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**ABSTRACT** -- Recent occurrences and reports of gray wolves (*Canis lupus*) in North Dakota have generated public interest and created demands on management agencies. We summarized reports of wolves in North Dakota received from the public and government personnel, and evaluated suitability of habitat for wolves. We suggest that in recent years dispersing wolves have sporadically occurred in all quarters of the state except the southwest, and non-dispersing wolves have occurred in the Turtle Mountains region in north-central North Dakota. Habitat data from the 1,500 km<sup>2</sup> Turtle Mountains physiographic region, bisected by the North Dakota/Manitoba border, suggest the potential for occasional to frequent wolf presence.

**Key words:** *Canis lupus*, gray wolf, North Dakota, range.

The gray wolf (*Canis lupus*) was abundant in the northern Great Plains at the time of European settlement (Bailey 1926). Lewis and Clark observed great numbers of wolves following herds of bison (*Bos bison*) and other large prey (Burroughs 1961). As Europeans settled what would become the state of North Dakota the indigenous wolves were persecuted, resulting in the apparent extirpation of breeding populations by the 1920-1930's. However, wolves were occasionally reported in the following decades. An aerial big game survey by the North Dakota Game and Fish Department (NDGFD) reported two wolves observed in 1941 near the town of Garrison (North Dakota Game and Fish Department 1941). A wolf was killed near Beach, ND in 1944. Nowak (1983, pers. comm.) speculated that the animal was part of a brief range expansion of Canadian wolves during the war years. A 1954 U.S. Biological Survey (1954) report suggested that a wolf or wolves were ranging into Cavalier

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County, ND from Canada. Adams (1961) reported that one or two wolves were seen or taken annually, but provided no supporting information. In summary, the long-term status during the period 1930-1980 was that wolves were non-existent or very rare visitors in North Dakota.

Starting in 1974 the Endangered Species Act of 1973 (Public Law 93-205) protected wolves throughout the conterminous 48 states. Subsequently, the Minnesota wolf population increased from an estimated 736-950 individuals in 1971-1972 to 1,500-1,750 individuals in 1989 (Fuller et al. 1992, U.S. Fish and Wildlife Service 1992), with range expansion occurring westward to within 28 km of North Dakota (Fuller et al. 1992, Licht and Fritts 1994). During the same period, wolves recolonized Montana (Ream et al. 1991). Populations of wolves in Manitoba and Saskatchewan have apparently remained stable in recent years; however, Manitoba wolves were afforded big game status in 1980, which provided them partial protection (Doug Pastuck, Manitoba Department of Natural Resources, pers. comm.; Randy Seguin, Saskatchewan Parks and Renewable Resources, pers. comm.). The protection afforded wolves in neighboring political jurisdictions was likely responsible for an increase in wolf reports in North Dakota in the 1980-1990's. Licht and Fritts (1994) reported on five wolves killed in North Dakota during 1985-1992.

Since 1980, there has been an increase in reports of gray wolves in North Dakota. Because the wolf is an endangered species in the state, and because wolves are often controversial, the increase in reports of wolves is generating public interest and greater demands on federal and state wildlife agencies. We document the amount of wolf reports received by wildlife agencies in the state and the current known status of wolves, analyze potential habitat, and discuss possible future trends.

## METHODS

In November 1991 we distributed a questionnaire concerning wolf reports received in the last five years to all 10 biological staff of the U.S. Department of Agriculture, Animal Damage Control (ADC); to the 14 refuges and Wetland Management District offices of the U.S. Fish and Wildlife Service (USFWS), and to 48 wildlife biologists and law enforcement officers of the NDGFD. Responses were categorized and analyzed.

The USFWS Ecological Services program, with assistance from ADC, NDGFD, and the USFWS Law Enforcement program, has records of all wolf reports in North Dakota since 1991. Non-systematic roadside surveys for tracks, scat, and other wolf sign were conducted by USFWS personnel on 17-18 February 1992 (covering approximately 80 km), and by ADC personnel on other occasions, in the Turtle Mountains area in Bottineau and Rollette counties. These surveys are the only known survey efforts conducted specifically for wolves in North Dakota.

Several researchers have documented that high road densities, high human densities, and reduced forest cover tend to be correlated with low wolf densities (Thiel 1985, Jensen et al. 1986, Mech et al. 1988, Fuller et al. 1992). On topographic maps, we measured road densities for select areas of North Dakota and Manitoba. Using 1990 U.S. Bureau of Census data, we determined human densities in North Dakota. For Manitoba we summed homesteads counted from topographic maps and multiplied by 2.3 people per household. We used dot grids and topographic maps to estimate forest cover.

## **RESULTS AND DISCUSSION**

Fifty-eight agency biologists and law enforcement officers responded to the 1991 questionnaire (81%). Two respondents reported seeing live wolves in North Dakota during 1986-1991; one in the Turtle Mountains area and one in McIntosh County in the southeastern part of the state. The latter wolf was killed (Licht and Fritts 1994). Fifteen respondents received at least one wolf report from the public within 1986-1991; however, 11 of those respondents indicated that they believed the reports they received were false. The reports came from the northwestern, northeastern, and southeastern quarters of the state. Five respondents suggested that wolves existed within their geographic work area during 1986-1991 (30 suggested they did not while 22 were unsure); those areas included the Turtle Mountains region in north-central North Dakota and the Pembina Gorge area in northeastern North Dakota.

Thirty-four reports of observations of wolves by the public and agency personnel were recorded by USFWS Ecological Services program from 1 January 1992 to 31 December 1995. Two of the reports involved confirmed wolf mortalities. A wolf was killed in Dunn County (west-central North Dakota) in January 1992 (Licht and Fritts 1994). In February 1994 a wolf was killed near Pembina (northeastern North Dakota). That animal was the sixth wolf confirmed killed in North Dakota since 1985 (see Licht and Fritts 1994).

Of the 34 reported sightings of wolves, 12 occurred in the Turtle Mountains and four of those were by ADC personnel. ADC personnel reported 17 incidents of wolf tracks in the Turtle Mountains. These tracks included tracks of pups in 1994. During the same period, ADC personnel also reported several possible - although unconfirmed - cases of wolf predation of livestock. In another case ADC personnel reported wolf scat while USFWS personnel collected canine scat that had, based on size, a 0.9 probability of being wolf scat versus coyote scat (Weaver and Fritts 1979). Other reports of wolves, including observations by ADC personnel, came from within 25 km of the Turtle Mountains. Evidence from the Manitoba portion of the Turtle Mountains supports the occurrence of wolves on the North Dakota side. Reports of wolves have come from near the towns of Killarney and Wakopa, MB (Doug Pastuck, Manitoba Department of Natural Resources, pers. comm.), and in

January 1994 a wolf was killed 3 km northeast of the International Peace Gardens (23 km south of Boissevain, MB), i.e., the center of the Turtle Mountains (Larry Bidlake, Manitoba Department of Natural Resources, pers. comm.).

Clusters of wolf reports are a better indicator of wolves with established territories than are individual reports (Fritts et al. 1995). The relatively large number of recent reports of wolves from the Turtle Mountains vicinity and the fact that the reports have been received during all seasons suggest that wolves may have established territories in the area.

The 1,500 km<sup>2</sup> Turtle Mountains region (1,020 km<sup>2</sup> in North Dakota and 480 km<sup>2</sup> in Manitoba) is an elevated physiographic feature that supports a deciduous forest ecosystem of paper birch (*Betula papyrifera*), quaking aspen (*Populus tremuloides*), and bur oak (*Quercus macrocarpa*). The area is about 90% uplands and small wetlands and 10% lakes and large wetlands. The uplands are 68% forested (60% in North Dakota and 85% in Manitoba), with the remainder being pasture and cropland. The region has non-migratory white-tailed deer (*Odocoileus virginianus*), moose (*Alces alces*), and elk (*Cervus elaphus*) populations. The deer density on the North Dakota portion is unknown, the moose density is estimated at less than 0.2 moose/km<sup>2</sup>, and the elk density is estimated at 20 animals (less than 0.1 elk/km<sup>2</sup>; William Jensen, NDGFD, pers. comm.). Ungulate populations on the Manitoba side are estimated at 2.3-3.8 deer/km<sup>2</sup>, 0.9 moose/km<sup>2</sup>, and 0.1 elk/km<sup>2</sup> (Larry Bidlake, Manitoba Department of Natural Resources, pers. comm.).

Road densities in the Turtle Mountains average 0.47 km roads/km<sup>2</sup> (0.54 km roads/km<sup>2</sup> in North Dakota and 0.33 km roads/km<sup>2</sup> in Manitoba) and resident human densities are 0.9 humans/km<sup>2</sup> (1.2 humans/km<sup>2</sup> in North Dakota and 0.3 humans/km<sup>2</sup> in Manitoba). Of special relevance is the 178 km<sup>2</sup> Turtle Mountain Provincial Park in Manitoba, situated along the North Dakota border. The Park is essentially 100% forested in the uplands, has a road density of 0.30 km roads/km<sup>2</sup>, and has few year-round residents. The Park, along with another 104 km<sup>2</sup> of adjacent provincial and federal lands, may serve as a core area for wolves in the area.

The Turtle Mountains appear to be suitable for some level of wolf activity. Studies in Minnesota and Wisconsin suggest that wolves are more likely to survive in forested habitats with road densities less than 0.58 km roads/km<sup>2</sup> (Mech et al. 1988, Thiel 1985). Fuller et al. (1992) found that 88% of the wolf packs and 81% of the lone wolves in Minnesota were in townships with less than 0.70 km roads/km<sup>2</sup> and less than 4 humans/km<sup>2</sup> or in townships with less than 0.50 km roads/km<sup>2</sup> and less than 8 humans/km<sup>2</sup>. Mech et al. (1988) found that peripheral wolf range in Minnesota averaged 27% cropland and pastureland.

Although we suggest the likelihood of limited wolf presence in the Turtle Mountains, we do not suggest that the region can support wolf densities

equivalent to comparable sites in Minnesota. The Turtle Mountains region is an island of forested habitat in an agrarian/prairie landscape. The nearest known wolf populations are 60 km away in and near Spruce Woods Provincial Park in Manitoba (less than 10 wolves) and 160 km away in Riding Mountain National Park in Manitoba. Immigration of wolves into the Turtle Mountains would likely be much less frequent than comparable Minnesota sites that benefit from nearby source populations.

In summary, we suggest that the presence of wolves in most of North Dakota will remain sporadic, and will consist of occasional dispersing animals from Minnesota and Manitoba. Although most of North Dakota is sparsely populated, and has low road densities, the mostly wide-open prairie habitat makes wolves vulnerable to being shot, and therefore, colonization by wolves is unlikely. The exception is the Turtle Mountains region. We suggest that the Turtle Mountains region provides marginal habitat that may be able to support a very small non-viable population of territorial wolves (Fritts and Carbyn 1995). Limited wolf reproduction may already be occurring in the area. Although North Dakota is not likely to contribute significantly toward wolf recovery in the United States anytime in the near future, wolves and wolf management in North Dakota could affect public perceptions and attitudes, and should therefore be considered in national recovery strategies (Mech 1995, 1996).

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### LITERATURE CITED

- Adams, A. W. 1961. Furbearers of North Dakota. N.D. State Game and Fish Dept. Bismarck, ND.
- Bailey, V. 1926. North American fauna no. 49: a biological survey of North Dakota. Bureau of Biological Survey, Washington D.C.
- Burroughs, R. D. 1961. The natural history of the Lewis and Clark expedition. Michigan State University Press, East Lansing.
- Fritts, S. H., and L. N. Carbyn. 1995. Population viability, nature reserves, and the outlook for gray wolf conservation in North America. *Restoration Ecology* 3:26-38.
- Fritts, S. H., E. E. Bangs, J. A. Fontaine, W. G. Brewster, and J. F. Gore. 1995. Restoring wolves to the northern Rocky Mountains of the United States. Pp. 107-126 *in* Ecology and conservation of wolves in a changing world (L. N. Carbyn, S. H. Fritts, and D. R. Seip, eds.). Canadian Circumpolar Institute, Occasional Publication No. 35.

- Fuller, T. K., W. E. Berg, G. L. Radde, M. S. Lenarz, and G. B. Joselyn. 1992. A history and current estimate of wolf distribution and numbers in Minnesota. *Wildl. Soc. Bull.* 20:42-55.
- Jensen, W. F., T. K. Fuller, and W. L. Robinson. 1986. Wolf, *Canis lupus*, distribution on the Ontario-Michigan border near Sault Ste. Marie. *Can. Field-Nat.* 100:363-366.
- Licht, D. S., and S. H. Fritts. 1994. Gray wolf (*Canis lupus*) occurrences in the Dakotas. *Amer. Mid. Nat.* 132:74-81.
- Mech, L. D. 1995. The challenge and opportunity of recovering wolf populations. *Cons. Biol.* 9:270-278.
- Mech, L. D. 1996. A new era for carnivore conservation. *Wildl. Soc. Bull.* 24:397-401.
- Mech, L. D., S. H. Fritts, G. L. Radde, and W. J. Paul. 1988. Wolf distribution and road density in Minnesota. *Wildl. Soc. Bull.* 16:85-87.
- North Dakota Game and Fish Department. 1941. Aerial survey of North Dakota's big game: Jan. - Feb. - Mar. Bismarck, ND.
- Nowak, R. M. 1983. A perspective on the taxonomy of wolves in North America. Pp. 10-19 *in* Wolves in Canada and Alaska: their status, biology and management (L. N. Carbyn, ed.). Canadian Wildl. Serv. Rep. Series 45.
- Ream, R. R., M. W. Fairchild, D. K. Boyd, and D. H. Pletscher. 1991. Population dynamics and home range changes in a colonizing wolf population. Pp. 349-366 *in* The greater Yellowstone ecosystem: redefining America's wilderness heritage (R. B. Keiter and M. S. Boyce, eds.). Yale University Press, New Haven, CT.
- Thiel, R. P. 1985. Relationship between road densities and wolf habitat suitability in Wisconsin. *Am. Midl. Nat.* 113:404-407.
- U. S. Biological Survey. 1954. Dakotas - Nebraska District annual report: June 30, 1954. U. S. Department of Interior, Washington, D. C.
- U. S. Fish and Wildlife Service. 1992. Recovery plan for the eastern timber wolf. Twin Cities, Minnesota.
- Weaver, J. L., and S. H. Fritts. 1979. Comparison of coyote and wolf scat diameters. *J. Wildl. Manage.* 43:786-788.

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