

## INTERSPECIFIC AGGRESSION IN LOONS

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**Abstract.**—Observations of interspecific aggression in loons are reported and reviewed. When breeding, loons appear to discriminate against birds swimming in the loons' feeding or nesting territory. The loons' aggressive behavior does not always appear to provide them with reproductive benefits.

### AGRESIÓN INTERESPECÍFICA EN SOMORMUJOS (*GAVIA* SPP.)

**Resumen.**—En este trabajo se examina información y se llevan a cabo observaciones sobre la agresión interespecífica en somormujos (*Gavia* spp.). Durante la época en que se reproducen los somormujos, parecen discriminar entre las aves que invaden sus territorios de alimentación y reproducción. La agresividad en estas aves no siempre beneficia su reproducción.

There are several records of interspecific aggression in loons; however, the function of this interspecific aggression has been unclear. In all cases to date, the aggression was directed at waterfowl intruding on the loon's feeding or nesting territory. Recent discussions on interspecific aggression in Steamer-ducks (Livezey and Humphrey 1985a,b; Murray 1985, 1986; Nuechterlein and Storer 1985a,b) provide an interesting evolutionary context in which previous observations, and those presented here, may be viewed. Several questions arise. (1) Are the observations of interspecific aggression examples of predatory behavior (Lensink 1967, Zicus 1975)? (2) Are they related to shortages of food (Forbes and McMackin 1984), and therefore defense against possible competitors (Nuechterlein and Storer 1985a)? (3) Are they a form of sexual selection (Livezey and Humphrey 1985a, Nuechterlein and Storer 1985a)? (4) Are they a non-discriminatory aggressive response to intruders on a territory even though such defense does not provide a net fitness benefit to the aggressor (Murray 1985)?

On 11 Jul. 1984 on a tundra pond near Churchill, Manitoba, a Pacific Loon (*Gavia pacifica*) was observed attacking an Oldsquaw (*Clangula hyemalis*) duckling. The loon nested on a small island and hatched two young on about this date. The adult loon, with its head and neck outstretched on the surface of the water (somewhat similar to the second stage of the "submerged sneak" posture of territorial Flying Steamer-ducks [*Tachyeres patachonicus*], Nuechterlein and Storer 1985a), swam towards a female Oldsquaw, which was swimming with about 12 Class

Ib (Gollop and Marshall 1954) Oldsquaw ducklings. The female Oldsquaw attempted to move her ducklings toward the shore when the loon was about 10 m away. After the loon made several quick splash-dives, some of which were preceded by a high-pitched "yelp," a single duckling became isolated from the remainder of the group. The loon attacked the isolated duckling by grabbing the back of its head and thrashing the duckling from side-to-side in the water. Within about 30 s the Oldsquaw duckling appeared dead. The loon released the corpse and began diving and surfacing around it, occasionally stopping to attack it in the manner described above. After about 5 min, the loon left the dead duckling and swam from sight.

During the 4 wk following this observation, one of the nesting Pacific Loons often swam with head and neck outstretched. Several Arctic Tern (*Sterna paradisaea*) nestlings from nearby nests swam short distances from nesting sites and the loon swam toward them. Although no attacks were observed in this location, on two occasions loon splash-dives and "yelps," and Arctic Tern alarm cries were heard.

On 19 Jul. 1985, during the course of Snow Goose (*Chen caerulescens*) banding operations in the Sagavanirktok (Sag) River Delta, near Prudhoe Bay, Alaska, a 3-wk-old Snow Goose gosling was attacked by a pair of Pacific Loons. The gosling was one of about 150 Snow Geese captured and banded in the Sag Delta during late Jul. 1985. When captured it had a badly broken, but mostly healed, left leg and lagged by about 50 m behind its flock after their release into a nearby lake.

The pair of Pacific Loons approached the lagging gosling from about 100 m. When they were about 50 m away, both loons assumed a low profile in the water (head and neck outstretched), and when they were about 10 m away, both loons dived and appeared to attack the gosling from underwater. On one occasion, the gosling disappeared underwater for several seconds. The loons attacked the gosling about 8–10 times before it struggled to shore where it was easily captured by the banding crew. Aside from one apparent superficial wound on its thigh, the gosling did not appear to be injured (though no autopsy was performed). Nevertheless, it died within 12 h of capture.

In late Aug. or early Sept. 1972, T. Barry (Canadian Wildlife Service, pers. comm.) observed a Common Loon (*Gavia immer*) attack and kill a nearly fledged Red-breasted Merganser (*Mergus serrator*) at Sandy Lake, about 100 km SE of Inuvik, N.W.T., Canada. The merganser was one of a brood of nine. After about 1 wk this brood consisted of only three young, and Barry felt that the loons may have killed all of the young that disappeared from this brood.

Jones and Obbard (1970) observed an attack by a Canada Goose (*Branta canadensis*) on a Pacific Loon that resulted in the death of the goose after its breast was pierced by the loon's bill (young loons that intrude on a neighboring loon's territory may also be killed in this way [J. W. McIntyre, pers. comm.]). Zicus (1975) reported Common Loons attacking and killing a 3–4-d-old Canada Goose gosling, and Meinertz-

TABLE 1. Observations of interspecific aggression in loons.

Species of loon	Species attacked	Result to victim	Source
Pacific Loon	Oldsquaw duckling	killed	this study
Pacific Loon	Snow Goose 3 wks	injured	this study
Pacific Loon	Arctic Tern nestlings	unknown	this study
Pacific Loon	Canada Goose adult	killed	Jones & Obbard 1970
Pacific Loon	Oldsquaw adult	killed	Alison 1975
Common Loon	Red-breasted Merganser nearly fledged	killed	T. Barry, pers. comm.
Common Loon	Canada Goose 3-4 d	killed	Zicus 1975
Common Loon	Common Eider duckling	killed	Meinertzhagen 1941
Common Loon	Common Goldeneyes 7 d	killed	Sperry 1987
Common Loon	Ring-necked Duck 7 d	killed	Sperry 1987

hagen (1941) saw a Common Loon capture and eat a Common Eider (*Somateria mollissima*) duckling. Sperry (1987) reported several cases of Common Loons attacking and killing Common Goldeneye (*Bucephala clangula*) and Ring-necked (*Aythya collaris*) ducklings. However, none of these reports described the outstretched neck and low profile approach of the attacking loon, which is a display of aggression among and between loons (Davis 1972). A summary of the reports of loons attacking waterfowl is given in Table 1.

In those reports of interspecific aggression by loons towards waterfowl that were explained as "predation," none of the victims were eaten by the aggressor; it seems unlikely, therefore, that predation is a valid explanation for the observed behavior. Furthermore, there is great similarity in interspecific and intraspecific aggressive behavior in loons (J. W. McIntyre, pers. comm.).

The hypotheses concerning a shortage and defense of food probably are not adequate explanations of the present observations; waterfowl and loons seldom overlap in their use of food resources (Red-breasted Mergansers may be an exception). Such an explanation more likely will apply to conspecifics, congenetics, or to a species whose food resources overlapped with those of loons.

The sexual selection hypothesis predicts that interspecific aggression will occur during pair formation, or at least when the female is present. We were unable to positively identify the sex of the loons involved in the interspecific encounters. Only a single loon was present during two of our observations, thus any female-related display of the male's fighting ability seems improbable. However, there may be times when a male may drive out a potential competitor regardless of whether the female is present or not.

In summary, we agree with Murray's (1985, 1986) contention that *ad hoc* hypotheses formulated to account for specific observations are un-

desirable because of their lack of generality, but they may be of value in formulating future studies. The Oldsquaws and mergansers apparently were not a threat to the current or future reproductive potential of the loons; the loons' aggressive responses to these waterfowl appear to have been examples of aberrant or nonadaptive behavior. In other circumstances, interspecific aggression by loons may be absent; e.g., during an apparent breeding failure (Abraham 1978), Pacific Loons have been known to adopt Spectacled Eider (*Somateria fischeri*) ducklings.

In conclusion, it seems that (1) the loons attacked intruders swimming in their nesting and feeding territories when they were reproductively active, and (2) this behavior was not necessarily adaptive.

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