

COMMON LOON MANAGEMENT IN THE BULL RUN WATERSHED

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BACKGROUND

The Common Loon is a large diving bird that winters on the ocean and breeds on freshwater lakes. It migrates long distances and is frequently seen on freshwater lakes, particularly in the spring. Its diet is primarily fish, although crayfish, leeches, and aquatic insect larvae are also eaten. Occasionally seen in loose flocks during winter or in brief group encounters, the loon is usually a solitary bird that forages singly and chases other loons from any chosen fishing spot. Breeding habitat is large, freshwater lakes. Pairs of loons aggressively defend their large breeding territories from adjacent pairs, non-breeding loons, and frequently from other species. Because the loon is adapted for diving rather than walking on land, nest sites are on the shoreline, particularly on islands or peninsulas, or in marshes. The nest is often on a large, half-submerged log in the Pacific Northwest, and floating nest platforms are readily accepted. Chick rearing or nursery habitat is shallow water areas that are protected from wind and have small fish or other food resources. The loon is a long-lived species, noted for its faithfulness to a nesting territory (Alvo, 1981; Mathisen, 1969; McIntyre, 1983; McIntyre, 1988; Olson and Marshall, 1952; Sjolander and Agren, 1972).

The nesting distribution of the Common Loon covers much of sub-Arctic Alaska and Canada, and the northern United States. From sparse historical records, we know that in the Pacific states the species used to nest as far south as northern California, and in lakes throughout many sections of Oregon and Washington. By about 1900, a decline in numbers was noted, and by the 1950s the loon had apparently been extirpated as a breeding species from California, Oregon, and Washington. There were doubtless many reasons, including incidental capture in commercial salmon fishing nets, use as bait by commercial crabbers, recreational shooting, and use of pesticides, but human disturbance and settlement at nesting lakes were certainly major causes of recession of the loon's breeding range (Corkran, 1988; Gabrielson and Jewett, 1970; McIntyre, 1988).

Surveys of Common Loons since 1985 have found nesting on nine lakes scattered around Washington. Although some earlier nesting may have been overlooked, in several cases it is known that the loons moved to the lake in recent years. In Oregon, there have been no confirmed nests since 1947, however nesting is suspected to have occurred at a lake on the Oregon coast in the 1960s, possibly at Bull Run Lake in the late 1970s, and has been reported but not confirmed at a lake in the Cascades north of Crater Lake in 1992 and 1993. The Common Loon is listed as a Sensitive Species by the Forest Service (FS) and the U. S. Fish and Wildlife Service. It is a candidate for Threatened status by the Washington Department of Fish and Wildlife, and is considered extirpated as a breeding species by the Oregon Department of Fish and Wildlife (Corkran, 1988; Corkran, 1989; McIntyre, 1988; Richards and Musche, 1985).

COMMON LOON USE OF THE BULL RUN WATERSHED

Common Loons have been noted in the lakes and reservoirs of the Bull Run Watershed since at least the late 1970s, when a Forest Service (FS) employee reported a vocalizing pair of loons at Bull Run Lake on every visit during one summer. Apparently they were also noted earlier, since the Native American name for Bull Run Lake translates to "Loon Lake." The construction of the reservoirs created foraging habitat for loons, although it is likely that nesting or chick rearing habitat at Bull Run Lake was excluded by the dam.

Monitoring of Common Loons in the Watershed started in 1986 and is continuing. The majority of sightings are in the spring, during April and May of each year. Most loons seen are single adults in breeding plumage, although pairs of loons are also observed. From surveys repeated twice weekly, it appears that most loons use the reservoirs for only a few days, presumably as a migration stop-over point before continuing on to breeding grounds further north. Most loon sightings are randomly distributed over the two main reservoirs, with regular sightings also at Bull Run Lake.

In contrast to the migration stop-over pattern above, however, Common Loons exhibiting pairing and territorial behavior have been consistently observed on the eastern one-third of the Upper Reservoir since at least 1980. Nesting or unsuccessful nesting attempts may have occurred. When surveys started in 1986, the "North Fork Pair" was a well-known phenomenon to employees of the FS and the Portland Water Bureau (WB). The pair was observed in this area in 1986; during April and May they patrolled the boundaries and performed courtship and pre-copulatory displays (McIntyre, 1988; Rummel and Goetzinger, 1975; Sjolander and Agren, 1972; Tate and Tate, 1970). No nest was seen, and the pair left at the end of May. In 1987 and 1988, territorial defense and behavior interpreted as courtship and tentative pair formation were seen (McIntyre, 1988; Rummel and Goetzinger, 1975). In both 1989 and 1990, a pair was seen around the first of April, but on these two occasions the loons were observed leaving the territory giving distress vocalizations (Barklow, 1979; Olson and Marshall, 1952; Sjolander and Agren, 1972). This behavior appeared to be in response to WB bridge building and other activity in 1989, and to logging on FS land adjacent to the reservoir in 1990. No loons were seen in the territory for the next 2 weeks in 1989, and for the remainder of the spring in 1990. In 1991 through 1994, a single loon defended the territory, however fewer surveys were made in the last two years.

Because of the possibility that there had been nesting attempts that had failed due to fluctuating water depths, two floating nest platforms were built for Common Loons. Subsequently they have been moved to better locations, but have not been observed being used by the loons.

Reports on the monitoring of loons in the Watershed were written in 1986, 1987, 1988, 1990, and 1991.

RESEARCH AND IMPLICATIONS FOR MANAGEMENT IN THE BULL RUN WATERSHED

Timing of nesting - Monitoring throughout the Common Loon's breeding range has outlined the timing of loon reproduction. Most of the data on the loon's breeding season is summarized in McIntyre (1988). Towards the southern edge of the breeding range, most pairs return to nest

sites in April (occasionally by the end of March), and immediately establish or re-establish territories. In northern Michigan nesting begins about two weeks after arrival, and two eggs (rarely 1 or three) are laid within a few days of the selection of the nest site (Olson and Marshall, 1952). If the first clutch of eggs is lost during incubation, the female may lay a second clutch after 8 to 13 days. The incubation period is 26 to 31 days. In Washington, eggs were seen in a nest in May, and chicks at another lake in June (Washington Department of Fish and Wildlife records, Kelly McAllister, pers. comm, 1989). Eggs at sites in northeastern Washington hatched between June 4 and June 18 (Richards and Musche, 1985; Visser, 1988). After a few hours or a night, loon hatchlings are led by the parents to a shallow, protected nursery area, where they remain for the first 2 or 3 weeks (McIntyre, 1983). The chicks begin catching some of their own food when they are a few weeks old, but they are partially dependent on the adults for three months after hatching (McIntyre, 1988).

Human disturbance during nesting - Research conducted in other parts of the loon breeding range indicate that nests often fail when the adults are disturbed by human activity near the nest (Alvo, 1981; McIntyre, 1988; Olson and Marshall, 1952; Ream, 1976; Titus and VanDruff, 1981; Vermeer, 1973). In many cases the adults abandon the nest; in other cases temporary abandonment allows predators such as otter, mink, raccoon, or raven to find the eggs, which are large and not covered by nest material. Disturbance can also cause desertion of young chicks or extended separation that allows predators to take the chicks (McIntyre, 1988).

Causes of disturbance - All of the known studies of loon nest disturbance have looked at the effects of recreation rather than of management or commercial activities. Most have looked at nest site preference and success in relation to intensity of human use on a lake, including shoreline fishing, motorboat use, canoeing, camping, and use of cabins near the shoreline. Alvo (1981) and Olson and Marshall (1952) suggested that loons were changing their nest site selection in areas with human disturbance, and may have nested in sites more vulnerable to predators as a result. Titus and VanDruff (1981) monitored loon nests on lakes used for recreation and found that motorized boats caused greater disturbance than canoes at the same distance from the nest. They and other researchers also found that people in any type of boat that stopped near a nest, especially if they made loud noise or moved about in the boat, had a much greater impact than a boat moving past a nest on an uninterrupted course. Loons were less apt to leave a nest if the landform and/or the vegetation provided visual screening. Individual loon pairs differ in their reactions to disturbance. Several studies suggest that over time loons become accustomed to disturbance, and that nest success is actually lowest on lakes with only occasional boat use (McIntyre, 1988; Titus and VanDruff, 1981). Motorboats are more apt than canoes to separate loon chicks from parents, which sometimes led to desertion of at least one chick (McIntyre, 1988).

Distance from a nest - Most studies described impacts from disturbance “near the nest.” Alvo (1981) found that loons did not use potential nest sites that were “beside routes of boat traffic and within 50 m of the nearest cottage,” but they did use nest sites screened by marsh vegetation that were “at least 100 m from cottages and from boat traffic.” Titus and VanDruff (1981), found that incubating loons left the nest when the disturbing human approached to a distance of 3 to 90 meters (the mean distance was 28 m). The distance was greater from motorboats than

canoes, and was greater on lakes with only occasional human use. There was no data on distance from disturbance on land, or else it was reported in with that from boat disturbance.

Implications - The monitoring and study results discussed above form the basis for management recommendations for the Bull Run Upper Reservoir. The known loon territory on the Upper Reservoir provides nesting sites (2 floating nest platforms as well as partially submerged logs) and chick rearing habitat in the shallows near the head of the reservoir and at the mouth of Fir Creek. Because loon arrival and territorial defense begin in the first week of April in the Bull Run Upper Reservoir, if nesting occurred it would be most likely to begin in the third or fourth week of April or later, with eggs hatching in the third or fourth week in May or later. Chicks would be especially vulnerable to desertion and predation until the middle or the end of June. If a first nest failed, a second clutch of eggs would not hatch until mid- to late June, with chicks being especially vulnerable until the beginning or middle of July. The results of the studies of disturbance indicate that breeding loons in the Bull Run Upper Reservoir could be susceptible to disturbance by any water or land based human activity within 90 meters of a nest, or in an area where young chicks were being reared. This susceptibility would occur from the first of April when loons are establishing territories through at least the middle of June if nesting occurred (the middle of July if a first nest failed but a second nest succeeded).

MANAGEMENT RECOMMENDATIONS AND REASONS

1.) Monitoring of Common Loons in the Watershed should be continued, with surveys using existing observation points made at least weekly from the last week in March through May 31. If potential nesting activity is observed, more frequent monitoring should be carried out from several remote points. If no loons are seen after May 15, monitoring can cease for the year.

Reasoning: Common Loons have arrived in the Watershed on or about April 1 in every year since at least 1986. In many years, some have remained through the end of May. Continued monitoring will alert FS and WB staff to possible nesting, and will allow the use restriction to end on May 15 if loons leave early.

2.) There should be no activity on the Upper Reservoir east of and including the vicinity of the North Fork logboom between April 1 and May 31 of each year. If possible, vehicles should not stop along Road 10 between the North Fork logboom and the North Fork rock pit during the time that this restriction applies. If monitoring finds no loon pair on the upper half of the Upper Reservoir after May 10, the restriction should end on May 15 for that year. See map, Figure 1, for boundaries of restricted use area. This restriction does not apply to water quality monitoring or removal of a log or other obstruction blocking FS Road 10. This restriction does apply to all of the following:

- a. Log removal from the reservoir,
- b. All use of motorized and non-motorized boats at or above the North Fork logboom, including towing or corraling logs, and ferrying people and equipment,
- c. All land-based activity between FS Road 10 and the Upper Reservoir from the north end of the North Fork logboom to, but not including, the North Fork rock pit, including timber harvest or salvage, brush cutting along FS Road 10, and construction or maintenance of road, trail, or bridge,
- d. All land-based activity between the Station 18 trail and the north side of the Upper Reservoir from FS Road 10 to the head of slack water, and

- e. All land-based activity within 100 meters of the south side of the Upper Reservoir above the south end of the North Fork logboom.

Reasoning: Because of territorial and pre-nesting behavior observed in past years only in this area, there is the strong possibility both that nesting attempts here in the past have failed, and that nesting may occur here in the future. Inadvertent harassment by logging and by WB activity has been observed to elicit distress calls from loons and to alter the loons' use of the reservoir. April 1 has been the approximate loon arrival date every year. If nesting occurred, it would be most likely to begin in the third or fourth week in April or later.

3.) If Common Loon nesting is confirmed or suspected in a given year, the use restriction in 2.) should be extended beyond May 31, to July 15 or whenever loon chicks are off the nest and considered safe from disturbance from a particular proposed activity. Monitoring the loons' activity/behavior patterns after the young are actively foraging will assist in developing guidelines to permit certain management activities to proceed within restricted timelines.

Reasoning: Published records from Washington and other states indicate that if nesting occurred in Oregon, eggs would probably hatch around the end of May or later. Leaving this restriction open-ended might allow proposed activities that are considered less disturbing to occur earlier.

4.) The two floating nest platforms should be maintained, and replaced if necessary.

Reasons: Fluctuating water levels are known to have caused failure of Common Loon nests from both flooding and stranding. Maintaining the platforms ensures that they are available to loons, and that if loons nested elsewhere, the nest could be relocated to a platform if threatened by a change in water level.

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