conducted using banded and tagged loons, various state, regional, and national management and conservation efforts have been employed.

Population dynamics monitoring projects include:

- Arctic Coastal Plain Loon Study
- NRDA (North Cape, Sanborn, Bouchard Barge, Deepwater Horizon)
- Common Loons in the Gulf of Mexico — Winter Ecology
- Common Loons in Saskatchewan
- Rangeley Lakes Long-term Monitoring



PROJECT HIGHLIGHT:

RESTORE THE CALL

In 2013, the Ricketts Conservation Foundation initiated the largest conservation study for the Common Loon, a key bioindicator of aquatic integrity for lakes and nearshore marine ecosystems across North America. This scientific initiative, carried out by BRI, provides an opportunity to identify major threats to loons and to create solutions that strengthen current populations and restore loons to their former breeding range. Focal restoration sites are in Massachusetts, Minnesota, and Wyoming. Primary project components include population assessments, outreach and conservation, and translocation and captive rearing.

For more information on this study, visit:
www.briloon.org/restorethecall



INVITATION TO ATTEND

2019 International Loon/Diver Symposium

October 30 – November 1, 2019
Portland, Maine

BRI will host the 2019 International Loon/Diver Symposium. We invite loon researchers and conservationists, state and federal employees, wildlife rehabilitators, students, and loon enthusiasts from across the northern hemisphere to share knowledge and expertise.

The Symposium aims to be a comprehensive meeting that encompasses all five loon species: Arctic Loon; Common Loon; Pacific Loon; Red-throated Loon; and Yellow-billed Loon.

The Planning Committee is developing a detailed itinerary. We will post conference updates as information is available. Please spread the word to your colleagues.

To learn more, visit:
www.briloon.org/loons2019