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Studies of the Timber Wolf in Isle Royale National Park

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STUDIES OF THE TIMBER WOLF IN ISLE ROYALE NATIONAL PARK

by L. David Mech

This is the last of three annual progress reports on the Isle Royale Wolf Project. The study was initiated in June, 1958, under general technical supervision of Durward L. Allen, Professor of Wildlife Management, Purdue University. Field work has been carried out for three summers, three winters, and two springs. After one more spring and summer, a thesis will be prepared for publication.

The first two years' work showed that Isle Royale's wolf population consisted of a pack of 15 plus a lone wolf traveling with it, a group of 3, and possibly a group of 2 and a lone wolf. The size of the moose herd was estimated at 600. The large wolf pack killed an average of one moose per three days during the study period, but the wolves "tested" an average of eight animals for every one killed. Calves and old adults were most frequently utilized.

Summer research indicates that wolf food is mainly moose, with beaver comprising less than 20 percent of occurrences in scats. Old moose remains examined showed that most moose mortality (from all causes) occurred in the calf and old adult classes. The proportion of calves in the 1959 moose population was about 25 percent in summer, 22 percent in fall, and 17 percent the following spring.

Spring and Summer Field Work, 1960

The spring and summer study period extended from May 9 to September 1. Means of travel were hiking (approximately 550 miles), and use of the Purdue boat and outboard.

One-hundred fifty-one wolf scats, 166 fox scats, and 40 unidentified scats were brought to the campus for analysis. Moose remains (mostly calf) composed 83 percent of occurrences in 74 spring and summer scats, whereas beaver constituted 7 percent. In 77 scats of undetermined age, the occurrences were 88 percent moose and 7 percent beaver.

The old wolf den discovered in May, 1959 was examined this year on May 13; it had caved-in partially and no wolf sign was seen. Another examination, on August 15, revealed the same.

We had considerable hope this summer of finding an active den by triangulating on wolves which answered howls amplified from a portable record player. Records were played at 34 locations at various times from 7:55 to 10:15 p.m., but only in two locations was contact established with wolves. Both areas were searched thoroughly but no sign was found. In each case no replies were obtained the night following the first contact. Apparently the replies came from traveling animals.

Hikers observed three wolves near Mount Ojibway (northeast end of I.R.) and along the Huginnin Cove Trail (southwest end). A Park employee made the only other chance wolf observation --a lone animal near Ojibway Tower.

During each of the last two summers, only one fresh kill was found, each a calf. This summer, remains of another calf were discovered, but a freshly killed cow also was located. The latter was the most significant summer discovery by the project so far, for its lungs harbored 57 hydatid tapeworm cysts (many the size of golf balls), and its liver, 10. During the next few days, at least three and probably four wolves were observed (from the ground and air) near the carcass.

Again this summer, mandibles, skulls, or teeth from all moose remains found were collected. Whenever possible the remains were also sexed; remains of 11 males, 4 females, and 4 animals of unidentified sex were found. They segregated into the following approximate ages: less than one year, 4; one to six years, 4; seven years, 5; nine years, 5; thirteen years, 1.

Evidence of a heavy winter-tick infestation of moose was found this spring. Ticks irritate the hide, causing moose to rub against trees; this action leaves large bare areas on the neck, back, and rump. Between May 15 and June 8, all of 32 adult or yearling moose seen plainly lacked hair on these areas.

Moose-observation forms were distributed again to Park personnel and residents willing to record the sex and age of animals seen. Eighteen observers reported 359 observations, 15 percent of which were calves.

Twenty-two hares were seen this summer, whereas in the previous two summers only one and three were observed. Residents and hikers for the first time in many years reported seeing the animals. This superficial evidence supports the indications obtained last winter that the hare population has increased since 1958.

Winter Field Work, 1961

This final winter's field work, was carried out from January 30 to March 21. Windigo (at the southwest end of the island) again was used as base camp. Rangers Roy Stamey, Pete Parry, and Ben Zerbey, in that order, represented the Park Service. Don Murray, of Northeast Airways, Eveleth, Minnesota, piloted the aircraft for the third year straight. From January 30 to February 25 Dr. Allen accompanied the party and aided with field work.

When we arrived on the island, most of the bays and harbors were frozen, and there was continuous ice from Canada to Isle Royale. This "bridge" could have been composed of floating ice, as it was during the last two winters. However, by February 15, the ice had withstood several severe windstorms, demonstrating its solidity. It remained that way all during our stay. Undoubtedly wolves could have crossed, but none left during the study period, and there was no sign of any arriving from the mainland.

Snow on the level in protected areas varied from 20 to 26 inches in early February. Settling, melting, and several inches of new precipitation maintained that level throughout February and March.

Despite snowstorms, high winds, and warm weather which kept the plane grounded for 17 days, we flew a total of 134 hours.

Wolf numbers, movements, and social behavior

For the third consecutive winter it appears that the Isle Royale wolf population has remained the same. However, this year we confirmed that there were two more wolves than the minimum estimate for the past two years. Last winter when two wolves were seen three times in the same general territory where three wolves were observed five times, the two were thought to be part of the pack of three. This winter, evidence showed that these were two separate groups.

The island's most significant wolf pack, a group of 15, had neither increased or decreased. The lone wolf which had followed this pack during the last two winters did not do so this year; but a lone wolf was present in the large pack's territory. (There also may be another lone wolf.) Although the large pack remained as a unit for the past two winters, it split several times this year, sometimes into groups of 5 and 10 and sometimes into 7 and 8. Whereas last winter (1960) the wolf population was estimated at 19 (but possibly as many as 22), the work in 1961 indicates at least 21, and possibly 22.

General movements of all wolves remained about the same as for the last two years, except that the large pack made few forays into the area of Lake Richie, Rock Harbor, and McCargoe Cove this year.

Intolerance was noted again between two packs. The large pack chased two wolves feeding on an old kill near shore. One ran inland and was not pursued. The pack chased the other along the shore at top speed for at least a half-mile before stopping. The pursued animal continued running at the same speed for another mile before heading inland.

No copulation was observed this year, but sniffing, tail-wagging, and pairing of a large and a small animal from February 6 to 24 indicated breeding activity.

Hunting techniques

We followed the large pack (or part of it) for 13½ hours this year while the animals were hunting. During this time, they failed to detect four separate moose within 125 yards of them, and seemed to detect but did not chase one group of four within 150 yards; 25 moose, in 15 groups, discovered

the wolves and escaped without being "tested" by them, and 25 others (in 13 groups) were "tested" but outran or fended-off the pack. We did not witness the large pack wounding or killing any moose this winter. Hunting techniques and the moose's defense were the same as described last year.

For the first time, we watched a lone wolf hunt. The animal sneaked to within 25 yards of two moose, then rushed them. Both ran and then one stopped. The wolf ignored this moose and continued after the other. Failing to get closer than 15 yards from it, the wolf soon gave up. Later, it approached within 100 yards of another moose before being discovered. This moose strode "confidently" toward the wolf, which then cowered, evaded the moose, and continued on. A similar situation occurrence was watched on another day.

A lone wolf was also observed killing an adult moose which a few days earlier the large pack had wounded and left. The moose, wounded only in the rump, had remained in one spot. The wolf approached about 12:55 p.m. and kept the moose standing all afternoon. Every time the moose lay down, the wolf ran toward it. We were refueling when the wolf actually attacked, but at 4:55 p.m. it was tugging at the rump of the animal, which apparently was too weak to rise. By 6:30 p.m. the moose was dead. It had been about 14-years old, had harbored at least 35 cysts (many the size of golf balls) in its lungs, had an abnormal liver, and was infested heavily with ticks.

Frequency of kills

During the 1959 and 1960 winter-study periods, the large pack of wolves ate an average of one moose per three days. Consumption was about the same this year.

Little information previously has been obtained concerning the rate of kill of the smaller Isle Royale wolf packs. This year, we determined that these six, and possibly seven, wolves consumed at least six moose during 48 days, or at least one per eight days. This rate is similar (per wolf) to the known rate of kill by the large pack.

Sex, age, and condition of moose killed

Remains were found of 24 moose eaten by wolves, but because slush hindered landing on inland lakes during much of the study period, remains of only 13 could be examined from the ground. The others will be investigated immediately in the spring. Of those inspected, there were 7 cows, 5 bulls, and 1 calf. This is a much lower proportion of calves than in previous years. Five of the adults aged were estimated at 7-to 10-years old, and the remaining six were more than 13.

Necrosis was observed in the jaws of three adults, and two others had fat-depleted femur marrow. All of the remains searched for ticks had them. The only animal whose viscera could be examined contained a high infestation of hydatid tapeworm cysts in the lungs, as mentioned above, and some of its bronchioles were clogged with thick, rubbery mucous; its liver was gray and crumbly. In some areas on the flank there were 10 ticks per square inch.

Moose calf-adult ratio

No moose census was made this winter, but records were kept on age groups of moose seen during daily field work and various sample counts. Of 133 moose observed, 10.5 percent were calves. This is in line with the 15 percent indicated by the summer moose survey. Comparable percentages for the previous year were 25 and 17 percent, respectively. Thus it appears that moose reproduction was much lower in 1960 than in 1959. This probably accounts for the relatively low proportion of calves in the 1961 winter moose-kill.

Relationships of wolves to other prey

A clue to wolf-beaver relations during the breakup was obtained when a temporary thaw hit Isle Royale about March 3. Fresh beaver tracks were seen at several locations on that date, sometimes leading 100 feet from the hole or ice crack from which they came. This was true along streams, the Lake Superior shore, and islands. On the same date, tracks showed that the large wolf pack had caught a beaver on the ice between two docks on Washington Island. Meanwhile the pack of three wolves had killed one near a tiny island in Tobin Harbor. We retrieved the skull, measured it, and estimated the animal to have been two-years old.

The snowshoe hare is potential prey for Isle Royale wolves. However, summer scat studies indicate that few hares are taken. Similarly, most authorities give little importance to anything but big game in the wolf's diet. A few observations on the subject were made this winter. The 15 wolves while hunting moose, jumped three hares without showing any interest. Even a lone wolf hunting moose paid no attention to three hares which it started. The wolf did not even seem aware of the scent when it crossed a trail only 20-seconds old! These limited observations support the data obtained from scat analysis.

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