

APPENDIX F:

The Use of Signs: An Essential Common Loon Management Tool

This appendix includes information about the kinds of signs to use, how to obtain or construct the signs, how and when to place them, and when to remove them. All decisions about applying shore or floating signs must be made with the Area Coordinator for that lake ([Appendix A](#)).

WHY USE SIGNS

The rationale for the use of floating signs around loon nests comes from analysis of data collected in Montana between 1987 and 1991 ([Kelly 1992](#)). This revealed that 60% of departures from nests by loons were due to human disturbance and 51% of these departures were related to approaching boats. The loons were off the nest for an average of 24 minutes. Forty percent of nest departures were the result of various loon activities such as changing incubators, heat or insect stresses, building the nest platform, or territoriality. Loons were off the nest for an average of eight minutes for these reasons. In addition, it was found that loons left the nest in response to approaching boats at 140 yards (128 m), 130 yards (119 m), 100 yards (91 m), and 70 yards (64 m) during the first, second, third and fourth weeks of incubation, respectively ([Kelly 1992](#)). The heightened sensitivity of loons to approaching boats is a result of their physical adaptations for diving which dramatically limit their ability to move efficiently on land. While individual loons do habituate to boats and tolerate closer approaches, they will eventually leave the nest and will remain off the nest until the boat leaves the area. Eggs that are unprotected, especially during the last two weeks of incubation, are generally lost after one hour (Sutcliffe 1980) to chilling or to ravens. The purpose of the floating signs is to reduce the amount of human caused disturbance. With exponential increases in water-based human recreation, the use of floating signs to protect loon nesting areas will continue to be critical to successful loon reproduction and management.

The most effective protection for nesting loons is the combination of floating signs AND someone on the boat ramps explaining why the signs are there. There are few people willing to spend their time on boat ramps in the spring watching other people playing in the water and the few people who are out there cannot be in several locations at once. A small number of floating signs have been ignored, stolen, or vandalized. The likelihood of this happening increases dramatically in the absence of public education. This public education can take the form of a volunteer handing out brochures on the boat ramp, a “Loon Ranger” near the signed areas, a campground host making a point of stressing the closed area for loon nests, or a water safety officer working with the wardens.

SHORE SIGNS

At a minimum, post signs onshore explaining that loons are nesting and why recreationists should be concerned, especially on trails that follow the shoreline.

The shore signs shown below may be obtained from an Area Coordinator ([Appendix A](#)). The larger “No Laughing Matter” signs are typically left up year-round and replaced each spring. Post the temporary sign at the time floating buoys are placed on the lake. This provides the

CORRECT PLACEMENT OF FLOATING SIGNS

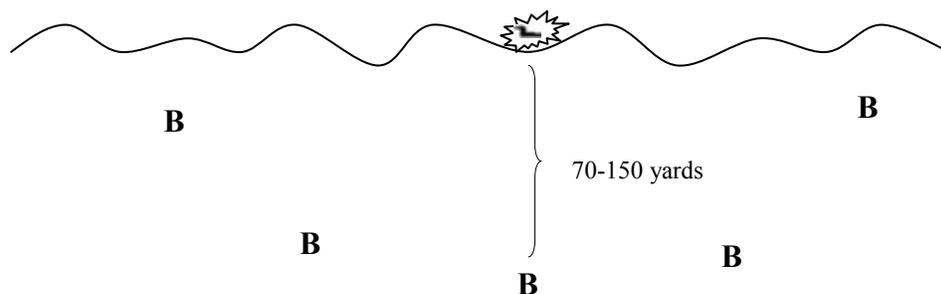
Correct placement of floating signs impacts the effectiveness of the signing program. Use GPS to record the exact location of nest sites and floating sign buoy each year, and use this information to evaluate the effectiveness of buoy placement in relation to the nest site.

Since loons are much more sensitive to any kind of boat presence during the first two weeks of incubation, the presence of your boat may get them off the nest while you are setting signs. This may not mean that the signs are too close. However, when the signs are set, leave the area quickly to help the loon return to the nest.

Once the loon returns to incubating, slowly approach the signs. **If the bird stays on the nest when your boat is right at the signs, then the signs are properly set.** This distance will typically be between 70 to 150 yards (64 to 140 m) from the nest depending on the amount of tolerance exhibited by the birds for people and the configuration of the lake. Obviously, it is important to err on the side of more distance for the loon, although few birds actually need the maximum distance of 150 yards (140 m). **Do not place signs out more than 150 yards (140 m) because it will appear to close off too much of the lake.** This can result in vandalism or theft of signs or deliberate noncompliance. Accidental noncompliance occurs when the signs are too far apart so the semi-circle around the nest is not readily apparent. It is important to maintain flexibility in sign location in consideration of the recreating public. **Do not block traditional boating travel/navigation routes used by the public.**

Shoreline Nest Sites: Nests along the shoreline typically need five signs arranged in a semicircle 70-150 yd (64 to 140 m) from the nest site (Figure 1). In order to get the signs evenly spaced, you may want to put the “point” sign in first. This is the sign at the height of the semicircle, straight out from the nest. Then place the two signs nearest to shore. They should be 20 to 30 feet (6 to 10 m) from land so that canoes hugging the shoreline can see and heed the signs. Finally, place signs between the shoreline and point signs to fill in the semicircle. If the semicircle seems hard to follow, the signs may be too far from shore and spread out too far from each other. Try pulling them in closer to shore. If you feel the distance is right, but the signs still seem hard to follow, add an additional sign.

Figure 1. Placement of signs around a shoreline nest site (5 signs)



Island Nest Sites: Most island nests require at least six signs encircling the island (Figure 2). If the island is large enough, the signs on the side of the island opposite the nest can be much closer to the island than the signs on the side where the nest is. Some islands are large enough to sign in a manner similar to shoreline nests (Figure 3).

Figure 2. Placement of signs around a small island (6 signs)

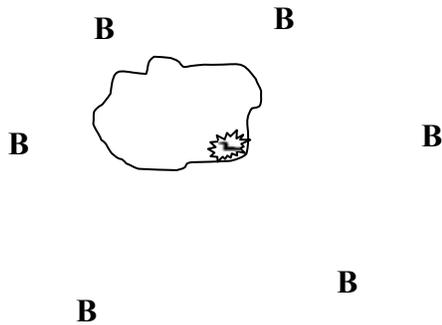
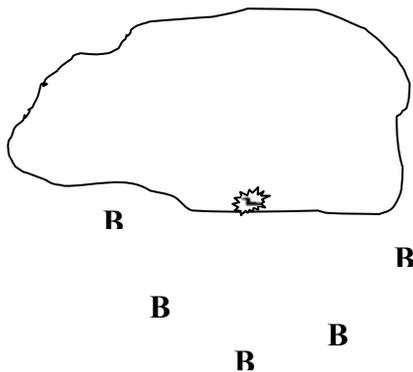


Figure 3. Placement of signs around a large island (5 signs)



WHEN TO PLACE AND REMOVE FLOATING SIGNS

Floating signs are typically placed as soon as possible after the birds are settled onto the nests. However, people are arriving to recreate on lakes earlier and earlier in the spring, in larger and larger numbers. Signs can be placed around apparent nesting areas before a nest site is known. This can quiet the area down so that the birds can proceed with courtship and nest selection, since human presence disrupts the courting and nest selection process as well as incubation. Yonge (1981) and Heimberger et al. (1983) found that early nesting efforts tend to be more successful. [Kelly \(1992\)](#) found that all nests initiated between April 26 and May 1 were successful, but fewer initiated between May 8 and May 26 were successful. Thus, delay of nesting caused by increased recreation early in May can predispose the nest to failure. Loons tend to reuse nesting sites, especially if they were previously successful (Strong 1987).

Shoreline development limits the numbers of nest sites which can be used by loons. As a result, it is often possible to ascertain the approximate location of the nest before the birds are settled.

The downside to early sign placement is that it may be necessary to move or adjust the signs in response to the actual location of the nest so that only the nesting area which needs protection is actually closed to human use. This extra effort is done in consideration of recreationists who may not comply with floating closures if they perceive that too much of the lake is “closed off” or that the loons are not in the area enclosed by the signs.

If a nest failure occurs, loons may renest. If they do, they often renest in a different spot, which will require that the signs be moved.

Loon signs can stay up as long as the family unit is using the enclosed area. Once they are consistently using other parts of the lake (or after the chick is two to three weeks old), the signs need to be promptly removed. As recreational pressures increase, it may be necessary to use signs to protect nursery areas temporarily so that family units with very young chicks have time to feed and rest. These essential activities are compromised when loon families are constantly moving to avoid watercraft. This is particularly true during the Fourth of July weekend.

CONSTRUCTION OF FLOATING SIGNS

Materials needed for one sign and approximate 2008 costs:

- **37 inch long piece of 4 inch schedule 40 PVC pipe.** Comes in 10’ lengths, so three can be cut out of a 10-foot piece, at about \$2.70 per foot.
- **Two high-pressure 4 inch PVC slip caps,** at about \$8.60 each.
- **One 40 inch piece of ¾ inch EMT thin-wall conduit.** This comes in 10-foot lengths at \$1.20 per foot.
- **PVC two-part glue system (primer and glue),** costing about \$10.00 for both cans, enough for 30 to 40 attachments.
- **PVC glue E6100** (about \$10.00 per tube and tube will seal many eye hooks). This is best used between 70 and 85 degrees F.
- **Paint for covering PVC glue to make it UV resistant.**
- **Four self-tapping metal screws.**
- **Eye bolt (about 1 inch circumference and 4 long) with two washers and one nut.**
- **One ¼ inch bolt, approximately 3½ inches long, with two nuts.**
- **One small metal coffee can measure of dry pea-size gravel.**
- **Two metal “LOON NESTING AREA” signs.** Members of the Montana Common Loon Working Group make bulk purchases of the metal signs, often through Montana Fish, Wildlife, and Parks.



In 2008, we purchased enough materials for 40 floating signs. Excluding the cost of the metal signs, this was about \$35 per sign. Buying in bulk probably reduced our cost by 20%.

Tools and Equipment needed

- Tape measure and pencil
- Power drill
- Drill bit for pre-drilling hole slightly smaller than self-tapping screws
- Drill bit for driving self-tapping screws
- Drill bit for 3/4" hole through PVC cap
- Drill bit for eye bolt through PVC cap
- Drill bit for 1/4" hole through conduit
- Two crescent wrenches
- Hack saw for 3/4" conduit pipe
- Hand saw for 4" PVC pipe
- Small metal coffee can
- Caulking gun
- Paint brush
- Water to test floatation, such as an extra large trash can or a 24" x 4-foot plastic culvert lined with a garbage bag.

Instructions

Step 1) After pre-drilling the holes, screw the two metal loon signs back-to-back on either side of the 40" conduit pipe. Make sure the top of the signs is flush with the top of the conduit pipe. Place glue on the screw before screwing into the conduit. Use two screws for each sign.

Step 2) Glue both the top and bottom of the conduit to seal out water, using silicone glue or possibly the E6100. ***This glue must cure 24 hours.***

Step 3) Center drill the 4" PVC top cap so you can slide a 3/4" EMT thin wall conduit (40 inches long) through the cap. The conduit must fit tightly in the hole.

Step 4) From the bottom of the metal signs, measure down the conduit 4" and drill a 1/4" hole through the conduit. Push the conduit through the top cap with the loons signs above the top of the cap, then insert the 1/4" bolt, which will prevent the conduit from pulling out of the cap when the sign is pulled from water. The bolt will need two nuts to tighten it against the conduit with each end equal distance from the conduit. Pull up the conduit snug against the bottom of the top cap, then seal both the bottom and top of the cap around the conduit with PVC glue E6100.

Step 5) Cut the 4" PVC pipe down to 37 inches.

Step 6) Center drill the bottom cap so you can attach the eye bolt with two washers (one on each side of the cap) and a nut. Seal the eye bolt on the cap with PVC glue E6100.

Step 7) Glue on the bottom cap, pour in the gravel, slip on the top cap, and check how the loon sign floats in water. The sign should float with the water level at the bottom of the top cap. Add or remove small amounts of gravel as needed. When the correct amount of gravel is added, glue the top cap with the metal signs onto the main body.

Step 8) 24-hours after the PVC glue is dry, paint over it so that the sun can't break it down.

