

Gull Chain of Lakes Association



Common Loon (*Gavia immer*)
Friendly Lake Management Plan

November 28, 2022

The intent with this template is to ensure key information is included in each lake plan but also to allow for flexibility and customization to each lake and situation.

Objectives

Describe the objectives of the plan (e.g., conserve loons), how the plan will be implemented, coordination with partners (e.g., MDNR, Watershed District, other lake associations, etc.).

The Gull Chain of Lakes Association (GCOLA), with the assistance of the Minnesota Department of Natural Resources (MNDNR), and the Minnesota Pollution Control Agency (MPCA) will work together to conserve loon populations on Gull, Upper Gull, Margaret, Roy, Bass (Ray), and Spider Lakes in Cass County, and Nisswa and Love Lakes in Crow Wing County Minnesota. By way of this plan, the GCOLA is enrolled in the MN DNR RCLMP Loon Friendly Lake Registry (LFLR). Enrollment in the LFLR is how the GCOLA will conserve loons on Gull, Upper Gull, Margaret, Roy, Bass (Ray), Nisswa, Spider, and Love Lakes. GCOLA has participated in the Minnesota DNR's Loon Watcher's Survey Program for many years, and has extensive data on nesting, reproduction, and adult and chick numbers from 2014-2022.

In 2019 GCOLA added an end of August Juvenile survey to determine chick survival rates. In 2022 GCOLA began doing data analytics on our survey information to analyze nesting and reproduction success and survival rates of chicks on each of the lakes on the Gull Chain of Lakes. The data is shared with the DNR and National Loon Center lead scientist, Dr. Walter Piper. The GCOLA Loon Conservancy Committee chair, Sheila Johnston, is a member of two North American loon science working groups which meet monthly. She is also a director of the Association of Cass County Lakes (ACCL), and she is responsible for directing loon conservancy activities for the ACCL Board of Directors. Graphs of GCOLA survey results, loon survey observation sheets, photos, are attached to this plan. Paper copies of survey reports will be mailed to MN DNR MLRP Project Coordinator Rob Rabasco to also attach to the plan.

Loon Use

Describe what is known about loons use on the lake, including a description of the number, history, locations of territories, and descriptions of the management activities within territories. Describe the habitat conditions/characteristics, foraging resources, nesting chronology, chick productivity, and existing monitoring/conservation efforts for loons on the lake. Include a map that denotes the territories. Loon use information may be used to identify future management action, e.g. protection of important shoreline nesting habitat.

The lakes of GCOLA are connected via a series of waterways. As such, loon use can be 'shared' amongst them. For example, loons nesting on Love Lake often spend time loafing and feeding on Gull Lake.

Gull: Gull Lake has been a part of the Loon Watcher Survey (LWS) since 1979, with some years missed (1981, 1985, 1986, 2006, 2007, 2008, and 2009). The number of loons observed on the lake has ranged from 0 (1983) to 46 (1999). During this time loons have been recorded nesting on the lake during the summers of 2006, 2009, 2010, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, and 2022. The maximum number of nesting pairs was 12 in 1983.

Loon survey information for previous years has been submitted to the DNR. The following active nests were identified and described by loon watchers on Gull Lake in 2022:

- Steamboat Bay:
Nest #1, north of Birch Island on the north side of dead-end bay, against shore with dead reeds as camouflage

Nest #2, Second natural nest on Steamboat Bay was identified on 6/15/22, on the southeast side of Pine Beach Peninsula facing Steamboat Bay.

- Wilson Bay:

Nest # 1, Loons began building a nest on 5/15/22 on a mound where they had nested in previous years. It was detached from the end of a short point of land. Water was higher than in previous years. On 5/18/22 adults were observed building a nest in a different location. It was a better spot, about 40 feet from their past location, and further away from Madden's Voyagers Resort building. On 5/22/22 and adult was spotted sitting on the nest.

Nest #2, Wilson Bay on the SW tip of Crane Island. On 5/28/22 a wake boat came too close to the point and washed the nest and the eggs into the water. The boat came inside the navigational buoy while wake surfing. The island homeowner moved their pontoon boat to an anchor in-between navigational buoy and shore to deter the wake boaters. The wake boater was not deterred and boated even closer to shore between the anchored pontoon and shore and washed out the nest. The loons did not rebuild a nest.

Nest #3, Wilson Bay on the west shore.

- Grassy Point, one natural nest
- Government Point, one natural nest near the dam.
- Bar Harbor Channel, one natural nest near Miller Lane common boat docks

The number of chicks hatched each summer between 1979 and 2022 has ranged from zero to 14. The highest number was 14 in 2022. Artificial Nesting Platforms (ANPs) have been employed in 2000 and 2001 and the platform was used by loons in 2000. Gull Lake, as well as all the lakes of GCOLA were surveyed during the summer of 2021 and 2022 as part of the joint MN DNR, USGS, USFWS loon surveys. These surveys were a part of the Restoration of Common Loons in Minnesota Program.

MN DNR has classified Minnesota's lakes into 43 different types based on physical, chemical, and other characteristics. Gull Lake is in lake class 22. Class 22 lakes are relatively large, hard water lakes. They tend to be deep and clear, with Northern Pike, Bluegill, and Walleye making up the primary fish species. Gull Lake has good water quality and low algae levels throughout the open water season. Excessive growth of aquatic plants and algae due to chemical runoff from lake shore properties is increasing. Wake boat activity stirs up the sediment and water clarity is significantly reduced on summer weekends. The littoral area (acres of lake that are less than 15ft in depth) is 2,825 out of a total of 10,010 acres (~ 28%). Further, Gull Lake is classified as a General Development Lake, with approximately 1,510 individually owned parcels on the lake shore. General Development Lakes are often used extensively for recreation, and heavily developed around the shore. Gull Lake has a resident population of cisco (tullibee), an important forage fish for loons, especially during fall loon migration. Invasive species present in Gull Lake include zebra mussels.

Upper Gull: Upper Gull Lake has been a part of the Loon Watcher Survey (LWS) since 1979, with some years missed (1980, 1981, 1983, 1984, 1985). The number of loons observed on the lake has ranged from 0 (1979) to 9 (1996). During this time loons have been recorded nesting on the lake during the summers of 1979, 1982, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, and 2009, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022.

In 2022 and previous years loons nested on Upper Gull in the following locations.

- “Causeway Pair” A natural nest directly south and east of the Lost Lake channel, located close to water’s edge and near where boat waves are high and frequent as boats approach and exit the channel. The pair sometimes nests on top of lily tubers further into the cove on the east side or along the east shore of the cove on natural shoreline.
- “Lost Lake Channel Pair” An ANP on the west side of the north end of the channel located closely to docks and passing boats. The ANP is sheltered by rushes once they grow in. The pair has nested here for many years. A new property was developed in 2021, so now the ANP is situated between two docks. The pair does not seem to be bothered by the passing boats.
- “Bullhead Bay Pair” The Bullhead Bay pair sometimes makes natural nests and sometimes uses an ANP. There was an old ANP on Bullhead Bay that had fallen into disrepair. In 2019 the pair nested on it. After the pair was observed on the water with one chick, the loon watcher checked the platform. They found no nesting material on the ANP and one of the eggs had rolled into the hole in the corner of the platform. The ANP owner could not be identified, so GCOLA removed the old platform and replaced it in 2020. The pair used the new platform in 2020. They have not used it in subsequent years. New properties were developed in along the natural shoreline on the west side of Bullhead Bay in 2021 and 2022, so the platform was moved a bit further north. Unfortunately, we put the ANP in on the same morning the pair was starting to build a natural nest on a lily tuber near a dock where the ANP had been previously located before the property was developed. The pair abandoned the nest, and built another nest in the same location, which was also abandoned.
- “Tamarack Pair” The Tamarack pair makes a natural nest in the middle of the west side of Upper Gull in front of a tamarack bog. The property owner says that foxes get the eggs every year. In 2022 the foxes got the eggs again, and the pair moved down the shore to an ANP that was temporarily being anchored near a dock as the ANP owners were deciding where to locate it. The ANP was in front of the boathouse with the carved fish on the exterior. The ANP was very well supplied with nesting material. After a very brief investigation, the female climbed on the nest and laid two eggs. Two chicks hatched on 4th of July weekend. The pair’s chick rearing area was between the west shore and Wienzel Point, in the thick of the wake boat traffic. The family was run over by a wake boat. The adults survived but the chicks did not. We called them the Boathouse Pair, but we assume it was the Tamarack Pair in a new location.
- “Mayo Creek Pair”: This pair makes a natural nest in the rushes where Mayo Creek enters the northwest area of Upper Gull. It is a high traffic wake boat area, but the nest is well hidden.
- “Point Narrows Pair”: This pair makes a natural nest on top of lily tubers in the northwest entrance of the Point Narrows channel. Usually, it is in the tubers close to the north end and further from the boat traffic. In 2022 the water was higher, and the tubers were sparse, so the pair chose what was available and the nest was close to traffic. The property owner put out an ANP in 2022. The loons nested productively there in 2022 and in the past without an ANP.
- “Mystery Nest” in 2021 a pair nested in Stony Brook, a short way up from the entrance into Upper Gull. We did not find the Bullhead Bay pair’s nest that year, and we are wondering if they nested in Stony Brook. There was not a pair with chicks in the cove by Stony Brook, which is the Bullhead Bay Pair’s nesting area.

The maximum number of nesting pairs was 6 in 2022. The number of chicks hatched each summer between 1979 and 2022 has ranged from zero to six. One to three Artificial Nesting Platforms (ANPs) have been employed since 1999 and at least one platform was used by loons every summer. In 2020, 2021, and 2022, excessive black flies caused loons to abandon their nests. Three pairs nested a second time and hatched chicks.

Upper Gull Lake is in lake class 25. Class 25 lakes are hard water lakes with Northern Pike, Yellow Bullhead, and Bluegill making up the primary fish species. The littoral area (acres of lake that are less than 15ft in depth) is 154 out of a total of 422 acres (~37%). Further, Upper Gull Lake is classified as a Natural Environment Lake, with approximately 259 individually owned parcels on the lake shore. Natural Environment Lakes usually have limited development or recreational use. However, Upper Gull has extremely high recreational use, and loon nests are at risk of washing out from wake boat waves and adult loons and chicks are at great risk of being struck by watercraft in all six Upper Gull chick rearing territories. Wake boats stir up the sediment and water quality is significantly reduced on summer weekends. Upper Gull Lake has a resident population of cisco (tullibee). Invasive species present in Gull Lake include zebra mussels.

Margaret: Margaret Lake has been a part of the Loon Watcher Survey (LWS) since 1988, with some years missed (1996, 2006, 2007, 2008, and 2014). The number of loons observed on the lake has ranged from 0 (1992) to 5 (1998). During this time loons have been recorded nesting on the lake during the summers 1989, 1990, 1991, 1998, 2000, 2001, 2002, 2009, 2010, 2011, 2012, and 2017. The maximum number of nesting pairs was 2 in 2010, 2011, 2012, 2014, 2015, 2016, 2017, 2018, 2019, 2021, 2022. The number of chicks hatched each summer between 1988 and 2022 has ranged from zero to six, with the highest number in 2019.

Lake Margaret loons have nested in the following locations:

Artificial Nesting Platforms (ANPs) had been employed from 2009-2012 and the platform was used by loons from 2009-2012.

- “South Lake Margaret Pair”: A new platform was provided for the pair on the south end of Lake Margaret in 2017, but it has not been used. The loon pair in south Lake Margaret has had nests in several areas over the past several years. They have nested in the southeast area of the lake on the edge of Home Brook, different areas of the rice paddies, and near the shore on southwest side, which was washed out by a wake boat. In 2022 the pair nested on a mound on the south side and further out from shore. The nest was initially very exposed to boat and jet ski traffic, but vegetation eventually grew around it. The pair had a successful hatch in 2010. When the chick was three weeks old the loon watcher observed a distressed parent with a chick near their dock. The parent stayed with the chick until it died from a broken neck. There was no trace of blood on the chick. The loon watcher was a wildlife rehabber and thought the chick had likely been struck by a boat. The pair had two successful hatches and fledged chicks in 2011 and 2012 when nesting near the edge of Home Brook. In 2022 they successfully hatched a chick, but it died at 5 five days.
- “Middle Lake Margaret Pair’: We have not been able to identify the nest, but we have observed a pair with chicks in middle Lake Margaret in 2021 and previous years. Rob Rabasco indicated that a pair nested on the longer/smaller undeveloped peninsula on the west side of the middle of Lake Margaret in 2022.

- “North Lake Margaret” In 2022 and in recent years a pair has had a natural nest in north Lake Margaret, but we do not have an exact description for location. There is a decrepit ANP in the channel near north Lake Margaret that should be removed.

Lake Margaret is another lake on the Gull Chain with very heavy wake boating activity. All three of the Lake Margaret chick rearing areas are in the path of wake boats, and adults and chicks are at risk of boat strikes.

Margaret Lake is in lake class 31. Class 31 lakes are hard water lakes with Northern Pike, Yellow Bullhead, and Bluegill making up the primary fish species. Margaret Lake has low water clarity and excessive algae. The littoral area (acres of lake that are less than 15ft in depth) is 64 out of a total of 248 acres (~26%). Further, Margaret Lake is classified as a General Development Lake, with approximately 173 individually owned parcels on the lake shore. Margaret Lake has a resident population of cisco (tullibee). Invasive species present in Margaret Lake include zebra mussels.

Roy: Roy Lake has been a part of the Loon Watcher Survey (LWS) since 1979, with some years missed (1980, 1981, 1983, 1985, 1986, 1987, 1990, 2006, 2007, 2008). The number of loons observed on the lake has ranged from 1 (1982) to 8 (1994). During this time loons have been recorded nesting on the lake during the summers of 1979, 1984, 1991, 1992, 1993, 1994, 1998, 1999, 2002, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022. The maximum number of nesting pairs was 3 in 2016 and 2017.

- “Southwest Roy Lake Pair” nested in 2022 and previous years in its usual spot on the southwest side of the lake. There were two eggs spotted on the nest in 2022.
- “Roy-Nisswa Channel Pair” nested in its usual spot in the channel between Roy and Nisswa Lakes. A loon was spotted on the nest on the 2022 survey day.

The number of chicks hatched between 1979 and 2022 has ranged from zero to four. Artificial Nesting Platforms (ANPs) have been employed in 2009, 2011, 2012, 2013, and 2017 and the platform was used by loons in 2009. One pair often nests in the north end of the channel between Spider and Roy Lake.

Roy Lake is in lake class 31. Class 31 lakes are hard water lakes with Northern Pike, Yellow Bullhead, and Bluegill making up the primary fish species. Roy Lake has good water clarity with low algae levels throughout the open water season. The littoral area (acres of lake that are less than 15ft in depth) is 129 out of a total of 320 acres (~40%). Further, Roy Lake is classified as a General Development Lake, with approximately 219 individually owned parcels on the lake shore. Roy Lake has a resident population of cisco (tullibee). Invasive species present in Roy Lake include zebra mussels.

Bass (Ray): Bass Lake has been a part of the Loon Watcher Survey (LWS) since 1988, with some years missed (1989, 1993, 1996, 2006, 2007, 2008). The number of loons observed on the lake has ranged from 0 (1992) to 3 (2002). During this time loons have been recorded nesting on the lake during the summers of 1991, 1995, 1999, 2003, 2004, 2009, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2020, 2021, 2022. The maximum number of nesting pairs was 1 each year. The number of chicks hatched between 1988 and 2022 has ranged from zero to two. Artificial Nesting Platforms (ANPs) have been employed in 2009 and 2016 and the platform was not used by loons. There is one mated pair nesting on Bass Lake. They often nest on along the shore on the east undeveloped side of the lake near a small point. A housing development is planned for this side of the lake, but docks will be on Roy Lake. In 2022 the pair nested on top of aquatic lily tubers on the Bass Lake area of the east side of the channel leading into Spider Lake. This area is not a no wake zone. There is heavy and high-speed boat traffic in the

nesting area. This is also part of the pair's chick rearing area. There is concern that boat waves could wash out nests in this area. Making this entire channel or stretch between Upper Gull 's Point Narrows and Spider Lake a no-wake zone would provide a safer nesting and chick rearing territory for this pair.

Bass Lake is in lake class 36. Class 36 lakes are hard water lakes with Northern Pike, Black Bullhead, and Bluegill making up the primary fish species. The littoral area (acres of lake that are less than 15ft in depth) is 112 out of a total of 143 acres (~78%). Further, Bass Lake is classified as a Natural Environment Lake, with approximately 38 individually owned parcels on the lake shore. Bass Lake has a resident population of cisco (tullibee). Invasive species present in Bass Lake include zebra mussels.

Nisswa: Nisswa Lake has been a part of the Loon Watcher Survey (LWS) since 1981, with some years missed 1993, 1994, 2005, and 2006). The number of loons observed on the lake has ranged from 0 (1981) to 3 (1989). During this time loons have been recorded nesting on the lake during the summers of 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1999, 2000, 2004, and 2007, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022. The maximum number of nesting pairs was 2. The number of chicks hatched between 1981 and 2022 has ranged from zero to two. There is one artificial nesting platform on this lake that was used in 2022.

Nisswa Lake is in lake class 29. Class 29 lakes are hard water lakes with Northern Pike, Yellow Bullhead, and Bluegill making up the primary fish species. Nisswa Lake has good water clarity and low algae levels throughout the open water season. The littoral area (acres of lake that are less than 15ft in depth) is 121 out of a total of 219 acres (~55%). Further, Nisswa Lake is classified as a General Development Lake, with approximately 101 individually owned parcels on the lake shore. Nisswa Lake has a resident population of cisco (tullibee). Invasive species present in Nisswa Lake include zebra mussels.

Spider: Spider Lake has been a part of the Loon Watcher Survey (LWS) since 1988, with some years missed (2006, 2007, 2008,). The number of loons observed on the lake has ranged from 0 (1989) to 2 in most years. During this time loons have been recorded nesting on the lake during the summers of 1990, 1992, 2009, 2012, 2013, 2014, 2015, 2016, 2017. The maximum number of nesting pairs was 1. The number of chicks hatched between 1988 and 2017 has ranged from zero to two.

- “Spider Lake Pair”: The Spider Lake pair was observed with newly hatched chicks on the north end of the lake near the shoreline in 2016, but we were not able to find the nest. In 2021 loons were spotted nesting on the north end of the channel between Spider and Roy Lakes. This is not a nesting location that Roy Lake loon watchers associate with the Roy Lake loons, so it may have been the Spider Lake Pair. During nesting season, the Spider Lake Pair has been observed in the channel between Upper Gull and Spider Lake, and the channel between Spider and Roy Lakes. There is good nesting habitat in these areas, but the boat traffic is high. Nesting Platforms (ANPs) have not been employed on this lake.

Spider Lake has not been surveyed by the MN DNR Fisheries. Spider Lake is classified as a Natural Environment Lake. There are approximately 33 individually owned parcels on the lake shore. A new single-family home and the Spider Ridge multi-home development are under construction in 2022-23. They are both being developed on natural properties with natural shorelines and good nesting habitat. The Spider Ridge development will include a large common dock with at least 12 boat slips, a large patio, and golf cart parking lots near the shoreline. This reduces the nesting territory for the Spider Lake pair and will bring more human activity into their chick rearing area.

Love: Love Lake has been a part of the Loon Watcher Survey (LWS) since 1992, with some years missed (1993, 2006, 2007, 2008, 2009, and 2010). The number of loons observed on the lake has ranged from 0 (1992) to 5 (2003). During this time loons have been recorded nesting on the lake during the summers of 1998, 2003, 2011, 2021, and 2022.

- “Love Lake Pair” In 2022 the Love Lake Pair nested on the south end of the lake. The loon watcher spotted two eggs in the nest. He noted it was a platform nest. The maximum number of nesting pairs was 1. The number of chicks hatched between 1992 and 2022 has ranged from zero to two. One to two Artificial Nesting Platforms (ANPs) have been employed in 2003, 2011, and 2012, and at least one platform was used by loons each year.

Love Lake is in lake class 36. Class 36 lakes are hard water lakes with Northern Pike, Black Bullhead, and Bluegill making up the primary fish species. The littoral area (acres of lake that are less than 15ft in depth) is 63 out of a total of 79 acres (~80%). Further, Love Lake is classified as a General Development Lake, with approximately 63 individually owned parcels on the lake shore. Love Lake does not have a resident population of cisco (tullibee). Invasive species present in Love Lake include zebra mussels.

Thor Lake: Thor Lake is a very small lake connected to Hole in the Day Bay on Gull Lake. There is no information about it on the DNR LakeFinder web page, as DNR Fisheries does not consider this an independent public water basin. It was added to the GCOLA Loon Survey in 2022, and there was one pair nesting on Thor Lake that year. Two chicks were hatched. The loon watcher who observed Thor Lake and Hole in the Day Bay in 2022, has observed the Thor Lake pair for several years. Beginning in 2018 when they were first observed, the pair has built a nest from natural materials gathered by the loons and placed on an old dock section every year. Although the old dock section is artificial, no nesting materials are provided by humans. (Photos attached.)

2018: 2 chicks

2019: Data NA

2020: 2 eggs laid, one taken by eagle

2021: 2 chicks hatched, one died immediately from unknown cause

2022: 2 chicks hatched, one survived to fledge

Loon Threats

Describe current threats to loons on the lake, including disturbance from human recreational activities, inadequate or limited nesting/foraging habitat, predators, poor water quality, fluctuating water levels, shoreline development, fishing line/lure entanglement, and contaminants (e.g., mercury, lead, organic compounds). Threats to loons may vary per lake, e.g. higher levels of human disturbance on more densely developed lakes.

Gull: As a General Development Lake, the loons on Gull Lake are exposed to high levels of recreational use and danger of boat strikes. Wake surfing is popular in the bays on the south end of Gull Lake where several loon pairs nest and rear chicks. This puts nests at risk of wash out, as occurred in 2022, and adults and chicks at risk of boat strikes. Additionally, with approximately 1,510 lakeshore parcels in private ownership on Gull Lake, loon nesting habitat may be a limiting factor for loon populations. There are four public accesses to Gull Lake. As a lake with heavy fishing pressure, loons on Gull Lake have the

potential to be exposed to lead fishing tackle. In 2020 and 2022 two Gull Lake loons died of lead poisoning. In 2022 the poisoned loon left behind a mate with two chicks that it was unable to care for without the assistance of its mate. MN DNR conducted an analysis on Gull Lake as part of the Sensitive Lakeshore Assessment Project (SLAP). The SLAP was initiated to identify lakeshore areas of unique or critical habitat, or high biological diversity. As a result, there were four shoreline areas, totaling 1,344 acres and approximately 46 miles shoreline, identified on Gull Lake as 'Highly Sensitive'. Gull Lake is infested with zebra mussels, and all lake users are required to inspect and remove any aquatic plants and animals from their watercraft and trailers, as well as pull the plug and drain all water from watercraft. Gull Lake is also listed as 'impaired' by the MPCA for mercury content. Removing native plants, sodding shorelines, and using lawn chemicals and fertilizers on lake shore properties is degrading water quality and reducing habitat for loons and other wildlife on Gull Lake.

Upper Gull: Although Upper Gull is a Natural Environment Lake, the loons on Upper Gull Lake are exposed to very high levels of recreational watercraft use. Although Upper Gull Lake is only 421 acres and is a much smaller lake than Gull Lake, which is 9,947 acres, it has almost as many pairs of nesting loons. Gull has 8 pairs and Upper Gull has six pairs. During the summer months adult loons and chicks are at great risk of being struck by watercraft as boats and jet skis are operating at high speeds in chick rearing areas on this relatively small lake. Upper Gull has become one of the most popular spots on the Gull Chain of Lakes for wake surfing and jet skiing. Four of the Upper Gull pairs raise their chicks in areas of the lake where there is heavy wake surfing activity. In 2022 a wake boat ran over an entire loon family. A fisherman prevented a ski boat from running over another family. Packs of jet skiers are frequently operating at high speeds in chick rearing areas. There is extremely heavy boat traffic coming through the Upper Gull channels where two loon nests are located. The chick rearing areas of two Upper Gull pairs, the Lost Lake Channel Pair and the Point Narrows Channel Pair, are located inside no wake zones in channels on the northeast and south ends of the lake and outside of the no wake zones. A third Upper Gull loon pair, the Causeway Pair, has a chick rearing area outside the south end of the Lost Lake channel. They are often in-between the Lost Lake Channel and the Causeway gas dock, right in the middle of the heavy and high-speed boat traffic. They frequently nest in a spot where there is heavy and high wave action from boats entering or exiting the south end of the Lost Lake channel. This puts their nest at risk of washing out. If the no wake zone was extended and connected to the no wake zone near Causeway, this danger could be averted. As boats exit the channels, they accelerate to high speed and many drivers are unaware or careless of the loons in their paths. At the same time, watercraft are approaching the channels at high speed from the other direction. Chicks have been run over by boats and killed in these areas between 2014 and 2022. GOCLA has a large yellow and black 'Caution Loon Chicks Ahead' sign at the south end of the channel near the Lost Lake Resort signs, and another sign on the shore near the north end of the channel. This has had some observed effect on boater behavior near loons, but not enough. GOCLA has approval to install lighted loon caution buoys on both ends of the Lost Lake channel and on the Upper Gull end of the Point Narrows channel beginning in 2023. Careless and reckless boating poses a huge danger to the loons of Upper Gull. Boat strikes are the second leading cause of loon deaths. Lack of enforcement of watercraft is a problem on Upper Gull. Given the high number of chick rearing loon pairs on Upper Gull, watercraft enforcement needs to improve to protect chicks and adult loons from injury and death and improve reproductive success.

The shoreline is heavily developed and much of it is hardened with riprap. Riprap continues to be installed for aesthetic reasons or to combat erosion caused by wake boats, which means less nesting habitat. Additionally, previously undeveloped shoreline that offered excellent nesting habitat has been developed in the Lost Lake channel and in Bullhead Bay. New properties were developed in Bullhead

Bay during 2021 and 2022. The nesting area of the Bullhead Bay pair now has at least 3 new properties. Further development is likely. Previously natural shoreline on the north end of the Point Narrows channel now has a dock, boat lift, and jet ski storage in the Point Narrows Pair's nesting area. Additionally, with approximately 316 lakeshore parcels in private ownership and future development occurring on Upper Gull Lake, loon nesting habitat may be a limiting factor for loon populations. There is a public access to Gull Lake at a channel which narrows into Upper Gull Lake. This access gets extremely heavy use. There is a pair that nests near this access and moves their chicks out into Booming Out Bay. Again, both chicks and parents are at risk of boat strikes due to heavy and careless boat traffic in the Bar Harbor channel and in the Booming Out Bay chick rearing area. Enforcement from the Cass County and Crow Wing County sheriffs' departments that patrol the Gull Chain of Lakes is needed to protect loons from reckless and careless boat and jet ski operators.

As a fishing lake, loons on Upper Gull Lake are likely to be exposed to lead fishing tackle. Fishermen are frequently observed casting towards loons, and a juvenile loon was hooked with a lead jig in 2022. Broken fishing line and tackle have been found in the chick rearing areas of Upper Gull by GCOLA Loon Watchers. Bass fishing tournaments pose dangers to loons as the competitors race through chick rearing areas at extremely high speeds to get to their fishing spots. Upper Gull Lake is infested with zebra mussels, and all lake users are required to inspect and remove any aquatic plants and animals from their watercraft and trailers, as well as pull the plug and drain all water from watercraft. Upper Gull Lake is also listed as 'impaired' by the MPCA for mercury content. In recent years excessive algae has become a problem in Stony Brook "cove", along the shoreline in the northwest bay, and near the properties west of Pt Narrows Resort in the northeast bay. According to MN DNR aquatic plant specialists, use of fertilizer by property owners is a contributing factor.

Margaret: As a General Development Lake, the loons on Margaret Lake are exposed to high levels of recreational use. General Development lakes are extensively used for recreation and heavily developed around the shore. Wake boats and jet skis boat operate in large numbers and come recklessly close to loon nests and loons on the water. Loon nests have been washed out by the wave action of these watercraft. Large flotillas of boats frequently gather in the chick rearing area at the south end of the lake. Additionally, with approximately 166 lakeshore parcels in private ownership on Margaret Lake, loon nesting habitat may be a limiting factor for loon populations. A new housing development has been started in middle Lake Margaret that will reduce nesting habitat. Margaret Lake is accessed via a channel. As a fishing lake, loons on Margaret Lake have the potential to be exposed to lead fishing tackle. Margaret Lake is infested with zebra mussels, and all lake users are required to inspect and remove any aquatic plants and animals from their watercraft and trailers, as well as pull the plug and drain all water from watercraft. Margaret Lake is also listed as 'impaired' by the MPCA for mercury content.

Roy: As a General Development Lake, the loons on Roy Lake are exposed to high levels of recreational use. General Development lakes are extensively used for recreation and heavily developed around the shore. The sandbar on Roy Lake is a popular gathering and party spot for boaters. High recreational use of Roy Lake puts loons at risk for boat strikes. Additionally, with approximately 215 lakeshore parcels in private ownership on Roy Lake, loon nesting habitat may be a limiting factor for loon populations. A new housing development with a large common dock and boat slips is under construction on Roy Lake, which will compromise nesting and bring more activity into the area. There is no public access by land to Roy Lake. There is access by water only. As a fishing lake, loons on Roy Lake have the potential to be exposed to lead fishing tackle. Roy Lake is infested with zebra mussels, and all lake users are required to inspect and remove any aquatic plants and animals from their watercraft and trailers, as well as pull the plug

and drain all water from watercraft. Roy Lake is also listed as 'impaired' by the MPCA for mercury content.

Bass (Ray): As a Natural Environment Lake, the loons on Bass Lake are exposed to relatively low levels of recreational use. During the summer, motorized boat travel is limited due to abundant aquatic vegetation. Additionally, with approximately 38 lakeshore parcels in private ownership on Bass Lake, loon nesting habitat may be a limiting factor for loon populations. A new housing development has been approved on Bass Lake which may negatively affect the loons. Bass Lake may be accessed via a channel from Upper Gull Lake. The Bass Lake pair has nested in the wider area of the channel between Upper Gull and Spider Lake. This section is not a no wake zone, and the boat traffic is heavy and fast, which puts the nest at risk of being washed out. As a fishing lake, loons on Bass Lake have the potential to be exposed to lead fishing tackle. Bass (Ray) Lake is infested with zebra mussels, and all lake users are required to inspect and remove any aquatic plants and animals from their watercraft and trailers, as well as pull the plug and drain all water from watercraft. Bass (Ray) Lake is also listed as 'impaired' by the MPCA for mercury content.

Nisswa: As a General Development Lake, the loons on Nisswa Lake are exposed to high levels of recreational use. General Development lakes are extensively used for recreation and heavily developed around the shore. Additionally, with approximately 101 lakeshore parcels in private ownership on Nisswa Lake, loon nesting habitat may be a limiting factor for loon populations. Nisswa Lake can be accessed via a channel from Roy Lake and the Nisswa Lake boat access. As a fishing lake, loons on Nisswa Lake have the potential to be exposed to lead fishing tackle. Nisswa Lake is infested with zebra mussels, and all lake users are required to inspect and remove any aquatic plants and animals from their watercraft and trailers, as well as pull the plug and drain all water from watercraft. Nisswa Lake is also listed as 'impaired' by the MPCA for mercury content.

Spider: Is a Natural Environment Lake. However, a high number of Nisswa Lake and Roy Lake residents pass through Spider Lake on a regular basis in very high-powered boats. Additionally, touring the Gull Chain of Lakes from Gull to Nisswa Lake is a popular boating activity for both residents and tourists, and there is a high-speed traffic area between the channels on each end of Spider Lake in high use. Natural Environment Lakes usually have low levels of development. With approximately 28 lakeshore parcels in private ownership on Spider Lake, loon nesting habitat may or may not be a limiting factor for loon populations. However, loon populations could be impacted by loss of habitat and increased watercraft activity due to the new Spider Ridge housing development, and additional properties being developed on Spider Lake and in the channels on both ends of Spider Lake. As a fishing lake, loons on Spider Lake have the potential to be exposed to lead fishing tackle. Spider Lake is infested with zebra mussels, and all lake users are required to inspect and remove any aquatic plants and animals from their watercraft and trailers, as well as pull the plug and drain all water from watercraft. Spider Lake is also listed as 'impaired' by the MPCA for mercury content.

Love: As a General Development Lake, the loons on Love Lake are exposed to high levels of recreational use. General Development lakes are extensively used for recreation and heavily developed around the shore. Additionally, with approximately 63 lakeshore parcels in private ownership on Love Lake, loon nesting habitat may be a limiting factor for loon populations. Love Lake can be accessed via a channel from Gull Lake. As a lake that receives moderate fishing pressure, loons on Love Lake have the potential to be exposed to lead fishing tackle. Love Lake is infested with zebra mussels, and all lake users are

required to inspect and remove any aquatic plants and animals from their watercraft and trailers, as well as pull the plug and drain all water from watercraft. Love Lake is also listed as 'impaired' by the MPCA for mercury content.

Management Recommendations to Benefit Loons

Describe management recommendations and strategies to protect loons and increase productivity. Identify short, mid, and long terms actions. Management actions might include nest and nursery protections via signs, buoys, and area closure, development of a monitoring program, annual deployment of artificial nesting platforms, an advocacy program to promote the use of non-lead fishing tackle, placing shorelines in conservation easements, and landowner outreach.

Management actions on GCOLA lakes to protect loons and increase loon productivity are based on enrollment in the LFLR. Participation in the LFLR includes the following loon conservation steps:

1. Establishment of a Loon Liaison (LL) as the GCOLA representative that partners with MN DNR to assist in guiding loon conservation on GCOLA lakes. Sheila Johnston is the LL for GCOLA.
2. Sheila Johnston and GCOLA will partner with MN DNR to train association members as volunteers to assist with loon monitoring through the MN DNR Loon Watcher Survey program.
3. The LL, or selected lake association member(s), will integrate loon conservation information into GCOLA newsletters, websites, and agenda items in meetings. GCOLA Loon Conservancy Committee chair will provide a report at monthly board meetings. Articles on loon conservancy issues are featured in every quarterly GCOLA newsletter, which are mailed to over 900 members, and are also available on the GCOLA website. The June newsletter is distributed to every property owner on the Gull Chain of Lakes. The June newsletter loon conservancy articles address loon issues that are essential for every property owner to be aware of. A tear out of the loon-safe boating card is also included in the June newsletter. Additional information about loon conservancy is featured on the GCOLA website and Facebook page.
4. The LL, or selected lake association member(s), will provide loon conservation information at key lake access points (pending MN DNR Parks and Trails Division and/or county permission), and invite Minnesota Pollution Control Agency Get the Lead Out Program staff to speak at GCOLA meetings. GCOLA has installed new informational kiosks at all four of the Gull Chain access points. The kiosks display loon conservancy, Get the Lead Out, and AIS information. There are brochure boxes attached to the kiosks that are stocked with loon conservancy info cards for boaters. MPCA Get the Lead Out staff has been invited to speak at a GCOLA meeting. The Loon Conservancy Committee chair is working with Get the Lead Out staff to expand youth education and involvement in GTLO efforts in the Brainerd Lakes Area.
5. If deemed appropriate by MN DNR and USFWS/USGS RCMLP staff, the LL, or selected lake association member(s), will assist in the optimization the construction and annual deployment of artificial nesting platforms. GCOLA has volunteers who will build ANPs if needed.
6. The LL, or selected lake association member(s), will employ the following strategies to reduce the use of lead-based tackle on GCOLA lakes: encouraging members to dispose of lead tackle at Household Hazardous Waste sites, hosting a lead tackle drop-off event with lake association members, offering summer-long lead tackle drop off at 2 locations, quarterly GCOLA newsletter articles on Get the Lead Out, and Get the Lead Out posts on GCOLA's social media sites.

7. Work with the Cass County and Crow Wing County Sheriff's Departments to increase watercraft monitoring and enforcement on the Gull Chain of Lakes, particularly on the smaller lakes on the chain that are underserved to reduce risk of boat strikes.
8. Secure permission from the Sheriff's Departments for more Loon Caution Buoys near high traffic chick rearing areas near no wake zone exits and entrances to increase cautious boating near adult loons and chicks.
9. To reduce injury and death to loons because of fishing line entanglement, permission has been granted to install 5 new monofilament fishing line collection bins at the Government Point Campground fishing areas in 2023. Our goal is to secure permission from the MN DNR to also install monofilament fishing line collection bins at Hole in the Day, Gull Narrows, and Nisswa accesses.
10. Educate and promote property management practices that protect the water and preserve or restore natural habitats through GCOLA's Lake Steward and Shoreline Restoration Programs.

Background

Best Practices for Loon Nesting and Chick Rearing

Several factors may explain why loons are not nesting on the Gull Chain of Lakes, including lack of nesting habitat, poor food base, or high levels of human disturbance. If territorial loons nest on the lake but have a history of nest failures, you should first work to enhance natural nesting sites. This might be through regulations such as a slow-no-wake zone near the nest coupled with signage (check with your local Law Enforcement Unit or Sheriff's Office to obtain permission), contacts with the landowners about naturalizing shorelines, or educational programs for lake residents or users. GCOLA has a Loon-Safe Boating Program. We distribute over 1000 loon-safe boating cards to area boat rental businesses and resorts each summer. The business and resort staff review the loon-safe boating info and share the cards with their boat rental customers. We also have large loon-safe boating posters on display on the GCOLA kiosks at the Gull Chain boat accesses, and brochure boxes containing the loon-safe boating cards. We have posted several large yellow and black caution signs with the message Caution Go Slow Loon Chicks Ahead near chick rearing areas on Gull Lake, Upper Gull, and Lake Margaret. We have received permission from the sheriff to install lighted loon caution buoys at the ends of the channels near chick rearing areas on Upper Gull and Lake Margaret. GCOLA has well-established Lake Steward and natural nest sites are not available and cannot be restored, and factors leading to nest failure are controlled, then artificial nesting platforms are a consideration.

The best way to enhance long-term health of loons across Minnesota is to protect natural nesting and foraging habitat. Maintaining shorelines in natural, undisturbed vegetation assures that loons have nesting habitat, as well as access to foraging areas near their nests. Habitat alteration surrounding nesting sites may deter loons from using those sites in subsequent years. The use of riprap for aesthetic reasons and as a misguided strategy to protect shorelines from erosion continues to be a problem on the Gull Chain of Lakes. GCOLA has strong Lake Steward and Shoreline Restoration programs that educate and provide support for preserving and restoring natural shorelines. Many GCOLA members have participated in both programs, and GCOLA will continue to provide support for shoreline

preservation and restoration. GCOLA offers matching grants for approved shoreline restoration projects. GCOLA's quarterly newsletter features articles on lake stewardship and natural shorelines, and Lake Steward and shoreline restoration information is also provided on GCOLA's website. For more information, please consult the MDNR Lakescaping and Shoreland Restoration Program <https://www.dnr.state.mn.us/lakescaping/maintaining-and-restoring-natural-shorelines.html>.

Best Practices for Limiting Human Disturbance

The primary anthropogenic impacts on loon breeding habitats are noise and visual disturbance to adults (both of which may result in failed reproduction), and lakeshore development. Physical disturbance of adult loons after eggs have been laid may flush loons from their nest and cause total nest failure. Loons vary in their tolerance to boat traffic but may leave the nest if watercraft comes within 500 feet of the nest. This leaves the eggs without warmth or protection from predators. Loons may also permanently abandon a nest if disturbed too often. Additionally, boat wakes may 'swamp' nests or wash eggs off of nests. If loons that are approached start to call and/or stand-up straight out of the water, they are alarmed by the proximity of a boat/personal watercraft. Personal watercraft and motorboat operators can help significantly by staying away from shorelines and keeping a safe distance from foraging loons. GCOLA has a well-established Loon-Safe Boating program that educates GCOLA members, lake access users, boat rental customers, and resort visitors. It would be helpful if GCOLA could get assistance from the DNR and sheriff's departments, so loon nests and loon families are better protected in high boat traffic areas. More enforcement of careless and reckless boating near loons is needed throughout the chain. Extending no wake zones though channel chick rearing areas between Upper Gull's Pt Narrows Channel and Spider Lake and between Upper Gull's Lost Lake Channel and Causeway/Zorbaz no wake zones would protect adults and chicks and would reduce nest washouts from boat waves. Securing permission from sheriffs for loon caution buoys at ends of no wake zones near chick rearing areas would increase boater awareness of loons and chicks.

Best Practices for Loon Foraging

Loons have several characteristics that make them a valuable "indicator" of the health of a lake. As diving birds that use sight to hunt prey, they thrive in clear lakes with healthy fish populations. Taking steps to monitor and maintain water clarity and quality may preserve foraging opportunities for loons. The "suburbanization" of lakeshore properties on the Gull Chain of Lakes and the heavy use of fertilizers and other lawn chemicals negatively affects water quality to a great degree. GCOLA's Lake Steward program is changing that. The mission of GCOLA's Lake Steward program is to reduce nutrient pollution and restore habitat to make water quality sustainable by changing the culture. To qualify for Lake Steward, the property must have a natural shoreline or restored shoreline buffer with native plants, and no fertilizer or lawn chemicals are used on the property. GCOLA's Lake Steward Program works hand in hand with the Shoreline Restoration Program which provides guidance and matching grants to property owners restoring their shorelines. GCOLA is the originator of the Lake Steward Program and has partnered with Minnesota Lakes and Rivers Advocates to bring Lake Steward to lakes throughout Minnesota. Additionally, GCOLA participates in two water quality programs, the Citizen Lake Monitoring Program and Water Quality at the End of Your Dock Program.

<https://webapp.pca.state.mn.us/cmp/stations/11-0305-00-208>

For more information consult the MPCA Citizen Water Monitoring Program www.pca.state.mn.us/water/citizen-water-monitoring. Informing the angling public about risks related to lead fishing sinkers and lures (i.e. jigs) and encouraging use of non-toxic materials can also mitigate negative effects on foraging loons. Cutting and leaving broken fishing line in the water poses a serious hazard for loons. The angling public needs more education about this, and GCOLA shares information on Loon-Safe Fishing through their newsletter articles and social media.

Learn More

There are effective strategies for reaching out to lakeshore landowners, including;

- 1.) Promoting a Loon-Friendly Lake Registry Program for lake associations within the focus area for the Restoration of Common Loons in Minnesota Project (RCLMP).
- 2.) Train lake association members as volunteers to assist with loon monitoring on lakes registered in the Loon-Friendly Lake Registry Program.
- 3.) Integrate loon conservation information into lake association newsletters, websites, and as agenda items in meetings.
- 4.) Provide loon conservation information at key lake access points.
- 5.) Invite MN DNR staff to speak about the Restoration of Common Loons in Minnesota Project, loon conservation, and citizen loon monitoring programs at lake association meetings. MN Loon Program Coordinator: MLRP.DNR@state.mn.us.
- 6.) Invite MPCA to speak about the Get the Lead Out Program at lake association meetings: leadout@state.mn.us
- 7.) Include Get the Lead Out information in lake association newsletters, websites, and as agenda items at meetings.

Education is the best way to encourage loon awareness and good boating behavior. Contact Restoration of Common Loons in Minnesota Project staff MLRP.DNR@state.mn.us if you are interested in an educational brochure to share with lake residents and users titled “Be Loon Aware” that describes responsible watercraft use to help limit conflicts between boaters and loons.

Appendix A:

Loon Monitoring Protocols

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Management Plan Template

Volunteer Loon Survey – Survey Tips

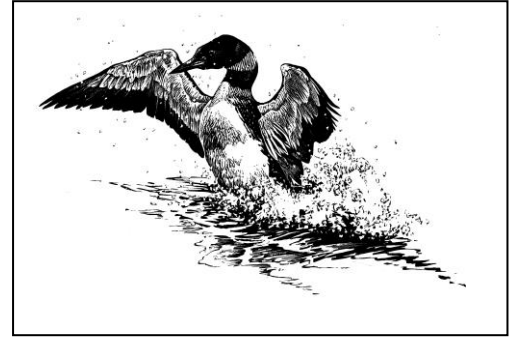
Minnesota Dept. of Natural Resources

Nongame Wildlife Program

www.dnr.state.mn.us/eco/nongame/projects/mlmp_state.html

Contact Volunteer Loon Watcher Survey Coordinator

LoonWatcherSurvey@state.mn.us



General survey tips

1) When to Survey:

- **Do not survey in heavy rain or whitecap conditions.** Loons are very difficult to see in choppy water conditions (>7 mph wind speed, crest break, white caps). If the weather is bad, reschedule your survey for another day. Watch the forecast and plan your surveys accordingly.
- Early morning and late evening generally provide the best survey conditions.
- **Try to avoid disturbing the loons – observe them from a distance.**

2) What you will need:

- **Binoculars** and/or spotting scope
- **Map of lake for navigation and marking nest locations**
- **Be careful – wear life vests in boats and canoes**
- **Bird identification guide book** – you may note other bird species present on the lake that you may want to add to your comments section on the data sheet.
- **Ask for permission before crossing private land**

Other important Information

1) Loon Facts

- Most breeding pairs of loons will have 0 - 2 young
- Lakes smaller than 150 acres are unlikely to have more than 1 breeding pair of loons, which means that most small lakes will not have more than 1 or 2 juvenile loons.

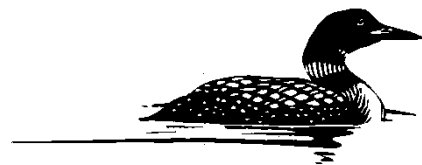
- Adult loons frequently fly to other lakes for feeding and social interactions. Thus while you survey your lake, any loon(s) associated with your lake may be off your lake, or an “extra” loon could be visiting.
- Chicks up to 1 – 2 weeks of age have gray downy feathers. Juvenile loons are brown and gray from 2 – 4 weeks and then turn gray and white after about 4 weeks of age.
- Female and male adult loons are indistinguishable by feather pattern and color. Males tend to be slightly larger. They share nest and chick-raising duties equally on average (it’s a myth that only “mom” tends to the nest and young).

2) Monitoring Tips

- Count all loons on the lake including those leaving or landing. **Do not count loons that fly overhead but do not land.**
- Count only the loons **you** see but use calls to help you find other loons.
- Be careful not to count cormorants as loons – from a distance they can look similar. **Use binoculars to look for white on the breast of any bird that looks like a loon.** Cormorants are entirely dark.



Double-Crested Cormorant

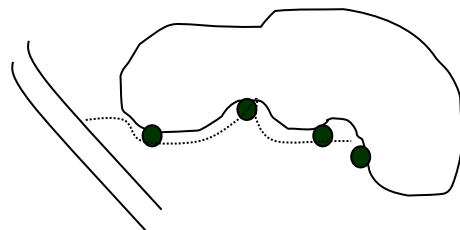


Loon

- **Surveying from Shore:**
 - Make sure you can see the entire lake.
 - View the lake from multiple vantage points, if necessary (Example 1).
 - If you cannot see the entire lake, view for a longer period of time in case there are loons “around the corner”.

Example 1:

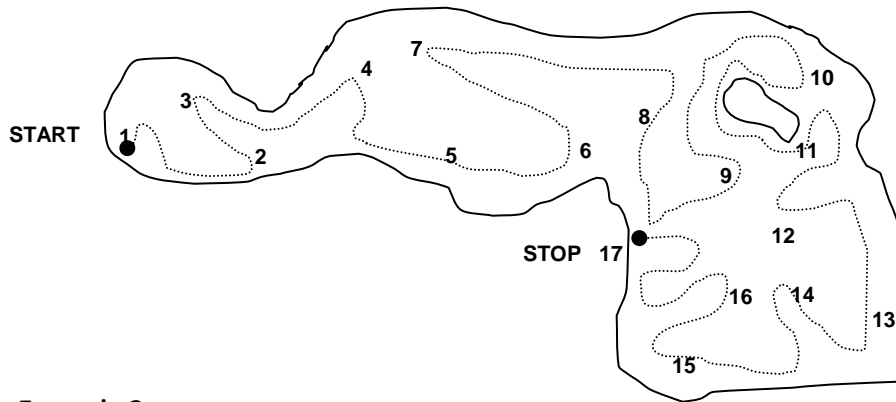
Suggested route for surveying by shore



- **Surveying by Boat:**
 - **Round Lakes:** stay about 200 feet from shore while moving around the lake.
 - **Narrow, long Lakes:** move back and forth (zig-zag) down the length of the lake.
 - **Large lakes (>400 acres):** Survey under calm, windless conditions with low boat traffic (which conditions will typically occur in early morning). Have 3 people in the boat (1 driver, 2 observers). Scan to the **FRONT**, **SIDES** and **BEHIND** the boat...if you see a loon, stop and survey for a minute. Note the

location of the loon and any direction of its movement. Be careful not to double count loons as you move around the lake (keep track of the loons you observe).

- o **Stop the boat every 400 yards to fully scan the lake** with and without binoculars. With the motor off, you can hear loon calls from all parts of the lake.
- o Be conservative...if you think you may have already counted one or more loons, do not count them again.



Example 2:

Suggested route for observing by boat

Appendix B:

Strategies for Promoting the Use of Non-lead Fishing Tackle

Lead is a toxic metal that has adverse effects on the nervous and reproductive systems of animals, including loons. The Get the Lead Out Program, administered by The Minnesota Pollution Control Agency (MPCA), and supported by the MN DNR, and the U.S. Fish and Wildlife Service, serves to reduce the use of lead fishing tackle.

General Concerns:

- 1.) Even in small amounts lead is lethal to loons and other wildlife including eagles and trumpeter swans.
- 2.) Loons pick up lost lead tackle while gathering pebbles for their gizzards.

General Strategies

1.) Organize a lead tackle exchange:

- a. Include information on a lead tackle exchange in the lake association newsletter.
- b. Place lead tackle exchange information on the lake association social media pages.
- c. Hold a lead tackle exchange event at the annual lake association annual meeting.
- d. Install a durable, tamper-proof container where association members and guests can safely deposit their lead fishing tackle for recycling. Recruit a volunteer to actively manage the container.
- e. Find a household hazardous waste collection site through the MPCA:
<https://www.pca.state.mn.us/waste/find-your-household-hazardous-waste-collection-site>

2.) Provide non-lead fishing tackle information to lake association members.

- a. Include non-lead tackle information, including lists of products/manufacturers, in lake association newsletters.
- b. Share the MPCA's lead-free manufacturers website for options to buy lead-free tackle: [Manufacturers of lead-free tackle](#)
- c. Include MPCA Get the Lead Out [webpage](#) and [social media](#) links on lake association social media pages.
- d. Encourage members who want to dispose of lead tackle to contact their local Household Hazardous Waste site.
- e. Contact MPCA's Get the Lead Out program at leadout@state.mn.us to acquire lead-free tackle sample packs for distribution at lake association meetings.
- f. Secure permission to post educational signage about fishing lead-free at high visibility shoreline areas.
- g. Ask an association member to volunteer to be the leader and organizer of Get the Lead Out activities for your lake.
- h. Include Get the Lead Out messages and articles in your newsletters and communications with association members.

3.) Invite MPCA Get the Lead Out staff to speak at lake association meetings:

Email leadout@state.mn.us for more information.

4.) Talk to your favorite retailers and ask them to stock non-lead fishing tackle.

Appendix C

Best Management Practices for Artificial Nesting Platforms

Artificial nesting platforms have been used to increase loon nesting success in many states. While they have been effective at enhancing loon productivity and are very popular with lakeshore residents, artificial platforms do not ensure nesting success.

Important: Individuals or Lake Association volunteers are responsible for maintaining artificial nesting platform for its lifetime. This responsibility includes: placing platforms on the lake soon after ice-out, removing it in late summer, storing it on shore, and making necessary repairs at the end of the season. Platforms are a long-term responsibility. If the nesting platform is not properly maintained, it may cause the nest to fail.

Artificial nesting platforms are not always the answer.

- Platforms may seem like an “easy out” from the true challenge of balancing human lake use and the habitat needs of loons and other species. Protection of nest and habitat from development, coordination of water level fluctuations to protect nests, and an understanding of specific lake habitat suitability are essential.
- There is no guarantee that loons will use a platform and, in fact, artificial nesting platforms can sometimes create problems for loons. For example, predators such as crows, gulls, or eagles may more easily locate nests on platforms. Avian guards can be added to nest platforms to reduce the risk of predation by birds. In addition, curious humans can impact loons by boating too close to a platform and frightening loons from the nest.
- The best way to enhance long-term health of loons across Minnesota is to protect natural nesting and foraging habitat.

Consider the following questions and steps as guidance for evaluating the appropriateness of an artificial nesting platform.

If loons are nesting on the lake, start here.

If you answer yes to Questions 1 – 3, then a platform is probably not the right option for the lake.

1. Do loons produce chicks on the lake once every three years?
2. Do loons successfully nest on a nearby lake most years?
3. Are there natural nesting locations on the lake that could be enhanced through means other than placing an artificial platform?

If loons are not nesting on the lake, start here.

You need more information to understand loons are not nesting on the lake. Check historically records, or record your own observations, to answer questions 4 – 7.

4. Do you know that historically loons nested on the lake?
5. Can you identify territorial loon behavior (exhibiting defensive postures such as the penguin dance) separate for behavior of non-breeding resident loons or just occasional visitors?
6. Is the lake subject to water level fluctuations that may flood nests?

7. Has unsuccessful nesting been observed? If so, try to document locations, numbers, and causes of nest failure. Please report to the Restoration of Common Loons in Minnesota Project Coordinator at MLRP.DNR@state.mn.us.

More to consider

A number of factors may explain why loons are not nesting on the lake. These include: lack of nesting habitat, poor food base, high levels of human disturbance, or simply that the loons are successfully nesting on a nearby lake.

If territorial loons nest on the lake but have a history of nest failures, you should first work to enhance natural nesting sites. This might be through regulations such as a slow-no-wake zone near the nest, contacts with the landowners about naturalizing shorelines, or educational programs for lake residents or users.

If natural nest sites are not available and cannot be restored, and factors leading to nest failure are controlled, then artificial nesting platforms are a consideration. The most appropriate locations for artificial platforms are lakes where all natural nesting sites have been developed, water levels fluctuate severely (such as reservoirs), or where loons nest on mainland shores and have lost their eggs to shore predators such as raccoons for at least three consecutive years. Artificial nest platforms should be placed away from existing loon territory boundaries.

If you are considering an artificial platform, please do the following:

- Contact Restoration of Common Loons in Minnesota Project Program Coordinator MLRP.DNR@state.mn.us for help in selecting an appropriate location.
- Check with your local Law Enforcement Unit or Sheriff's Office to obtain permission or a permit for platform placement.
- Platforms cannot interfere with boating traffic.
- We encourage you to involve your lake association in any plans.
- Monitor the nesting success of loons on the lake as well as use at platforms. Consider joining MN DNR Loon Watcher Program.



Loon nesting on natural substrate adjacent to an ANP.

Lake		Counts 2014 2015 2016 2017 2018 2019 2020 2021 2022									
Nisswa											
Spring	Nests	2	2	1	2	1	1	2	1	1	
Summer	Adults	2	2	1	1	2	2	2	2	3	
Summer	Chicks	0	0	0	0	2	1	0	0	1	
Fall	Juveniles						1	0		0	
Roy											
Spring	Nests	0	2	0	0	0	0	1	0	2	
Summer	Adults	7	6	4	9	4	10	6	2	4	
Summer	Chicks	1	3	2	2	2	3	4	1	2	
Fall	Juveniles						0	4		1	
Bass/Spider											
Spring	Nests	2	2	2	3	1	0	0	1	1	
Summer	Adults	4	3	4	2	4	7	2	3	2	
Summer	Chicks	1	1	2	0	2	0	1	0	1	
Fall	Juveniles						0	1		1	
Upper Gull											
Spring	Nests	2	3	2	3	3	4	5	5	6	
Summer	Adults	6	9	8	9	8	9	6	10	8	
Summer	Chicks	1	6	2	2	5	2	2	1	3	
Fall	Juveniles						2	2		2	
Margaret											
Spring	Nests	1	2	1	2	2	1	0	1	2	
Summer	Adults	4	2	2	4	3	6	3	4	4	
Summer	Chicks	0	0	0	2	1	2	0	1	1	
Fall	Juveniles						0	0		0	
Gull											
Spring	Nests	7	6	5	4	3	8	6	5	8	
Summer	Adults	29	54	49	81	49	73	98	68	37	
Summer	Chicks	6	8	11	7	9	7	7	8	14	
Fall	Juveniles						6	7		11	
Thor											
Spring	Nests									1	
Summer	Adults									2	
Summer	Chicks									2	
Fall	Juveniles									1	
Love											
Spring	Nests	0	0	0	0	1	0	0	1	1	
Summer	Adults	6	0	0	0	0	2	0	2	2	
Summer	Chicks	0	0	0	0	0	0	0	0	0	
Fall	Juveniles						0	0		0	
Green											
Spring	Nests				1	0	0	0	0	0	
Summer	Adults					0		2	2	0	
Summer	Chicks					0		2	2	0	
Fall	Juveniles						0	0		0	

Totals										
	Nests	14	17	11	15	11	14	14	14	22
Summer	Adults	58	76	68	106	70	109	119	93	62
Summer	Chicks	9	18	17	13	21	15	16	13	24
	Chicks per Nest	0.64	1.06	1.55	0.87	1.91	1.07	1.14	0.93	1.09
Fall	Juveniles	0	0	0	0	0	9	14	0	16

GCOLA loon productivity counts 2014 – 2022.

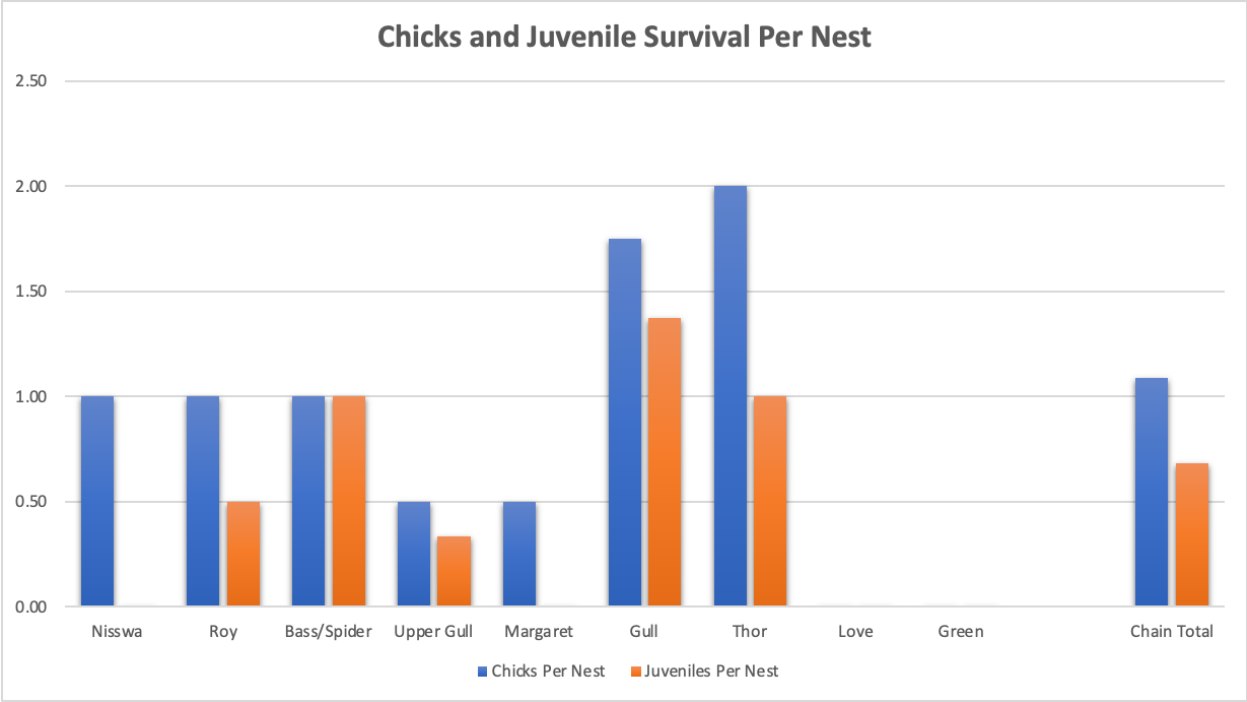
Lake		2022 Chicks/ Juveniles per Nest	Per Lakeshore
Nisswa	Nests		0.36
	Chicks	1.00	0.36
	Juveniles	0.00	0.00
Roy	Nests		0.35
	Chicks	1.00	0.35
	Juveniles	0.50	0.18
Bass/Spider	Nests		0.38
	Chicks	1.00	0.38
	Juveniles	1.00	0.38
Upper Gull	Nests		0.70
	Chicks	0.50	0.35
	Juveniles	0.33	0.23
Margaret	Nests		0.38
	Chicks	0.50	0.19
	Juveniles	0.00	0.00
Gull	Nests		0.17
	Chicks	1.75	0.30
	Juveniles	1.38	0.24
Thor	Nests		3.33
	Chicks	2.00	6.67
	Juveniles	1.00	0.00
Love	Nests		0.56
	Chicks	0.00	0.00
	Juveniles	0.00	0.00
Green	Nests		0.00
	Chicks	0.00	0.00
	Juveniles	0.00	0.00
Totals	Nests		0.30
	Chicks	1.09	0.32
	Juveniles	0.68	0.20

GCOLA loon nest and chick counts 2022.

[Type here]

[Type here]

Management Plan Template



GCOLA loon chick & juvenile survival per nest 2022.

Appendix D

Roles and Responsibilities of an Artificial Nesting Platform Sponsor

Background

The primary goal of the Minnesota Loon Restoration project is to increase reproductive success and reduce mortality of Minnesota's loons. To achieve this goal, we are conducting loon nesting surveys each summer to help identify where our loon conservation activities are most likely to improve loons' ability to successfully hatch and raise young. One of those conservation activities is the use of an Artificial Nesting Platform (ANP). An ANP provides nesting habitat for loons and can help protect them from nest predation or other environmental factors that can cause nest failure. In collaboration with U.S. Fish and Wildlife Service and U.S. Geological Survey, we have identified numerous loon territories throughout our study area that may benefit from the deployment of an ANP. To successfully deploy and maintain these nesting platforms, we need the assistance of our Loon Liaisons and their local lake communities to sponsor an ANP.

Roles and Responsibilities

Being an ANP sponsor requires the construction, deployment, removal, and maintenance of an ANP for a minimum of three years. It is also important to note that the data collected from the deployment of the ANPs are part of a scientific study, therefore, it is important that sponsors follow the design and deployment directions as best as possible. This helps keep the study standardized and ensures that all loons experience the same quality nesting platform.

Construction – For this study, we are using the Sigurd Olson “Eternal” Artificial Nesting Platform design. ANP sponsors will be responsible for constructing their ANP. The DNR will provide funds to cover the cost of materials. The DNR will also provide written directions and a video tutorial that walk through the steps of building one of these platforms.

Deployment - This entails the actual physical placement of the ANP on the lake. The ANP sponsor would be responsible for transferring the ANP to a suitable location and properly anchoring the platform. The ANP should be deployed within two weeks of ice out in the spring. Loon pairs will usually return to their nesting territory soon after ice out, sometimes within a day or so, to defend their territory. We would provide guidance on potential placement locations within the territories and can conduct site visits if desired.

Removal – Similar to deployment, we ask that the sponsor removes the ANP from the lake on or after August 1st. It can be left out as late as the beginning of ice up, however, the platforms can get water-logged and become very heavy the longer they sit in the lake.

Maintenance – ANP sponsors will be responsible for general maintenance and care when the platform is off the lake. For example, the primary structure of the ANP is made of PVC, therefore, seams between the sections of PVC may need to be drained and re-sealed if they become water-logged over time. Additionally, ANPs should not be left on the ground during the winter. They can freeze to the ground and become damaged when trying to remove for spring deployment.

Appendix E

Margaret ANP Location Map

Margaret Lake - Mid-lake

