

MATING BEHAVIOR OF THE COMMON LOON

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HUXLEY (1923) describes copulation and some displays for the Red-throated Loon (*Gavia stellata*), and Zedlitz (1913) gives similar information for the Arctic Loon (*Gavia arctica*). A variety of displays have been described (Roberts, 1932; Munro, 1945; Yeates, 1950) for the Common Loon (*Gavia immer*), but their sequence and significance are not clear. Other than Southern's (1961) single report of an apparent midsummer copulation by two Common Loons, no description of copulation seems to have been reported for this species. In their detailed study of the Common Loon on its nesting grounds, Olson and Marshall (1952) never observed copulation and suggest it possibly occurs at night.

We watched two Common Loons attempt to copulate on the water of French Farm Lake, Emmet County, Michigan, at about 17:30 on 19 April 1968. By this date the lake had been free of ice for only a week to 10 days; thus our observation of the pair was soon after their arrival. We returned on 20 and 21 April (a weekend), but found the loons so disturbed by fishermen that observation was difficult. On 22 April from 16:30 to 19:00, we were able to watch the pair without interruption through a 15-60× telescope, and 8×40 binoculars. The birds were unaware of our presence during this time, and we saw them copulate on land.

Initially, our attention was attracted on 19 April by a loon poised upright on the water, splashing and flapping its wings just beyond marsh vegetation more than 200 yards away from us. We then saw two loons swim out into open water, apparently fishing. Some 10 or 15 minutes later one loon swam up to the other, which had turned on its left side in a normal rolling preen position (Olson and Marshall, 1952: 16, Figure 6) with its breast and belly exposed and head clear of the water. The male (sexes assumed from copulatory role) swam up onto the female's exposed belly at nearly a right angle to her. Contact was very brief; the female submerged and the male rolled off to his left. The male faced away from the female and engaged in a wing-flapping act (cf. Johnsgard, 1964), which exposed an expanse of white belly and breast visible for some distance. Each of the several wing flaps sprayed water, and the rapid return of his breast to the water also produced a splash. He then submerged in front of the female until only his head and neck were visible. Meanwhile the female emerged to nearly a normal level.

Unlike this hasty encounter, about 30 minutes of relaxed swimming,

¹ A contribution from the University of Michigan Biological Station.

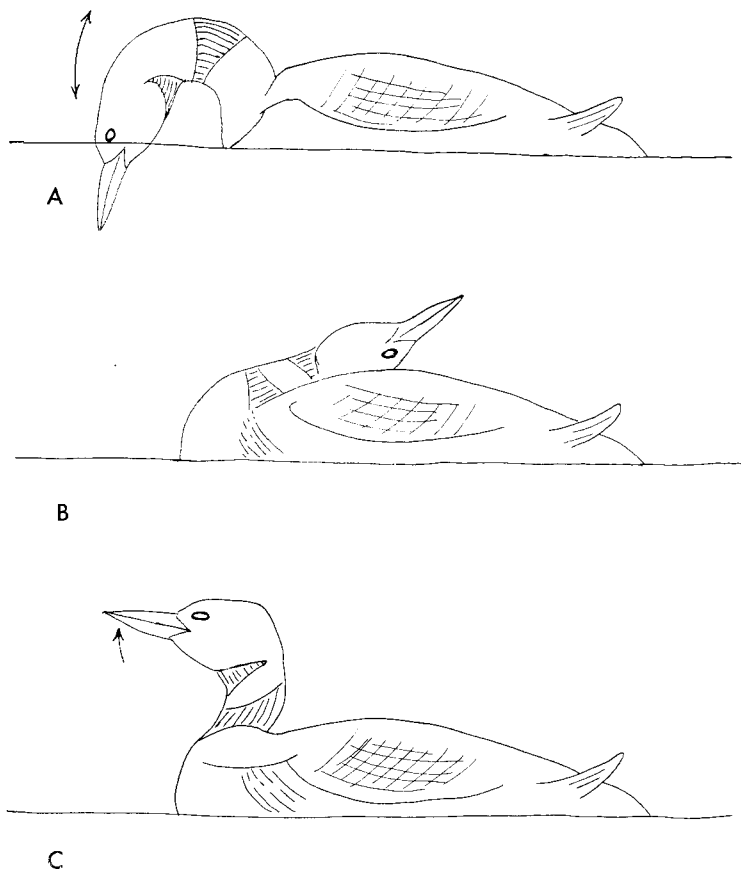


Figure 1. Three precopulatory displays of the Common Loon. A, bill-dipping, a mutual display; B, head-rubbing; C, head-tossing, a mutual display.

feeding, and a distinct bout of displaying preceded the two attempts at copulation on 22 April. The actions we watched on this date are described below in approximate order of occurrence.

PRELIMINARY DISPLAYS

Bill-dipping.—When the two birds first came together, both engaged in bill-dipping (Figure 1A). Inclining their heads forward on stiffly arched necks, first at random then in unison, both birds raised their bills out of the water, then immersed them to eye level. The birds kept 1–2 feet apart and closely synchronized their movements. They performed from 10–20 mutual dips during each session. The black-and-white fluted collar flashed prominently at the back of the neck during this display.

The stiffened neck and stylized motions, as well as the mutual nature of this display distinguish it from peering (Olson and Marshall, 1952: 16, Figure 6).

Huxley (1923: 256) refers to bill-dipping in the Red-throated Loon as the snake-ceremony, and he also notes its similarity to peering.

Simultaneous-dive.—On the two occasions when this occurred, it immediately followed mutual bill-dipping. At the height of bill-dipping, as if on a signal, both birds threw their heads up, forward, and dove quickly. On one occasion they faced in the same direction; on the other they faced each other when they dove. The flowing, graceful dive and the perfect synchronization of this display impressed us. Immediately upon emergence they engaged in a bill-dipping ceremony.

A period of vigorous preening followed. Both birds preened, but the actions were not synchronized nor were all the movements clearly display elements. During this period, we interpreted two acts as displays, largely because of their stereotyped form.

Head-rubbing.—As in Figure 1B, both sexes pointed the bill vertically upward so that the head lay on the back between the shoulders of the closed wings. Each bird rubbed its head on its back in a movement similar to that of oiling. The fluted black-and-white anterior throat patch was prominent during this display.

Head-tossing.—The throat patch was also prominent during head-tossing (Figure 1C). The performing bird raised its bill above the horizontal plane quickly, returning to horizontal more slowly. On some occasions this was done mutually but not synchronously; at other times it was an individual display. From three to seven head-tosses were involved in a sequence.

COPULATION

The extended periods of preening lasted about 5 and 7 minutes respectively. One or the other bird interrupted its preening and began a long surface swim that ended at a place suitable for copulation.

We found we could differentiate between the two birds consistently by their body posture. One bird (male, based on later role in copulation) rode higher in the water, its neck pulled back farther with more white breast exposed, its neck more curved (exposing more prominently the necklace on the back of the neck), and its bill tilted above the horizontal (Figure 2A). The other bird (female) with its breast deeper in the water, straighter neck, and slightly downward-tilted bill, seemed submissive (Figure 2B). Its plumage appeared duller (probably from sleeking of the feathers) at these times. In contrast, the two were equally bright when they were fishing separately. The differential posturing began only after the birds came together, dove simultaneously, and began interacting as a pair.

When swimming toward the northeast, the male was first, but about halfway along a channel on the east shore he slowed and the female passed him. She alternately moved ahead and was caught up to by the male. About 300 yards up the channel she climbed out of the water onto a wet platform of aquatic vegetation on a small island and turned onto her left side with her head at least partially erect and facing anteriorly. The male followed immediately and slid up against her, his feet under her and his cloaca pressed against hers. The entire contact lasted about 9

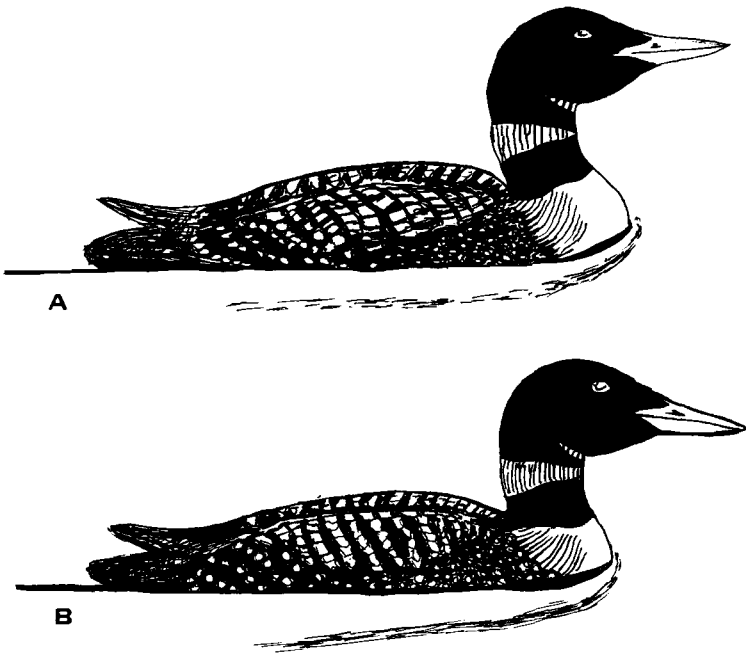


Figure 2. A, erect swimming posture of the Common Loon; B, swimming posture of the female Common Loon when sexually interacting with her mate.

seconds, after which the male pivoted off behind the female and returned to the water in the same direction from which he had come. There he held his neck and head stiffly and dipped his bill. The female lay quietly for about 60 seconds and then joined the male.

During the next 30–40 minutes the birds remained constantly together, diving and swimming. They pulled plant materials from shallow water and placed them on a nest platform some distance from the copulation platform. They did considerable mutual bill-dipping and head-shaking, but no rolling preening or head-tossing. Both birds spent some time in peering with the head partially submerged.

Bill-dipping, a simultaneous-dive, head-rubbing, head-tossing, and preening preceded another attempt at copulation. In this case the female led the way to the northeast up a channel along the far shore. We lost sight of them for about 2 minutes behind a low hummock of vegetation. Copulation probably did not occur behind this hummock because we would have seen the male mount the female. After coming back into view the male attempted to copulate. The female ran aground against a hummock, but was unable to climb up because of dense shrubs. The male approached

her three times but each time backed off. Before backing off, he immersed his bill and threw water laterally upward in an apparent displacement act. The movement was similar to the head-shake of waterfowl (McKinney, 1965: 135) except that the bill was in the water when the head was thrown to the side. Because of the tangled vegetation the female did not turn on her side and the male could not approach her: he grounded himself against the tangle several feet away from her. Within less than a minute both birds swam off together dipping their bills. It seemed as if the female missed the copulation platform and was unable to find a suitable place to turn on her side in solicitation.

DISCUSSION

Before the male attempted to copulate, the female first exposed her white belly in solicitation. In the copulation attempt on 19 April, the female was engaged in a normal rolling preen on the water, a common maintenance movement, when the male attempted to mount her. In the complete copulation we watched on land 2 days later, the female's solicitation act was very similar to the rolling preen. On 19 April the threshold of the male's response to solicitation might have been so low that the similar rolling preen act elicited the copulatory response.

The swimming posture of the male when with the female, as well as the mutual displays of bill-dipping and head-rubbing, appear to enhance the prominence of the necklace posteriorly and anteriorly, and/or the prominence of the white breast. Thus ritualized preening, comfort movements, and foraging behavior serve direct display functions. We saw no display that resembled the emergence ceremony in the Red-throated Loon (Huxley, 1923: 256, Figure 3).

Nor did we see any overwater chases such as Olson and Marshall report in their discussion of copulation-directed behavior. Their observations, as well as those of Southern (1961), occurred during late May or early June and may not have represented attempts at copulation, but served merely to strengthen the pair bond. Olson and Marshall (1952: 27) commonly noted bouts of displays very similar to the precopulatory sequence we have described. These bouts, seen until mid-July, "invariably" ended in a chase. Thus the chase appears to replace copulation later in the breeding season. The chases they observed increased in frequency in July, often involving three or sometimes more birds, and from their description greatly resemble the rushing ceremony of the Western Grebe (*Aechmophorus occidentalis*). As in the rushing ceremony (Storer, 1963), the chase in the Common Loon probably contains both display and aggressive elements.

Prominent vocalizations accompanied the overwater chases that Olson

and Marshall (1952: 23) describe; none were associated with the precopulatory displays we saw. A pair of Common Loons we watched in Lincoln County, Maine, were not vocal early in July, but became very much so during the period they were caring for young in late July and early August. Such vocalizations apparently function in pair bond maintenance and not as a part of precopulatory display per se.

Olson and Marshall (1952: 29-30) stress the late summer occurrence of aerial displays, which often involved several birds. We saw no aerial displays in Michigan, but they were very frequent during late August in Maine when the Common Loons were leaving their freshwater breeding areas to feed in the saltwater bays. In our experience aerial displays are not a part of precopulatory display.

The secretive behavior and unobtrusive displays associated with effective copulation early in the spring are in marked contrast to the later obvious and often dramatic displays apparently associated with pair bond maintenance or serving aggressive and territorial functions.

The use of a copulation platform, not previously reported in this species, agrees with the usage Zedlitz (1913) and Huxley (1923) describe for the Arctic and Red-throated Loons respectively.

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