

## A Single Deer Stands-off Three Wolves

**ABSTRACT.**—The first record of a deer (*Odocoileus virginianus*) standing off three wolves (*Canis lupus*) is documented by an aerial observation in northeastern Minnesota.

### INTRODUCTION

White-tailed deer (*Odocoileus virginianus*) usually respond to the presence of wolves (*Canis lupus*) by standing alert when unthreatened and rapidly fleeing when chased or closely approached (Mech, 1966, 1984). Thus, deer usually employ alertness, speed and agility to defend against wolves. Conversely, moose (*Alces alces*) often stand and defend themselves when approached and those that flee often are killed (Mech, 1966; Peterson, 1977); hence, large body size and belligerence are adaptive premiums for moose.

However, a small proportion of deer also act aggressively when attacked by wolves. Mech (1984) observed a deer chase and strike at a single wolf, and three wolf deaths caused by deer have been reported (Frijlink, 1977; Nelson and Mech, 1985; Mech and Nelson, 1990).

Here we document the first stand-off recorded between a deer and wolves, analogous to many observed encounters between moose and wolves. Aerial tracking of radio-collared wolves yielded the observational data, and M. Nelson made the observation in northeastern Minnesota, 48°N, 42°W. Snow depth was 37 cm.

### RESULTS

On 12 March 1993, at 1020 h three wolves from the Nip Creek Pack, a large adult (sitting), a radio-collared pup (29 kg) and a third wolf, sat and stood, respectively, 25 m from a large adult deer. The deer stood alert and stared at the wolves. One standing wolf approached to within 5 m of the deer and then circled slowly to the deer's opposite side. The sitting adult then arose and with the third wolf also slowly approached to within 5 m of the deer, positioning themselves more-or-less equidistant from each other and the other wolf. The deer remained motionless. After 5 minutes of staring at the deer, the wolves moved back toward their original position but continued traveling away from the deer. Fifteen minutes later the wolves were 1 km from the deer, which still stood motionless at its original location. The wolves quit moving, but the deer had left the site when it was examined 1 h later.

### DISCUSSION

What explains the deer's unusual moose-like behavior? It seems unlikely the deer was not capable of fleeing rapidly in the usual manner. The deer appeared large and robust, and an unobstructed view of the snow-covered ground indicated no blood or struggle. Further, the deer left the site after the wolves left. Presumably the wolves would not have left had they detected some weakness.

One plausible explanation is that the wolves had chased and/or encountered the deer earlier, and aggressive or combative behavior by the deer stymied the wolves' attack. Conceivably, individual aggressiveness can vary greatly, and some deer may learn that such behavior may repel wolf attacks. Thus, when first observed, the wolves were perhaps waiting for some change by the deer and were cautious because of their earlier encounter with it. Such caution may also stem from a general difficulty wolves have in killing some prey (Mech, 1966; Peterson, 1977; Haber, 1977; Nelson and Mech, 1993). Moreover, some wolves are killed by their prey (Mech, 1970; Frijlink, 1977), and nonfatal injuries may be common (Rausch, 1967; Phillips, 1984; Nelson and Mech, 1985; Pasitschniak-Arts *et al.*, 1988; Mech and Nelson, 1990). A wolf that has been injured previously by aggressive prey might be less inclined to move in on a similarly aggressive individual.

It is noteworthy that at least one of the wolves in the present observation was a pup and at least one other a much larger adult. The third wolf could also have been a pup. Thus, it is possible that only one of the wolves had much experience at killing deer. A negative experience with aggressive deer by the adult combined with the inexperience of pups could explain the timidity of the wolves and their unwillingness to attack the deer.

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MICHAEL E. NELSON<sup>1</sup> AND L. DAVID MECH,<sup>2</sup> U.S. Fish and Wildlife Service, Patuxent Wildlife Research Center, Laurel, Maryland 20708. Submitted 30 May 1993; accepted 8 June 1993

<sup>1</sup> Present address: 305 West Harvey Street, Ely, Minnesota 55731

<sup>2</sup> Present address: North Central Forest Experiment Station, 1992 Folwell Avenue, St. Paul, Minnesota 55108