

# Loon Program - British Columbia

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## GSA Contract

## RECENT BRI PUBLICATIONS

Plasma Biochemistry and Protein Electrophoresis Reference Intervals of the Common Loon (*Gavia immer*) (2020)

Assessing year-round habitat use by migratory sea ducks in a multi-species context reveals seasonal variation in habitat selection and partitioning (2020)

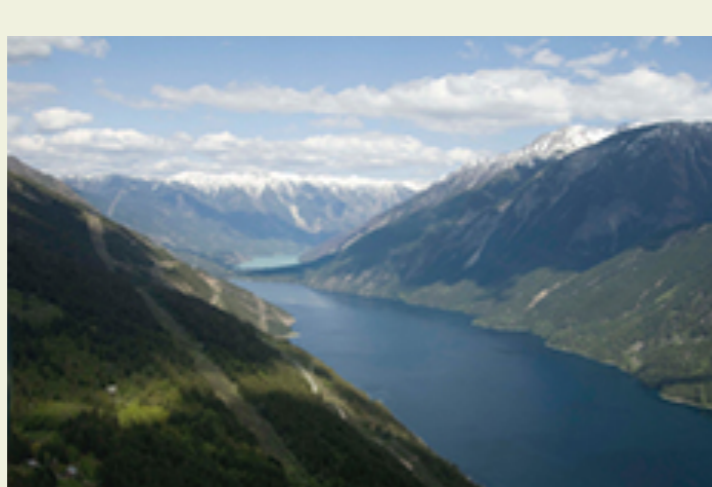
Annual movement patterns of American common eiders *Somateria mollissima dresseri* (2020)

## Loon Research in British Columbia

British Columbia supports an estimated 75,000 adult Common Loons, which is approximately 10 percent of the global population (Campbell et al. 2008; Evers et al. 2010).

Despite this very high concentration of loons, very little dedicated research has been directed to this species in British Columbia. Environmental risks, such as mercury pollution and acid rain, avian diseases, and human disturbance, pose threats to even robust loon populations.

**Lead Investigator:** Ken Wright



## Project Overview

To date, most knowledge of Common Loons in British Columbia is derived from citizen science initiatives, such as the Canadian Lakes Loon Survey (CLLS) coordinated by Bird Studies Canada (BSC). Recently, a paper produced by BSC scientists investigated patterns of Common Loon breeding productivity across Canada and revealed a concerning trend—an accelerated decline in productivity in western Canada (Tozer et al. 2013).

With increasing atmospheric mercury deposition and British Columbia's position downwind of Asia (the primary source of global mercury), it seems prudent to further investigate Common Loon demography and mercury concentrations.



## Study Goals

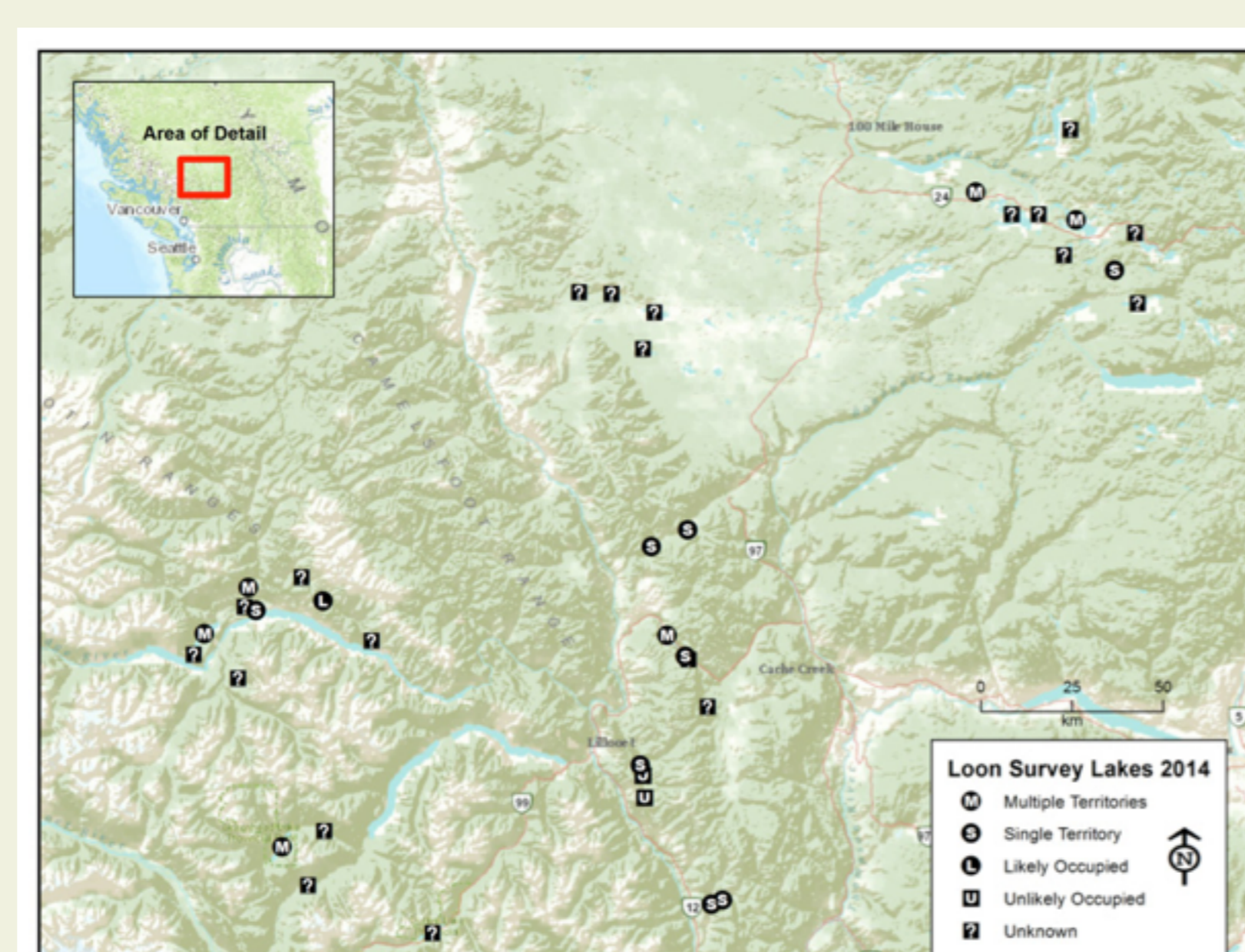
Surveys to determine loon occupancy rates will commence in mid-May, when most loons should return to their territory (Campbell et al. 2008).

We will survey lakes to determine loon presence. For most lakes, surveys will be shore-based, with one or two observers scanning a lake with binoculars or spotting scopes for a minimum of 30 minutes. For large lakes with limited road access, especially those with convoluted shorelines and deep bays, we will use a kayak or motorboat to make observations. We have identified 37 lakes to survey in the primary study area.

Our goal is to monitor 40 loon territories over the course of the breeding season to generate an estimate of productivity (number of chicks/territorial pair) that can be compared to other regions (i.e., Washington, Montana, Wyoming, Minnesota, etc.).

In order to accomplish this second demographic objective, a follow-up survey will be performed on all lakes that supported loons during the initial survey. This survey will occur in late August when chicks will be at least 6 weeks of age and nearing the fledging stage. Our productivity estimate will help us understand potential mercury impacts as well as other factors like human disturbance, predation rates, and food availability.

## Study Region



Lakes targeted for Common Loon surveys in British Columbia in 2014.



## Methods of Gathering Data

### Surveying

Lakes will be observed using binoculars or a spotting scope to determine the presence or absence of loons. Kayaks or boats will be used to survey lakes when appropriate. If use of watercraft is not possible, lake perimeters where breeding is occurring or suspected will be searched on foot for the presence of nests.

### Capture and Banding

Loons will be captured using both nocturnal and diurnal techniques developed by BRI. Captured loons will be banded for individual identification using unique combinations of color-marked bands and numbered U.S. Geological Survey aluminum bands.

### Blood and Feather Collection

We will follow established tissue sample collection protocols. We will non-lethally collect loon blood samples to evaluate short-term mercury accumulation in the loons. Feather samples will be collected from the adults (and from juvenile loons with fully emerged feathers) to provide an indication of long-term mercury accumulation.

### Egg Collection

Loon eggs will be collected when a nest is confirmed abandoned or has been over-incubated (due to inviable egg/s). The average length of incubation for Common Loons is 28 days; therefore eggs will not be deemed inviable until they have been incubated many days or weeks beyond this length of time.

### Carcass Collection

Biologists may encounter deceased loon adults or chicks. If this occurs, the carcass will be collected in a sealable plastic bag and marked with the location of the carcass, the date, and any other pertinent information. When possible, a GPS location of the carcass will be taken. If the carcass is reasonably fresh, it will be refrigerated. Veterinarian Michæla Kneeland will be contacted to determine if she is available for a necropsy. If Dr. Kneeland is not available, or if the carcass is decaying, it will be stored in a freezer until a necropsy can be performed.

## Breeding Lakes in British Columbia



Carol Lake, Bridge River drainage basin, B.C., has produced Common Loon chicks in recent years.

## Expected Deliverables/Outcomes

This study aims to initiate loon studies in British Columbia with the specific objectives to:

- Determine rates of productivity in the southern interior of British Columbia
- Mark a subset of Common Loons with unique color bands to monitor return rates and productivity
- Obtain tissue samples to determine mercury concentrations and conduct genetic sequencing in adult and juvenile Common Loons
- Obtain samples for a comprehensive health assessment of Common Loons in this region

## Collaborators

- [Canadian Lakes Loon Survey \(CLLS\)](#)
- [Bird Studies Canada \(BSC\)](#)
- [Lillooet Naturalist Society Citizen Scientists](#)

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## ABOUT BRI

### BRI IN THE NEWS

**BRI's Research Published in the Journal Evolutionary Applications**

July 6, 2021

**BRI Featured in Discover Magazine Online**

June 22, 2021

**New BRI-IPEN Study Shows High Mercury Levels in Indigenous Latin American Women**

June 15, 2021

**BRI Loon Biologist Awarded NSF Grant**

June 11, 2021

**BRI Climate Change Program in the News**

April 21, 2021

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