

Minnesota Wolf Dispersal to Wisconsin and Michigan

ABSTRACT.—Records are presented of three wolves that dispersed ≥ 200 km from northern Minnesota to the Minnesota–Wisconsin border, to southern Wisconsin, and to Michigan. This report documents that wolves cross major highways and other developed areas and that the recently recolonized wolf population in Wisconsin and Michigan could have originated from wolf populations in Minnesota other than those living along the Minnesota–Wisconsin border.

INTRODUCTION

Wolves (*Canis lupus*) often disperse long distances (Gese and Mech, 1991), sometimes more than 800 km straightline (Fritts, 1983; Ballard *et al.*, 1983; Boyd *et al.*, 1994). Some wolf dispersals include travel across four-lane highways (Mech and Frenzel, 1971) or through large expanses of open area (Licht and Fritts, 1994). However, except for Thiel's (1988) and Wydeven's (1994) reports, wolves have not been documented dispersing long distances through the heterogeneous habitat of central Minnesota and Wisconsin.

Furthermore, wolves have not been documented dispersing for more than a few kilometers from eastern Minnesota into Wisconsin or Michigan (Wydeven *et al.*, 1994), even though it has been assumed that recolonizing Wisconsin and Michigan wolves dispersed from Minnesota (Mech and Nowak, 1981; Thiel and Welch, 1981). Thus little is known about where in Minnesota such wolves might have originated. This note documents the dispersal of northern Minnesota wolves to the Minnesota–Wisconsin border, to southern Wisconsin, and to Michigan.

RESULTS

Our first record involves a 35-kg, adult male wolf, number 1165, live-trapped and ear-tagged on 22 August 1979 in St. Louis Co., Minnesota 6.5 km NNW of Ash Lake. This animal was shot on 6 November 1982 ca. 13 km E of Pine City, Pine Co., Minnesota, 262 km from his capture point.

The second record involves a 10-kg, male pup, number 395, live-captured and ear-tagged in St. Louis Co., 17 km SW of Ely, Minnesota on 25 August 1991. This wolf was recaptured as a 38-kg adult on 12 June 1994 in Iron Co., Michigan, 1.6 km N of Perch Lake, with an adult female wolf caught 10 m away the same day. Radio-tracking indicated that this pair of wolves occupied a territory of at least 275 km² in the capture area. During winter 1993–1994, a pack of three wolves thought to include this pair had been seen frequenting this area.

The dispersal of female wolf pup 487 constituted our third record. She was captured and radio-tagged on 24 August 1993 in eastern Lake Co., 26 km NE of Isabella, Minnesota, weighing 13 kg. During winter 1993–1994, she was a member of a pack of seven wolves living around the capture area and was seen with the pack through 6 April. However, during all three times she was observed from 14 through 25 April she was seen alone, and she was last located by radio near her pack's territory on 2 May 1994. No signal was heard from her during aerial searches on 12 and 16 May and 28 June. On 30 August 1994, wolf 487 was found killed by a vehicle on State Highway 51, 4 km N of Portage, Wisconsin, a minimum travel distance of 555 km from her capture point.

DISCUSSION

To reach Michigan during 1991 or 1992, wolf 395 would had to have traveled SSW at least 120 km to avoid the city of Duluth and then eastward a minimum of an additional 320 km. In winter 1993–1994, this wolf could have crossed Lake Superior from Minnesota directly to Michigan, 270 km between capture and recapture locations, for during that winter the lake was frozen in this area. However, some 96% of 48 dispersing wolves from the same area dispersed before 33 mo of age (Gese and Mech, 1991), so chances are high that wolf 395 dispersed before winter 1993–1994.

Assuming that wolf 395 did not cross Lake Superior, all three wolves reported herein must have crossed Interstate Highway 35 S of Duluth, and wolves 395 and 487 most probably also crossed four-lane Minnesota State Highway 53 N of Duluth. All three must either have followed greatly irregular strings of occupied wolf habitat or passed through much habitat not then occupied by

wolves to reach their final locations (Wydeven *et al.*, 1994). Wolf 487 traveled at least 185 km beyond any known wolf range and crossed much densely roaded country.

These records demonstrate the extent to which wolves can disperse through diverse habitat and circumvent or cross what might be considered impediments such as urban areas, large, busy highways, extensive open areas, or wolf-free habitat to colonize new regions. We do not mean that all wolves might behave this way. The senior author once saw the two lead members of a wolf pack nonchalantly cross a two-lane highway in Lake Co., Minnesota (7 December, 1970) while two following members would not. One of the first two animals, presumably the alpha pair, then crossed back and chased the other two pack members, presumably their offspring, across the road. Such extreme individual variation results in at least some wolves traversing areas that others might not.

The possible role of bias in our interpretation of these data is also unknown. On one hand, we only learned of the location of one of our three records because the wolf was struck by a vehicle, which might imply that such mortality is important in limiting wolf dispersal. On the other hand, there is little way of knowing how many other wolves successfully crossed major highways without being struck. Certainly all three of our records demonstrate that the wolves crossed many roads and highways successfully.

Our records also show that wolf recolonization in both Wisconsin and Michigan involves Minnesota wolves originating far from these two states, as well as populations immediately adjacent to Wisconsin. Some colonizing wolves could also have come from Ontario via eastern Upper Michigan.

Acknowledgments.—This study was funded by the U.S. Fish and Wildlife Service, the National Biological Survey, the U.S. North Central Forest Experiment Station, and the Michigan Department of Natural Resources. We thank W. J. Paul and T. J. Meier for field assistance, M. E. Nelson, Jim Hammill and T. J. Meier for critiquing this manuscript, and A. P. Wydeven for reporting the finding of wolf 487.

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Symposium

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ABSTRACT.—Description of three species of branchiopods from a pond in southeastern Michigan. This observation is not unusual. Evidence is given for a brief discussion of the ecology of the community.

Debrey *et al.* (1991) described three new branchiopod orders (Notostraca, Leptosthegida, and Eubranchiopoda). This observation was first reported in a pond found in diverse communities in prairie habitats, and first described by Debrey *et al.* (1967, p. 474). Prairie ponds are dominated by Notostracan *Triops longicaudatus* and Leptosthegida since the late 1800s. This community of seven species includes *T. longicaudatus*.

Eubranchiopod communities have been reported in prairie ponds (Debrey *et al.*, 1990). Sublette *et al.* (1990) described three species in three orders of branchiopods in rock pools. In my own work with or without *Streptocephalus compleximanus* with or without *T. longicaudatus* was present in 74 prairie ponds.

Presence or absence of branchiopods in prairie ponds is determined by wind or perhaps animal activity (Moore and Faust, 1972; Debrey *et al.*, 1990). However, this is not determined by wind or perhaps animal activity.

Co-occurrence of branchiopods in prairie ponds is determined by either species-specific factors involved in structure of the pond (Prophet, 1975; Donald, 1983; Kuehn, 1983). The significance of observations of branchiopods together in prairie ponds is examined in the area of prairie ponds (Prophet, 1975; Donald, 1983; Dodson, 1983). I will determine what causes this variation.

The ecology of ephemeral prairie ponds is a basis for more detailed studies of prairie communities.

Acknowledgments.—I thank the reviewers for their comments on the draft manuscript.

BELK, D. 1977. Zoogeography of prairie ponds. *Journal of Zoology* 12:70-78.

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