The Common Loon (loon) is an uncommon summer resident in Wyoming (Orabona et al. 2016). It is classified as a Species of Greatest Conservation Need (SGCN) with a Native Species Status 1 (NSS1), Tier I (highest conservation priority) in the Wyoming State Wildlife Action Plan (WGFD 2017). Loons in Wyoming have an extremely small and isolated breeding population that is at risk of extirpation, are very sensitive to human disturbance and recreation activities, and have very limited and specific breeding habitat. Common Loon nesting sites in Wyoming are currently restricted to the Greater Yellowstone Ecosystem (GYE), making this the rarest breeding bird species in the state. Since 1987, Wyoming Game and Fish Department (Department) Nongame Program and Yellowstone National Park (YNP) biologists have been monitoring Common Loon occupancy and productivity in nesting areas within the GYE. This continues to be a cooperative effort with personnel from the Caribou-Targhee National Forest (CTNF), Bridger-Teton National Forest (BTNF), and Grand Teton National Park (GTNP).

The GYE Common Loon population has historically been about 21-22 territorial pairs. Some territories are not occupied every year, some territorial pairs use multiple lakes, and other pairs may not nest (Evers et al. 2019). A decline to 14 pairs was noted between 2006-2013 (Spagnuolo et al. 2016). To address multiple and complex issues with loon management and conservation in the GYE, a collaborative and comprehensive partnership began in 2013 with representation from the Department, YNP, CTNF, BTNF, GTNP, Biodiversity Research Institute (BRI), and Ricketts Conservation Foundation (RCF) to investigate and understand the status of the Common Loon population, assess threats to loon survival and reproduction, and inform management actions (Spagnuolo et al. 2020). In 2019, the Shoshone National Forest, Idaho Department of Fish and Game, and Wind River Indian Reservation were included to further accomplish annual loon population and conservation objectives.

Starting in 2012, BRI has aimed to better define loon territories, locations of nest sites, and reproductive success using shoreline, boat, and aerial surveys. From 2013-2019, 20 adult and 13 young loons were captured and sampled (including 5 adult recaptures and 7 chicks that were too young to band), and 8 adult loons were fitted with geolocators (Evers et al. 2019). We use geolocators to calculate the loon’s approximate location (latitude and longitude) by recording sunlight levels over time, which is then used to identify approximate migration routes and wintering areas (Evers et al. 2019). We need to recapture the loons and remove the devices to retrieve location information.

In 2019, BRI captured 3 adults (including a recapture to replace bands) and 6 chicks in the GYE population and sampled them for mercury, genetics, and cyanobacteria concentrations. To date, 20 adult loons have been banded in the GYE (including 2 that died or are missing), which reflects 18 of the 42 territorial adults (43%) that are color banded in the GYE (Evers et al. 2019).

From 31 July-4 August 2019, BRI captured and banded Common Loon families at 4 lakes in the GYE using night and day capture methods. Night captures use a combination of spotlighting and playback recordings (Evers 1993, 2001), which works best with pairs having young that are less than 6 weeks old. Day captures use a loon decoy and vocalizations for adults without chicks. A total of 3 adult and 6 young loons were banded with uniquely numbered US Geological Survey metal leg bands and a unique combination of plastic colored leg bands. Color marking provides additional information about territory boundaries, fidelity to territory sites, mate switching, survivorship, intra-seasonal movements, and loon population recruitment (Evers et al. 2019). During handling, loons were weighed, feathers were collected, and blood samples were taken. Combined with loon reproduction information, these data help evaluate population growth and sustainability over time. To date, adult survivorship for the GYE population is 52 out of 55 adults (95%) and is similar to other areas in the US where loons breed (Evers et al. 2019).

BRI analyzed blood mercury concentrations of 16 adult loons in the GYE and found them to be generally low compared to other studies in the western US and Canada, although 1 female had a higher concentration (Evers et al. 2019). Feathers and eggs were also collected from 2013-2019 to evaluate long-term mercury uptake during summer and winter (feathers) and uptake of mercury on-site (eggs). Feather mercury load was elevated for females at 2 sites and males at 3 sites (Evers et al. 2019).

BRI deployed 8 geolocators from 2013-2015, but data were only retrieved from 1 female. Data suggest that she migrated south over land, spent most of October on the west side of the Baja Peninsula, and then moved east to winter on the Sea of Cortez (Figure 1; Evers et al. 2019). Two tagged loons likely died, 3 have yet to be retrieved, and 2 geolocators were defective.
BRI’s genetic analyses indicate that Wyoming’s loons are not a genetically distinct population, and are more closely related to breeding populations in Alberta, Saskatchewan, and Manitoba in Canada rather than those in Montana and Washington (Evers et al. 2019, Lindsay et al. 2019).

From late April through early September 2019, RCF biologists monitored loons in YNP, CTNF, BTNF, and GTNP with historic or recent loon presence, and searched other lakes in the GYE for territorial pairs and unpaired adults. Using approved methods (LPC 2004), surveys were conducted from shore, motorboat, canoe, and aerially. Populations were measured using territorial pairs; nesting pairs; successful nesting pairs that included pairs that hatched at least 1 egg, chicks hatched, and chicks surviving to at least 6 weeks of age; nests failed; and unpaired adults. Trail cameras were used at 14 loon territories to provide information on nesting biology, causes of nest failures, human disturbance of nest sites, and the effectiveness of area closures. Closures included temporarily closing trails, access roads, bays or coves, shorelines, campsites, and/or nesting lakes. RCF also deployed and maintained nest rafts at 4 territories following approved methods (LPC 2004, Desorbo et al. 2007).

2019 survey results showed there were 22 territorial pairs in the GYE—15 (68%) in YNP, 5 (23%) in CTNF, and 2 (9%) in BTNF—and 17 loon chicks survived to fledge—9 (53%) in YNP, 7 (41%) in CTNF, 1 (6%) in BTNF, and 0 (0%) in GTNP (Spagnuolo et al. 2020). Of the 22 territorial pairs, 18 (82%) nested and hatched a total of 19 chicks, 17 of which survived (89%), resulting in a 77% productivity rate (Spagnuolo et al. 2020). RCF documented nest failures at 6 sites in YNP, 2 sites in CTNF, and 1 site in BTNF, and successful re-nesting at 1 site in YNP, 1 site in CTNF, and 1 site in BTNF (Spagnuolo et al. 2020). RCF found 13 unpaired adults (23% of the adult population)—10 (77%) in YNP and 3 (23%) in CTNF—as well as loons occupying 2 recently formed territories in YNP, 1 new pair in YNP, 2 vacant territories in YNP, 1 vacant territory in BTNF, and 1 new territorial pair in BTNF (Figure 2; Spagnuolo et al. 2020).

Artificial nest platforms were used by loons at 2 of the 4 sites in the GYE in 2019, with 1 pair successfully fledging 2 chicks for the first time since 2015 (Spagnuolo et al. 2020). Temporary closures at 11 sites in YNP and CTNF also aided successful nesting at most sites, with human disturbance suspected to be the cause of nest failures (Spagnuolo et al. 2020).

Overall, the GYE loon population trend looks positive regarding observed and future growth and expansion potential, the ability to manage and mitigate human disturbance, and the ability to detect the presence of new loons (Spagnuolo et al. 2020).

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