Staubert and Bush Arm Loon Platform Monitoring

Prepared for:
Fish and Wildlife Compensation Program
Prepared by:
Corey Bird, Yucwmenlúcwu (Caretakers of the Land)

March 2022

Prepared for:

Irene Manley,
Ministry of Forests, Lands, Natural Resource Operations and Rural Development
401-333 Victoria St., Nelson, BC.

Prepared by:

March, 2022

Corey Bird, Wildlife Biologist, R.P.Bio, Date
Yucwmenlúcwu (Caretakers of the Land) LLP
Enderby, BC
250-838-0775 ext. 121
corey.bird@splatsindc.com

Reviewed by:

March 28, 2022

Aaron Deans, Terrestrial Ecologist, R.P.Bio,
Yucwmenlúcwu (Caretakers of the Land) LLP
778.943.1821
aaron.deans@splatsindc.com

Prepared with the financial support of: Fish and Wildlife Compensation Program-Columbia Basin, on behalf of its program partners BC Hydro, the Province of BC, Fisheries and Oceans Canada, First Nations and Public.

Executive Summary

Known to Secwepemc people as 'iswat,' Common loon (*Gavia immer*) populations have been affected in the Columbia region, and elsewhere in British Columbia, due to habitat loss resulting from reservoir creation. Given this as well as other increasing threats to population stability, enhancing loon habitat may aid in counteracting past impacts and lead to increased nesting success. In response, the Fish and Wildlife Compensation Program's Small Lakes Action Plan (FWCP 2019) has highlighted the need to create habitat elements for focal wildlife species such as Common loons. Habitat enhancement/compensation through use of floating nest platforms is known to improve nesting success for Loons in lakes and reservoirs with regional evidence shown on the Whatshan Lake Reservoir.

Artificial loon nesting platforms were installed on three small lakes in the Columbia Region in (2016): (1) Staubert Lake (in the Nakusp/Trout Lake region), (2) Aide Lake and, (3) Treasure Lake (both near Bush Arm, at the south end of Kinbasket Reservoir in the Rocky Mountains). In summer 2021, these loon nesting platforms were monitored and maintained by Yucwmenlúcwu (Splatsin Caretakers of the Land LLP). This project involved assessing the condition of previously installed artificial nesting platforms, conducting maintenance, as well as monitoring/documenting use of platforms by loons and other animals through the breeding season to determine reproductive success of loons in 2021. This was done through 2-3 monitoring trips which included, one pre-breeding season maintenance trip and 2-3 monitoring trips during the breeding season.

Of the three lakes monitored, two loon pairs were found nesting on two of the artificial platforms (i.e., on Staubert and Aide lakes) with no loon observations recorded on Treasure Lake. Loons were found incubating on the Staubert Lake platform on the platform maintenance trip on May 12th and were incubating again on May 28th. On June 10th, eggshells and evidence of otter was found on the Staubert Lake platform but no young were observed. On Aide Lake, loons were found incubating on the platform on June 10thand a single young loon was observed foraging with both adults on July 28th (0.50 young/pair which is just above the 0.48 young/pair required for a stable population). No loons were observed on Treasure Lake. All platforms were found in good condition with functional anchors and relatively good vegetation cover.

Limitations of Report

This report and its contents are intended for the sole use of the Fish and Wildlife Compensation Program Columbia and their agents. Yucwmenlúcwu (Caretakers of the Land) LLP (Yucwmenlúcwu) does not accept any responsibility for the accuracy of any data, analyses, or recommendations contained or referenced in the report when the report is used or relied upon by any Party other than Fish and Wildlife Compensation Program Columbia, or for any Project other than the proposed development at the subject site. Any such unauthorized use of this report is at the sole risk of the user.

Where Yucwmenlúcwu submits both electronic file and hard copy versions of reports, drawings and other project-related documents, only the signed and/or sealed versions shall be considered final and legally binding. The original signed and/or sealed version archived by Yucwmenlúcwu shall be deemed to be the original for the Project. Both electronic file and hard copy versions of Yucwmenlúcwu's deliverables shall not, under any circumstances, no matter who owns or uses them, be altered by any party except Yucwmenlúcwu.

Table of Contents

List of Figures

Keywords

Iswat, Common loon, *Gavia immer*, reservoir, nesting success, nesting habitat, artificial nesting platform, Whatshan Lake, Bush Arm, Treasure Lake, Staubert Lake, Aide Lake.

1 Introduction

For Secwepemc people, the Common Loon (‘iswat’) is considered a powerful and treasured guardian spirit (seméc). Common loon populations appear to be declining across southern Canada (Tozer *et al*., 2013) and while long-term conservation measures for this species recommend investigation of various environmental issues and related impacts including potential mercury exposure, water pH levels, and/or habitat loss (Tozer *et al*., 2013), short-term actions that result in increases in reproductive success are considered essential. The Fish and Wildlife Compensation Program’s (FWCP) Small Lakes Action Plan (FWCP 2019) has identified the Common Loon as a focal species and highlighted the potential to compensate for habitat loss through the provision of habitat elements such as secure nesting sites.

Common loons are migratory species that spend the breeding season on inland lakes, often returning to the same lake to breed year after year. To investigate the productivity of loons on the Whatshan Reservoir (‘Whatshan’), Kingbird Biological Consultants (‘Kingbird’) monitored loon nests between 2006 and 2010 (Kellner and van Oort 2011). During this period, low reproductive rates for loons were observed with between 0 and 50% of nests successful per year; rates which are below the Canadian average (Timmermans and Jones 2002) and lower than rates found elsewhere in BC (Tozer *et al*., 2013). Loon monitoring at Whatshan found that much of the poor nesting success was attributed, or related to BC Hydro reservoir operations, with other causes of nest failure attributed to human related disturbances as well as predation (Kellner and van Oort 2011). Because loons cannot easily walk on land, their nests are built at the water’s edge and this makes them vulnerable to several threats, including fluctuating water levels. To address this, Kingbird installed five floating artificial nest platforms on Whatshan in 2011 (with additional platforms in Montana Bay on the Upper Arrow Reservoir in 2013). In continuation of this work, Kingbird monitored the loon activity on seven (7) small lakes in the Columbia Mountains to determine where to install additional artificial nesting platforms. In 2016, three platforms were installed on three small lakes (i.e., Staubert Lake, Aide Lake, and Treasure Lake) (Kellner and van Oort 2017). As no monitoring has occurred since platforms were installed in 2016, loon nesting platforms were monitored by Yucwmenlúcwu and Kingbird in summer 2021 to assess platform condition and use by loons. This report summarizes the activities and results of monitoring in 2021.

2 Goals and Objectives

To support loon populations in the Columbia Basin, our goal with this project was to evaluate the condition and use of floating nest platforms installed in 2016 (Kellner and van Oort 2017)

Through this work our objectives were to:

- Visit all nest platforms in early May to assess condition, complete maintenance and ensure platforms were functional prior to nesting season.
- Monitoring reproductive success by locating breeding loon pairs, locating nests (on and/or off platforms (using established protocols; Kellner and van Oort 2011).
- Report any use of platforms by other species, note other bird species nests found in the course of this work.

3 Study Area

The study area for this project consisted of three (3) small lakes in the Columbia Region which included Staubert Lake, Aide Lake, and Treasure Lake. Staubert Lake is in the Central Selkirk Mountains in the Nakusp/Trout Lake region, whereas Treasure and Aide lakes are found in the Bush Arm region of the Rocky Mountains, in proximity to the Kinbasket Lake Reservoir (Figure 1).

Figure 1. Map showing the location of Staubert Lake, Treasure Lake, and Aide Lake.

4 Methods

To evaluate the success of nest platforms used on Staubert, Aide, and Treasure lakes, monitoring visits were completed from mid May to late July 2021. Site visits consisted of one early season platform maintenance visit on each lake followed by two or three monitoring visits to each lake during the breeding season. Monitoring protocols were consistent with those established by Kellner and van Oort (2011) as described below.

4.1 Monitoring of nest platforms and loon reproductive success

In 2021, monitoring was conducted via canoe and/or kayak through visual observation made with spotting scopes and/or binoculars. In mid-May, lakes were visited to assess condition of platforms and to conduct required maintenance activities. Following this, two or three additional site visits were made during the breeding season to look for evidence of use by loons. During each visit, loon pairs and their nest sites both on and off platforms, if present, were located to determine the number of eggs and fate of these nests. If loon pairs were accompanied by young, the number, size, colour, and behaviour of young were recorded (McIntyre and Barr 1997).

4.2 Data analysis and management

Data recorded in field notebooks for each visit and/or observation were entered in an Excel spreadsheet following each survey. All waypoints were downloaded and saved on computer and projected in QGIS to check accuracy of the waypoints and associated field notes. Data on nest locations and success and the final report are to be submitted to the Province of BC through the Wildlife Species Inventory submission site. Data on nesting success will also be submitted to the Canadian Lakes Loon Survey.

5 Results and Outcomes

In 2021, platforms were monitored between May 12 and July 28.

5.1 Staubert Lake

For Staubert Lake, one platform maintenance visit (i.e., May 12th) and three loon monitoring trips (May 28th, June 5th, and June 21st) were conducted. However, during the May 12th platform maintenance visit, loons were found already incubating on the platform. Loons were incubating again on May 28th. No other loons were observed breeding on Staubert Lake. During these first two visits, incubating loons were not disturbed and thus, no clutch size was obtained (Figure 2).

Figure 3. Image showing the occupied platform (circled in red). Photo taken May 12, 2021.

On June 5th, eggshell fragments (and evidence of River Otter) were found on the platform (Figure 4) but there were no young observed. This nest was determined to have failed to successfully produce young; however, it was uncertain whether young hatched or were predated in the nest. Despite the failed nest, the Staubert Lake platform was found well vegetated with anchor and attachments intact (Figure 5).

Figure 4. Image of the Staubert Lake platform showing evidence of otter. Taken June 5, 2021.

Figure 5. Image of the Staubert Lake platform taken June 5, 2021.

5.2 Bush Arm

For the Bush Arm platforms (i.e., Treasure Lake and Aide Lake), one maintenance trip (on May 13th; Figures 6 and 7), and two loon monitoring visits (i.e., June 10th and July 28th) were conducted. Both platforms were found in good condition and reasonably well vegetated, though primarily with herbaceous vegetation. To increase diversity as well as vertical cover, additional vegetation (sedges, cinquefoil and willow shrubs were transplanted onto the platforms (Figures 6 and 7).

There were no loons observed on Treasure Lake during the monitoring period. On Aide Lake, a single pair of Common loons was observed and during the June 10th site visit, one of the two loons was observed incubating on the platform. The nest was not disturbed, and thus clutch size was not determined. On July 28th a single juvenile loon was observed foraging alongside the pair of adults (Figure 8).

Figure 6. Images of the Treasure Lake platform during (upper image above) and after (lower image above) revegetation on May 13, 2021.

Figure 7. Images of the Aide Lake platform prior to (above) and after revegetation on May 13, 2021.

Figure 9. Image of loons on Aide Lake July 28th showing 2 adults and 1 juvenile.

Results of 2021 monitoring confirmed nest platforms to be functional and that loons appear to be relying on floating nest sites for breeding on inland lakes. Loons were confirmed present during the breeding season on two of the three lakes that were monitored. On both lakes (Stuabert and Aide) that loons occurred, breeding was only observed and attempted on the artificial nest rafts provided. Of the two nests documented in 2021, one hatched successfully yielding a productivity rate of 0.5 young/breeding pair.

6 Discussion and management implications

Floating nest platforms on inland lakes appear to be an important alternate nest site for loons. Loons appear to prefer nest rafts on lakes that experience a rise and fall in water levels over attempting to breed at fixed elevations along lake margins. Loons also appear to have competitive advantage and primary access to the nesting platforms as no other species of water bird was observed to use platforms during this study. While nest platforms likely provide some greater protection to terrestrial predators, they are still susceptible to impacts by predators such as otters. Despite the failed Staubert Lake nest, productivity of loons was determined to be 0.50 young/pair, which is slightly greater than the 0.48 young/pair required for a stable population.

Maintaining the condition of nest platforms should be a priority going forward. Since all three platforms in this study were found in good condition five years after their initial installation, annual visits are likely not required. However, given that the platforms installed on the Whatshan Lake Reservoir (circa 2011) are beginning to show signs of reduced buoyancy (Kellner and Bird, 2021), it is recommended that monitoring occur again in two years (i.e., in summer 2023) to assess condition of floating rafts the determined whether platforms need to be replaced.

7 Acknowledgements

Thanks to Torrie Nicholas, Farshad Shafiei, Shannon Basil and Aaron Deans for their technical support and keenness in the field, as well as Irene Manley and Crystal Klym (FWCP) for their support of this project. This report was prepared with the financial support of the Fish and Wildlife Compensation Program-Columbia Basin, on behalf of its program partners BC Hydro, the Province of BC, Fisheries and Oceans Canada, First Nations and the public.

8 References

FWCP. 2019. Columbia Region: Small lakes action plan. Fish and Wildlife Compensation Program. 27pp.

Kellner, M. and C. Bird. 2021. Monitoring of nesting habitat for Common loons (*Gavia immer*) on Whatshan Lake Reservoir – 2021. Fish and Wildlife Compensation Program. 18pp.

Kellner, M. and H. van Oort. 2011. Enhancement and monitoring of nesting habitat for Common Loons (*Gavia immer)* on Whatshan Lake Reservoir. Fish and Wildlife Compensation Program. 23pp.

Kellner, M. and H. van Oort. 2017. Nest platforms for loons in Bush Arm and Staubert Lake. Fish and Wildlife Compensation Program. 13pp.

McIntyre, J.W. and J.F. Barr 1997.Common Loon (*Gavia immer*); the Birds of North America. The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.

Timmermans, S. and K. Jones. 2002. Canadian Lakes Loon Survey National Report: Western Loons have higher productivity than eastern Loons. Bird Watch Canada Newsletter:18-19.

Tozer, D. C., C. M. Falconer, and D. S. Badzinski. 2013. Common Loon reproductive success in Canada: the west is best but not for long. *Avian Conservation and Ecology* **8**(1): 1. http://dx.doi.org/10.5751/ACE-00569-080101