

known population resides 40 km to the south-southeast along the Yaak River in Lincoln County, Montana [A. G. Wilson, Jr., and E. M. Simon. 1987. Status of the Coeur d'Alene Salamander (*Plethodon vandykei idahoensis*) in Montana. Report submitted to Montana Natural Heritage Program, Helena, Montana.].

Copper Falls is only 3.2 km south of the Canada-United States boundary and is part of the Moyie River drainage that extends into southeastern British Columbia. This drainage would seem a likely northward dispersal route for the Coeur d'Alene Salamander in suitably damp situations (see Nussbaum et al. 1983 for comments on microhabitats). Although not mapped in British Columbia in recent guides (Cook 1984; Green and Campbell 1984; Stebbins 1985) it was incidentally included (as *Plethodon vandykei* without mention that this was a new Canadian record) in a list of vertebrates found in 1981-1983 in the Kuskonook Mine (49° 21'N, 116° 44'W), B.C., by Holmberg, Angerilli and LaCase (1984). Our report, by significantly shrinking the distributional gap between this site and previous northern records, supports a conclusion that its occurrence in British Columbia is natural. This raises the number of known Canadian *Plethodon* species to three: *P.*

cinereus, the Eastern Redback Salamander, from Ontario to Prince Edward Island and *P. vehiculum*, the Western Redback Salamander, and *P. vandykei idahoensis* from southwestern and southeastern British Columbia, respectively.

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Common Loons, *Gavia immer*, Nesting in Deadwater Streams

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Common Loons (*Gavia immer*) were found nesting 10 to 800 m from the main bodies of lakes in shallow, deadwater streams. In breeding territories without islands, deadwater streams were strongly favored for nesting over other mainland sites. Nesting success in deadwater streams was greater than on islands or at mainland sites.

Key Words: Common Loons, *Gavia immer*, nesting, deadwater streams.

Common Loons (*Gavia immer*) nest on lakes of all sizes in the northernmost tier of conterminous United States and in Alaska, Canada, Greenland, and Iceland (American Ornithologists' Union 1983). On individual lakes, loons nest in a variety of locations [e.g. marshes, islands, mainland] (Vermeer 1973; McIntyre 1975; Sutcliffe 1980; Alvo 1981). Islands are favored as nesting

locations when available (McIntyre 1975; Smith 1981) and often confer greater reproductive success than nests in other habitats (McIntyre 1975; Sutcliffe 1980; Titus and Van Druff 1981).

To date, no studies of Common Loons have reported the use of slow-moving inlet or outlet streams for nesting. In this paper, we describe the use of deadwater streams for nesting and

document the use, availability, and nesting success of these and other potential nest habitats for Common Loons.

Study Area and Methods

We were studying habitat selection by Common Loons on large, remote lakes in north-central Maine (approximately 46°N, 69°W). From 1982 to 1984 we collected data on nest location and success on seven lakes ranging in size from 200 to 1000 ha. Additional data for 1979 and 1980 were available for three of the lakes (Christenson 1981). Individual lakes had two to eight breeding pairs of loons.

We located nests by searching all shoreline areas and islands from ice-off (usually early May) to mid-July. After a nest was located, we discontinued shoreline searches in that area and periodically checked the status of the nest from a distance until hatching or abandonment.

Results

We found 69 loon nests in 25 different breeding territories. Previously used nest bowls or nearby areas were often used in subsequent years (Strong et al. 1987), resulting in only 40 discrete nest locations.

Eighteen (45%) nests were on islands. Eleven of the 22 mainland nests were in slow-moving inlet or outlet streams commonly called backwaters or deadwaters in this area.

The deadwater streams used by the loons for nesting were shallow (< 1 m) and narrow (5 to 10 m wide). Ericaceous shrubs typical of boggy areas were dominant plant types. Stream current was slow or absent and water levels fluctuated only with fluctuations on the lake.

Loons constructed nests at various distances from the mouths of the streams. One nest was located approximately 10 m upstream from the mouth and was visible from the main body of the lake. All others were obscured from the main body of the lake by bends in the streams. We estimated the distances from the nests to the stream mouths for nests > 50 m upstream and rounded the distances off to the nearest 50 m. The nests were 10, 100, 150, 200, 200, 350, 400, 400, 500, 500, and 800 m from the stream mouths.

Loons seemed to prefer nesting in deadwater streams or on islands. In six breeding territories (boundaries determined after intensive observations of resident pairs (Strong 1985)) with deadwater streams but no islands, seven of eight nest sites were in the streams. In ten territories with at least one island but no streams, 11 of 12 nests

were on islands. Seven territories had islands and deadwater streams. Seven nests were on islands, four were in streams, and three were at other mainland sites. Two territories had no deadwater or island nesting habitat.

Stream-nesting loons enjoyed greater nesting success (at least one hatched egg) than loons that nested on islands or at mainland sites. Fourteen (82%) of 19 stream nests were successful; 16 (52%) of 31 island nests were successful; and seven (37%) of 19 mainland nests were successful.

Discussion

Factors affecting the selection and success of Common Loons nests have been discussed (Olson and Marshall 1952; Vermeer 1973; McIntyre 1975; Sutcliffe 1980; Yonge 1981). Nesting on islands is thought to be a response to mammalian predation on eggs (McIntyre 1975; Sutcliffe 1980).

On our study area, the high degree of nesting success in deadwater streams suggests that they were at least as good for nesting as islands. We were unable to determine the ultimate cause of nest failure for most nests, so we have no conclusive evidence for the fact that nesting success was greatest in the deadwater streams.

We suspect that the greater nesting success may have been the result of greater nest attentiveness. Each of the study lakes had two to eight territorial pairs of loons. One to five resident loons without territories were also present throughout the summer. Additionally, non-resident loons were often present on the lakes for varying periods of time. It was not unusual to see a group of 3 to 10 loons anywhere on the lakes during any part of the breeding season. However, only nesting birds were seen in the deadwater streams.

During incubation one member of a nesting pair often joined these small groups when they entered the breeding territory. Several times we observed both members of a nesting pair interacting with the groups. At these times, the nest would be left uncovered up to one hour.

We believe that the activities of these small groups may be a negative influence on nesting success. However, for loons nesting several hundred meters upstream away from the main body of the lake, these activities are not visible and the stimulus to leave the nest may be reduced. In effect, the location of the nest may isolate the incubating bird from potentially distracting activities on the main body of the lake. This may be especially important when there are multiple breeding pairs on the lake or when the lake is visited regularly by non-resident loons. Nesting in

deadwater streams may be important on lakes with heavy boat traffic. Loons seem to select nesting areas with low probabilities of human disturbance on some lakes (Sutcliffe 1980; Alvo 1981).

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Additions to the Lichen Flora of Alberta, Saskatchewan, and Manitoba

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Johnson, J. D. 1989. Additions to the lichen flora of Alberta, Saskatchewan, and Manitoba. *Canadian Field-Naturalist* 103(1): 96-99.

An ecological survey in the forested regions of Alberta, Saskatchewan, and Manitoba adds four species to the known lichen flora of Alberta, three species to the flora of Manitoba, and provides additional information on a recent new record from Saskatchewan.

Key Words: Alberta, Saskatchewan, Manitoba, lichens, new records.

During an ecological survey in the forested regions of Alberta, Saskatchewan and Manitoba, several interesting lichen collections were made. After consulting standard references (Bird 1972;

Hale 1979; Thomson 1984) and surveying a number of herbaria (ALTA, CAFB, CANL, MMMN, SASK, UAC, WIN, and WIS) [acronyms follow Holmgren and Keuken (1974)],



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