

# Notes

## Swimming Wolves, *Canis lupus*, Attack a Swimming Moose, *Alces alces*

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In August 2008 at a small pond on Isle Royale, Michigan, we saw three Wolves (*Canis lupus*) run towards and leap at or onto a cow Moose (*Alces alces*) standing at the shore's edge in water ca. 1.7 m deep. The Moose swam out into the pond with the Wolves swimming in pursuit while attempting, with occasional success, to climb on the back of the Moose. The chase eventually moved out of our view, but a week later we found a Wolf-eaten cow on the pond's shoreline where we estimated it might have been killed. The animal was ca. 14-yr old with arthritic lesions in the pelvic region. This is apparently the first published report of swimming Wolves attacking and killing a swimming Moose, the kill likely having been made as the Moose emerged from the pond. Remains of a second kill in that pond were found shortly thereafter.

Key Words: Wolves, *Canis lupus*, Moose, *Alces alces*, swimming, killing, Isle Royale, Michigan.

Numerous observations of Wolves (*Canis lupus*) attacking Moose (*Alces alces*) have been published, mostly as seen from small planes during winter (Jordan et al. 1965; Mech 1966; Vucetich and Peterson 2009); but far fewer attacks have been seen during the snow-free months. Several reports, however, describe three Wolves driving Moose into water: one in winter after which a cow was killed upon emerging from a lake (Jordan et al. 1965), and three in summer (Borkholder and Schrage 1975; Nelson and Mech 1993; Nelson 2001) where, in each case, the Moose apparently escaped. In fall 2008 citizens reported to the Minnesota Department of Natural Resources seeing three swimming Wolves attack an adult cow Moose standing in ca. 1 m of water in a lake in northeastern Minnesota. At least one Wolf was on the cow's back biting at its neck. The observers scared the Wolves off, but were unable to save the Moose since it appeared to be "stuck in the mud." Presumably the Wolves could have returned and killed it. Other than Moose, reportedly a BBC video by Jeff Turner ca. 1991 in Wood Buffalo National Park shows swimming Wolves pursuing and subsequently killing a Bison (*Bison bison*) in a lake then feeding on it at the water's edge. Carbyn and Trotter (1988) generalize that bison being chased by Wolves will attempt escape by entering water bodies. Nelson and Mech (1984) observed a swimming Wolf kill a swimming White-tailed Deer (*Odocoileus virginiana*) in a lake in northeastern Minnesota. We report here our observation of swimming Wolves attacking and killing a swimming Moose, plus later evidence from the same pond that Wolves also swimming killed a Moose that was possibly standing in water < 2-m deep.

On 24 August 2008, at Isle Royale Michigan, we were on a bluff 0.8 km west of Saginaw Point (latitude 48°36', longitude 88°36'), overlooking an un-named, 1.7 ha, pond ca. 26 m below us. The pond was bordered by a flat meadow, beyond which were hardwoods and conifers (Figure 1). Linear distances were reconstructed from an aerial photo (Figure 1) showing two geo-referenced sampling points of known distance apart. The pond's perpendicular maxima were 245 and 115 m. The shoreline within our view (Figure 1) comprised vertical banks extending 1-1.5 m above the water. Water depth was estimated as >2 m in the middle and only ca 1.7 m nearer shore. The pond bottom was a muddy substrate of unknown softness.

We heard the moaning of a lone, adult cow Moose that was swimming towards the west shore (Figure 1 "B") and then stood at the edge while foraging on aquatic plants. It was in a depth of ca. 1.75 m, based on a still photo showing its back above the surface and assuming a shoulder-height of 185-195 cm (Bubenik 1997), but not accounting for its hooves probably being 5-10 cm into the substrate. Its hindquarters were ca. 1 m from the bank as it faced away from shore. Another lone cow, judged to be a yearling, was standing above on flat ground in the open some 40 m farther from us. No calves were seen.

We then saw three Wolves, all judged to be adults that were of similar size and color, running across the flat meadow directly toward the cow in the pond. We judged, based on the topography, that they could not have initially seen the cow below the shoreline bluff, so we speculated they had heard its vocalizations. Upon reaching the edge directly above the cow, the Wolves

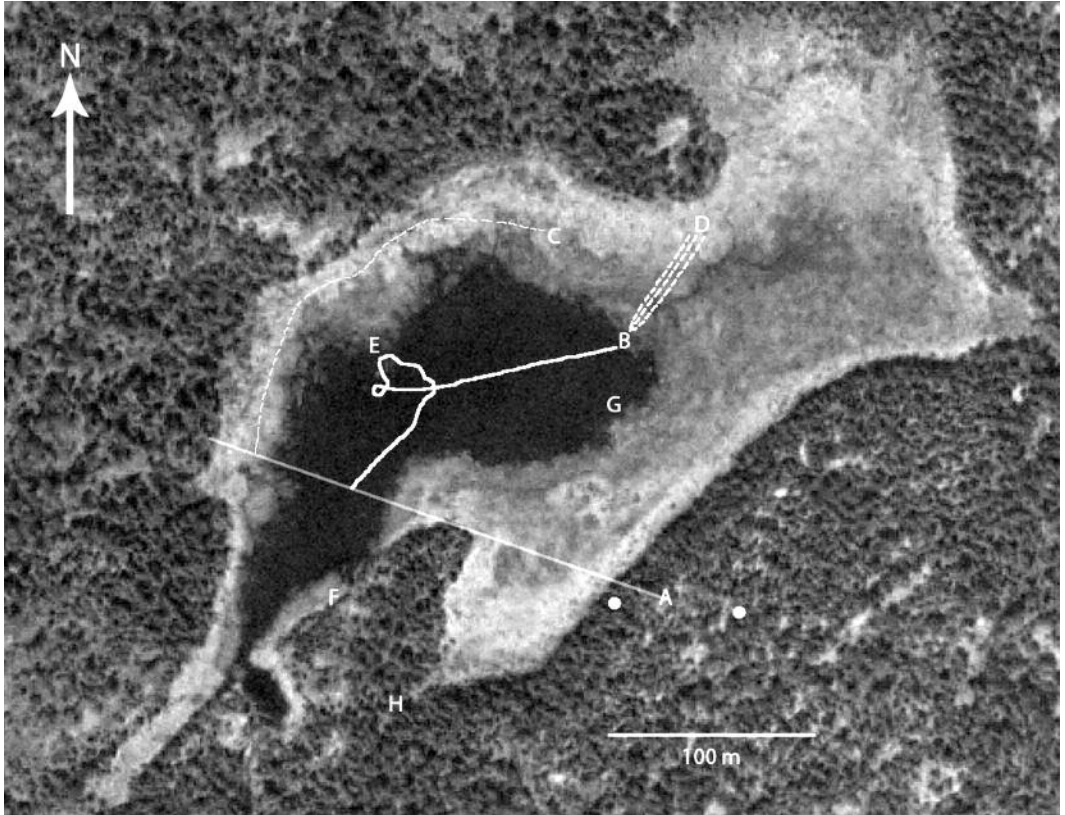


FIGURE 1. Aerial photo of the unnamed pond, Isle Royale National Park, MI. "A," the point from which we observed the chase, the straight line being the limit of our vision to the left, and the two circles are the fixed points of know distance apart; "B," the initial location of the chased cow Moose; "C" initial and final location of the second cow Moose, a suspected yearling of the chased cow, with its course, the lighter dotted line, showing where it appeared to follow the chase then returned to its original position; "D," approximately where the three Wolves were first seen by us, the heavy dotted lines being their running course toward the cow, and the solid line in the water is the course of the chase, with "E" being where the cow approached the shore and one Wolf briefly went on shore. "F" is the shoreline point where the carcass was found a week later; "G," where the carcass of a Wolf-eaten bull was found in the water two weeks later; and "H" where a second Wolf-eaten adult bull was found, probably killed somewhat before "G."

leapt into the water or directly on top of the Moose. The cow immediately headed away from shore, apparently swimming, though a mud trail behind indicated that its hooves were stirring up the substrate. We video-recorded the chase for some 4 minutes until the animals moved out of our view (Figure 1). The Wolves were unquestionably swimming throughout our observation, with one exception noted below. Our video footage reveals that at least two Wolves repeatedly mounted the cow's back each time for a few seconds and seemed to be reaching for and biting at its neck. The frequency of these mountings increased over the span of our observation. When a Wolf reached the base of the neck it was shaken off by the cow's vigorous, side-shaking of its head and neck. At the start, Wolves were swimming 5 m or less behind the Moose, but steadily closed

to within 1-2 m. If any of their bites were drawing blood, this was not visible to us nor revealed in the video.

From the middle of the pond, the cow first headed to the shore farthest from us to within 1 m of a point where going ashore would be readily feasible, but then turned back towards the middle (Figure 1). At that point one Wolf that had been trailing the others took a few steps onto the shore, but jumped back in when the chased cow turned back. From there the chase moved to the center of the pond and then out of our view (Figure 1).

During the chase, the yearling cow on the far shore followed on land, apparently watching the chase until it was also out of our view (Figure 1). About 5-10 minutes later it returned to near its initial location. We are

not aware of other reports of a Moose appearing to follow the course of a predatory attack on another Moose (other than cows witnessing predation on their calves).

We stayed on the bluff some 10 minutes after the chase was out of sight. We heard a single loud sound resembling a growl or bark. We did not search the corner of the pond where the chase was headed, so did not know then how it ended. One week later, at a point on the shore towards which the chase was heading (Figure 1) we found a well-eaten carcass of a Wolf-killed cow. It was aged as ca. 14 yr and had significant arthritic degeneration in the pelvic region. On 16 October 2008, some 15 days after finding that cow, we discovered a Wolf-killed, bull Moose floating in the same pond, with one Wolf sitting on the still-intact carcass plus four pups and four adults being on the adjacent shore. We assumed by the carcass location that the Wolves had probably made the kill while swimming, though the Moose, if able to stand, might have been constrained from walking/running by its hooves being too far into a soft substrate. A third fresh carcass ("H", Figure 1), a bull Moose, was found inland 60 m from the first carcass (Figure 1) 10 days after the second find, but probably had been killed earlier. From telemetry data, all three attacks were likely by the regularly monitored "Chippewa Harbor Pack" which included one radio-collared member (Vucetich and Peterson 2009).

The two kills, that were both apparently by swimming Wolves, might represent a novel skill developed by this particular pack simply through trial and error. From Peterson's years of tracking Wolves and examining their kills during summer, it is notable that over the past couple years this pack had killed quite a few adults, many of which were in the vicinity of ponds or relatively small lakes. On the other hand, while aquatic attacks have not been reported as a common trait, paucity of such records during the warm season may simply reflect a low probability that such would be observed. At the same time, if Wolves in many areas have consistently been unsuccessful in swimming attacks, then such experience might lead to few such attempts being made, and hence this hunting strategy not being passed on to younger Wolves. Our observa-

tion will apparently be the first published account of swimming Wolves attacking and killing swimming Moose, although in the case observed, the kill was apparently just as the animal was coming on shore. The second carcass recovered clearly indicates a kill by Wolves that were swimming, but the Moose may have been standing in ca 1.5 m of water, possibly unable to move quickly due to being constrained in a soft substrate.

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