

WISCONSIN ENDANGERED RESOURCES REPORT # 118
STATUS OF THE TIMBER WOLF IN WISCONSIN
PERFORMANCE REPORT, 1 JULY 1998 THROUGH 30 JUNE 1999
By Adrian P. Wydeven and Jane E. Wiedenhoef

SUMMARY

This report covers activities conducted from July 1, 1998 through June 30, 1999. The Wisconsin wolf population was at its reclassification goal of 80+ wolves for the fifth year, and a draft wolf management plan underwent public review and revision to outline management for a reclassified and delisted wolf population in Wisconsin. State reclassification to threatened should be completed in early fall 1999.

Eighteen wolves from 14 different packs were live-captured and radio-collared in 1998. Forty radio-collared wolves were monitored during the period. Winter territories of 17 wolves averaged 41 mi². The minimum count for the wolf population in winter 1998-1999 was 197-203 wolves in 54 packs. Territorial wolves occupied an area of 3200 mi² at a density of 1 wolf per 17 mi². Six radio-collared wolves died during the period including 2 from shooting, 2 from vehicle collisions, 1 from capture related causes, and 1 from unknown causes. Wolf observations were reported from 31 Wisconsin counties. Eighteen cases of wolf depredation occurred during the period and involved 38 calves (19 killed), 29 deer (deer farms, 23 killed), and 8 dogs (6 killed). Disease testing has not been completed for the wolves captured during this period.

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RECOVERY OF THE TIMBER WOLF
PERFORMANCE REPORT

July 1, 1998 – June 30, 1999

Prepared by: Adrian P. Wydeven and Jane E. Wiedenhoef

- Job:
- 106.1 Direct educational activities
 - 106.2 Provide legal protection
 - 106.3 Cooperative habitat management
 - 106.4 Monitor statewide wolf population
 - 106.5 Initiate disease abatement
 - 106.6 Evaluate progress
 - 106.7 Implement livestock damage control action
 - 106.8 Coordinate with other agencies
 - 106.9 Citizen participation
 - 106.10 Volunteer programs
 - 106.11 Develop reclassification criteria
 - 106.12 Review translocation

Background: Timber wolves (*Canis lupus*) in the Great Lakes region were originally placed on the first list of Federal Endangered Species in 1967, and were again listed after the enactment of the Federal Endangered Species Act of 1973. The State of Wisconsin listed the timber wolf as a state Endangered Species in 1975. The Wisconsin Department of Natural Resources (DNR) has monitored the state wolf population since 1979. The Wisconsin Timber Wolf Recovery Plan was approved in 1989, and set a minimum downlisting goal (to threatened) of 80 wolves for 3 consecutive years for the State. Federal criteria for wolf reclassification from endangered to threatened in Wisconsin are the same. The reclassification goal was first attained in 1995 (83-86 wolves in Wisconsin), and the current population of 197-203 is at the fifth year of this goal. The federal guideline for totally delisting is a population goal of 100 wolves for Michigan and Wisconsin for 5 consecutive years. The federal delisting goal was attained in 1994 when the bi-state population was 114. The Wisconsin DNR began work on a new wolf management plan in 1996, and in 1999 the DNR went through the process for state reclassification of wolves from endangered to threatened, which should be completed by fall. The U.S. Fish and Wildlife Service began some work on reclassification of gray wolves in fall 1997 but has yet to begin the official reclassification process. The current report covers the period July 1, 1998 through June 30, 1999.

Personnel and funding: Funding for the Wisconsin population monitoring efforts has come from Federal Aid in Wildlife Restoration Project W-154_R, U.S. Fish and Wildlife Service Section 6 Endangered Species Grants, funds from the Chequamegon and Nicolet National Forests, Wisconsin Endangered Resources Fund, Timber Wolf Alliance (TWA) Adopt-A-Wolf Pack Program, and private donations. The Wisconsin Department of Transportation (WDOT) has provided funding for the Highway 53 Wolf Study in northwest Wisconsin, which has been of major assistance to state wolf population monitoring efforts.

Adrian Wydeven was the ecologist in charge of the project, with extensive assistance from project wolf technician Ron Schultz. Bruce Kohn has conducted research within the Highway 53 Wolf Study with help from Jim Ashbrenner and Paul Keenlance. DNR pilots Phil Miller, Paul Anderson, Joe Sprenger, John Bronson Robert Paanen, and Michael Weinfurter did aerial monitoring of wolves. Dick Thiel coordinates Wolf population monitoring in central Wisconsin with assistance from Wayne Hall. Kerry Beheler coordinated Wolf health monitoring. Necropsies on dead wolves were done by Dr. Nancy Thomas of the National Wildlife Health Lab. Wolf depredation control activities were conducted by personnel from USDA-APHIS-Wildlife Services including Bob Willging, Kelly Thiel, Ed Zydzik, Buck Follis, and Jim Rollman. Sarah Boles conducted track surveys in northwest Wisconsin and coordinated volunteer surveys. Randy Jurewicz coordinated policy and budget support, and arranged transportation for wolf carcasses. Jane Wiedenhoef entered and tabulated data, and assisted with preparation of reports. Other DNR personnel, other agencies, and many volunteers also provided assistance.

JOB 106.1 DIRECT EDUCATIONAL ACTIVITIES

The project ecologist (Wydeven) and technician provided training for 18 people at a Timber Wolf Alliance (TWA) workshop in August 1999, and attended four TWA Advisory Board meetings during the period. A total of 32 volunteers were given training in wolf track surveys. Reports were prepared on summer and winter surveys, and progress reports were prepared in mid-winter and mid-summer; these reports were distributed to about 2000 people each. Wolf population information was published in the Wisconsin Wildlife Surveys. A second draft of a Wisconsin Wolf Management Plan was published in March 1999, and a third draft was prepared for the Wisconsin Natural Resources Board in late June 1999. Wydeven published an update of GIS assessment of Wisconsin wolf habitat with David Mladenoff and Ted Sickley (1999, Ecological Applications 9(1): 37-44.) and published information on potential for wolf recovery in the northeast U.S. with 3 other authors (1998, Wildlife Society Bulletin 26(4): 776-784). Comments and input were provided for a new publication on central Wisconsin wolves by Dick Thiel.

JOB 106.2 PROVIDE ADDED LEGAL PROTECTION FOR WOLVES

Dick Thiel, Wayne Hall, and other wildlife management personnel posted signs and talked to hunters during the deer season to warn about wolves. A news release of the coyote closed zone in northern Wisconsin was sent out prior to the firearm deer season. Project personnel assisted state and federal law enforcement officers in investigations of two wolf shootings. Extra flights were flown on radio-collared wolves during major hunting periods to detect possible illegal kills.

JOB 106.3 COOPERATIVELY MANAGE HABITAT WITH LANDOWNERS

A potential den site was inspected on the Chequamegon Forest in winter to determine potential impact of adjacent timber harvest activities. Timber harvests were not likely to impact local wolves. Wolf territories were mapped on National Forest maps and shared with Forest Service personnel. Potential wolf habitat maps have been shared with the Forest Service for new management plans for the Nicolet-Chequamegon National Forest.

A cooperative research project with the Wisconsin Department of Transportation was completed at the end of June 1999. Bruce Kohn will write up results, incorporate 4 master studies, and develop recommendations for future highway developments in Wisconsin.

JOB 106.4 MONITOR STATEWIDE WOLF POPULATION

Nineteen wolves were live-captured in Wisconsin in 1998. Two of the wolves died from capture related causes. One after he ran into a log pile with the trap attached and became entangled tearing a radial artery and fracturing his left ulna and radius. The other died due to complications from capture and anesthesia the day after being captured on a deer farm. Two of the captured wolves were pups that were not collared, two were recaptured from previous years, and two were trapped twice in 1998 (Table 1). Captured wolves were from 14 different packs. Two became loners during the period, and 2 were relocated. Wolves

captured included 4 captured as part of the Highway 53 Study (279F, 280M, 288F, and 289F), 4 caught by USDA-Wildlife Services on a depredation complaint (246M, 281M, 724F, and an unnumbered male), and 11 captured as part of the statewide monitoring program (002F, 004M, 006M, 229F, 282F, 283M, 284M, 285F, 286F, 287M, and 301M). Wolf captures included 4 adult males (x wt of 3 = 79 lb.), 4 adult females (x wt of 3 = 67 lb.), 2 yearling males (x wt = 60 lb.), 5 yearling females (x wt = 57.8 lb.), and 4 pup males (x wt = 45 lb.). No pup females were captured. A total of 600 trap nights were used to capture 12 wolves outside the Highway 53 Study area (x = 46 trap nights per wolf).

Fifty-four wolf territories were identified in Wisconsin in winter 1998-1999 (Figure 1). Most were probably breeding packs (Table 3). Forty-four wolf territories were located in northwest and northcentral Wisconsin, 6 were located in central Wisconsin, and 2 were located in northeast Wisconsin. This is the first year that territories have been identified in the northeast part of the state. Wolf territories occurred in portions of 14 northern counties and 6 central counties.

A total of 40 wolves were monitored in 31 different packs during the study period (Table 2). Five wolves were loners or dispersers for at least a portion of the study period, and 2 more were relocated due to depredation problems. Sex-age composition of monitored wolves included 13 adult males, 12 adult females, 6 yearling males, 8 yearling females, 1 pup male, and 0 pup males (age during the majority of the study period).

Mean winter home range size averaged 41 mi² for 17 wolves. The average home range for 11 territorial adults located 20 or more times was 40 mi². The largest home range was 67 mi² for 284M of the Averill Creek Pack. The smallest home range (adult with at least 20 locations) was 14 mi² for 285F of the Ranger Island Pack.

Dispersing Wolves:

Adult Wolf 240F had been a member of the Torch River Pack in Ashland County. During the study period she appeared to move somewhat east of the pack and was observed with another wolf over the winter. In late March and early April she began dispersing from the area, moving 23 km southeast and then 33 km southwest. Her signal was temporarily lost after 8 April. On 19 May she was found 47 km to the northeast, 2.5 km west of Upson. Again her signal was lost until she was found on 15 June, 19 km to the southeast. From there she traveled further south into the territory of the Pine Lake Pack in Iron County.

Wolf 242M was trapped as a yearling from the Chase Brook Pack in Burnett County on a depredation case by Wildlife Services in 1997. He was relocated to Forest County. From there, he moved a short distance west to the eastern edge of Oneida County, south of Big Lake. He remained in that area as a loner until he was found dead on 7 December 1998.

Wolf 279F, a yearling from the Stuntz Brook Pack in Washburn County began moving, primarily west, in late February. On 15 March she was located in Minnesota. On 25 March she was observed trying to cross I-35 in Minnesota, evidently unsuccessfully since her following locations were all east of the highway. In early May she moved southeast and briefly returned to Wisconsin, spending some time in the Crex Meadow Wildlife Area. In late May she returned to Minnesota and monitoring was discontinued by Wisconsin DNR.

In late January Wolf 280M, a yearling from the Crotte Creek Pack in Douglas County, moved southwest to the Riverside Pack territory in Burnett County. He was visually observed 3 times in February with another wolf. In March he was located 3 times with Wolf 724F of the Chase Brook Pack. Two of the locations were in the Riverside territory and 1 was in the Chase Brook territory. Since April, his locations

have been evenly split between the Chase Brook and Riverside territories. In June he was again located 2 times with Wolf 724F in the Chase Brook territory. Possibly these 2 pack territories have been combined into one territory.

Yearling Wolf 281M was trapped out of the Chase Brook Pack in Burnett County by Wildlife Services on a depredation case on 18 May 1998 and relocated to Forest County. On 24 July he was located in Iron County, Michigan and continued north into Michigan. Monitoring was discontinued after 4 September. Wolf 281M was found dead along a roadside 5 miles northeast of Wausau in Marathon County on 6 December. Shooting was the cause of death.

Yearling Wolf 288F was captured in the Frog Creek Pack in Washburn County in May 1998 but made movements north, west, and then south into the Tranus Lake territory. She was killed by vehicle collision on Highway 53 in Washburn County, 6 miles south of Minong, on 8 October 1998.

Adult Wolf 313M was captured on a deer farm in Oneida County on 28 April, and relocated to Forest County on 3 May. From there he headed southwest, back towards the deer farm, and was shot by a farmer 12 km east of Rhineland on 16 May. A female wolf was also trapped and euthanized in the deer farm after Wolf 313M was removed. The adult male (313M) and possibly the yearling female may have originated from the Little Rice River Pack.

Wolf 503F, a satellite collared adult female from Camp Ripley, Minnesota was located near Webb Lake in Burnett County on 30 March. From there she traveled southeast, getting almost as far as Green Bay by 13 April. She then headed southwest and spent mid April through the latter part of May between Portage and Stevens Point, making a trip to downtown Portage in the early morning hours of 15 May, and visiting the outskirts of both Wisconsin Rapids and Stevens Point. In late May she began heading westward toward LaCrosse and then north to the outskirts of Eau Claire in early June. By 20 June she was located back in Minnesota, west of Grantsburg. The wolf traveled through at least 27 Wisconsin counties, and traveled extensively through areas designated as Zone 3 "dispersal habitat" in the new Wisconsin Wolf Management Plan (WDNR, 1999).

A minimum of 197-203 wolves occurred in 54 territories during winter 1998-1999 (Table 3). Along with the 54 territories or packs, the count also includes 7 loners. The wolf population increased 11% from last year and has increased at an average rate of 22% since 1995 (Figure 2). Average size for wolf packs was 3.6 wolves (range 2-8 wolves). Wolf territories and adjacent interstitial areas covered 3200 mi² at a density of 1 wolf/17 mi². Wolf counts were based on 410 radio locations of 21 packs and 3 loners, and involved observations of 76 different wolves. Additionally, 2768 miles of snow tracking was used to obtain wolf counts in noncollared packs and packs not readily seen from the air, and 1573 miles of snow tracking by volunteers was used to supplement DNR surveys.

Wolf Mortality:

Six collared wolves died during the study period (Table 4). Two died from vehicle collisions, 2 died from shooting, 1 died from capture related causes, and 1 died from unknown causes. Six of the mortalities (86%) were human-caused. The crude survival rate of 40 collared wolves was 82.5%.

Six noncollared wolves were found dead during the study period. They included the following: a female pup killed by vehicle collision 14 August on Highway 53 in Washburn County; an adult male died after capture on a deer farm southwest of Ashland in Bayfield County 21 August 1998; a female yearling killed by vehicle collision 1 January on Highway 13 in Wood County; a female killed by a train 11 February in Lincoln County; a pup killed by vehicle collision 22 February on Highway 35 in Douglas County; and a

yearling female was trapped and shot on a deer farm near Hazelhurst on 31 May 1999 by USDA-WS and DNR.

Table 5 lists all known mortality on radio-collared wolves in Wisconsin and adjacent areas of Minnesota from 1979 through June 1999. Human-caused mortality has accounted for 62% of the mortalities, while natural causes have accounted for 38% of mortalities. Shooting has been the leading cause of mortality (33%), followed by disease (19%), vehicle collisions (14%), and killing by other wolves (12%).

Estimates of number of pups present in mid-winter was 55-73 pups in 28 of 43 packs that could have produced pups. Using the midpoint value of 64 pups, average annual pup survival was about 29% ($64 \text{ pups} / 43 \text{ breeding females} \times 5.2 \text{ pups/female}$).

Statewide Wolf Distribution:

Wolf observations were collected from natural resource agency personnel and private citizens throughout the study period. All observations were rated as "probable", "possible", or "not likely". A total of 150 probable and possible observations were collected during the study period (Table 6). This is lower than last year (224), but comparable to the previous year (163). Wolves were reported from 31 counties, including all counties with breeding packs except for Burnett and Monroe counties. Counties with highest report rates were Ashland (26), Price (18), and Forest (14).

JOB 106.5 INITIATE DISEASE ABATEMENT

Disease testing has not been completed on the wolves captured in 1998. Disease did not appear to be a factor in any of the known mortalities during the study period.

JOB 106.6 EVALUATE PROGRESS

The reclassification goal for state downlisting from endangered to threatened status entered its fifth year in 1999. The request to reclassify was presented at fish and wildlife regulation hearings across the state in April 1999. The proposal was supported by persons at these hearings and was approved by the Wisconsin Natural Resource Board in summer, and finalized in fall 1999.

The U.S. Fish & Wildlife Service had worked at federal delisting in 1998 and 1999, but because of the lack of an approved management plan in Minnesota, the Service decided to instead attempt reclassification in Michigan and Wisconsin (Minnesota is already listed as threatened). The federal reclassification goal was also 80 wolves in Wisconsin for 3 years, and 1999 was the fifth year at this goal. Federal reclassification will likely be completed in 2000, and the federal delisting process will begin soon afterwards (assuming management plans have been approved in Wisconsin and Minnesota).

The Wisconsin Wolf Advisory Committee met 4 times during the period including 19-20 August, 16 September, 22 October, and 17-19 May, as well as many meetings of subcommittees or members of the wolf committee. The focus of most of the meetings was the development of a new state wolf management plan. Public review of the first draft of the plan was held from May through August 1998 in a 90-day review period. The second draft of the wolf plan was reviewed from March to May 1999 (55-day review).

JOB 106.7 IMPLEMENT LIVESTOCK DAMAGE CONTROL ACTIVITIES

Eighteen cases of wolf depredation involving 38 calves (19 killed), 29 deer (deer farms, 23 killed), and 8 dogs (6 killed) occurred during the study period (Table 7). One farm in Burnett County accounted for 28 of the calf depredations (9 killed and 19 missing) during 1998. This farm has experienced depredation problems in the past from the Chase Brook Pack. Two wolves from the pack were trapped and relocated to Forest County in May 1998. The alpha female, Wolf 724F, was captured, fitted with a shock collar, and

released 3 miles away near her den. Diversionary feeding and a dog shock collar were used to keep her off the farm during most of June and into July. The farmer found additional missing calves in the fall. Wolf 724F was caught again in April 1999 and fitted with a shock collar which was used to keep her off the farm during the critical calving period in the Spring. The farm reported no losses due to wolf depredation this Spring.

One farm in Price County lost 4 calves to depredation. No wolf pack is known to exist in the area, and trackers were unable to find tracks during surveys of the surrounding area. Possibly dispersers or transient wolves caused the depredation. The remainder of the calf depredations involved single kills mostly by dispersing wolves. Trapping was attempted in Marathon County after several people reported seeing 1 or 2 wolves in the area of their farms. It is unclear whether the animal(s) are wolves or wolf/dog hybrids.

Two deer farms experienced losses due to wolf depredation during the study period. A wolf depredation was confirmed by Wildlife Services at St. Anthony's Preserve in Bayfield County on 9 May 1998. An adult male wolf was captured on the preserve on 21 August and died in captivity the next day. Four deer kills and 6 injuries were confirmed by Wildlife Services. A wolf was reported on the Preserve again in spring 1999 while fencing was being repaired. Wildlife Services investigated and found that the wolf had left the preserve prior to the fence being fixed.

The Forest of Antlers deer farm in Oneida County reported 1 wolf inside their enclosure on 11 January. They believed the wolf might have been in the enclosure since September. On 8 February, Wildlife Services confirmed a wolf depredation in the enclosure and began trapping. An adult male who had recently entered the enclosure was captured on 28 April and relocated to Forest County. A farmer shot him on 15 May east of Rhinelander. An adult female was captured on 31 May and euthanized. Wildlife Services confirmed 19 deer kills.

Six dogs were killed in 5 wolf pack territories and wolves injured 2 dogs. The Empire Pack was involved in 2 of the kills. Hybrids may have been responsible for one of the injured dogs. The dogs killed included 2 Plott Hounds, 2 Walkers, 1 Redtick, and 1 Collie.

JOB 106.8 COORDINATE WOLF MANAGEMENT WITH OTHER AGENCIES

The project ecologist served on the federal Eastern Timber Wolf Recovery Team and attended 5 meetings during the period. Five Wisconsin Wolf Advisory Committee meetings were held during the period and these included USDA-Wildlife Services, Great Lakes Indian Fish and Wildlife Commission, U.S. Forest Service, U.S. Fish & Wildlife Service, County Forests, and DNR personnel. Other cooperators meetings included: HoChunk Tribe 8 July 1998, Lac du Flambeau Tribe 9 July 1998, Bad River Tribe 15 July, Wisconsin Conservation Congress 25 July 1998 and 10 September 1998, Michigan/Wisconsin/Minnesota wolf and furbearer managers 15 September 1998, GLIFWC wolf concerns 24 September 1998, Mexican Wolf Recovery Team 11 January 1999, Wisconsin Conservation Congress 22 January 1999, County Forest Administrators 25 March 1999, and Midwest Furbearer Conference 27-28 April 1999.

JOB 106.9 CITIZEN PARTICIPATION

Wydeven gave presentations on wolves at 32 talks to 1617 people. Others giving wolf talks included Ron Schultz, Sheri Buller, Dick Thiel, Randy Jurewicz, Sarah Boles, and other DNR personnel.

The 90-day review for the first draft of the new wolf plan ended in August 1998. A total of 300 persons had attended 8 forums and 69 had given verbal comments. About 2000 copies of the plan were distributed, and 423 written comments were received.

A 55-day review was held on the draft of the wolf plan from 19 March through 5 May 1999. About 2000 copies of the plan were distributed and over 1200 media notices were made on the plan. Twelve special

meetings were held with groups on the plan, and a roundtable discussion of the plan was held on 24 April with 14 individuals reflecting concerns of conservation, education, agricultural, environmental, and sportsmen groups. A total of 53 letters and 39 e-mail messages were received on the plan.

JOB 106.10 VOLUNTEER PROGRAM ACTIVITIES

Over 20 different volunteers assisted with howl surveys and livetrapping of wolves. More than 55 people assisted on volunteer carnivore track surveys across northern and central Wisconsin. Fifty volunteers were trained through TWA and track training workshops.

JOB 106.11 DEVELOP RECLASSIFYING CRITERIA

The first draft of the state wolf management plan had a state delisting goal of 300 wolves, and maximum goal of 500. The goals were modified to delisting at 250 and a management goal of 350 wolves. The original goals were developed using Geographic Information System analysis of Wisconsin wolf habitat and Population Viability Analysis. The goals were modified after public input received on the first draft plan. Along with reducing the delisting goal, control activities that could occur at delisting were reduced, so that lower delisting was not likely to have detrimental effects on the population. The goal of 350 was designed as the level at which pro-active depredation control and public harvest could occur. The management goal is perceived to be a possible social tolerance level, and would be reviewed every 5 years.

JOB 106.12 REVIEW TRANSLOCATION

The success of wolf recovery in Wisconsin reduces the need to use translocations to enhance the state wolf population. Translocation will continue to be used to move depredating wolves away from farms to remote areas until federal reclassification is completed. In the last 8 years, 5 wolves have been translocated more than 40 miles from farm sites and 2 have been relocated locally (<10 miles). Four of 5 long-distance translocations died within 19 months, and 1 disappeared soon after release; deaths were due to shooting (2), capture related activity (1), and unknown cause (1). Of the local relocations, one died from vehicle collision 1½ months after release, and the second is still alive more than 16 months after release. Thus far, long-distance translocations may have reduced local depredation, but have not contributed to overall wolf recovery. Interestingly, in winter 1998-1999 a wolf pack did settle into the area where depredating wolves have been released in the Nicolet National Forest. Perhaps having some wolves present has encouraged others to settle in the area.

LITERATURE CITED

- Wisconsin DNR. 1989. Wisconsin Timber Wolf Recovery Plan. Wisconsin Endangered Resources Report 50. Wisconsin DNR, Madison, WI. 37p.
- Wisconsin DNR. 1999. Wisconsin Wolf Management Plan (Draft). Wisconsin DNR, Madison, WI 69p.

Table 1. Capture data on wolves caught in Wisconsin in 1998.

Date	Weight (lb.)	Sex	Age ^a	Wolf #	Pack/Area	County
10 May 98	56	F	Y	002	Wildcat Mound	Jackson
16 Jul 98	34	M	P	004	Bear Bluff	Jackson
13 Aug 98	48	M	P	006 [*]	Bear Bluff	Jackson
17 Jul 98 ^b	54	F	A	229	Augustine Lake	Iron
11 April 98 ^c	82	M	A	246	Chase Brook	Burnett
13 May 98	65	F	Y	279	Stuntz Brook	Washburn
13 May 98	75	M	Y	280	Crotte Creek	Douglas
12 Apr 98 ^d	69	M	P	281	Chase Brook	Burnett
10 May 98	54	F	Y	282	Little Rice River	Oneida
24 Jul 98 ^e	~75	M	A	283	O'Brien	Iron
23 Aug 98	45	M	Y	284	Averill Creek	Lincoln
24 Aug 98	75	F	A	285	Ranger Island	Lincoln
5 Sep 98	54	F	Y	286	Log Creek	Price
28 Oct 98	76	M	A	287	Pine Lake	Iron
22 May 98	60	F	Y	288	Frog Creek	Washburn
5 Jun 98	72	F	A	289	Shoberg Lake	Douglas
25 Aug 98	29	M	P	301 [*]	Wildcat Mound	Jackson
21 Aug 98 ^e	79	M	A	---	Loner	Bayfield
14 May 98 ^f	~65	F	A	724	Chase Brook	Douglas

^{*} Not collared

^a At time of capture assuming birth date of 1 May (P=Pup, Y=Yearling, A=Adult)

^b Recapture; initial capture 9 Jul 93 Sawyer County

^c Recaptured 17 May 98 and relocated to Forest County 27 May 1998

^d Recaptured 18 May 98 and relocated to Forest County 18 May 1998

^e Died/capture related

^f Recapture; initial capture 28 May 97 Douglas County

Table 2. Radio telemetry data on wolves monitored from July 1, 1998 – June 30, 1999 in Wisconsin.

Wolf # & Sex	Age ^a	Pack ^b	Date Captured	Last Date	# of Locations ^c	Winter Territory Size (mi ²)	# of Wolves in Territory ^d
002F	Y	Wildcat Mound	10 May 98	Ongoing	56	40	4-5
004M	P	Bear Bluff	16 Jul 98	16 Jul 98*	1	NE*	7
155M	A	Moose Road	6 May 97	Ongoing	210	55	3
210F	A	Moose Lake	31 May 96	Ongoing	292	36	4
229F	A	Augustine Lake	17 Jul 98 ^f	Ongoing	300	55	5
237F	Y	Price Creek	20 Oct 95 ^h	Ongoing	226	44	4
240F	Y	Disperser	21 Jun 97	Ongoing	97	17	-
241F	P	Ghost Lake	20 Nov 97 ^h	Ongoing	76	10	2
242M	Y	Loner	28 Jun 97	7 Dec 98**	28	NE	-
244F	A	North Willow	23 Jul 97	Ongoing	85	31	5
245F	P	Bootjack Lake/Hoffman Lake	30 Jul 97	Ongoing	97	49	5
259F	Y	Smoky Hill	15 Jul 96	14 Jul 98**	108	NE	-
266F	Y	Bird Sanctuary	7 Aug 96	Ongoing	279	22	4
267M	A	Empire	28 Aug 96	Ongoing	268	54	6
268M	Y	Truck Trail	11 Jun 97 ⁱ	Ongoing	197	44	3
274M	A	Wildcat Mound/Dead Creek	28 Aug 96	23 Sep 98*	114	NE	-
275F	A	Bear Bluff	12 May 97	Ongoing	101	65	7
279F	Y	Stuntz Brook/Disperser	13 May 98	24 May 99 ^j	92	44	5
280M	Y	Crotte Creek/Riverside	13 May 98	Ongoing	104	17	2
281M	Y	Chase Brook/Relocated	18 May 98	4 Sep 98**	18	NE	-
282F	Y	Little Rice River	10 May 98	Ongoing	58	44	7
284M	Y	Averill Creek	23 Aug 98	Ongoing	35	67	4
285F	A	Ranger Island	24 Aug 98	Ongoing	42	14	4
286F	Y	Log Creek/Brunet River	5 Sep 98	Ongoing	44	20	2
287M	A	Pine Lake	28 Oct 98	14 Dec 98*	4	NE	3-4
288F	Y	Frog Creek/Loner	22 May 98	5 Oct 98**	33	NE	5
290M	A	Shoberg Lake	13 May 99	Ongoing	15	NE	5
291M	A	Chain Lakes	27 Jun 99	Ongoing	2	NE	?
292M	Y	Tranus Lake	21 May 99	Ongoing	12	NE	2
293F	A	Frog Creek	23 May 99	Ongoing	12	NE	5
294M	A	Frog Creek	23 May 99	Ongoing	12	NE	5
295F	Y	Stuntz Brook	25 May 99	Ongoing	11	NE	5
296M	Y	Crotte Creek	28 May 99	Ongoing	10	NE	4
297M	A	South Empire	2 Jun 99	Ongoing	9	NE	?

Table 2. (Cont.)

Wolf # & Sex	Age ^a	Pack ^b	Date Captured	Last Date	# of Locations ^c	Winter Territory Size (mi ²)	# of Wolves in Territory ^d
298M	Y	North Empire	8 Jun 99	Ongoing	7	NE	?
299M	A	Buckley Creek	30 Jun 99	Ongoing	1	NE	4
310M	P	Brush Creek	2 Nov 97 ^k	Ongoing	20	NE	4
313M	A	Little Rice River	28 Apr 99 ^l	15 May 99 ^{**}	4	NE	-
503F	A	Loner	4 Feb 99 ^m	Ongoing	16	NE	-
724F	A	Chase Brook	26 April 99 ⁿ	Ongoing	205	21	?

^a Age at time of capture (P = Pup, Y = Yearling, A = Adult)

^b Pack during winter of the study period

^c Total locations from the time of capture

^d Number of wolves in pack during midwinter

^e NE = No Estimate

^f Recaptured wolf; first captured as a yearling in Sawyer County on 9 July 1993

^g Recaptured wolf; first captured 4 May 1995

^h Recaptured wolf; first captured in Ashland County on 23 Jun 1997, 19 lb pup too small to collar

ⁱ Recaptured wolf; first captured as a pup in Douglas County on 28 Aug 1996

^j Dispersed to Minnesota

^k Initial capture in Houghton County, Michigan; locations listed for Wisconsin only

^l Captured by Wildlife Service on deer farm in Oneida County and relocated to Forest County

^m Recaptured MN wolf; first captured as a pup in Minnesota 31 Oct 1997; satellite monitored by MN

ⁿ Recaptured wolf; first captured in Douglas County 28 May 1997

^{*} Lost signal

^{**} Died

Table 3. Minimum estimation of Wisconsin's timber wolf population in winter 1998-1999.

Pack/Area/Wolf	Counties	No. of Wolves	Evidence ^a
Sterling Barrens	Polk/Burnett	1	T
Crex Meadows	Burnett	2+	T
Truck Trail	Douglas/Pine	3*	R & T
Moose Road	Douglas/Pine	3*	R & T
Empire	Douglas	6*	R & T
Crotte Creek	Douglas	4*	R & T
Moose Lake	Douglas	4*	R & T
Bird Sanctuary	Douglas	4*	R & T
Shoberg Lake	Douglas	5*	T
School House	Douglas	2*	T
Oriente Falls	Douglas/Bayfield	2	T
Chase Brook	Burnett/Douglas	4*	R & T
Riverside	Burnett	2*	R & T
Wolf 503	N & C Wisconsin	1	R
Flag River	Bayfield	3	T
Loner County A	Bayfield	1	T
Rainbow Lake	Bayfield	3*	T
Lower Porcupine Lake	Bayfield	1	T
Ghost Lake	Bayfield/Sawyer	2*	R & T
Stuntz Brook	Washburn	5*	T
Frog Creek	Washburn/Douglas	5*	T
Tranus Lake	Washburn	2*	T
Smoky Hill	Bayfield	2-3*	T
Hellhole Creek	Bayfield/Ashland	4*	T
Brush Creek	Ashland	4*	R & T
Wolf 240	Ashland/Iron	1	R & T
Torch River	Ashland	4*	T
Black Lake	Sawyer/Ashland	3*	T
Brunet River	Sawyer/Ashland	2*	R & T
Log Creek	Sawyer/Ashland/Price	2-3*	T
Thornapple River	Sawyer	2*	T
Price Creek	Price	4*	R
Tupper Creek	Sawyer	2*	T
Haystack Corner	Sawyer/Rusk	3*	T
Kiddrick Swamp	Taylor	2	T
West Firelane	Ashland	4*	T
Morrison Creek	Ashland/Iron	2	T
Augustine Lake	Ashland/Iron	5*	R & T
O'Brien Lake	Iron	5*	T
Pine Lake	Iron	3-4*	T
Chippewa River	Ashland/Iron	5*	T
Hoffman Lake	Ashland/Iron/Price	5*	R & T
Miles Lake	Price/Iron	2	T & O
Wilson Flowage	Price	8*	T
Bootjack Lake	Price/Oneida	6*	T
North Willow	Oneida	5*	R & T
Little Rice River	Oneida	7*	R & T
Johnson Creek Loner	Oneida	1	T
Ranger Island	Lincoln	4*	R & T
Averill Creek	Lincoln	4*	R & T

Table 3. (Cont.)

Pack/Area/Wolf	Counties	No. of Wolves	Evidence ^a
Nineweb Pair	Vilas	2	T
Giant Pine	Forest	3*	T
Rock Dam	Clark/Eau Claire	2*	T
Noch-Hanai	Jackson	2	T
Wildcat Mound	Jackson	4-5*	R & T
Two Korners	Jackson/Clark	2*	T
Sandhill Loner	Wood	1	T
South Bluff	Wood/Juneau	2-3	T
Suk Cerney	Juneau	2*	T
Bear Bluff	Jackson/Wood	7*	R & T
Dead Creek	Monroe/Jackson	3-4*	T & O
Totals		197-203	

54 packs = 3.5 - 3.6 wolves/pack

7 loners

^aEvidence: R = radio-telemetry surveys
 T = track and sign surveys
 O = observations

*Pack with breeding activity

Table 4. Mortality of radio-collared wolves in Wisconsin from July 1, 1998 to June 30, 1999.

Wolf # & Sex	Age ^a	Date Captured	Date Died	County Died	Cause of Death
242M	Y	28 Jun 97	10 Dec 98	Oneida	Unknown
259F	Y	15 Jul 96	14 Jul 98	Bayfield	Vehicle Collision
281M	Y	12 Apr 98	6 Dec 98	Marathon	Shooting
283M	A	24 Jul 98	24 Jul 98	Iron	Capture Related
288F	Y	22 May 98	5 Oct 98	Washburn	Vehicle Collision
313M	A	28 Apr 99	15 May 99	Oneida	Shooting

^a Age at time of capture

Table 5. Mortality summary of radio-collared wolves in Wisconsin and adjacent areas of Minnesota from October 1979 – June 1999.

	Cause of Death	Number	% Known Mortality
Human Causes	Capture Related	2	3%
	Shot Wound	19	33%
	Trapped	3	5%
	Vehicle Collision	8	14%
	Unknown Human Causes	4	7%
	<i>Total Human Causes</i>	<i>36</i>	<i>62%</i>
Natural Causes	Birth complications	1	2%
	Disease	11	19%
	Killed by Other Wolves	7	12%
	Unknown Natural Causes	3	5%
	<i>Total Natural Causes</i>	<i>22</i>	<i>38%</i>
Totals	<i>Known Mortality</i>	<i>58</i>	<i>100%</i>
	<i>Unknown Mortality</i>	<i>6</i>	
	Total Mortality	64	

^a 19 wolves shot by firearm; 1 wolf by bow and arrow

Table 6. Wolf observations reported by natural resource agency personnel and private citizens in Wisconsin in July 1998 – June 1999.

County	Sightings	Wolves Seen	Track or Sign Observations	Total Observations
Ashland*	20	30-32	6	26
Barron	1	1	0	1
Bayfield*	7	9	0	7
Brown	1	1	0	1
Clark*	1	1	1	2
Douglas*	4	6	2	6
Eau Claire*	0	0	2	2
Florence	2	3	1	3
Forest*	13	18	1	14
Iron*	2	2	2	4
Jackson*	1	1	2	3
Juneau*	1	1	0	1
Langlade	4	5	2	6
Lincoln*	4	4	1	5
Marathon	7	8-9	1	8
Marinette	2	3	1	3
Oconto	1	1	1	2
Oneida*	3	6	4	7
Polk	1	1	0	1
Price*	15	23?	3	18
Rusk*	1	1	0	1
Sauk	1	3	0	1
Sawyer*	6	11-12	3	9
Shawano	4	5	0	4
St. Croix	2	2	0	2
Taylor	1	1	1	2
Vilas	1	3	2	3
Washburn*	3	8	0	3
Waushara	3	3	0	3
Winnebago	1	1	0	1
Wood*	1	1	0	1
Totals	114	163-167	36	150

* Counties with known breeding packs during winter of this study period. Burnett and Monroe Counties also had breeding packs, although no observations were reported.

Table 7. Wolf depredation cases on livestock and pets in Wisconsin, July 1998 through June 1999.

Date	Animal Lost	Pack Involved	County	Payments	Other Actions
1 May 98+	9 calves likely killed 19 calves missing	Chase Brook	Burnett	Pending	3 Trapped, relocated, &/or shocked ^a
9 May 98+	10 deer (4 killed)*	Loner	Bayfield	Pending	Trapped, died in captiv.
4 Jul 98	1 dog (Walker)	Log Creek	Price	\$2500	None
12 Jul 98	1 dog (Redtick)	Kidrick Swamp	Taylor	\$2500	None
19 Jul 98	1 calf	Log Creek?	Price	\$395	None
27 Jul 98	1 dog (Plott)	Empire	Douglas	\$500	None
13 Aug 98	1 dog injured	?Possible hybrids	Lincoln	\$398.19	Attempted livetrapping
16 Aug 98	1 dog (Plott)	Shoberg Lake	Douglas	\$1500	None
5 Sep 98	1 calf	Loner?	Taylor	\$315	None
19 Sep 98	1 dog (Walker)	Empire	Douglas	\$1000	None
8 Oct 98	1 calf	Dispersers?	Douglas	\$512	None
10 Nov 98	1 calf	Dispersers?	Bayfield	Pending	None
20 Nov 98	1 dog (Collie)	Chase Brook	Burnett	\$500	None
15 Dec 98	1 dog injured	North Willow	Oneida	No request	None
23 Dec 98	4 calves	Unknown?	Price	\$2000	None
21 Jan 99+	19 deer*	Loners	Oneida	Pending	1 Trapped & relocated, 1 Trapped & euthanized
27 May 99	1 calf	Unknown	Marinette	Pending	None
7 Jun 99	1 calf	?Possible hybrid	Marathon	Pending	None
18 cases	19 calves killed 19 calves missing 23 deer killed 6 deer injured 6 dogs killed 2 dogs injured	6 packs 5 loners/dispersers 2 possible hybrids 2 unknown	9 counties	\$12120.19	3 Trapped & relocated > 40 mi. 1 Trapped & relocated < 10 mi. 1 Trapped & died 1 Trapped & euthanized 1 Attempted trapping

* Liscensed deer farm

^a 3 Wolves were livetrapped, 2 were relocated to NE Wisconsin, 1 was fitted with a shock collar, locally relocated, & shocked when she returned to farm.

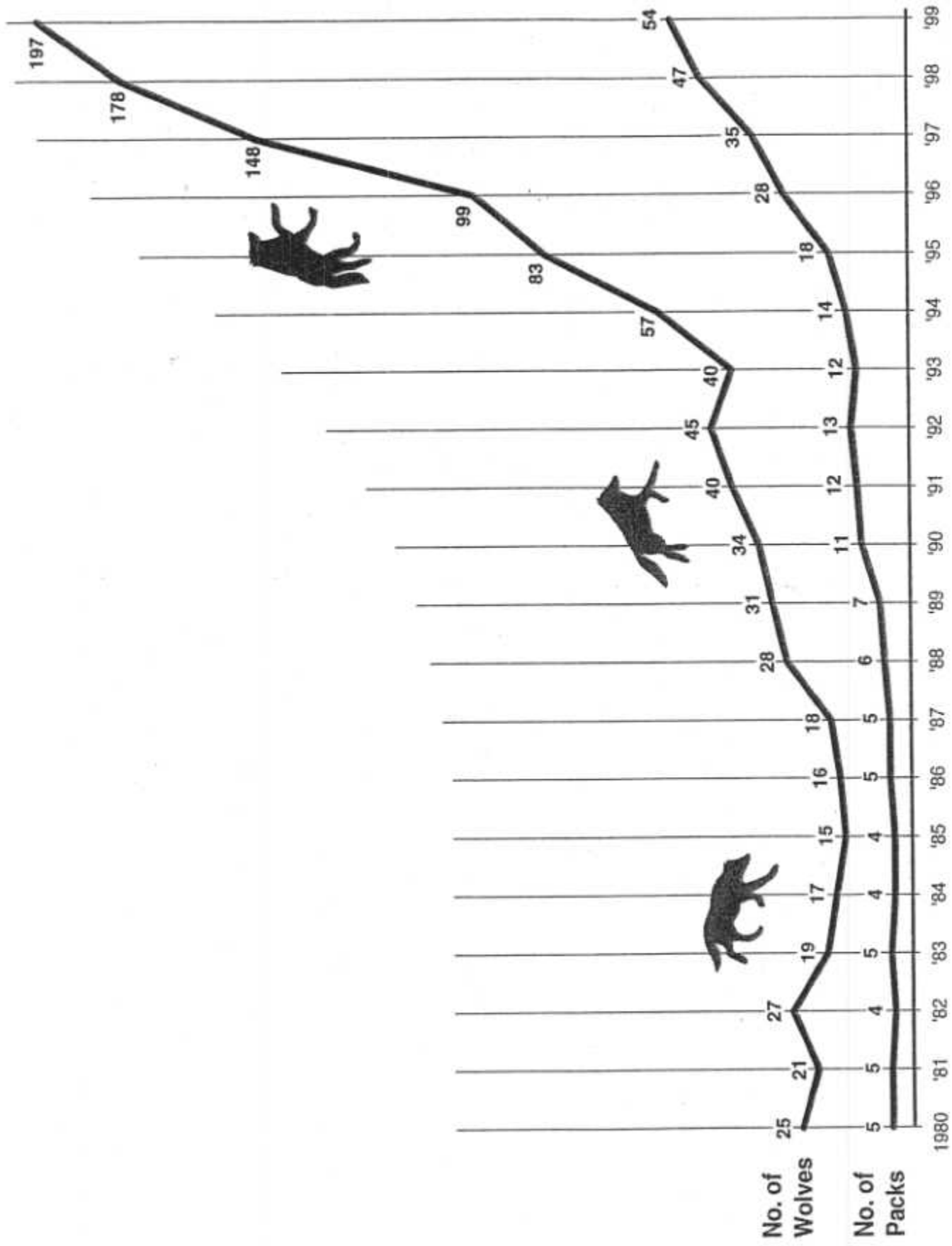


Figure 2: Changes in Wisconsin Gray Wolf Population: 1980 - 1999