

**WISCONSIN ENDANGERED RESOURCES REPORT #141**  
**STATUS OF THE TIMBER WOLF IN WISCONSIN**  
**PERFORMANCE REPORT 1 JULY 2010 THROUGH 30 JUNE 2011**  
**(also PROGRESS REPORTS FOR 15 APRIL 2010-14 APRIL 2011, and 2010 summaries)**

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**SUMMARY**

This report covers activities conducted from 1 July 2010 through 30 June 2011, and summary of data collected in 2010 on wolf conservation in Wisconsin. The Wisconsin DNR reclassified wolves from endangered to threatened in 1999 and delisted wolves to protected wild animals on 1 August 2004. The U.S. Fish and Wildlife Service downlisted wolves to threatened on 1 April 2003, but were relisted as endangered on 31 January 2005. On 12 March 2007 wolves were removed from the federal list of threatened and endangered species in Wisconsin and other portions of the Western Great Lakes Distinct Population segment. But wolves were relisted on 29 September 2008, again delisted on 3 May 2009, and relisted on 1 July 2009. The 1999 Wisconsin Wolf Management Plan and 2007 Wolf Plan Addendum determined wolf management in the state, and this report follows the outline of those plans to describe wolf management activities.

Thirty-five wolves were live captured, and were fitted with radio collars in 2010 in 28 different packs. Ninety-one radio collared wolves were monitored during 2010. About 11,000 square miles of the state was estimated to be occupied by territorial wolves in winter 2010-2011. The minimum count for winter 2010-11 was 782-824 wolves, including 19 or 20 as loners and the rest in 202-203 packs, and included 751 to 793 wolves living outside Indian reservations in the state. Sixteen wolves being actively monitored died in 2010 and included: 7 shot illegally, 2 vehicle collisions, 2 euthanized in human safety situations, 1 other wolves, 1 mange and disease, and 3 unknown. A total of 72 wolves were found dead in the state in 2010 and included the following mortality factors: 16 euthanized human safety concerns, 26 vehicle collisions, 1 train collision, 1 euthanized injured wolf, 15 illegal shootings, 1 trauma from trap injury. 2 died from mange, 1 died from other wolves, and 9 died from unknown mortalities. One of 35 live-captured wolves examined in 2010, one had some mange. Reports of wolf observations were received from 55 counties. Eighty-one cases of depredations on domestic animals occurred during the period and included: 60 cattle killed and 6 injured, 6 sheep killed, 1 goat injured, 6 farm deer, 24 dogs killed and 14 dogs injured. Sixteen wolves were captured and euthanized at human safety situations. Nonlethal methods were also used on many farms. Various other strategies for implementing the Wisconsin Wolf Management Plan were also conducted during the period.

**Wisconsin Department of Natural Resources  
Madison, Wisconsin 53707**

**RECOVERY OF THE TIMBER WOLF  
PERFORMANCE REPORT**

1 July 2010 - 30 June 2011  
(also 15 April 2010-14 April 2011 and summaries for 2010)

by Adrian P. Wydeven, Jane E. Wiedenhoef, Ronald N. Schultz, Jean E. Bruner, Richard P. Thiel,  
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Timber or gray wolves (*Canis lupus*) were listed as Endangered in the Great Lakes region in 1967 and 1974 by the U.S. Fish and Wildlife Service (USFWS 1992). The State of Wisconsin listed wolves as Endangered in 1975, reclassified them to Threatened in 1999, and delisted wolves to Protected Wild Animal on 1 August 2004. The Wisconsin Department of Natural Resources (WDNR) has monitored wolves since 1979. A recovery plan with a reclassification goal to Threatened status of 80+ wolves was completed in 1989 (Wisconsin DNR 1989), and a management plan was completed in 1999 (Wisconsin DNR 1999). The management plan sets a state delisting goal of late winter count of 250 wolves outside of Indian reservations, and a management goal of 350 wolves outside of Indian reservations. At the management goal, permits could be issued to landowners, government trappers may conduct proactive population control activities, and public harvest of wolves could be considered after federal delisting is completed.

The plan included 14 management strategies that represent the general outline of this report. The Wisconsin wolf plan was updated in 2006 and 2007, although no major changes were made in the plan or strategies for managing wolves (Wisconsin DNR 2007).

The 1992 Federal Recovery Plan for the eastern timber wolf established reclassification goals of 80+ wolves for 3 years in Wisconsin, and a delisting goal of 100+ wolves for 5 years for Wisconsin and

Michigan (USFWS 1992). Federal delisting also required a stable population of 1251 to 1400 wolves in Minnesota, and approved management plans for each state. In Minnesota the most recent wolf population estimate was 2922 wolves (90% CI, 2192-3535) in winter 2008 (Erb 2008). In 2011, Michigan and Wisconsin shared over 1469 wolves, and had exceeded the 100+ threshold for 19 years. Detailed information on the recovery of wolves in the Great Lakes region are reported in Wydeven et al (2009).

On 1 April 2003 the USFWS reclassified wolves to Threatened in Wisconsin and Michigan (Minnesota has been listed as Threatened since 1978), and other states in the Eastern Distinct Population Segment (EDP), but on 31 January 2005 a federal district court invalidated the 2003 reclassification process and wolves in Wisconsin and elsewhere (except Minnesota listed as threatened) were re-listed as endangered. The USFWS delisted wolves in Wisconsin, Michigan and Minnesota from the federal endangered and threatened species list as part of a Western Great Lakes Distinct Population Segment (WGLDPS) on 12 March 2007, returning wolf management authority to the 3 states and tribes in the region, as well as portions of North Dakota, South Dakota, Iowa, Illinois, Indiana, and Ohio (USFWS 2007). In 2005 and 2006, while wolves were again listed as endangered, special section 10 permits or sub-permits were issued to Wisconsin and Michigan to allow the states to kill depredating wolves, but permits were lost both years due to lawsuits by animal welfare and environmental groups. Due to additional lawsuits, wolves were again placed on the endangered species list on 29 September 2008, again removed from the list on 3 May 2009, and again placed back on the list on 1 July 2009. During relisting, Minnesota wolves returned to threatened status, while wolves in the remainder of the region returned to endangered status. On 5 May 2011, the USFWS published a new proposed delisting rule for Wisconsin and the remainder of the WGLDPS, and hope to have wolves again delisted in the region by the end of 2011 (USFWS 2011).

A complication in wolf recovery/classification that has occurred in the Great Lakes region has been recent genetic analysis suggesting that wolves in the region are a genetic mixture of gray wolves (*Canis lupus*) and eastern wolves (*Canis lycaon*). Kyle et al. (2006) suggest that the smaller wolves of southern Ontario and southern Quebec represent a separate species known as the eastern Canadian wolf or eastern wolf (*Canis lycaon*). Recent research in Wisconsin, as well as Michigan and Minnesota indicate that wolves in the region are a mixture of eastern wolves and gray wolves (Fain et al. 2010, Wheeldon 2009, Wheeldon and White 2009). Recently Chambers et al. (in prep.) have further suggested that eastern wolf genes exist in the population of wolves in the Western Great Lakes region, and this represents an admixed population of gray and eastern wolves. But a healthy scientific debate still persists as to whether the eastern wolf qualifies as a specific species (vonHoldt et al. 2011). Because wolves were initially listed in the region as gray wolf or subspecies of gray wolf (i.e. eastern timber wolf) by federal and state listing systems, we will continue to refer to these wolves as gray wolves, but do recognize that they also may contain DNA of the eastern wolf.

The enclosed report describes wolf management activity conducted in Wisconsin between 1 July 2010 through 30 June 2011. This report also includes and replaces "Progress Reports" on summer 2010 wolf surveys, annual wolf summaries for 2010, and winter 2010-2011 wolf surveys for the period 15 April 2009-14 April 2010.

### Personnel and funding

Funding for wolf conservation activity in Wisconsin was from the following: Federal Aid in Wildlife Restoration Project W-154-R; funds from the Nicolet-Chequamegon National Forest; Wisconsin Endangered Resources Fund (tax check-off and license plate); Timber Wolf Alliance (TWA); Timber Wolf Information Network (TWIN); Menominee Conservation Department; Stockbridge-Munsee Tribe; Ho-Chunk Nation; Bad River Band Chippewa; Lac Courte Oreilles (LCO) Band Chippewa; Wisconsin

Natural Resources Foundation; research grants through University of Wisconsin - Madison supported research, as well as grants and donations from National Wildlife Federation, Defenders of Wildlife, and private individuals. Persons and organizations donating radio collars are listed in Appendix 2.

Adrian Wydeven was the ecologist in charge of the project, and was assisted by project wolf technicians Ron Schultz, Sarah Boles and Jane Wiedenhoef. Dick Thiel had coordinated wolf surveys in the West Central Region, but retired in winter and Michele Windsor assumed those responsibilities. DNR pilots conducting aerial monitoring of collared wolves included: John Bronson, Joe Sprenger, Mike Weinfurter, Phil Miller, Beverly Paulan, Dan Cardinal, and Leo Bunderson. Other DNR personnel that assisted extensively on wolf monitoring included, Nancy Businga, Lindsey Long, Randy Jurewicz, Ken Jonas, Greg Kessler, Todd Naas, Bruce Bacon, Rick Weide, Pat Beringer, Laine Stowell, Nancy Christel, Gary Dunsmoor, Jess Carstens, Aaron McCullough, Kevin Morgan, Rich Staffen, Amy Staffen, Kyle Anderson, Steve Hoffman, Bob Hanson, Sara Kehrli, Mark Rasmussen, David Schmidt, Lesa Kardash, Jon Robaidek, Terry Dukerschein, Jean Bruner, Tom Carlson, Mark DeBaker, Karl & Marie Ericksen-Pilch, Joanne Finnell, Eric Kroening, David MacFarland, Shawn Rossler, and Mike Zeckmeister. Dawn Hinebaugh maintained the DNR wolf web site. Live trapping and field investigations of wolf depredations were conducted under the supervision of Jason Suckow and district supervisors Bob Willging and Charles Lovell of USDA-APHIS-Wildlife Services, as well as assistant district supervisor, Dave Ruid and included wildlife specialists Mark Kerr, Phil Peterson, Eric Fromm, Ed Zyzdik, DeWayne Snobl, Jim Rollman, Jeremy Irish, Jim Miller, Chad Alberg, Steve Krueger, John Nuce, Mike Petrie, Aaron Freund, and Barry Benson. Eric Fromm also conducted track surveys during winter. Dead collared wolf specimens and some hybrids were sent to Paula Holahan at University of Wisconsin-Madison, and Paula assisted in identification of possible hybrids. Dead radio-collared wolves, suspected illegally killed wolves, and fresh dead wolves dying from unknown causes found in the field were necropsied by the DNR Wildlife Health Team. Toni Piaggio of the USDA National Wildlife Research Center in Fort Collins, CO provided genetic testing of wolf specimens. Wolf surveys were also conducted by Don Reiter on the Menominee Reservation; Bob Frank and Randall Wollenhaup on the Stockbridge reservation, Bob Wilmer and Lacy Hill on the Bad River Ojibwa Reservation; Paul Christel on the LCO Ojibwa Reservation; and Karen Karash and other Ho Chunk members surveyed portions of central Wisconsin. Additional assistance with wolf monitoring was provided by Dean Beyer and Brian Roell (MI DNR); Dan Eklund, Mike Peczynski, Kathy Moe, Beth Blicharz, Scott Anderson, Jerry VanCleve, and Tom Matthiae (U.S. Forest Service); and Tim Wilder and Nathan Tucker (U.S. Army-Fort McCoy); Sarah Boles and Northland College students; and Zack Wilson (TWA). Jennifer Stenglein and Christine Anhalt conducted research with Dr. Tim Van Deelen of UW-Madison; Erik Olsen and Christine Browne-Nunez conducted research with Dr. Adrian Treves of the Nelson Institute at UW-Madison. About 137 volunteer trackers assisted with winter track surveys, and are listed by survey blocks in Appendix 3. Regional coordinators for the volunteer tracking program include John & Alice Droske, Linda & Perry Nelson, Tom Podlesny & Bobbi Rongstad, David Wiltout, Karl & Marie Ericksen-Pilch, Al & Nancy Warren, Norm Poulton, Chris Giese, Joanne Finnell, Ron VanderVelden, Ray Leonard, Emily & Larry Scheunemann, and Mike Ravet.

#### JOB 106.1 WOLF MANAGEMENT ZONES

Four management zones were created in the 1999 wolf management plan (Figure 1). Wolf population and summary of wolf management activities for each zone for period 2010-2011 are discussed below.

Zone 1 (18,384 square miles) represents the northern forest wolf range in Wisconsin and in winter 2010-2011 consisted of 568-600 wolves in 158 packs plus 11 loners. Packs were detected in all 21 counties in the zone; public and agency reports of wolf observations were received from all these counties. Depredations during 2010 included 46 cattle killed and 6 injured as well as 6 sheep and 6 farm deer killed, and 1 goat injured on 35 farms by 20 wolf packs. Fourteen packs also killed 20 dogs and injured 5 dogs.

Two packs depredated on both dogs and livestock. Ten wolves and 1 hybrid were captured at a depredation site and euthanized in a human safety situation. Average deer density across the zone in late 2010 was 21 deer per square mile (range 6 to 39 deer/mi<sup>2</sup> among 44 deer management units), just slightly above the average goal of 19 deer / square mile for the region. Wolf packs occupied about 9600 square miles in the zone at a density of about 1 wolf per 16 square miles during winter (2.4 wolves / 100km<sup>2</sup>)

Zone 2 (4,521 square miles) represents the central forest wolf range, and in winter 2010-2011 consisted of 118-124 wolves in packs and 4 loners. The zone consists of portions of 10 counties, but mainly consists of 7 counties that all contained wolf packs. Public and agency reports of wolf observations were received from all counties in the zone. Depredations in 2010 consisted of 3 cattle killed on 3 farms by 2 packs, and 3 dogs killed and 4 injured by 2 packs and a disperser. One pack attacked both a dog and livestock. Average deer density in the zone in late 2010 was 31 deer per square mile (range 23 – 37 deer / mi<sup>2</sup> among 5 deer management units), and was slightly above the goal of 27 deer per square mile. Wolf packs occupied about 800 square miles in the zone at a density of about 1 wolf per 7 square miles during winter (5.5 wolves / 100km<sup>2</sup>)

Zone 3 (~18,000 square miles) represents wolf dispersal habitat and marginal wolf habitat in areas of mixed forest/farmland across central and southwest Wisconsin and includes portions of 33 counties. This area was not expected to be important wolf habitat, and was not expected to support many packs. In winter 2010-2011, 76-81 wolves were detected in 17-18 packs plus 4-5 loners were detected. Reports of wolf observations were received from at least 14 counties. Thirteen wolves were found dead in 8 counties in the zone in 2010. Depredations during 2010 occurred on 8 farms and included 11 cattle killed. Depredations on livestock were apparently caused by at least 5 packs and 1-2 lone wolves. Five dogs were injured and 1 killed by 5 different packs, including 2 packs that attacked both livestock and dogs. Wolf packs occupied about 500 square miles in the zone at a density of about 1 wolf per 6 square miles (6.4 wolves/ 100km<sup>2</sup>).

Zone 4 (~16,000 square miles) represents portions of southern and eastern Wisconsin, and includes 28 counties in portions of the state that are mostly agricultural and urban areas. No packs or lone wolves were detected in the zone during the winter survey period. Reports of wolf observations were received from 17 counties in the zone during the study period. One wolf was found dead in the zone during the study period in Dane County. No depredations on domestic animals were detected.

## JOB 106.2 POPULATION MONITORING AND MANAGEMENT

### Methods of study

A territory mapping system (Fuller et al. 2002) was used to determine the Wisconsin wolf population. Wolf territories and numbers of wolves in packs were located by radio-telemetry of radio-collared packs, snow track surveys of non-collared packs, depredation reports, mortalities, and agency and public reports of observations of wolves.

Wolves were live trapped and radio collared following procedures of Mech (1974) and Wydeven et al. (1995, 2009). Most trapping was done from early May through mid-September mostly using foothold traps (Kuehn et al. 1986), but some limited trapping was done with cable restraints in winter (Olson and Tischafer, 2004).

Radio telemetry surveys were used to determine territory distribution and wolf numbers for packs with collared wolves (Fuller and Snow 1988). Aerial locations were obtained weekly with fixed winged aircraft on VHF radio collared wolves. Attempts were made to maintain one collared wolf in about one

third of the packs in the state (Wydeven et al. 1995, Wisconsin DNR 1999, Wydeven et al. 2009). Movements of collared wolves were assumed to represent the general movements of the pack, and maximum count obtained from the air in mid or late winter was assumed to represent the whole pack. When collared wolves moved outside of known territories in extraterritorial moves or dispersals, the collared wolves were assumed to be traveling by themselves. Wolves were rarely observed from the air in Wisconsin, except during winter when collared wolves were observed up to 30% of the time flown. Pilots made special efforts to visually observe wolves from December through March. Numbers of visual observations were reported for all collared wolves in relationship to total radio-locations during the period of December through March.

Home range area for the winter period (15 September – 14 April) was determined from the minimum convex polygon (Mohr 1947). Normally, isolated radio locations over 5 km from other points would be considered extra-territorial moves as done by Fuller (1989). However, because of the small number of radiolocations available during the summer monitoring period, locations greater than 5 km from other points were considered part of the home range when they fell within or very near the mapped pack territory boundary and were not within another pack's territory. When 2 separate clusters of radiolocations existed with regular travel between them, areas in between were considered part of the home range regardless of distance, as long as both clusters did not occur in another pack territory. Home range areas were calculated for wolves that occupied stable areas, and did not include lone wolves that were dispersing.

Snow tracking and sign surveys (Wydeven et al. 2009) were used by trackers to obtain counts of wolves in packs without collared wolves, or to supplement survey information for collared packs where few observations were made from the air. Presence of raised leg urinations (RLU's) especially double raised leg urinations (urinations by both alpha male and female) were used to determine territory marking and likeliness of breeding activity (Peters and Mech 1975). Estrus blood in the snow with the RLU's of alpha females further demonstrated likely breeding activity (Rothman and Mech 1979). Breeding status was surmised for some packs based on regular breeding history in the past or large pack size, and in some cases was determined by observation of freshly excavated den sites in late winter. Surveys were conducted by slowly driving snow covered roads, generally within 1 to 3 days after new snow falls. During a specific survey, as many snow covered roads as possible were followed within specific survey blocks that covered about 200 square miles each (Appendix 4). Roads were followed until wolf tracks were encountered and these tracks were backtracked and forward-tracked to see where they joined and left the road. Separations of packs were determined by distance between track sets and sign observations, direction of movements, timing of observations, presence of radio collared packs, historical pack use of an area, and knowledge of focal points such as den sites and rendezvous sites.

Attempts were made to conduct track surveys across most of the heavily forested areas of northern and central Wisconsin. Track surveys were especially focused on areas with historical wolf presence, recent observations of wolves, or areas of highly suitable wolf habitat (Mladenoff et al. 1995, Mladenoff et al. 2009). Although emphasis was on conducting surveys in fairly recent snow, surveys in older snow did allow detection of wolf presence and of wolf breeding activity (RLU's), but older snow was less suitable for precise counts due to vehicle activity, snowplowing, melting-freezing, and perhaps multiple passages by wolf packs.

Along with DNR trackers, volunteer trackers representing other agencies or the general public helped provide additional snow track surveys. This was the 15th year for the volunteer tracking program. Most heavily forested and mixed forest areas were subdivided into 154 survey blocks (Appendix 4). Volunteers were asked to conduct at least 3 "good" surveys per block, and track about 60-100 miles of road. All volunteers were required to attend weekend wolf ecology courses and day-long track training programs.

Public and agency reports on wolf observations were also used for determining wolf abundance and distribution. Such observations were included in the state wolf count only if verified by experienced trackers, photos or videos were available to verify wolf identification and counts, or the report was from a known reliable source. Track observations were used as part of the state wolf count only from experienced trackers, or from well documented observations (photos, plaster casts, scats collected, etc.).

Wolf packs along the border with Michigan or Minnesota were included in the Wisconsin wolf count if they appeared to have more than 50% of their home range or territory in Wisconsin. Thus some Minnesota and Michigan packs that overlapped only slightly into Wisconsin were not included as part of the state count.

The average of winter 2010-2011 territory area for specific zones, or statewide, were multiplied by all territories to estimate area of occupied territories. Area of wolf occupancy across the state during winter was determined by multiplying occupied territories by 1.37 to include 37% interstitial areas around the territories (Fuller et al. 1992). Territories of lone wolves were included in estimates of home range area and wolf population density if lone wolves were remnants of previously documented packs and the loners appeared to continue to occupy regular territory areas. Lone wolves that appeared to be dispersing or floaters, that did not seem to occupy regular home range areas, were not used in density estimates of the wolf population.

Howl surveys (Harrington and Mech 1982) were used to determine pup production, location of rendezvous sites, summer location of non-collared packs, and to determine the presence of new packs. Howl surveys are useful for determining occurrence of wolves and presence of pups, but are not reliable for an accurate count of wolves beyond 2-3+ pups and 2-3+ adults (Harrington and Mech 1982).

## General Results

### *Wolf Captures in 2010*

Thirty-five wolves were live-captured and radio-collared in 2010 (Table 1). Collars were placed on 24 of 181 packs (13%) detected in the state in winter 2010, and on 3 packs not previously detected (Chittamo, Scotchman Lake, Tilleda), plus 2 wolves apparently established new pair/pack (Oxbo Creek). Collars were also placed on 5 wolves that mainly appeared to be loners/dispersers. Eight wolves were captured by fur trappers in the fall and turned over to WDNR for radio-collaring. The other 27 wolves were captured by WDNR, USDA-WS, and tribal trappers. Captured wolves included: 11 adult males ( $\bar{X} = 79.4$  lbs.  $\pm$  6.9 SD for 10), 6 adult females ( $\bar{X} = 63.5$  lbs.  $\pm$  7.5 SD), 4 yearling males ( $\bar{X} = 67.5$  lbs.  $\pm$  11.5 SD), 12 yearling females ( $\bar{X} = 63.7$  lbs  $\pm$  6.1 SD for 11), 1 pup male (30 lbs.) and 1 pup female (60 lbs).

### *Radio-Collared wolves monitored in Wolf-year 2010-2011*

A total of 82 wolves were monitored during the 2010-2011 wolf-year (15 April 2010 – 14 April 2011; Table 2). A total of 91 wolves were monitored in calendar year 2010. Radio collared wolves monitored during the wolf-year were detected in 72 Wisconsin packs, and 2 Minnesota packs. In winter 2010, 65 packs were monitored in Wisconsin which included 35% of state wolf packs. Wolves monitored during the period included: 24 adult males, 41 adult females, 4 yearling males, 11 yearling females, 1 pup male, and 1 pup female. Most wolves were monitored in Zone 1 (63 wolves), with smaller numbers in Zone 2 (13) and 3 (4), plus 2 were monitored in Minnesota along the Wisconsin border. During the wolf-year, 17 collared wolves died, 12 went missing or dispersed out of range, and 1 lost its radio collar. At the end of the study period, 52 wolves remained on the air including: 10 adult males, 30 adult females, 3 yearling male, 7 yearling females, 1 pup male and 1 pup female.

### *Winter Territory Area*

Mean winter home range for wolves with  $\geq 20$  radiolocations in winter 2010-2011, was 41.0 mi<sup>2</sup> (range 8.3 to 194.0 mi<sup>2</sup>). The mean home range area for 40 wolves in Zone 1 (northern Wisconsin) was 43.4 mi<sup>2</sup> ( $\pm 32.6$  SD), and for 7 wolves in Zone 2 (Central Forest) was 19.8 mi<sup>2</sup> ( $\pm 9.3$  SD). Only one wolf was monitored sufficiently in Zone 3 to estimate home range, adult female 658F covered 49.3 mi<sup>2</sup> in the Miller Creek Pack in Shawano and Menominee Counties. The habitat and prey levels for the Miller Creek territory were probably more similar to Zone 1 and portions of the territory extend into that zone. The general trend seems to be that home range areas were smaller for Zone 2, and probably as well for most of Zone 3. The higher deer density in Zone 2 would be expected to support smaller territory size. Only 2 winter home ranges extended over 100 mi<sup>2</sup> in the state including M2749 of the Giant Pine Pack in Forest County (109.2 mi<sup>2</sup>) and M2761 of the Evergreen Pack (194.5 mi<sup>2</sup>) in Menominee County; both packs occurred in some of the lowest deer densities in the state with 11 deer /mi<sup>2</sup> in northern Forest County and about 7 deer /mi<sup>2</sup> in Menominee County.

### *Annual Pack Territories*

Annual minimum convex polygon pack territories were mapped for the period 15 April 2010 to 14 April 2011 (Figure 2). Locations of all radio monitored wolves in a pack were used, as well as additional locations from winter track surveys, mortalities, depredations, and public observation reports to map each territory. Area of pack territories was calculated for packs with at least 20 radiolocations during the period (Appendix 1). Average annual pack territory size in Zone 1 was 55.6 mi<sup>2</sup> for 47 packs, Zone 2 was 41.0 mi<sup>2</sup> for 8 packs, and one pack in Zone 3 was 62.0 mi<sup>2</sup>. These figures are higher than last year (47.7 mi<sup>2</sup> in Zone 1, 29.4 mi<sup>2</sup> in Zone 2), and seem to be stabilizing or increasing after declining in size for many years (Wydeven et al. 2009).

### *Howl Surveys and Pup Observations*

Howl surveys were conducted in 46 packs and 1 non-pack area (Table 3). A total of 57-60 wolf pups were heard in 24 packs ( $\bar{X} = 2.4 - 2.5$  pups) in summer 2010. A total of 91-94 pups were observed other than on howl surveys in 29 packs ( $\bar{X} = 3.1-3.2$  pups). Using highest counts from a combination of howl surveys and observations, a total of 142- 148 pups were detected in 51 packs ( $\bar{X} = 2.8-2.9$  pups detected per pack). This rate was higher than 2009 when an average of 2.4 to 2.6 pups were detected per pack. Overall, wolves were heard at 77 of 749 stops, or a detection rate of 10.2 %, somewhat less than the detection rate in 2009 (12.6 %). Howl detections were lower in Zone 1, with wolves detected at only 7.4 % of stops, compared to 20.2 % of stops in Zone 2, and 0 % of stops in Zone 3. In Zone 1, pup observation rates were 3.2-3.3 pups per pack, similar to Zone 2 of 3.6 pups per pack, but greater than Zone 3 of 2.2 -2.5 pups per pack. Although exact counts are difficult to obtain from howl surveys (Harrington and Mech 1982), these data suggest that pup estimates are probably comparable to visual observation if large enough samples are available. In general, it appeared pup production was relatively high. Overall howl surveys with 749 howl stops were conducted for 163.2 hours along 1448.8 miles of survey routes.

### *Summary of Radio Telemetry Flights*

Wisconsin DNR pilots detected 191 different wolves including 62 collared wolves being monitored and other wolves seen with them from December 2010 through March 2011 (Table 4). The 191 wolves detected in Wisconsin, represent 24 % of the state minimum count (782), and if 4 wolves known to have died during the period are subtracted, the 187 wolves detected by pilots still represent 24 % of all wolves counted in the state in late winter. At least 4 wolves lost their signals during the period. This is a slight decline in the percentage of the state wolf population counted by pilots in 2010(28%), but similar to previous years: 2009 (21%), 2008 (24%), and 2007 (22%), and slightly less to than the proportion of the

population observed by pilots between 2003-2006, when 27 to 37% of state wolves were observed from the air (Wydeven et al. 2009).

The percentage of times observed from the air averaged 28% for the radio collared wolves monitored across the state. In winter 2010-2011 observation rates were highest in Zone 1 (30%), slightly less in Zone 2 (24 %), and low in Zone 3 (5%) . The overall high rate indicated favorable snow conditions across wolf range for visual observations, and was similar to winter 2009-2010, when an observation rate of 29 % occurred across the state (Wydeven et al. 2010).

Mean pack size of 47 packs observed in Wisconsin by pilots was 4.0 wolves per pack ( $SD \pm 2.37$  ) and ranged from 2 to 12 wolves. The pack count of 12 was the Moose Road Pack in Douglas County. At least 4 other packs also contained at least 7 wolves. Sixteen packs consisted of just a pair (34 %).

Average pack size observed by pilots was similar to observations in 2010 ( $\bar{X} = 4.1 \pm 2.18$  SD , n=42), 2009 ( $\bar{X} = 3.8 \pm 1.73$  SD, n=32), 2008 ( $\bar{X} = 3.8 \pm 1.80$  SD, n=35), and 2007 ( $\bar{X} = 3.6 \pm 1.68$  SD, n=27), but somewhat less than 2006 ( $\bar{X} = 4.5 \pm 2.4$  SD, n=26), or 2005 ( $\bar{X} = 4.6 \pm 2.1$  SD, n=28) (Wydeven et al. 2010).

### *Summary of Track Surveys*

Volunteer trackers turned in surveys for 86 of 103 assigned survey blocks (83 %), of designated blocks (Table 5, Appendix 3). DNR trackers surveyed 86 blocks, and both groups combined surveyed 127 of 154 designated survey blocks. A total of 133 blocks were designated through 2010, but last year 21 additional blocks were added. Blocks not surveyed by snow track surveys included those surveyed only by radio telemetry, blocks on Indian reservations, and blocks in marginal wolf habitat with none or few reports of wolf activity. The percentage of assigned blocks surveyed by volunteers was similar to rate in 2010 (89%), (2009 (83%), and 2008 (85%) and higher than 2007 (79%) or 2006 (74%). Volunteer trackers detected 430-462 wolves along 8232.5 miles of snow-tracking, and DNR trackers detected 457-486 wolves along 4690.0 miles. Volunteer trackers averaged 4.1 surveys per block, averaging 95.7 miles, and 15.4 hours per block.

Both DNR and volunteer trackers surveyed for wolves in 40 survey blocks. Overall number of wolves detected was 158-172 detected by volunteers and 204-223 detected by DNR trackers. Detection rates between DNR and volunteers did vary by individual blocks. DNR detected more wolves in 19 blocks, volunteers detected more wolves in 14 blocks, and both detected the same in 7 blocks, including 1 block with no wolves detected.

### *Dispersing Wolves*

*406F (MI)* was captured as a female pup in the Bear Bluff Pack of Jackson County, Wisconsin on 27 July 2002. It was fitted with a short-term ear tag transmitter and followed until 15 January 2003. She was captured in Schoolcraft County, Michigan on 20 May 2006, and 236 miles from her original capture site. She died in this territory on 15 October 2010 from congestion and pulmonary edema. Her identity was determined at the time of death when her microchip was detected.

*455F (MI)* was captured as an adult female at a depredation site in Burnett County on 18 July 2002, and relocated 109 miles to southwest Vilas County 25 July 2002. She was found dead in Western Gogebic County, Michigan in 3 October 2010, 43 miles to the northwest.

*570F* was captured as an adult female in the Rainbow Lake pack area of Bayfield County on 13 May 2007. She remained a part of that pack through fall 2007. For the next few years she seemed to float around through major portions of Bayfield and Douglas Counties, but for varying periods would rejoin the Rainbow Pack. She traveled as far as 20 miles from the center of the pack territory. Her last location on 30 August 2010, before her signal disappeared, was near the center of the Rainbow Lake territory, although the center had shifted west 4 miles since her original capture.

*630F* was captured as an adult female in the Tupper Creek Pack of Sawyer County on 18 June 2009. In winter 2009-2010 she remained mostly in the pack area, but also traveled to the north and east of the territory. She seemed to leave the Tupper Creek area after 10 May 2010, and moved about through western Sawyer and eastern Price County. By winter 2010-2011 she seemed to occupy a regular territory in the area of the Tuscobia Trail centering about 4 miles north of her original capture, with at least one other wolf. By spring 2011 she shifted to the east into the Thornapple River pack centered about 8 miles northeast of her original capture.

*639F (MN)* was captured as a yearling female in a coyote trap on 20 October 2009 in the Shoberg Lake pack in Douglas County. She left the territory after 30 November, 2009. In winter 2009-2010 she settled into the Thunder Meadow area near Duxbury, Pine County, Minnesota, 42 miles southwest of her original capture. On 20 September 2010, she was detected on mortality, and her collar was found 11.5 miles northwest of her most recent location. She probably was killed illegally in the Thunder Meadow area.

*652F* was captured as a female pup in the McKenna pack, Jackson County on 15 August 2008. In winter 2008-2009 she occupied the McKenna pack and western portions of the Bear Bluff pack. On 3 August 2009 she moved north into the Noch Hanai territory 10 miles from the center of her natal territory, and seemed to have settled into that pack. But by spring 2010 she began roaming east of that pack and by winter occupied a new territory, the Pray Pack situated just east of Noch Hanai and north of McKenna

*657M* was captured as an adult male in a coyote trap in the Meadow Creek area of Clark County on 10 November 2009. He left his home territory on 3 January 2011 and by 12 January had joined the Eau Claire River Pack. His new territory center was about 12 miles northwest of his original capture site.

*659F* was captured as an adult female in the Miller Creek Pack on the Stockbridge Indian reservation in Shawano County on 10 July 2010. She spent part of the summer roaming areas south of the pack territory, and by fall seemed mostly to have left the territory and perhaps join a new pack in the Tilleda area. On 25 October she was found dead from shooting by arrow about 4.5 miles south of her original capture on the south side of the Miller Creek pack area.

*687M* was captured as an adult male in the Thunder Creek pack in Price County on 29 June 2009. He apparently dispersed from this pack and by 16 February he had apparently joined the Little Rice River Pack; the middle of this pack was about 8 miles east of his original capture site.

*691M* was captured as an adult male in the Price Creek Pack of Price County on 20 June 2009. He left the territory after 15 December 2010, traveling east and northeast of the territory in north Price and southern Ashland and Iron County. He was found dead on a frozen lake northeast of Butternut 28 March 2011, 23 miles northeast of his original capture site in the Price Creek Pack.

*694F* was captured as a yearling female in the Ghost Lake Pack of Sawyer County on 29 June 2009. She left the territory after 28 October 2010, and roamed broadly through portions of Bayfield, Sawyer, Price, Ashland and Iron Counties. After 18 April 2011 she settled into a home range in the Chippewa River pack area of Ashland and Iron Counties. She was last detected in this area on 13 June 2011, 33 miles east of her original captures site.

*752F* was captured as a yearling female in the Price Creek Pack of Price County on 25 June 2010. She was last in the Price Creek Pack area on 23 November 2010. By 15 December 2010 she had joined the Carpenter Creek pack and her new home range centered about 8 miles east of her original capture in Price Creek.

*753F* was captured as a yearling female in a coyote trap in the area of the Shoberg Lake Pack of Douglas County on 18 October 2010. This wolf was apparently just passing through the area, and remained in a dispersing mode throughout the remainder of the study period. She roamed as far north as 16 miles north of her capture, to areas near Maple in northern Douglas County to 24 miles to the south of her capture, to areas west of Hayward in northern Washburn County.

*754F* was captured as a yearling female on 28 June 2010 in the North Willow Pack in western Oneida County. She mostly remained in the pack area during winter, but did an extra territorial move to eastern Price County in March 2011. She was again in her natal territory on 18 April 2011, but on 2 May 2011 was euthanized at a farm experiencing human safety concerns with wolves 30 miles to northwest near Fifield in Price County and 26 miles northwest of her original capture.

*757M* was captured as an adult male in the Casey Creek Pack of Douglas County on 29 October 2009. After 29 November 2010, wolf 757M moved south to join the Moreland Lake pack. The new pack center was about 8 mile south of the center of Casey Creek.

*763F* was captured as a yearling female in the Colburn Pack of Adams County on 3 June 2010. She spent most of the summer in the Colburn area, but by September 2010, started spending time in the town of Grant in Portage County, 14 miles north of her original capture site. During winter 2010-2011, wolf 763F roamed over an area that extended 28 miles north to south from southern Portage County to central Adams County. By 10 March she began to focus on the Leola Marsh area about 6 miles north of her original capture site.

*768M* was captured in a coyote trap as an adult male near Tigerton in Shawano County on 16 November 2010. He may already have been dispersing when captured. He roamed southwest Shawano and northern Waupaca Counties. He moved into Menominee County by 18 January, but after 26 January disappeared and was again discovered on 22 February 2011 in Florence County, and 77 miles northeast of his original capture site. He was next detected on 28 March 2011 in the Oconto River area of west Oconto County, nearing Suring, and remained in the area through the rest of the period, 53 miles south of the February location and 34 miles northwest of his original capture.

*777F* was captured in a deer farm in Oneida County as a yearling female on 31 August 2010 and released in west Price County 45 miles to west. Although initially she roamed mainly in the Price Creek Pack area, eventually she roamed broadly in western Price and eastern Sawyer County. She was found dead from shooting on 28 October 2010 near the Flambeau River in eastern Sawyer County, 5.5 miles north of her original release site.

*779M* was captured as a pup male in the West Firelane Pack in the Bad River Reservation in Ashland County on 31 July 2010. This territory may have been divided into west and east portions and he roamed the western portions through 29 November 2010, but started spending time in the east side of the territory in early December, and dispersed after 9 March 2011. He was next detected on 21 April 2011 in the North Blue Hills, 72 miles from his original capture, and appeared to join this pack.

*792F* was caught as a pup female on 12 November 2010 in a coyote trap in the North Willow area of Oneida County. She remained in the territory throughout the winter. She was last near her natal territory on 25 April 2011. The wolf was detected on 9 May 2011 north of Park Falls in Price County, 31 miles northwest of her original capture. Her signal was lost after that date.

*793F* was captured as a yearling female in the North Willow Pack in Oneida County on 28 June 2010. She was last located in her natal territory on 1 November 2010, and after 16 November settled into the North Wintergreen Pack 28 miles to northwest. The wolf was euthanized on a farm near Fifield experiencing wolf safety issues on 19 April 2011 and 25.5 miles from her original capture site.

*M2778F* was captured as an adult female on 15 June 2010 in Gogebic County, Michigan. She was detected in western Menominee County, Wisconsin on 14 March 2011 about 90 miles south of her capture site. GPS locations for the wolf indicate it traveled through Gogebic and Iron Counties, Michigan, and Vilas, Forest, Florence, Marinette, Oconto, and Langlade Counties. The wolf had traveled to Menominee County by 19 January 2011, but was not detected by VHF telemetry in WDNR airplanes until March.

*M2782* was captured as an adult male on in Ironwood, Michigan on 11 August 2010, and lost from its territory after 27 September 2010. It was killed by a train collision in Clark County, WI on 18 October 2010, 107 miles south from capture in his natal territory.

*Dane Co. Female*, A yearling female was killed by vehicle collision on County M in northern Dane County on 6 January 2010. The location was about 60 miles south of the closest pack area. Although the animal tested genetically as wolf, there was some physical indications that she may have been a wolf-dog hybrid.

*Portage Co. Male*, An adult female was killed by vehicle collision along a town road in Portage County on 5 February 2010. The location was about 15 miles east of the nearest wolf pack.

*Portage Co. Female*, A female of unknown age was killed by a vehicle on County highway F in Portage County on 9 March 2010. The location was about 13 miles east of the nearest pack.

*Buffalo Co. Male*, An adult male died from unknown cause in Buffalo County on 29 March 2010. The location was about 26 miles southwest of the nearest wolf pack.

*Wood Co. Female*, An adult female who had apparently been shot illegally was found dead in Wood County on 3 April 2010. The location was about 2 miles north of the nearest wolf pack.

*Lincoln Co. Male*, An adult male was killed by vehicle collision on Highway 17 on 3 April 2010 in Lincoln County. The location was about 9 miles south of the nearest wolf pack.

*Marathon Co. Male*, An adult male was killed by vehicle collision on Highway 51 on 26 April 2010 in Marathon County. The location was about 3 miles east of the nearest wolf pack.

*Monroe Co., Male*, An adult male was illegally shot on 29 April 2010 in Monroe County. It was located about 2 miles north of the nearest wolf pack.

*Ashland Co. Male*, A yearling male was killed by vehicle on Highway 112 on 15 September 2010 in Ashland County. The location was about 2 miles east of the nearest pack.

*Jackson Co. Female*, An adult female was found dead from unknown causes on 22 November 2010 in Jackson County. The location was about 7 miles west of the nearest wolf pack.

*Polk Co. Male*, An adult male was killed by vehicle collision on Highway 8 on 4 December 2010. The location is about 15 miles southwest of the nearest wolf pack.

*Oneida Co. Female*, A female of unknown age died from a vehicle collision on Highway 51 on 31 December 2010. The location was about 3 miles east of the nearest wolf pack.

### Wolf Count Summary

Through radio tracking of collared wolf packs, snow tracking of noncollared packs, and public and agency reports of wolf observations, a total statewide population count was obtained of a minimum of 782 to 824 wolves in winter 2010-2011 (Table 6). This included 762 to 805 wolves in 202 or 203 packs or groups of  $\geq 2$  wolves, and at least 19-20 loners (Figure 2). The count outside of Indian reservations was 751 to 793, thus the wolf population was at least 401 wolves above the state population goal of 350 wolves outside of Indian reservations (Wisconsin DNR 1999). We adjusted the winter count in 2009-2010 from 690 to 733 with 181 packs, to 704 to 747 including 188 packs with discovery of 7 packs (pairs) missed in the winter count in 2009-2010. Using the lower range of the population ranges, the wolf population increased 11 % from winter 2009-2010 to winter 2010-2011. Annual growth averaged 12% between 2000 and 2007, but was higher between 1990 and 1999 when the rate averaged 22% (Wydeven et al 2009b). The wolf population growth since 1979-1980 is shown in figure 3.

Average pack size was 3.8 -4.0 wolves across the state, which was similar to packs counts in recent years including, 2010 (3.7 to 4.0), 2009 (3.8 to 4.0), 2008 (3.6 to 3.8), 2007 (3.8 to 4.1), 2006 (3.9 to 4.3), and 2005 (3.8 to 4.1) (Wydeven et al. 2010). The area occupied by territorial wolves in winter was estimated to cover 10,848 mi<sup>2</sup>, and thus 767-810 wolves occurred at densities of 1 wolf per 13.4 mi<sup>2</sup> to 14.1 mi<sup>2</sup> within occupied wolf range (2.7 -2.9 wolves/100 km<sup>2</sup>). DNR pilots detected 191 different wolves at 249 radio locations, and mean size of 47 packs observed by pilots was 4.0 wolves per pack (SD  $\pm$  2.37).

Seventy-three wolves and 3 wolf-dog hybrids were found dead in 22 counties in the state during 2010 (Table 7). The sample included: 21 adult males, 25 adult females, 3 adult unknown, 4 yearling males, 7 yearling females, 3 pup males, 7 pup females, 3 pups unknown sex, 1 male and two females of unknown age. Among 16 wolves that died while being actively monitored mortality included: 7 (44 %) were shot illegally, 2 (12 %) vehicle collision, 2 euthanized in human safety situations, 1 (6 %) disease (mange

related), 1 (6 %) intraspecific strife, and 3 (19 %) unknown mortality. Thus, 44 % of mortality of actively monitored wolves was due to illegal kills, and at least 69 % were human caused mortalities.

Among the overall sample of 72 wolves found dead in the state in 2010, mortality included: 16 ( 22 %) euthanized human safety concerns, 1 (1 %) euthanized after serious injuries, 25 (35 %) vehicle collisions, 1 (1 %) train collision, 15 (21 %) illegal shooting, 1 (1%) trauma from trap injury, 2 (3%) died from mange and other disease, 1 (1 %) intraspecific strife, 1 (1%) other natural mortality and 9 (12 %) unknown causes. Among the overall sample, at least 82 % were human caused mortality but among the actively monitored wolves, 69 % were human caused mortality. The radio-collared sample is probably less biased as far as assessment of overall mortality rates, because natural mortality is not readily detected for non-collared wolves. Illegal kill represented 44% of all mortality among collared wolves in 2010 compared to 62% in 2009, 23% in 2008, 19% in 2007, and 67% in 2006. Mange seemed to be a relatively minor mortality factor in 2010.

A total of 184 radio collared wolves actively being monitored were found dead in Wisconsin from October 1979 through December 2010 (Table 8). A total of 57% were human caused mortality, and slightly less than 43% were caused by natural factors among known mortalities. The most important mortality factors were: illegal shooting (35%), disease (26%), other wolves (11%), and vehicle collisions (9%). Illegal killing was especially important in the 1980s, but declined drastically in the 1990s. Illegal killing seemed to be increasing in 2006 and 2009. Mange is probably the most important disease factor over time, but was relatively unimportant during the current study period. Euthanizing of depredating wolves seems to be becoming a more important mortality factor, although it had only been possible since 2003, and was only used in human safety situations in 2010.

### Statewide Wolf Distribution

Wolf observations classified as “possible” or “probable” occurred in 55 Wisconsin counties in 2010, although 12 counties only had single wolf reports (Table 9). The 365 wolf observations reported in 2010 were similar to reports in 2009 (373 reports) and was higher than previous years (2008, 351 reports; 2007, 329 reports; 2006, 312 reports; 2005, 319 reports; 2004, 252 reports; 2003, 330 reports; and 2002, 355 reports). But the number of reports in 2010 and 2009 was only slightly more than 2002 when the wolf population was half as large, indicating poor power in this index as a measure of wolf abundance. Highest rates of reported observations were for Price (23), Marinette (22), and Ashland (20) Counties. Highest observations were from counties with breeding packs, but reports were also received from 13 counties, mainly in zone 3 (central and western Wisconsin), and 18 counties in zone 4 (southeast and southern Wisconsin). Some reports of wolves outside the northern and central forests may have been of dogs, coyotes or wolf-dog hybrids, but the mortality of a wolf in Dane County (Table 7), indicates wolves were traveling to zone 4 in southern Wisconsin. Although it appears that numbers of reported wolf observations does not closely track the wolf population, these reports continue to be useful for directing other surveys and supplementing these surveys, as well as providing broad information on wolf distribution and dispersal across the state.

### JOB 106.3 WOLF HEALTH MONITORING

No disease testing was conducted on wolves that were live captured in 2010. Attempts were made to conduct necropsies on wolves with radio collars that died, and wolves that died of unknown causes or suspected legal cases if carcass were still relatively fresh. Overall assessments of general physical conditions were made of all wolves necropsied.

The crude mortality rate during the study period of 16 radiocollared wolves found dead of 91 wolves monitored in 2010, was 18% mortality among wolves that were mostly  $\geq 1$  year old. Among these 16 wolves, 1 (6 %) died from disease (mange related). Although sample size was low, prevalence of mange was low in 2010. Mange was detected in 1 (3%) of 35 wolves live-captured in 2010 for monitoring. Overall rates of mortality remain relatively low for wolves one year or older.

Pup survival has been estimated at 30% during recent years (Wydeven et al. 2009). Pup survival was not determined for winter 2010-2011 because detailed information on age composition from each pack in the state is becoming difficult to obtain with the growing and expanding wolf population. From a combination of howl surveys and observations, 142-148 pups were detected in 51 packs in summer 2010, compared to a total of 108-117 pups detected in 45 packs in 2009, and 131-137 pups detected in 45 packs in 2008. These represent probably less than 1/3 of packs producing pups, suggesting that healthy levels of pup production are continuing in the state. Pup survival rates will probably decline in the future as the population approaches carrying capacity (Van Deelen 2009).

In general the Wisconsin wolf population appeared to be healthy. Adult survival rates were high, incidence of mange was low, recruitment of pups was adequate for maintaining the population or for moderate growth, and few wolves died from disease. Rates of illegal kill appear to be on the rise, which may be an indication of broad wolf distribution into areas with higher encounter rates with humans, or may represent a backlash to a high wolf population or frustration with the delisting/relisting process.

#### JOB 106.4 HABITAT MANAGEMENT

Wolf program personnel worked with public land agencies, and utility companies to encourage maintaining areas of low road densities and protecting den sites. Potential den sites are also listed on files for the Natural Heritage Inventory, and whenever management activities were planned for these areas, the agency or company planning such activities contacted the wolf program to avoid disturbance of den sites. Wolf pack territory shapefiles were provided to organizations, when requested, to aide in assessment of land use options. Forest and ecological management benefited wolves and provided habitat on the Chequamegon-Nicolet National Forest, State Forests (Northern Highland/American Legion, Brule River, Governor Knowles, Flambeau River, Black River, and Peshtigo River), Necedah National Wildlife Refuge, county forests, Apostle Islands NLS, St. Croix NRW, state wildlife areas, and various industrial and private forest lands. Presentations were given by Ron Schultz on 13 and 27 August 2010 to 70 people at a UW Coverts workshop for private forest owners. Adrian Wydeven talked to the County Forests Association in Keshena on 17 March 201 (80 people).

#### JOB 106.5 WOLF DEPREDATION MANAGEMENT

Wolf depredation to livestock occurred on 46 farms in 2010, compared to 28 farms in 2009, and exceeds the previous record of 32 farms in 2008 (Table 10a). Total livestock depredation in 2010 included: 60 cattle killed (45 calves), 6 cattle injured, 6 sheep killed (4 lambs), 1 goat injured, and 6 farm deer killed. A total of 26 to 27 packs and 2 to 4 loners/dispersers were involved in depredation on livestock in 18 counties. Twenty-three of the depredating packs were detected in the previous winter and were 13% of the known packs in the state. Depredations occurred on 35 farms in Zone 1, 3 farms in Zone 2, and 8 farms in Zone 3. Four verified cases of wolf harassment or threats to livestock were also recorded during 2010 (Table 10a).

Thirty-four cases of wolf depredations on dogs were detected during 2010, including 14 cases of wolf depredations on pet dogs near homes, and 20 cases of depredations on dogs in hunting and training situations (Table 10b). A total of 24 dogs were killed and 14 were injured by wolves in 21 different packs (12% of packs in the state in 2010) and 1 loner/disperser. Among hunting dogs 18 were killed and 4 were injured

(including 1 bird dog), and among pet dogs, 6 were killed and 10 were injured. An injury to a bird hunting dog in Jackson County on 21 September 2010 was the first depredation on a dog in a bird hunting situation ever recorded in Wisconsin. The total kill on dogs by wolves was less than the 25 killed in 2006, but the 14 injured in 2010 exceeded the previous high of 11 in 2009. Rate of wolf depredation on hunting dogs was similar to recent years, but rate of depredation on pet dogs was the highest ever recorded in the state. A total of 5 packs were involved in depredation on both dogs (all pet dogs) and livestock. A total of 31 packs (~17 % of state packs) would have been likely exposed to control actions if wolves had been delisted (packs attacking livestock or pets near homes), and with typical success rate of these controls, wolves would have been removed from about half these packs. No authority for lethal controls, except in human safety situations, existed for the Wisconsin DNR in 2010.

Nine safety concerns involving 7 packs across 5 counties were documented in 2010 (Table 10c). In two of these situations, levels of habituation were serious enough that WDNR exercised its authority to “take” wolves that were considered “demonstrable but not immediate threats to human safety”. In cooperation with USDA-Wildlife Services, 15 wolves and 1 wolf–dog hybrid were captured and euthanized or shot from a farm in Price County, and a cranberry bog in Jackson County. The Price County pack was also involved in livestock depredation and harassment, and the Jackson County pack had also attacked and threatened dogs. Additionally, a wolf captured and collared from the Price County farm (770M) in spring 2010, was euthanized away from the farm when recaptured in October when it continued to show habituated and bold behavior.

During 2010, USDA-WS received 225 wolf complaints which included 108 verified attacks (confirmed and probable), 8 verified threats and harassment of domestic animals, 8 verified human safety threats, 29 coyote attacks, 9 dog attacks, 3 bear attacks, 1 bobcat attack, 1 raccoon attack, 1 unknown predator and 57 unconfirmed. Complaint counts are higher than wolf cases in tables 10a and 10b because more than one complaint was received from some farm and home sites that are listed as 1 wolf case on those tables.

### JOB 106.6 WOLF EDUCATION PROGRAMS

During the study period, talks about wolves were given by the following DNR Wolf Program personnel (talks/people): Adrian Wydeven (19/714), Ron Schultz (17/408), Jane Wiedenhoft (4/665), Sarah Boles (2/70). Numerous talks were also given by others in DNR Wildlife Management, State Parks, USDA-Wildlife Services, naturalists and volunteers with Timber Wolf Alliance (TWA) and Timber Wolf Information Network (TWIN). Talks by the project personnel on wolf ecology and management training were provide for students at Northland College, UW-Stevens Point, and UW-Madison (Kemp). A presentation was given by the project ecologist at a state Land Conservation Departments conference for 80 people in Wisconsin Rapids on 3 March 2011. DNR program personnel talks included about 120 people at volunteer tracking workshops in fall 2010 and early winter 2011. Wisconsin DNR, US Forest Service, and other agencies cooperated with TWA to distribute 1000’s of wolf education posters during Wolf Awareness Week in October 2010.

DNR wolf program personnel attended 3 advisory board meetings of TWA to coordinate wolf educational and outreach activities. TWA held another successful Wolf Awareness Week in October 2010 and 30,000 wolf educational posters were distributed across the country.

Media contacts by the project ecologist included 97 contacts including, 59 newspaper (including wire service), 22 radio, 12 television, and 4 magazine interviews. Major news stories included: new federal delisting effort on Great Lakes wolves, controversy over wolf taxonomy and genetics, wolf depredations on dogs and livestock, new population count, and wolf control in human safety situations. News releases

were developed for new delisting of wolves, dog and livestock depredations, coyote season closure during deer season, and new population count. Three progress reports were produced including annual wolf status management efforts for July 2009-2010, annual wolf management summary for 2010, and annual wolf survey reports were written and distributed and posted on the DNR wolf web site, [http://dnr.wi.gov/org/land/er/publications/reports/pdfs/ER\\_report139.pdf](http://dnr.wi.gov/org/land/er/publications/reports/pdfs/ER_report139.pdf)  
[http://dnr.wi.gov/org/land/er/publications/reports/pdfs/ER\\_report140.pdf](http://dnr.wi.gov/org/land/er/publications/reports/pdfs/ER_report140.pdf)  
<http://dnr.wi.gov/org/land/wildlife/harvest/reports/graywolfpop.pdf>

The DNR wolf web site (<http://dnr.wi.gov/org/land/er/mammals/wolf/>) also contained information on wolf depredations on farms, latest updates on depredation on hounds, updated wolf distribution maps, news releases, and information on the Volunteer Carnivore Tracking Program. Since 2010, a notification system was established to let hunters and other pet owners know as soon as possible the occurrence of new dog depredations so that hunters could avoid depredating packs or modify their behavior if hunting or training in an area with a depredating pack. All new dog depredations are listed on the email notification system as soon as DNR staff receive and post the information, generally on the same day when verifications are made.

<http://dnr.wi.gov/org/land/er/mammals/wolf/dogdepred.htm>

#### JOB 106.7 LAW ENFORCEMENT

Wolf project personnel assisted DNR conservation wardens and U.S. Fish and Wildlife Services special agents on the 15 illegally killed wolves that occurred during 2010. Between 1 January 2010 and 30 June 2010, an additional 15 illegal kills occurred. In 2010 distribution of illegal kills included 7 (47 %) in Zone 1, 4 (27%) in Zone 2, 4 (27 %) in Zone 3, and 0 in Zone 4. The percentage of wolves known to be living in each zone in winter 2010-2011 was 74% in Zone 1, 16% in Zone 2, 10% in Zone 3 and <1% in Zone 4, indicating that illegal kill was not evenly spread across the wolf population.

The coyote closed area during the firearm deer season for Zone 1 was monitored during the hunting season, and a news release was published prior to the deer season to remind hunters of the coyote closed season and the protective status of wolves. Zones 2 through 4 were not closed to coyote hunting and attempts were made to reduce illegal kill by more educational efforts. Extra flights were flown during the deer season. Four wolves were detected illegally killed during the 9-day firearm deer season, and only one occurred in Zone 1, areas closed to coyote hunting. This was down from illegal kill of 9 detected in the 2009 firearm deer season.

#### JOB 106.8 INERAGENCY COOPERATION AND COORDINATION

The Wisconsin Wolf Science Committee did not meet at all during the period with wolf management in the state in flux as efforts were expended on developing and providing input on a new federal delisting rule. Members of the Wolf Science Committee did attend fall (1 Oct. 2010) and spring (15 Apr. 2011) wolf population monitoring meetings. The Wisconsin Wolf Science committee advises DNR administration, the Wisconsin Wolf Stakeholders, and the Wisconsin Natural Resources Board on scientific management of wolves in the state, and consisted of staff from Wisconsin DNR, University of Wisconsin, University of Wisconsin Extension, Wisconsin Department of Agriculture Trade & Consumer Protection, U.S. Forest Service, USDA-Wildlife Services, Great Lakes Indian Fish and Wildlife Commission (GLIFWC), U.S. Fish and Wildlife Services, Wisconsin county forests, and a private veterinarian.

A meeting was held with the Wisconsin Wolf stakeholders on 16 April 2011 to discuss wolf population updates, depredation management, wolf management policies, discuss potential goals for a new state wolf

management plan, and discuss the new federal delisting rule. The Wolf Stakeholders consisted of a diverse group of interested parties including hunting groups, environmental groups, animal welfare organizations, farm groups, tribes, educators and private citizens.

The Midwest Wolf Stewards met in Cable, Wisconsin on 27-28 April 2011, and was organized by the Wisconsin DNR and TWA, with help from USDA-Wildlife Services, U.S. Fish and Wildlife Services, and Great Lakes office of The National Wildlife Federation. Talks were held on latest taxonomy and genetics of wolves in the Western Great Lakes region. Talks and discussions were also held on wolf status and research in Michigan, Wisconsin, Minnesota and Ontario, as well as federal delisting plans for Western Great Lakes. The organizations involved included Wisconsin DNR, Michigan DNR, Minnesota DNR, Ontario Ministry of Natural Resources, USDA-Wildlife Services, U.S. Fish and Wildlife Service, U.S. Forest Service, University of Wisconsin-Madison, Trent University, Wright University (OH), New York State Museum, Northland College, Timber Wolf Alliance, Michigan Technological University, Michigan State University, GLIFWC, Bad River Band of Chippewa, Potawatomi Tribe, Stockbridge/Mohican Tribe, Odawa Tribe, International Wolf Center, Defenders of Wildlife, National Wildlife Federation, Wildlife Science Center, Wolf Park, Humane Society of U.S. and others.

Adrian Wydeven, Randy Jurewicz, and Dave Oginski met with the Wisconsin Conservation Congress, Wolf Committee on 8 October 2010 in Plover. Major discussions were held on population status, depredation management, federal delisting issues, and updating of the wolf plan.

The project ecologist was very involved with the U.S. Fish and Wildlife Service in developing plans for a new delisting rule for the Western Great Lakes region, as well as working carefully with Minnesota and Michigan DNR. Along with WDNR administrator Rebecca Schroeder, Wydeven attended a week long workshop in West Virginia from 22 August to 28 August 2010, to examine wolf management issues. The effort known as a Structured Decision Making Process was coordinated by the U.S. Fish and Wildlife Service, and was attended by representative of 14 states ( AZ, MA, ME, MI, MN, ND, NH, NM, NY, UT, VT, WA, WI, WY) to plan national wolf conservation efforts and determine units for delisting. Extensive work was also done by the project ecologist developing background on Wisconsin wolves for the new proposed delisting rule, as well as reviewing and commenting on the new rule for the Wisconsin DNR.

Other coordination by wolf program personnel included some of the following: numerous meetings with project ecologist and administrators over wolf issues throughout the year, 10 meetings with researchers from UW Madison for planning or reviewing research, meeting with Bad River Band to discuss monitoring on the reservation (1 July 2010), meet with WDNR public information officers in Madison to discuss communications on wolf issues (14 July 2010), meeting on wolf monitoring in Central Forest in Black River Falls (27 January 2011), and attend public hearing on proposed wolf delisting rule in Ashland (18 May 2011).

#### JOB 106.9 PROGRAM GUIDANCE AND OVERSIGHT

As stated above, no meetings were held with the Wolf Science Committee as WDNR focused on federal delisting efforts, but meetings were held with Conservation Congress Wolf Committee, and Wisconsin Wolf Stakeholders Committee. Meetings were held on 1 October 2010 and 15 April 2011 with wolf trackers and trappers to summarize wolf survey work from the previous season and plan wolf survey activities. A meeting was also held with agency biologists, pilot, and technicians to plan future wolf monitoring in the Central Forest region (27 January 2011). A new rule for federal delisting of wolves in the Western Great Lakes was published by the USFWS on 5 May 2011 with a 60 day public comment period through 5 July 2011. Wisconsin DNR commented extensively on the rule, especially in reference to referring to the Western Great Lakes as one single interacting wolf population, and keeping wolf

delisting in the Western Great Lakes Distinct Population Segment separate from any other wolf listing rule.

#### JOB 106.10 VOLUNTEER PROGRAMS

Volunteers were again important to wolf conservation activity in Wisconsin including assistance on wolf surveys, assisting with funding including the purchase of radio collars, and providing education and outreach about wolves. Volunteers also served on the Wolf Stakeholders group which met on 16 April 2011, and the Conservation Congress Wolf advisory committee, which met on 8 October 2010, to advise DNR on wolf issues. Volunteer speakers with the Timber Wolf Alliance gave talks to over 1000 people. A total of about 120 volunteers attended track training classes, and 137 people completed 8232 miles of track surveys in 86 survey blocks. Volunteers averaged 4.1 surveys per block (~ 200 square mile area), 95.7 miles of roads and trails surveyed per block, and 15.4 hours surveying per block. During the deer hunting season, volunteers visited hunting camps across northern Wisconsin to share information on wolves with hunters. Volunteers also assisted with wolf trapping, radio collaring, scouting for wolf sign, howl surveys, and reporting wolf observations.

#### JOB 106.11 WOLF RESEARCH

The Wisconsin DNR wolf workers Adrian Wydeven, Randy Jurewicz, Ronald Schultz, Dick Thiel and Jane Wiedenhoefst continued research with DNR Wildlife Health including Lindsey Long and Nancy Businga. Radio collared wolves dying in the state, and those suspected of illegal killing or unknown mortalities were necropsied.

Paula Holahan (University of Wisconsin), continued research on osteopathology of wolves that have died in Wisconsin. Attempts will be made to correlate pathological conditions on skeletons of wolves with necropsy results and field conditions. Paula Holahan also investigated structural and anatomical differences between wolves and wolf-dog hybrids.

Genetic research on wolves in the Great Lakes region used in the new delisting rule included data from Fain et al (2010). Wisconsin DNR has contributed extensively to this study including contributing 65 of 124 Great Lakes wolf samples, and 132 coyote samples. This research, as with previous research supported by WDNR (Wheeldon 2009, Wheeldon and White 2009), indicate that portions of wolves in the region include genetic material of eastern wolves (*Canis lycaon*), but apparently hybridize with gray wolves throughout the region and can not be geographically separated. Although it appears wolves in the region possess genes of 2 species, they are thoroughly mixed, and there do not appear to be physical attributes to allow field recognition of either species, and therefore will need to be managed as one species population. More recent research (vonHoldt et al. 2011) questions whether the eastern wolf is a separate species, and suggests it only represents a variety of gray wolves.

Toni Piaggio, geneticist at the USDA, National Wildlife Research Center, in Fort Collins, Colorado helped genetically identify wolves and verify some cases of wolf-dog hybrids occurring in Wisconsin. Ongoing sharing of wolf genetic samples also occurred with U.S. Fish and Wildlife Service Forensic Lab in Ashland, Oregon.

Ramana Callan completed her PhD dissertation research entitled “Are wolves in Wisconsin affecting the biodiversity of understory plant communities via a trophic cascade?”, with assistant professor Nate Nibbelink, University of Georgia, Athens, Georgia (Callan 2010).

Jennifer Stenglein continued her PhD dissertation research “Understanding spatially explicit patterns of gray wolf (*Canis lupus*) survival to inform long term conservation of wolves in Wisconsin”, with Professor Tim VanDeelen at University of Wisconsin-Madison. Jen is examining 30 years of radio telemetry data of Wisconsin wolves to learn about variations in survival across the landscape based on habitat quality. She hopes to do Population Viability Analysis of the Wisconsin wolf population, and she hopes to develop models for predicting outcomes from various types of exploitations that may be applied to the wolf population.

Christine Anhalt completed her MS research on “Effectiveness of howl playbacks and scent marking in displacing gray wolves (*Canis lupus*) from rendezvous sites” with Professor Tim Van Deelen at University of Wisconsin-Madison (Anhalt 2011). Christine examined the dynamics of rendezvous site use and attempted to determine if wolves can be displaced from rendezvous sites, which may be useful in depredation control, attempting to displace wolves from areas of conflict with people. Her research demonstrated that it would be difficult to displace wolves from rendezvous sites in early and mid-summer in the core of wolf territories. But it appears such displacement might be possible at the edge of wolf range or in newly occupied territories.

Adrian Treves UW-Madison and David MacFarland, DNR Carnivore Research Scientist, are examining the effectiveness of lethal controls on reducing wolf depredation and public and landowner tolerance of wolves based on use of lethal or nonlethal controls. They are being assisted by post-doc researcher Christine Browne-Nunez, who is conducting focus group discussions with various stakeholder groups.

Adrian Treves and Kerry Martin conducted research to update prediction models for spatially predicting future livestock depredation locations (Treves et al. 2011). This will be an update of a model previously developed to predict livestock depredations in Wisconsin (Treves et al. 2004).

WDNR research scientist Christopher Jacques, with Tim Van Deelen from UW-Madison, began a new research project this winter looking at predator impact, including wolves impact on fawn survival in Wisconsin. Research started in winter 2010-2011.

Work was conducted by Professors Adrian Treves and Lisa Naughton of University of Wisconsin-Madison, on the changing attitudes toward wolves in Wisconsin, with graduate student Victoria (Tory) Shelly. The research examined changing attitudes toward wolves in Wisconsin, and the types of management practices on wolves that people will be willing to accept. Tory especially focused on attitudes of members of the Bad River Band of Chippewa toward wolves (Shelly 2010).

<http://www.nelson.wisc.edu/people/treves/WolfSurvey.html>

Erik Olson, PhD candidate at UW-Madison began research, working with Adrian Treves to examine wolf depredations on dogs, and develop models to predict where these will occur in the future.

Research project on wolf serology disease assessment of wolves in the Great Lakes region was begun in spring 2011 by graduate student Rocio Jara, working with Michael Samuel of the Cooperative Wildlife Unit at University of Wisconsin-Madison. Rocio will collect new samples, but will also interpret and summarize disease testing conducted over the years.

The wolf program produced several other reports during the study period. The Wisconsin Wolf Population in 2009-2010 was published in the Wisconsin Wildlife Surveys (Wydeven and Wiedenhoef 2010). Progress reports on wolf population monitoring were produced for summer-fall surveys, and winter surveys.

### JOB 106.12 WOLF DOG HYBRIDS AND CAPTIVE WOLVES

Eighteen cases of suspected wolf-dog hybrid incidents were reported in 2010 (Table 11). Because WDNR only recently started to regulate wolf-dog hybrids, not all cases of wolf-dog hybrids came to the attention of the wolf program. Some wolf dog hybrid problems were handled by local law enforcement personnel or animal control officers, but most cases listed in table 11 included some involvement by WDNR. Wolf-dog hybrid problems occurred in 15 Wisconsin counties and occurred throughout the state.

The Wisconsin DNR developed regulations for wolf-dog hybrids as harmful wildlife, along with mute swans and feral hogs. These animals were listed as harmful animals under the state captive wildlife rules under NR 16. These rules restrict ownership of wolf-dog hybrids, require permits to keep the animals, will require neutering or spaying, and will require special fencing. The rules went into effect on 1 July 2010, and are now being implemented.

### JOB 106.13 WOLF SPECIMEN MANAGEMENT

Attempts were made by WDNR Wildlife Health staff to necropsy radio-collared wolves, suspected legal cases, and wolves dying of unknown causes found dead in the state, if carcasses were not too decomposed. Wolves that were euthanized in depredation situations were not submitted for formal necropsies, but received amended field necropsies. Many of the euthanized depredators were also examined for a study on determination of Best Management Practices for assessing specific traps for wolves. Most collared wolves that died, and some wolf-dog hybrids, were made into specimens at UW Zoology Museum in Madison. Other wolf specimens were made available to nature centers, DNR offices, tribal offices, tribal spiritual use, and wolf educators. Randy Jurewicz coordinated wolf specimen distributions. Wolf specimens handled by WDNR regions in 2010 included: 48 in the Northern Region, 26 in the West Central Region, 1 in the Northeast Region, and 1 in the South Central Region.

### JOB 106.14 ECOTOURISM

Workshops by the Timber Wolf Alliance, Timber Wolf Information Network, and Sandhill Outdoor Skills Center brought people into communities of Manitowish Waters, Tomahawk, and Babcock to explore wolf habitat and supporting local businesses. Wolf programs were also given at the Cable Natural History Museum, State Parks and Forests, and National Park Service, and these programs were part of the attractants for people to visit these areas. The Wisconsin DNR continued support and monitoring of ecotourism activities involving wolves in forested portions of the state

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**Table 1.** *Wolves captured and radio-collared in Wisconsin in 2010.*

<b>Wolf Number</b>	<b>Sex/Age<sup>a</sup></b>	<b>Weight (lbs)</b>	<b>Pack/Area</b>	<b>County Captured</b>	<b>Date</b>
<b>Zone 1</b> - 24 captured, 24 collared					
W673	M/A	80	Flag River	Bayfield	28 Oct 10 <sup>b</sup>
W690	F/A	55	Scotchman Lake	Oneida	31 Oct 10 <sup>b</sup>
W752	F/Y	65	Price Creek	Sawyer	25 Jun 10
W753	F/Y	78	Ox Creek	Douglas	18 Oct 10 <sup>b</sup>
W754	F/Y	~60	North Willow	Oneida	28 Jun 10
W755	F/A	~60	Little Rice River	Oneida	22 May 10
W759	M/Y	75	Lea Lake	Rusk	06 May 10
W760	F/Y	61	Belden Swamp	Douglas	07 May 10
W761	M/Y	65	Webb Creek	Washburn	03 Nov 10 <sup>b</sup>
W764	M/A	~80	Torch River	Ashland	20 Jun 10
W770	M/A	85	Wintergreen South	Price	12 May 10
W773	M/Y	50	Twin Lakes	Bayfield	19 May 10
W774	F/Y	58	Lipsett Lake	Burnett	25 Jun 10
W776	F/A	62	Riverside	Burnett	30 Jun 10
W777	F/Y	65	Swamp Creek <sup>c</sup>	Oneida	31 Aug 10
W779	M/P	30	?	Ashland	31 Jul 10
W780	F/Y	62	West Firelane	Iron	29 Sep 10
W781	M/A	~80	?	Ashland	14 Jul 10
W782	F/A	?	Pemene	Marinette	10 Jun 10
W783	M/A	87	Mud Lake	Florence	02 Nov 10 <sup>b</sup>
W784	M/A	85	Chittamo	Washburn	30 Jun 10
W791	M/A	85	Chain Lake	Douglas	25 Oct 10 <sup>b</sup>
W792	F/P	60	North Willow	Oneida	12 Nov 10 <sup>b</sup>
W793	F/A	75	North Willow	Oneida	28 Jun 10
<b>Zone 2</b> – 8 captured; 8 collared					
W655	M/A	~85	Brushy Ridge	Clark	20 Feb 10 <sup>d</sup>
W683	M/A	76	Noch Hanai	Jackson	14 Sep 10 <sup>d</sup>
W762	M/A	?	Colburn	Adams	07 Jun 10
W763	F/Y	65	Colburn	Adams	03 Jun 10
W771	F/A	57	Pray	Jackson	14 Sep 10 <sup>d</sup>
W772	M/A	78	Noch Hanai	Jackson	12 Sep 10 <sup>d</sup>
W778	F/Y	55	Bear Bluff	Jackson	29 Jul 10
W790	F/A	60	Bear Bluff	Jackson	27 Jul 10
<b>Zone 3</b> – 3 captured & collared					
W658	F/A	75	Miller Creek	Shawano	05 Jun 10 <sup>e</sup>
W659	F/A	72	Tilleda	Shawano	21 June 10 <sup>e</sup>
W768	M/A	62	Disperser	Shawano	16 Nov.10 <sup>b</sup>

\* Not collared

<sup>a</sup>Age at time of capture assuming birth date 1 April (P = Pup, Y = Yearling, A = Adult)

<sup>b</sup> Captured by fur trapper.

<sup>c</sup> Captured during depredation trapping and released in Price County

<sup>d</sup> Captured by Ho-Chunk Nation.

<sup>e</sup> Captured by Mohican Nation.

**Table 2.** Radio telemetry data on wolves monitored 15 April 2010 to 14 April 2011 in Wisconsin.

Wolf # & Sex	Age Yrs.	Date Captured	Summer (4-15-10 to 9-14-10)			Winter (9-15-10 to 4-14-11)			Status 4-14-11
			Pack	# of Locs.	Home Range (mi <sup>2</sup> )	Pack	# of Locs.	Home Range (mi <sup>2</sup> )	
<b>Zone 1</b> – 62 wolves in 58 packs +1 disperser; 42 still active at end of period									
M2737M	≥6	12 May 06 <sup>a</sup>	Sabin Lake	8	7.6	-	-	-	Missing 03 Jun 10
M2749F	5	25 Jun 06 <sup>a</sup>	Giant Pine	25(24)	49.0	Same	30(28)	109.2	Active
M2761F	≥3	19 May 09 <sup>a</sup>	Evergreen	26(17)	47.3	Same	30(27)	194.5	Active
M2778F	?	15 Jun 10 <sup>a</sup>	-	-	-	Zoar	5	2.6	Active
M734M	≥3	03 Jul 09 <sup>c</sup>	Bob's Lake	25(24)	30.7	Same	31	31.6	Active
475F	≥8	24 Jun 04	Shanagolden	23	21.5	Same	5	3.9	Mortality 14 Oct 10
500B F	≥6	27 May 06	Escanaba Lake	25(24)	39.1	Same	31	83.3	Active
508F	7	12 Jul 04	Pine Lake	25	27.5	Same	31	34.7	Active
555M	≥3	13 Jun 09	Skinner Creek	24	26.9	Same	29	35.9	Active
564F	≥5	19 May 07	Moose Road	22	15.3	Same	28(27)	26.8	Active
570F	≥5	13 May 07	Rainbow Lake	8	19.2	-	-	-	Missing 30 Aug 10
573F	5	26 Jun 06	Black Lake	21	32.1	Black Lake/ Disp.	25(21)	60.0	Active
602F	≥6	11 May 06	Crotte Creek	22	25.2	Same	28	19.3	Active
615F	≥5	10 Jun 07	Pigeon Lake	22(21)	10.9	Same	28	40.2	Active
616F	≥5	15 May 07	Pikes Peak	22	13.3	Same	27(26)	25.6	Active
623F	≥5	29 May 07	Bootjack Lake	25(24)	43.3	Same	31	69.3	Active
626F	≥5	27 Jun 07	Rainbow Lake	22	13.9	Rainbow Lake	25	30.7	Active
627F	≥5	28 Jun 07	Mason	16(13)	9.2	-	-	-	Mortality 17 Aug 10
630F	≥3	18 Jun 09	Disp./ Tuscobia Tr.	19(17)	11.8	Tuscobia Trail	30(28)	31.5	Active
634F	≥4	16 Jun 08	Spruce River	5	NE	-	-	-	Mortality 03 May 10
637M	3	30 Jun 08	Ox Creek	21	25.6	Disp./ Brule River	22(19)	9.3	Mortality 28 Feb 11
650F	3	05 Jun 08	Haystack Corner	24(23)	62.5	Same	29	63.1	Active
651M	≥4	20 Jun 08	Brush Creek	24	17.1	Same	30(28)	28.5	Active
663F	2	02 Nov 08	Bearsdale	22(21)	15.9	Same	26	14.7	Mortality 30 Mar 11
664F	≥4	08 Nov 08	Shoberg Lake	22	37.8	Same	28	41.7	Active
667M	≥4	15 Aug 08	Kakagon Sloughs	22(20)	12.4	Same	29(28)	64.3	Active
669F	≥3	27 Apr 09	Amnicon River	22	20.9	Same	25(21)	15.5	Active
670F	2	20 Jun 09	Moreland Lake	22	13.9	Same	28	18.9	Active

Table 2. *Continued*

Wolf # & Sex	Age Yrs.	Date Captured	Summer (4-15-10 to 9-14-10)			Winter (9-15-10 to 4-14-11)			Status 4-14-11
			Pack	# of Locs.	Home Range (mi <sup>2</sup> )	Pack	# of Locs.	Home Range (mi <sup>2</sup> )	
671F	≥3	22 Jun 09	Beaver Dam Lake	22(21)	37.1	Same	29	60.4	Active
672F	≥4	30 Jun 08	Bird Sanctuary	22	22.6	Bird Sanctuary/ Lone	28	36.0	Active
673M	≥2	28 Oct 10	-	-	-	Flag River	14	12.6	Mortality 20 Jan 11
682M	≥3	18 May 09	Wintergreen North	20	25.2	-	-	-	Mortality 03 Aug 10
686M	2	24 Jun 09	Marheimie Creek	25	29.8	Same	31	45.1	Active
687M	≥3	29 Jun 09	Thunder Creek	25	24.1	Thunder Creek /	13	20.2	
						Little Rice River	17(16)	10.9	Active
688F	≥3	28 Oct 09	Casian	24	28.5	Same	26(22)	78.7	Missing 8 Mar 11
690F	≥2	31 Oct 10	-	-	-	Scotchman Lake	26(24)	14.7	Active
691M	≥3	20 Jun 09	Price Creek	23(21)	33.6	Price Creek /	13	26.6	
						Disperser	15	NE	Mortality 28 Mar 11
692F	≥3	11 Jul 09	Little Rock Lake	25	11.3	Same	31	45.0	Active
694F	2	29 Jun 09	Disp./ Ghost Lake	24(21)	30.9	Ghost Lake /	9	7.4	
						Disperser	15	NE	Active
697M	≥3	27 Oct 09	Rainbow Lake	7	2.9	-	-	-	Mortality 24 May 10
752F	1	25 Jun 10	Disperser	13	NE	Price Creek/ Disp./	12(9)	7.3	
						Carpenter Creek	22	10.7	Active
753F	1	18 Oct 10	-	-	-	Disperser	21	NE	Active
754F	1	28 Jun 10	North Willow	14	11.4	Same	25(23)	25.4	Active
755F	1	22 May 10	Little Rice River	21	18.0	Same	30(27)	44.8	Active
757M	≥3	29 Oct 09	Casey Creek	22(20)	26.6	Casey Creek /	11(9)	13.9	
						Moreland Lake	16	14.6	Active
759M	1	06 May 10	Lea Lake	22	7.6	Same	30	21.6	Active
760F	1	07 May 10	Belden Swamp	20	12.7	Same	28	19.3	Active
761M	1	03 Nov 10	-	-	-	Webb Creek	24(23)	28.5	Active
764M	≥2	20 Jun 10	Torch River	15	20.1	Same	20(19)	25.7	Missing 02 Feb 11
770M	≥2	12 May 10	Wintergreen South	22	27.4	Wintergreen North	6(5)	11.7	Mortality 24 Oct 10
773M	1	19 May 10	Twin Lakes	19(18)	21.0	Same	27	32.3	Active
774F	1	25 Jun 10	Lipsett Lake	14	5.3	Lipsett L./ Disperser	22(21)	23.0	Missing 28 Feb 11



Table 2. Continued

Wolf # & Sex	Age Yrs.	Date Captured	Summer (4-15-10 to 9-14-10)			Winter (9-15-10 to 4-14-11)			Status 4-14-11
			Pack	# of Locs.	Home Range (mi <sup>2</sup> )	Pack	# of Locs.	Home Range (mi <sup>2</sup> )	
772M	≥2	12 Sep 10	Noch Hanai	1	NE	Same	20	8.3	Missing 01 Feb 11
778F	1	29 Jul 10	Bear Bluff	67(65)	4.4	Bear Bluff / Disperser	55(54) 188	14.2 NE	Active
790F	≥2	26 Jul 10	Bear Bluff	7	3.2	Same	4	3.9	Mortality 10 Oct 10
<b>ZONE 2</b>	<b>Avg. home range</b>			<b>N=3</b>	<b>13.1</b> <b>SD=9.0</b>		<b>N=7</b>	<b>19.8</b> <b>SD=9.3</b>	
<b>Zone 3</b> – 3 wolves in 3 packs + 1 disperser; 3 still active at end of period									
658F	≥2	05 Jun 10	Miller Creek	30	21.7	Same	31	49.3	Active
659F	≥2	21 Jul 10	Tilleda	9(8)	8.3	Same	7(5)	4.2	Mortality 25 Oct 10
751F	≥2	05 Mar 11	-	-	-	South Post	15	8.6	Active
768M	≥2	16 Nov 10	-	-	-	Disperser	16(6)	2.9	Active
<b>ZONE 3</b>	<b>Avg. home range</b>			<b>N=1</b>	<b>21.7</b>		<b>N=1</b>	<b>49.3</b>	
<b>Minnesota</b> - 2 wolves in 2 packs; 0 still active at end of period									
520F	≥6	13 Jun 06	Foxboro	13	15.4	-	-	-	Missing 20 Jul 10
639F	2	20 Oct 09	MN Pack	20(18)	30.2	MN Pack	1	NE	Mortality 20 Sep 10

<sup>a</sup>Captured in Gogebic County, Michigan<sup>b</sup>Captured in Houghton County, Michigan<sup>c</sup>Captured in Baraga County, Michigan

NE = No Estimate

**Table 3.** *Howl surveys and pup observations in Wisconsin wolf packs spring-summer 2010.*

Pack/Area	No. of Howl Surveys	Miles Surveyed	Hours Howled	No. of Howl Stops	No. of Stops w/ Wolves	Est. No. of Pups	Pups Observed
<b>Zone 1</b>							
Bootjack Lake	9	65.5	15.7	51	0	0	0
Bradley	1	5.4	0.9	11	0	0	0
Brush Creek	2	25.6	2.1	20	2	2+	0
Casian	4	3.7	0.1	5	3	2-3	0
Cedar Lake	5	31.5	7.6	33	2	0	2 <sup>e</sup>
Dunbar	-	-	-	-	-	-	2 <sup>e</sup>
Escanaba Lake	7	19.9	2.9	23	1	3	0
Ghost Lake	2	9.7	1.7	8	3	2+	1 <sup>b</sup>
Giant Pine	3	19.5	3	16	0	0	3-4 <sup>e</sup>
Harrison Hills	1	24.1	1.8	9	1	1	0
Haystack Corner	1	3.0	-	3	0	0	0
Hellhole Creek	1	9.8	1.6	7	3	2+	0
Hoffman Lake?	-	-	-	-	-	-	4 <sup>e</sup>
Island Lake	1	22.1	2.5	11	1	0	0
Lake Nebagamon	-	-	-	-	-	-	1 <sup>a</sup>
Little Rice River	7	28.0	3.8	32	5	1+	0
Little Rock Lake	11	47.1	7.9	47	5	3+	0
McArthur Pine	2	24.0	3.6	16	0	0	0
Morgan Lake	-	-	-	-	-	-	3 <sup>b</sup>
Murray's Landing	4	26.5	5.6	26	0	0	1 <sup>e</sup>
Namakagon Barrens	-	-	-	-	-	-	1 <sup>a</sup>
North Willow	5	20.6	2.0	31	3	2-3	1 <sup>f</sup>
Ox Creek	-	-	-	-	-	-	1 <sup>a</sup>
Pelican Lake	-	-	-	-	-	-	9 <sup>d</sup>
Pemene	1	12.9	2.8	12	0	0	0
Peshtigo Brook	-	-	-	-	-	-	5 <sup>d</sup>
Pikes Peak	-	-	-	-	-	-	4 <sup>e</sup>
Pincherry Lake	7	37.3	3.9	28	3	1+	0
Pokegama River	1	5.1	1.0	7	0	0	0
Poplar River	-	-	-	-	-	-	1 <sup>a</sup> 1 <sup>e</sup>
Porcupine Lake	-	-	-	-	-	-	2 <sup>b</sup>
Price Creek	4	21.4	-	16	0	0	0
Ranger Island	1	8.5	2.1	9	2	4	0
Shoberg Lake	-	-	-	-	-	-	4-5 <sup>e</sup>
Skinner Creek	4	4.8	-	1	0	0	0
Somo River	1	8.8	1.9	11	0	0	0
Stevens Lake	2	9.5	1.3	6	0	0	0
Swamp Creek	2	25.9	2.3	19	0	0	0
Timber Lake	8	45.4	4.6	40	2	2-3	0
Torch River	3	11.1	1.5	8	2	1?	3 <sup>b</sup>
Unknown pack (Ashland)	-	-	-	-	-	-	4 <sup>d</sup> 1 <sup>f</sup>
Venison Creek	5	59.4	6.9	59	5	3	0

**Table 3.** *Continued*

Pack/Area	No. of Howl Surveys	Miles Surveyed	Hours Howled	No. of Howl Stops	No. of Stops w/ Wolves	Est. No. of Pups	Pups Observed
Wintergreen North	3	6.5	3	14	0	0	0
Wintergreen South	1	1.2	0.5	2	0	0	2 <sup>a</sup>
<b>Zone 1 Totals</b>	<b>110</b> (31 packs)	<b>643.8</b>	<b>94.6</b>	<b>581</b>	<b>43</b> (16 of 31 packs)	<b>29-32+</b> (14 of 31 packs)	<b>64-66 pups</b> <b>in 20 packs</b>
<b><u>Zone 2</u></b>							
Augusta	-	-	-	-	-	-	4 <sup>d</sup>
Ballard Road	5	174.2	11.8	27	5	3+	0
Bear Bluff	2	114.4	9.8	26	2	2+	3 <sup>a</sup>
Davidson Creek	3	25.6	1.7	5	4	5+	0
Mather East	4	129.4	9.5	22	4	2+	0
Mather West	4	90.0	6.7	16	6	3+	0
McKenna	1	5.6	0.5	1	0	0	0
Mill Bluff	-	-	-	-	-	-	3 <sup>e</sup>
Noch Hanai	3	49.8	3.5	9	3	3+	1 <sup>a</sup>
Pray	-	-	-	-	-	-	1 <sup>a-7d</sup>
Seneca	2	37.2	2.8	7	1	0	0
South Bluff	8	71.2	9.6	29	3	3+	0
South Wisconsin Rapids	1	8.1	2.0	9	0	0	0
Starlight	4	20.7	2.1	6	3	3+	0
Turner Creek	3	51.1	3.6	8	2	2+	0
2-Korner	1	5.2	0.7	1	1	2+	0
Veedum	1	8.4	1.3	2	0	0	0
<b>Zone 2 Totals</b>	<b>42</b> (13 packs + 1 area)	<b>790.9</b>	<b>65.6</b>	<b>168</b>	<b>34</b> (11 of 13 packs)	<b>28+</b> (10 of 13 packs)	<b>18 pups</b> <b>in 5 packs</b>
<b><u>Zone 3</u></b>							
Fogarty Marsh	1	1.8	0.5	5	0	0	0
New pack (Chippewa)	-	-	-	-	-	-	1 <sup>d</sup>
South Post	-	-	-	-	-	-	2-3 <sup>d</sup> 1 <sup>7e</sup>
Spence Lake	1	12.3	2.5	10	0	0	0
Unknown pack (W. of Mead)	-	-	-	-	-	-	1 <sup>a</sup>
Unknown pack (Tigerton)	-	-	-	-	-	-	5 <sup>d</sup>
<b>Zone 3 Totals</b>	<b>2 (2 packs)</b>	<b>14.1</b>	<b>3.0</b>	<b>15</b>	<b>0</b>	<b>0</b>	<b>9-10+ pups</b> <b>in 4 packs</b>

<sup>a</sup>Pup mortality<sup>b</sup>DNR report of observation or howls<sup>c</sup>USDA-WS report of observation or howls<sup>d</sup>Photo of pups<sup>e</sup>Public report of observation or howls<sup>f</sup>Trapped and released

**Table 4.** Visual observation rates of radio-collared wolves by DNR pilots during December 2010 – March 2011 in Wisconsin. Numbers in parentheses are wolves detected by active radio signal but not visually observed.

<b>Wolf Number</b>	<b>No. of Locations</b>	<b>Other Collared Wolf</b>	<b>Visual Observ.</b>	<b>Percent Visuals</b>	<b>Max. Wolves Seen</b>	<b>Pack</b>
<b><u>Zone 1</u></b>						
M2749F	16		5	31%	10	Giant Pine
M2761F	16		4	25%	2	Evergreen
M2778F	3		0	0%	(1)	Zoar
M734M	17		5	29%	3	Bob's Lake
500B F	17		5	29%	3	Escanaba Lake
508F	17		6	35%	2	Pine Lake
555M	15		4	27%	3	Skinner Creek
564F	15		9	60%	12	Moose Road
573F	11		2	18%	1	Black Lake
602F	15		7	47%	5	Crotte Creek
615F	15		3	20%	3	Pigeon Lake
616F	14		4	29%	2	Pikes Peak
623F	17		2	12%	1	Bootjack Lake
626F	14		0	0%	(1)	Rainbow Lake
630F	16		5	31%	2	Tuscobia Trail
637M	13		2	15%	2	Brule River
650F	16		6	38%	2	Haystack Corner
651M	16		2	12%	7	Brush Creek
663F	15		1	7%	2	Bearsdale
664F	15		5	33%	6	Shoberg Lake
667M	15		7	47%	5	Kakagon Sloughs
669F	12		3	25%	2	Amnicon River
670F	15	757M	4	27%	6	Moreland Lake
671F	15		5	33%	4	Beaver Dam Lake
672F	15		0	0%	(1)	Loner
673M	8		0	0%	(1)	Flag River
686M	17		4	24%	3	Marheimie Creek
687M	16		7	44%	4	Little Rice River
688F	14		7	50%	5	Casian
690F	17		4	24%	2	Scotchman Lake
691M	17		3	18%	2	Disperser (Hoffman Lake)
692F	17		8	47%	5	Little Rock Lake
694F	11		4	33%	3	Disperser (Skinner Creek)
752F	20		8	40%	3	Carpenter Creek

Table 4. *Continued*

<b>Wolf Number</b>	<b>No. of Locations</b>	<b>Other Collared Wolf</b>	<b>Visual Observ.</b>	<b>Percent Visuals</b>	<b>Max. Wolves Seen</b>	<b>Pack</b>
753F	13		4	31%	1	Disperser
754F	13		9	69%	6	North Willow
755F	16		7	44%	5	Little Rice River
757M	14		0	0%	(1)	Moreland Lake
759M	16		6	38%	4	Lea Lake
760F	15		5	33%	6	Belden Swamp
761M	16		4	25%	1	Webb Creek
764M	8		3	38%	3	Torch River
773M	14		2	14%	2	Twin Lakes
774F	10		4	40%	1	Lipsett Lake/ Disperser
776F	15		3	20%	2	Riverside
779M	13		7	54%	2	West Firelane
782F	13		2	15%	1	Pemene
784M	9		3	33%	3	Chittamo
791M	15		5	33%	6	Chain Lake
792F	17		10	59%	9	North Willow
793F	17		4	24%	2	Wintergreen
<b>Zone 1 Totals</b>	<b>736</b>		<b>219</b>	<b>30%</b>	<b>158</b>	<b>Zone 1 wolves detected*</b>
<b><u>Zone 2</u></b>						
635F	15		2	13%	4	Mather East
652F	16		3	18%	2	Pray
654F	16		2	12%	3	Starlight
657M	16		4	25%	1	Eau Claire River
684F	16		9	56%	9	2-Korner
763F	15		4	27%	2	Disperser
772M	9		2	22%	3	Noch Hanai
778F	14 <sup>a</sup>		2	14%	1	Disperser
<b>Zone 2 Totals</b>	<b>117</b>		<b>28</b>	<b>24%</b>	<b>25</b>	<b>Zone 2 wolves detected*</b>
<b><u>Zone 3</u></b>						
658F	17		2	12%	6	Miller Creek
751F	10		0	0%	(1)	South Post
768M	10		0	0%	(1)	Disperser
<b>Zone 3 Totals</b>	<b>37</b>		<b>2</b>	<b>5%</b>	<b>8</b>	<b>Zone 3 wolves detected</b>

\*Includes wolves not seen, but with active signal.

<sup>a</sup> Aerial locations only; does not include satellite locations.

**Table 5.** Track Surveys in survey blocks by volunteers and DNR Wolf Monitoring Team in northern and central Wisconsin in winter 2010-2011.

Survey Block	Main County	Bleed	Volunteer Surveys					DNR Surveys	
			Vol. Track*	No. of Surveys	Miles	Hours	Wolf Est.	Miles	Wolf Pop.
1	Douglas							43.7	5
2	Douglas							71.2	11
3	Douglas		P	1	9.8	3.5	1	51.0	11
4	Douglas		P	4	29.0	9.8	1	57.1	7
5	Douglas							64.6	5
6	Douglas	Y	P	3	51.1	4.0	6-8	75.4	17
7	Douglas							83.3	4
8	Douglas	Y	P	4	58.2	16.0	9-10	75.8	16
9	Douglas	Y						58.6	12
10	Burnett	Y						139.9	14-16
11	Douglas							49.0	7
12	Washburn	Y						127.0	6
13	Burnett		P	2	39.2	7.5	6	21.4	9
14	Burnett	Y	P	5	129.0	30.4	4	20.5	1
17	Burn / Polk	Y	P	5	108.0	19.7	3	25.3	5
19	Washburn							50.0	3
20A	Rusk / Sawy		P	7	174.1	16.9	5	38.8	8-9
20B	Sawy / Rusk							31.6	3
21	Washburn							49.9	2
22	Washburn							87.4	6-7
23	Washburn							110.3	11
24	Bayf / Sawy	Y	USFS, P	5	118.0	32.8	9-10	49.7	10-12
25	Bayfield	Y						57.0	9-11
26	Bayfield							46.1	13
27	Bayfield		NC	2	40.0	11.6	5-7	57.7	13-16
28	Bayfield	Y						59.2	8-10
29	Bayfield	Y						43.7	4
30	Bayfield	Y	NC	1	4.3	2.0	0	45.2	5
31	Bayfield	Y	P	3	26.1	7.8	2-3	67.3	6-8
32	Bayfield		USFS	2	31.8	9.6	3	1.1	3
33	Bayfield		NC	1	24.2	6.0	0	27.3	4
35	Bayfield							72.8	6
36	Ashland	Y	P	1	79.4	5.0	9		
37	Sawyer	Y	P, USFS	7	322.5	27.9	26-29		

Table 5. Continued

Survey Block	Main County	Bleed	Volunteer Surveys					DNR Surveys	
			Vol. Track	No. of Surveys	Miles	Hours	Wolf Est.	Miles	Wolf Pop.
38	Ashland	Y						92.9	12-14
39	Iron							6.1	3
40	Ash / Sawy	Y	P	4	216.1	14.2	14-15		
41	Price / Sawy	Y						67.0	9
42	Sawyer		P	1	82.5	3.0	9		
43	Sawy./Rusk	Y	P	3	73.3	8.4	6	143.4	6
44	Price		P	5	160.7	24.8	6	69.5	9-11
46	Price							64.2	5
47	Taylor							83.1	6-9
48	Taylor							61.8	7
49	Price/Tayl							46.7	6
50	Price							23.0	0
51	Price							139.9	22
52	Price	Y						75.6	13
53	Price	Y	P	3	65.5	8.6	4	52.6	15-16
54	Vilas / Price		P	2	52.3	6.5	0	85.5	6
55	Price / Ashl		P	3	70.9	7.0	4	65.7	10-12
56	Ashland							14.3	4
57	Iron / Ashl		P	3	115.9	13.6	8	58.5	4
59	Iron		P	3	75.7	9.2	0		
62	Iron, Vilas		P	3	28.8	4.2	2-3	16.6	0
63	Vilas		P	2	29.9	7.3	1	23.8	1
64	Vilas / Iron		P	10	166.5	17.1	5		
65	Oneida		P	1	11.1	1.8	5		
66	Langlade							30.9	0
67	Lincoln	Y	P	6	181.2	13.7	9	6.7	6
68	Lincoln							23.0	3
69	Lincoln		P	12	187.4	37.3	10		
70	Lincoln		P	8	225.9	36.9	14-15		
71	Lincoln		P	2	7.0	0.8	0		
72	Langlade		P	2	65.0	4.3	0	23.1	3
73	Marathon		P	2	40.0	4.5	0		
74	Langlade		P	4	115.0	27.2	4	45.9	0
75	Lincoln		P	6	69.5	10.6	5	30.3	0
76	Linc / Oneida		P	1	3.5	3.0	6		

Table 5. Continued

Survey Block	Main County	Bleed	Volunteer Surveys					DNR Surveys	
			Vol. Track	No. of Surveys	Miles	Hours	Wolf Est.	Miles	Wolf Pop.
77	Oneida		P	6	85.6	17.9	4	36.3	3
78	Oneida							30.8	0
79	Oneida	Y	P	3	199.8	20.9	3-4	51.8	4-5
80	Vilas		P	2	52.0	6.0	1-2	27.3	2
81	Vilas		P	2	16.4	3.4	2		
82	Vilas		P	2	54.2	6.6	2-3	24.4	3
83	Forest / Vilas		P	7	184.4	28.3	1	194.8	0
84	Forest / Vilas		P	6	163.5	18.3	2	15.3	0
85	Forest / Onei	Y	P	2	31.3	4.0	5	12.4	0
86	Forest							47.5	3
88	Langlade							68.0	3-5
90	Menominee		TRI	4	98.9	17.0	11		
91	Langlade							23.7	1
92	Langlade		P	1	20.0	3.8	0	108.4	3
93	Forest							12.7	0
94	Forest		P	3	63.5	16.4	0		
95	Forest		P	2	42.7	14.2	6	31.5	3-5
96	Forest							77.9	0
97	Forest							36.5	5
98	Florence		P	1	10.1	1.5	0	22.9	2
99	Florence	Y	P	1	10.6	2.3	0	41.6	2
100	Florence							28.8	7
101	Forest		P	1	24.6	3.5	4		
102	Marinette		P	2	30.4	4.7	2	181.9	4
103	Oconto		P	2	39.5	9.8	0		
104	Oconto		P	5	88.6	20.6	2		
106	Marinette		P	6	168.6	29.5	4-5		
107	Marinette		P	5	107.7	16.8	4		
108	Marinette		P	4	54.6	9.9	4-5		
110	Marinette	Y	P	7	53.8	15.1	5		
111	Marinette		P	4	87.8	18.1	2-3		
112	Marinette		P	5	41.8	11.6	3		
113	Marinette		P	9	179.8	32.8	8		
115	Oconto		P	2	35.2	5.3	0		
117	Clark / EC	Y	P	13	388.0	59.2	19-21		

Table 5. Continued

Survey Block	Main County	Bleed	Volunteer Surveys					DNR Surveys	
			Vol. Track	No. of Surveys	Miles	Hours	Wolf Est.	Miles	Wolf Pop.
118	Clark		P	4	92.3	10.1	10		
119	Jack / Clark		P	10	327.9	47.0	25-27		
120	Jackson		P	2	117.3	11.0	5-6	97.2	12-15
121	Wood / Junea	Y	P	10	305.7	54.5	18-21		
122	Juneau	Y	P	11	209.0	36.2	13		
123	Monroe	Y	MIL	4	112.7	14.8	20	4.5	2
124	Wood		P	9	143.7	20.8	10-11		
125	Junea / Wood		P	5	141.2	21.1	4		
126	Rusk/Chipp.		P	2	70.9	12.0	4	25.3	2
127	Adams		P	7	197.6	30.5	6-7	61.2	2
128	Adams		P	4	28.6	11.0	4-5	55.2	0
129	Juneau		P	4	121.1	20.0	2		
130	Shawano		P	3	63.3	10.5	0	63.4	0
131	Ocont/Shaw		P	3	58.6	16.7	0		
133	Wood/Portag		P	2	43.3	5.3	2		
135	Marath / Linc							43.5	0
137	Portage	Y	P	5	70.6	12.0	3-4		
138	Shaw/Waupa	Y	P	13	263.7	95.0	8-9		
140	Portage		P	3	32.9	7.1	1		
142	Door		P	3	34.9	9.0	0		
148	Dunn		P	1	52.8	5.0	0		
153	Taylor / Clark							66.2	0
154	Sauk		P	2	22.7	6.0	0	29.0	0
<b>127 Blocks</b>		<b>TOTALS</b>		<b>353</b>	<b>8232.5</b>	<b>1327.6</b>	<b>430-462</b>	<b>4690.0</b>	<b>457-486</b>
				<b>86 blocks</b>				<b>86 blocks</b>	

Packs may be counted in more than 1 block. Total wolf estimate and total wolf population reflects double counting of some packs.

\* P = Private citizen

USFS = US Forest Service employee

NC = Northland College students

TRI = Tribal biologists

MIL = Military biologists

**Table 6.** Pack and lone wolf summaries for Wisconsin in winter 2010-2011 (Map numbers refer to Figure 1). Evidence included Radio telemetry (R), Track surveys (T), Observations by agency or general public (O), and Depredation reports (D).

Map No.	Pack or Area <sup>a</sup>	Survey Block	Counties	Win. Est.	Collared Wolves	Breeding Detected	Evidence
<b>Zone 1</b>							
1	Pokegama River	1	Douglas	3-5		Y	T
2	Belden Swamp	2	Douglas	6	W760F Y	Y	R & T
3	Breitzman Lake	2	Douglas	5		Y	T
4	Jackson Box	3,4	Douglas	4		Y	T
5	North Empire	3,4	Douglas	3-5		Y	T
6	South Empire	3,4	Douglas	3		Y	T
7	Moose Lake	4,5	Douglas	4		Y	T & O
8	Pikes Peak	4,5	Douglas	2	W616F A	?	R & T
9	Amnicon River	5,6	Douglas	3	W669F A	Y	T & R
10	South Range	5,7	Douglas	4-5		Y?	T
11	Brule River	6	Douglas	1	W637M A died	N	T & R
12	Lake Nebagamon	6	Douglas	9		Y	T
13	Muck Lake	6,26	Douglas,Bayfield	3		?	T
14	Casey Creek	7	Douglas	3		Y	O & T
15	Poplar River	7	Douglas	3-4		Y	T & O
16	Chain Lake	8,23	Douglas,Washburn	6	W791M A	Y	R & T
17	Shoberg Lake	8,26	Douglas,Bayfield	6	W664F A	Y	R & T
18	Ox Creek	8	Douglas	2		Y	T
	W753F disperser	8		1	W753F Y	N	R
19	Bird Sanctuary	9,8,4,6	Douglas	3	W672F A	Y	T & R
20	Crotte Creek	9	Douglas	3-5	W602F A	Y	R & T
21	Leder Lake	9,10	Douglas,Washburn	4		Y	T
22	Namakagon Barrens	10	Burnett,Doug.,Wash.	6		Y	T & O
23	Riverside	10,12	Burnett	4	W776F A	Y	R & T
24	Chase Brook	11	Burnett,Douglas	3		Y	T
25	Moose Road	11,2	Douglas	12	W564F A	Y	R & T
26	Lipsett Lake	12	Burnett	2	W774F Y	?	T, R & O
27	Stuntz Brook	12,10	Washburn	4		Y	T
28	Webb Creek	12	Washburn	2	W761M A	?	O, R & T
29	Amsterdam Slough	13	Burnett	2		Y	T
30	Crex Meadow	13	Burnett	5		Y	T & O
31	Falun Meadows	13	Burnett	4		Y	T & O
32	Sterling Barrens	14	Burnett	4		Y	T & O
33	Wolf Creek	14	Polk	2		Y	T
34	Wolf Lake	19	Washburn,Sawyer	3		Y	T
35	Weirgor Lake	20A,19	Sawyer	2		Y	T
36	Nail Creek	20A	Rusk,Sawyer	6-7		Y	T
37	Blue Hills North	20A	Rusk,Sawyer	5		Y	T
38	Dugan Lake	21	Washburn	2-3		N	T & O
39	Bean Brook	21	Washburn,Sawyer	1		N	O & T
40	Spring Brook	22	Washburn	2		Y	T
41	Tranus Lake	22	Washburn	4		Y	T
42	Chittamo	23,10,22	Washburn	2	W784M A died	Y	R & T
43	Frog Creek	23	Washburn,Sawyer	4		Y	T & O
44	Smoky Hill	23,8	Douglas,Bayfield	4		Y	T & O
45	Ghost Lake	24,37	Sawyer,Bayfield	6-7		Y	T & O

Table 6. Continued.

Map No.	Pack or Area	Survey Block	Counties	Win. Est.	Collared Wolves	Breeding Detected	Evidence
46	Seeley Hills	24,29	Sawyer,Bayfield	6		Y	T & O
47	Bearsdale	25	Bayfield	3	W663F A died	Y	T & R
48	Sabin Lake	25,24	Sawyer,Bayfield	2		Y	O & T
49	Moreland Lake	26,6	Bayfield,Douglas	6	W670F A W757M A	Y	R, T & O
50	Rainbow Lake	26,27,25	Bayfield	4	W626F A	Y	T & R
51	Delta	27,28	Bayfield	2		Y	T
52	Ino Swamp	27,30	Bayfield	7		Y	T
53	Pigeon Lake	27,25	Bayfield	4	W615F A	Y	T & R
54	Bibon Swamp	28	Bayfield	3-5		Y	T
55	Mason	28,34	Bayfield	3		Y	T
56	Porcupine Lake	29,35	Bayfield	4		Y	T
57	Moquah	30	Bayfield	3		Y	T & O
58	Flag River	31,30,32	Bayfield	4	W673M A died	Y	T & R
59	Oriente Falls	31	Bayfield,Douglas	2		Y	T & O
60	Siskiwit Lake	32,33	Bayfield	3		Y	T
61	Echo Valley	33	Bayfield	4		?	T
62	Twin Lakes	33,30,32	Bayfield	2	W773M Y	?	R
63	Beaver Dam Lake	34,35,36	Ashland,Bayfield	3-4	W671F A	?	R, T & O
64	White River	34	Bayfield,Ashland	2		?	O
65	Hellhole Creek	35	Bayfield,Ashland	3		?	T
66	Brush Creek	36,57	Ashland	6-7	W651M A	Y	R, T & O
67	Black Lake	37,38,40	Sawyer,Ashland	3	W573F A dispersed	Y	T, O & R
68	<i>Mukwonago Trails</i>	37	Sawyer	5		Y	O & T
69	Round Lake	37,42	Sawyer	2		?	T
70	Venison Creek	37,42	Sawyer	2		?	T
71	Shanagolden	38,36	Ashland	3		Y	T
72	Torch River	38,37,36	Ashland	2	W764M A dispersed	Y	R & T
73	<b>Kakagon Sloughs</b>	39,34	Ashland	5	W667M A	Y?	R & O
74	<b>West Firelane</b>	39,60	Ashland,Iron	2	W779M P W780F Y	?	R & T
	W774F loner	39	Ashland	1	W774F Y	N	R
	W764M disperser	40	Ashland	1	W764M A	N	R
75	Hungry Run	40	Ashland,Sawyer	4-5		Y	T
76	Log Creek	40	Price,Sawyer	5		Y	T
77	Pine Creek	40,38,55,56	Price,Ashland	3		Y	T
78	Davis Lake	41,52	Price	3		Y	T & O
79	Price Creek	41,44,43	Price,Sawyer	4	W691M A	Y	R
80	Thornapple River	41	Sawyer	2		Y	
81	<i>Tuscobia Trail</i>	41,37	Sawyer	2	W630F A	N?	R & T
	W573F disperser	42	Sawyer	1	W573F A	N	R
82	<b>Eddy Creek</b>	42	Sawyer	3		Y	T
83	Winter	42,43,41	Sawyer	4		Y	T & O
84	Haystack Corner	43	Sawyer,Rusk	2	W650F A	Y	R & T
85	Lea Lake	43	Rusk	4	W759M Y	?	R & T

Table 6. Continued.

Map No.	Pack or Area	Survey Block	Counties	Win. Est.	Collared Wolves	Breeding Detected	Evidence
86	Main Creek	43,45	Rusk	2		?	T
87	Tupper Creek	43,20A	Sawyer	4		Y	T
88	Carpenter Creek	44	Price	3	W752F Y	?	R & T
89	Skinner Creek	44	Price,Sawyer,Rusk	5	W555M A	Y	T & R
90	Spring Creek	44,46	Price	4		Y	T & O
91	Catawba	46	Price	2		?	T
92	Green Creek	46	Price,Rusk,Taylor	3		?	T
93	Chequamegon Waters	47, 153	Taylor	2-4		Y	T
94	Kidrick Swamp	47	Taylor	2-3		Y	T
95	Mondeaux Flowage	47,46	Taylor	2		Y	T
96	Averill Creek South	48,70,135	Lincoln	3		?	T & O
97	Little Black River	48	Taylor	4		Y	T
98	Alcohol Creek	49,50	Price	2		Y	T
99	Spirit Lake	49,48	Taylor,Price	2		?	T
100	Marheimie Creek	50,49	Price,Lincoln	3	W686M A	?	R & T
	W754F disperser	50	Price	1	W754F Y	N	R
101	Clifford	51	Price,Oneida	4		Y?	T
102	Dover Loop	51	Price	6		Y	T
103	Musser Creek	51,53,52	Price	10		Y	T
104	Thunder Creek	51,53,65	Price,Oneida	6	W687M A dispersed	Y	T, R & O
105	Wintergreen	52,54,55	Price	3	W793F A	Y	T, R & D
106	Wilson Flowage	52,53	Price	3		Y	T
107	Bootjack Lake	53,54,65	Oneida,Price,Vilas	5	W623F A	Y?	T, O & R
108	Miles Lake	54	Iron,Vilas	2		?	T
109	Hoffman Lake	55,54	Price,Iron,Ashland	4-6		Y	T & O
110	Murray's Landing	55,64,62	Iron	2		Y	T
111	Chippewa River	56,58,57	Iron,Ashland	4		Y?	T
112	Magee Creek	56,57	Ashland	2		?	T & D
113	Augustine Lake	57	Iron,Ashland	4		Y	T
114	O'Brien Lake	57,59	Iron	4		Y?	T & O
	W694F disperser	58	Iron	1	W694F A	N	R
115	Pine Lake	58,55,61	Iron	2	W508F A	?	R
116	<i>Merril Lake</i>	61,62,MI	Iron	2		?	T
117	Cedar Lake	62,63	Vilas,Iron	2-3		Y	T & O
118	Whitney Lake	63	Vilas	4		Y?	O & T
119	<b>Little Rock Lake</b>	64,80	Vilas	5	W692F A	Y?	R, T & O
	<b>Pokegama Trail</b>	64	Vilas	1		N	T
120	North Willow	65,67	Oneida	9	W754F Y dispersed W792F P	Y	R & T
121	Scotchman Lake	65,54	Oneida	2	W690F A	?	R
122	Bradley	67,68	Lincoln,Oneida	6		Y	T & O
123	Little Rice River	67,51	Oneida	5	W687M A W755F A dispersed	Y	R & T
124	Swamp Creek	67	Oneida	3		Y	T
125	Somo River	68	Lincoln	3		?	T
126	Ranger Island	69	Lincoln	4		Y	T

Table 6. Continued.

Map No.	Pack or Area	Survey Block	Counties	Win. Est.	Collared Wolves	Breeding Detected	Evidence
127	Averill Creek North	70,69	Lincoln	6		Y	T
128	Harrison Hills	71,75	Lincoln	3		?	T & O
129	Clearwater Creek	72,74	Langlade	3		Y	T
130	Prairie River	74	Langlade	2		?	T
131	Crescent Flats	75	Oneida,Lincoln	2-3		?	O & T
132	Pelican Lake	76,74	Oneida	6-7		Y?	T & O
133	Stella Lake	77	Oneida	3		Y	T
134	Casian	78,79,77	Oneida	3-5	W688F A	?	R, T & O
135	Escanaba Lake	80,81	Vilas	3	W500B F A	Y	R & T
136	Pincherry Lake	80	Vilas	2		Y	T & O
137	Nineweb Lake	81,80,82	Vilas	3		Y	T
138	Muskrat Creek	82	Vilas	3		Y	T
	Kentuck Lake loner	83	Vilas	1		N	T & O
139	Giant Pine	84,85,96,97	Forest	10	M2749F A	Y	R, T & O
140	Atkins Lake	86,77	Oneida,Forest	3		Y	O & T
141	Jack Lake	88	Langlade	3-5		?	T
142	<b>Evergreen</b>	90,66,91	Menom,Lang,Oconto	2	M2761F A	N?	R & T
143	<b>South Branch</b>	90, 131	Menominee,Oconto	2		?	T
144	<b>West Branch</b>	90, 130	Menominee,Shawano	2		?	T
145	<b>Zoar</b>	90,66,130	Menominee,Langlade	3	M2778F Y	?	T
	<b>W768M disperser</b>	90	Menominee	1	W768M A	N	R
146	Ada Lake	92	Oconto,Langlade	3		Y	T
147	Bob's Lake	94,95,101	Forest	3	M734M A	Y	R, O & T
148	McArthur Pine	95,85,100	Forest	4		Y	O & T
149	<i>Lost Lake</i>	98	Florence	2		Y	T
150	Mud Lake	99,98	Florence & MI	2		Y	T & O
151	Morgan Lake	100,98	Florence,Forest	5		Y	T
152	Camp 6	101	Forest,Marinette	2-3		?	T
153	Knowles Creek	102	Forest	4		Y	T
154	Peshtigo Brook	104	Oconto,Marinette	2		N?	O & T
155	Eagle Creek	106, 102	Marinette	3-4		Y	T & O
156	Pike River	107	Marinette	3-4		?	T
157	<i>Spread Eagle Barrens</i>	108, 109	Florence	4		Y	T
158	Dunbar	108	Florence,Marinette	4		Y?	T
159	Pemene	110	Marinette,Florence	6	W782F A	Y	O, T & R
160	Island Lake	112, 106	Marinette	3		?	T
<b>Zone 1 Total</b>			<b>568-600 in 158 packs + 11 loners = 579-611 (3.6-3.8 wolves / pack)</b>				
<b>Zone 2</b>							
161	Augusta	117	Eau Claire	5		Y	T
162	Dickison Creek	117	Clark	4		Y	T
163	Eau Claire River	117	Eau Claire,Clark	5	W657M A	Y	T & R
164	Iron Run	117, 118	Clark,Eau Claire	5-6		Y	T
165	Meadows Creek	118, 117	Clark	4		Y	T
166	Wedges Creek	118	Clark	6		Y	T
167	Ballard Road	119	Clark,Jackson	6		Y	T
168	Brushy Ridge	119	Clark,Jackson	4		Y	T
169	Davidson Creek	119	Jackson	5		Y	T

Table 6. Continued.

Map No.	Pack or Area	Survey Block	Counties	Win. Est.	Collared Wolves	Breeding Detected	Evidence
170	Noch Hanai	119	Jackson	4	W772M A	Y	T & R
171	Pray	120,119,121	Jackson	2	W652F A	Y	T & R
172	Starlight	120	Jackson	3-4	W654F A	?	T & R
173	Wildcat Mound	120	Jackson	5-7		Y	T
174	Bear Bluff	121	Jackson	4		?	O & T
175	Mather West	121, 122	Monroe,Jackson	5		Y?	T
176	McKenna	121	Jackson	8		Y	T
177	South Bluff	121, 122	Wood,Juneau	7		Y	T & O
178	Turner Creek	121, 124	Wood	3		?	O
179	Mather East	122, 121	Juneau	4	W635F A	Y	T, R & O
180	Silo	122, 129	Juneau	7		Y	T & O
181	Seneca	124, 140	Wood	6-7		Y	T
182	2-Korner	124	Wood,Jackson	4	W684F A	N?	R & T
183	Rattail	125	Juneau	1		N	T
184	Creamery	125	Wood	3		Y	T
185	Colburn	127, 128	Adams,Waushara	3		Y	T & O
186	<i>Leola Marsh</i>	127	Adams,Portage	2	W763F Y	Y	R
187	Petenwell	127	Adams	2	W763F Y dispersed	Y	T & R
188	Caves Creek	128	Marquette	1		N	O & T
189	Quincy Bluff	128	Adams	1		N	T
	Meredith	129	Juneau	1		N	T & O
190	<i>Mill Bluff</i>	129	Juneau,Monroe	2-3		Y	T
<b>Zone 2 Total</b>			<b>118-124 in 27 packs + 4 loners = 122-128</b> (4.4-4.6 wolves/ pack)				
<b>Zone 3</b>							
191	Clam River	17	Burnett,Polk	3		Y	T
192	Sand Creek	17,18	Burn,Polk,Barr,Wash.	3		?	T
193	Blue Hills South	20B,20A,126	Barron,Rusk	3		N?	T
194	<i>Ackley Wildlife Area</i>	72,73	Lincoln,Lang,Marath.	3		?	O & T
195	<i>Lake Mary</i>	113	Marinette & MI	4		N?	T & O
196	Lake Noquebay	113	Marinette	5		Y	T
197	<i>Clear Creek</i>	120, 123	Jackson,Monroe	4		Y	O & T
198	Ft. McCoy	123	Monroe	12		Y	T & O
199	South Post	123	Monroe	8	W751F A	Y	T, O & R
200	Spence Lake	126	Chippewa,Rusk	4		Y	T
201	Long Lake	126,45	Rusk	1-2		N?	O & T
202	<b>Miller Creek</b>	130,90	Shawano,Menominee	6	W658F A	Y?	R & T
203	<i>Tilleda</i>	130, 138	Shawano	3-5		Y	T & O
204	Mead	133	Marath,Wood,Portage	8		Y	T
205	<i>Dewey Marsh</i>	137	Portage,Marathon	3-4		Y	T
206	Split Rock	138	Shawano,Waupaca	3		Y	T & O
207	<i>Navarino</i>	139	Shawano,Waupaca	2		N?	O
208	Fogarty Marsh	140	Portage,Wood	1		N	T
209	Lamb's Creek	148, 149	Dunn	2		Y	T
	Loner	151	Chippewa	1		N	T
	W778F disperser	0	Jackson	1	W778F Y	N	R

**Table 6. Continued.**

Map No.	Pack or Area	Survey Block	Counties	Win. Est.	Collared Wolves	Breeding Detected	Evidence
<b>Zone 3 Total</b>			<b>76-81 in 17-18 packs + 4-5 loners = 81-85</b> (4.5 wolves / pack)				
<b>STATEWIDE TOTAL</b>			<b>762-805 in 202-203 packs + 19-20 loners = 782-824</b> (3.8-4.0 wolves / pack) <b>751-793 off reservations</b>				
<b>MI Packs detected in WI, but counted in MI</b>							
210	<b>Little Girl's Point</b>	60,39	Iron & MI	6		Y	O & T
211	<i>Menominee River</i>	111	Marinette & MI	2-3		?	T

<sup>a</sup>Packs in italics are newly identified packs this year;

Packs in bold are counted as reservation wolves.

**Table 7.** *Wolf mortality in Wisconsin in 2010.*

<b>Date</b>	<b>Wolf Number</b>	<b>Age/ Sex</b>	<b>County</b>	<b>Cause</b>	<b>Pack</b>
<b>Zone 1</b>					
01/02/10		A/F	Vilas	Illegally killed	Miles Lake
01/05/10	W693*	A/F	Bayfield	Disease – mange	Rainbow Lake
01/12/10		P/F	Douglas	Vehicle collision	Spruce River
01/12/10	W498*	A/F	Douglas	Vehicle collision?/ trauma	Shoberg Lake
02/04/10	M2752**	A/F	Vilas	Trauma (Possible trap injury)	MI Pack
02/11/10		A/M	Rusk	Vehicle collision	Lea Lake
02/16/10		A/M	Ashland	Vehicle collision	Black Lake
02/20/10		A/M	Ashland	Vehicle collision	Beaver Dam Lake
03/15/10	W503*	A/F	Price	Illegally killed – shot	Miles Lake
03/31/10		A/F	Ashland	Disease-mange	West Firelane
04/03/10		A/M	Lincoln	Vehicle collision	Disperser
04/29/10		Y/F	Douglas	Vehicle collision	Bird Sanctuary
04/30/10		A/?	Douglas	Unknown	Shoberg Lake
05/03/10	W634*	A/F	Douglas	Unknown	Belden Swamp
05/15/10	(H)? <sup>a</sup>	A/F	Price	Euthanized – Depredation	Skinner Creek
05/24/10	W697*	A/M	Bayfield	Vehicle collision	Rainbow Lake
07/18/10	W511*	A/F	Sawyer	Illegally killed - Shot	Sabin Lake
07/27/10		Y?/M	Iron	Vehicle collision	Murray’s Landing
08/03/10	W682*	A/M	Price	Unknown	Wintergreen North
08/06/10		A/F	Douglas	Vehicle collision	Casey Creek
08/11/10		A/M	Price	Euthanized – Health & Safety	Wintergreen South
08/17/10		Y/F	Price	Euthanized – Health & Safety	Wintergreen South
08/17/10	W627*	A/F	Bayfield	Unknown	Mason
08/25/10		Y/F	Vilas	Vehicle Collision	Pin Cherry Lake
08/25/10		P/M	Price	Euthanized – Health & Safety	Wintergreen South
08/26/10	Hybrid <sup>b</sup>	A/F	Price	Euthanized – Health & Safety	Wintergreen South
08/26/10		A/M	Price	Euthanized – Health & Safety	Wintergreen South
08/26/10		P/F	Price	Euthanized – Health & Safety	Wintergreen South
09/01/10		P/?	Douglas	Vehicle Collision	Ox Creek
09/05/10		A/F	Price	Euthanized – Health & Safety	Wintergreen South
09/06/10		P/F	Douglas	Vehicle collision	Poplar River?
09/08/10	Hybrid?	A/M	Bayfield	Unknown	Unknown
09/15/10		Y/M	Ashland	Vehicle collision	Disperser?
09/29/10		Y/M	Price	Euthanized – Health & Safety	Wintergreen South
10/03/10		A/F	Price	Euthanized – Health & Safety	Wintergreen South
10/12/10		P?/F	Douglas	Illegally killed	Lake Nebagamon
10/14/10	W475*	A/F	Ashland	Illegally killed - shot	Shanagolden
10/15/10		Y?/F	Douglas	Vehicle collision	Poplar River
10/24/10	W770*	A/M	Price	Euthanized – Health & Safety	Disperser?
10/25/10		A/F	Price	Euthanized – Health & Safety	Wintergreen South
10/28/10	W777*	Y/F	Sawyer	Illegally killed – shot	Disperser
11/06/10		A/F	Burnett	Euthanized – poor condition	Crex Meadow
11/10/10		P?/?	Burnett	Unknown	Namakagon Barrs.
11/11/10		A/M	Ashland	Vehicle collision	Little Girls Point

Table 7. Continued.

Date	Wolf Number	Age/ Sex	County	Cause	Pack
11/27/10		Y/M	Rusk	Illegally killed – shot	Blue Hills North
12/28/10		A??	Burnett	Unknown	Namakagon Barrs.
12/31/10		?/F	Oneida	Vehicle Collision	Disperser
<b>Zone 2</b>					
01/16/10		A/M	Eau Claire	Illegally killed - Shot, poisoned	Eau Claire River?
01/29/10		A/?	Jackson	Illegally killed – shot	Wildcat Mound
02/26/10	W655*	A/M	Clark	Other wolves?	Brushy Ridge
03/30/10	Hybrid <sup>b</sup>	?/M	Monroe	Vehicle collision?	Unknown
05/08/10		P/F	Jackson	Unknown	Unknown
10/01/10		A/M	Jackson	Euthanized – Health & Safety	Bear Bluff
10/07/10		P/M	Jackson	Euthanized – Health & Safety	Bear Bluff
10/07/10		Y/F	Jackson	Euthanized – Health & Safety	Bear Bluff
10/08/10		P/F	Jackson	Euthanized – Health & Safety	Bear Bluff
10/10/10	W790*	A/F	Jackson	Euthanized – Health & Safety	Bear Bluff
10/13/10		P/M	Jackson	Vehicle collision	Noch Hanai
10/14/10		P/F	Jackson	Euthanized – Health & Safety	Bear Bluff
10/18/10	M2782	A/M	Clark	Vehicle collision (train)	Disperser
11/18/10	W683*	A/M	Jackson	Illegally killed - shot	Noch Hanai
11/23/10	W771*	A/F	Jackson	Illegally killed - shot	Noch Hanai
<b>Zone 3</b>					
02/05/10		A/F	Portage	Vehicle collision	Disperser
02/07/10		A/F	Portage	Illegally killed-gunshot	Fogarty Marsh
02/25/10		A/M	Monroe	Vehicle collision/ euthanized	Ft McCoy?
03/09/10		?/F	Portage	Vehicle collision?	Disperser
03/29/10		A/M	Buffalo	Unknown	Disperser
04/03/10		A?/F	Wood	Illegal killing-shot	Disperser?
04/26/10		A/M	Marathon	Vehicle collision?	Disperser
04/29/10		A/M	Monroe	Illegally killed-gunshot	Disperser?
06/28/10		P/?	Wood	Vehicle collision	?
10/25/10	W659*	A/F	Shawano	Illegally killed - shot (w/arrow)	Loner
11/12/10		A/F	Wood	Vehicle collision	Seneca
11/22/10		A/F	Jackson	Unknown	Disperser?
12/04/10		A?/M	Polk	Vehicle collision	Disperser
<b>Zone 4</b>					
01/06/10		Y/F	Dane	Vehicle collision	Disperser
<b>WI Collared Wolves found dead outside of WI</b>					
01/04/10	W648*	A/F	Iron, MI	Mange?	Disperser?
09/20/10	W639*	A/F	Pine, MN	Illegally killed – shot	MN pack
10/03/10	W455	A/F	Gogebic, MI	Unknown	MI pack
10/15/10	W406**	A/F	Schoolcraft, MI	Disease – congestion, edema	MI pack

**Zone 1** = 47 mortalities, (12 collared), 2 or 3 wolf-dog hybrids

**Zone 2** = 15 mortalities, (5 collared, 1 of which was not being actively monitored), 1 wolf-dog hybrid

**Zone 3** = 13 mortalities, (1 collared)

**Zone 4** = 1 mortality

**Outside of WI** = 4 mortalities; 2 WI monitored wolf mortalities

\* Actively monitored at time of death by WI DNR <sup>a</sup> Genetically tested as wolf, but physically appeared to be a wolf-dog hybrid.

\*\* Actively monitored at time of death by MI DNR <sup>b</sup> Genetically tested as hybrid

**Table 8.** *Mortality summary of radio collared wolves in Wisconsin from October 1979 – December 2010.*

	<b>Cause of Death</b>	<b>Number</b>	<b>% Known Mortality</b>
<b>Human Causes</b>	Capture Related	9	6%
	Euthanized (depredation)	7	4%
	Euthanized (safety)	4	2%
	Legal control by landowner	1	1%
	Vehicle Collision	15	9%
	Illegally killed	57	35%
	<u>Unknown Human Causes</u>	<u>0</u>	<u>0%</u>
	<i>Total Human Causes</i>	<i>93</i>	<i>57%</i>
<b>Natural Causes</b>	Accident	4	2%
	Birthing Complications	1	1%
	Disease	42	26%
	Malnutrition/Starvation	3	2%
	Killed by Other Wolves	18	11%
	<u>Unknown Natural Causes</u>	<u>3</u>	<u>2%</u>
	<i>Total Natural Causes</i>	<i>71</i>	<i>43%</i>
<b>Totals</b>	<i>Known Mortality</i>	<i>164</i>	<i>100%</i>
	<u>Unknown Mortality</u>	<u>20</u>	
	<b>Total Mortality</b>	<b>184</b>	

*Some final necropsy results pending do not cite for publication*

**Table 9.** Probable and possible wolf observations reported by natural resource agency personnel and private citizens in Wisconsin, 2010.

County	Number of Sightings	Wolves Seen	Track or Sign Observations	Total Wolf Observations
Adams*	4	4	1	5
Ashland*	20	45	0	20
Barron*	1	1	3	4
Bayfield*	10	21	7	17
Burnett*	11	21	0	11
Chippewa*	4	9	2	6
Clark*	1	2	0	1
Columbia	3	4	2	5
Dane	6	6	0	6
Door	3	4	1	4
Douglas*	12	32	6	18
Dunn	1	7	1	2
Eau Claire*	1	9	0	1
Florence*	13	16	0	13
Fond du Lac	1	2	0	1
Forest*	3	7	1	4
Green Lake	1	1	0	1
Iowa	1	1	0	1
Iron*	8	16	4	12
Jackson*	5	16	0	5
Juneau*	3	7	3	6
Kenosha	3	3	0	3
Kewaunee	2	3	1	3
Langlade*	1	1	0	1
Lincoln*	5	7	0	5
Manitowoc	10	12	0	10
Marathon*	9	13	1	10
Marinette*	20	31	2	22
Marquette	4	6	0	4
Menominee*	3	4	0	3
Monroe*	4	15	0	4
Oconto*	10	18	2	12
Oneida*	14	33	2	16
Outagamie	3	4	0	3
Ozaukee	1	1	0	1
Pepin	1	1	0	1
Polk*	4	12	1	5
Portage*	5	8	1	6
Price*	19	40	4	23
Richland	2	2	0	2
Rock	1	1	0	1
Rusk*	3	4	1	4
Sauk	5	6	0	5
Sawyer*	14	21	1	15
Shawano*	14	30	0	14
Trempealeau	1	1	0	1
Vernon	1	1	0	1
Vilas*	14	19	2	16
Walworth	1	1	0	1
Washburn*	5	7	2	7
Washington	2	2	0	2
Waupaca	7	9	1	8
Waushara	3	4	1	4
Winnebago	4	4	0	4

**Table 9.** *Continued.*

<b>County</b>	<b>Number of Sightings</b>	<b>Wolves Seen</b>	<b>Track or Sign Observations</b>	<b>Total Wolf Observations</b>
Wood*	5	10	0	5
Total	<b>312</b>	<b>565</b>	<b>53</b>	<b>365</b>

\*Counties believed to have packs with breeding activity in 2010. No observations were reported from Taylor county where breeding packs are known to exist.

**Table 10a.** *Wolf depredation cases on livestock in Wisconsin, in 2010. (Chronic depredation farms are highlighted).*

Date	Animal Lost	Pack Involved	County	Payments <sup>a</sup>	Control Actions
<b>Zone 1</b>	<b>Depredations on Livestock</b>	(chronic farms shaded)			
04/01 to 10/11/10	2 calves killed, 8 missing	Poplar River	Douglas	\$15,500.00	None
04/02 to 04/05/10	2 cow killed, 1 calf	Harrison Hills	Lincoln	\$2,600.00	Non-lethal
04/05 to 09/01/10	3 deer (deer farm) killed	Swamp Creek	Oneida	\$26,000.00	Trapping 2 wolves translocated
04/26 to 06/10/10	7 calves killed	Chase Brook	Burnett	\$4,800.00	Non-lethal
04/28/10	1 calf killed	Skinner Creek	Price	\$1,500.00	Trapping 1 wolf euthanized <sup>b</sup>
05/02/10	1 calf killed	Lea Lake	Rusk	\$500.00	None
05/03/10	1 calf killed	Harrison Hills	Lincoln	\$500.00	Non-lethal
05/08 to 12/07/10	2 cows killed, 6 missing	Wintergreen South	Price	\$15,144.00	Non-lethal Trapping <sup>c</sup>
05/10/10	1 calf killed	Poplar River	Douglas	\$750.00	Non-lethal
05/14 to 09/30/10	3 calves killed, 1 inj., 10 missing; 1 cow killed	Amnicon River	Douglas	\$11,750.00	Non-lethal
05/21 to 09/30/10	1 calf killed, 6 missing; 1 sheep, 4 lambs killed; 1 goat inj.	Casey Creek	Douglas	\$5,925.00	Non-lethal
05/24/10	1 calf inj.	Pine Creek	Price	NC	None
05/26 to 07/13/10	2 calves killed	Pine Creek	Ashland	\$1,504.00	None
05/28/10	1 calf killed	Mondeaux Flowage	Taylor	\$600.00	None
05/29 to 07/29/10	2 calves killed, 1 missing	South Range	Douglas	\$2,250.00	None
06/01/10	1 calf killed	Weirgor Lake	Sawyer	\$600.00	None
06/10/10	1 calf killed	Skinner Creek?	Price	\$700.00	None
07/06/10	1 calf killed	Pine Creek	Ashland	NC	None
07/07/10	1 calf killed	Pine Creek	Price	\$600.00	None
07/17/10	1 calf killed	Mason	Bayfield	\$900.00	None
07/23 to 08/10/10	1 calf killed, 2 inj.	Beaver Dam Lake	Ashland	\$750.00	Non-lethal
08/02/10	1 steer killed	Casey Creek	Douglas	\$750.00	Non-lethal
08/02/10	1 calf inj.	South Range	Douglas	NC	None
08/07/10	3 deer (deer farm) killed	Wolf Lake?	Washburn	\$29,000.00	None
08/19/10	1 calf killed	Poplar River	Douglas	\$1,500.00	None
08/21/10	1 cow killed	South Range	Douglas	\$2,400.00	None
08/26/10	1 calf killed	Disperser?	Forest	\$750.00	None
08/31/10	1 steer killed	South Range	Douglas	\$800.00	None

**Table 10a. Continued**

<b>Date</b>	<b>Animal Lost</b>	<b>Pack Involved</b>	<b>County</b>	<b>Payments<sup>a</sup></b>	<b>Control Actions</b>
09/10/10	1 calf inj., 1 missing	Amnicon River	Douglas	\$2,400.00	Non-lethal
09/15 to 11/20/10	3 calves killed	White River?	Ashland	\$3,900.00	None
09/22/10	1 calf killed	Weirgor Lake?	Sawyer	\$1,100.00	None
09/22/10	1 cow killed	Tupper Creek?	Sawyer	\$1,605.00	None
09/28/10	1 sheep killed	Miles Lake?	Price	\$600.00	None
10/23/10	1 steer killed	West Firelane	Ashland	\$1,000.00	None
10/30/10	1 calf killed, 2 missing	Casey Creek	Douglas	\$2,600.00	None
	<b>Calves</b>	<b>36 killed</b>			
		<b>6 injured</b>			
		<b>34 missing</b>			
<b>ZONE 1 TOTALS</b>	<b>Cows</b>	<b>7 killed</b>			<b>Trapping attempted at 2 farms</b>
<b>14 chronic farms</b>	<b>Steers</b>	<b>3 killed</b>	<b>20 packs</b>	<b>12 counties</b>	<b>\$141,278.00</b>
	<b>Sheep</b>	<b>2 killed</b>	<b>1 disperser</b>		<b>2 wolves translocated, 1 wolf euthanized</b>
<b>21 first time farms</b>	<b>Lambs</b>	<b>4 killed</b>			<b>Non lethal used at 10 farms</b>
	<b>Goats</b>	<b>1 injured</b>			
	<b>Deer (farm)</b>	<b>6 killed</b>			
<b>Zone 2</b>	<b>Depredations on Livestock</b>	(chronic farms shaded)			
05/07/10	1 calf killed	Mill Bluff?	Monroe	\$500.00	None
05/22/10	1 calf killed	Rattail	Juneau	\$632.50	None
09/20/10	1 cow killed	Mill Bluff	Monroe	\$1,470.00	None
<b>ZONE 2 TOTALS</b>	<b>Calves</b>	<b>2 killed</b>	<b>2 packs</b>	<b>2 counties</b>	<b>\$2,602.50</b>
<b>3 first time farms</b>	<b>Cows</b>	<b>1 killed</b>			
<b>Zone 3</b>	<b>Depredations on Livestock</b>	(chronic farms shaded)			
06/03/10	4 calves killed	Lamb's Creek	Dunn	\$2,000.00	None
06/28/10	1 calf killed	Lamb's Creek	Dunn	\$500.00	None
07/29/10	1 cow killed	Ackley	Marathon	\$1,600.00	None
08/24/10	1 cow killed	Unknown	Barron	\$1,800.00	None
10/07/10	1 calf killed	Miller Creek	Shawano	\$1,200.00	None
10/08/10	1 calf killed	Lamb's Creek	Dunn	\$500.00	None
11/07/10	1 cow killed	Little Black River	Taylor	\$1,400.00	None
11/09/10	1 steer killed	Disperser?	Monroe	\$900.00	None
<b>ZONE 3 TOTALS</b>	<b>Calves</b>	<b>7 killed</b>	<b>4-5 packs</b>	<b>6 counties</b>	<b>\$9,900.00</b>
<b>8 first time farms</b>	<b>Cows</b>	<b>3 killed</b>	<b>1-2 disperser</b>		
	<b>Steers</b>	<b>1 killed</b>			

Table 10a. *Continued*

Date	Animal Lost	Pack Involved	County	Payments <sup>a</sup>	Control Actions
<b>STATEWIDE LIVESTOCK TOTALS</b>	<b>Calves 45 killed 6 injured 34 missing</b>				
<b>14 Chronic farms</b>	<b>Cows/ Steers 15 killed</b>	<b>26-27 packs 2 dispersers</b>	<b>18 counties</b>	<b>\$153,780.50</b>	<b>Non lethal used at 10 farms</b>
<b>32 First time farms</b>	<b>Sheep/ Lambs/ Goats 6 killed 1 injured</b>				<b>Trapping attempted at 2 farms 2 wolves translocated 1 wolf euthanized</b>
	<b>Deer 6 killed (farmed)</b>				
<hr/>					
<b>Zone 1</b>	<b>Verified Harassment or Threat to Livestock</b>				
07/22/10	Harassment of horses	Belden Swamp	Douglas	-	Non-lethal
<b>Zone 3</b>	<b>Verified Harassment or Threat to Livestock</b>				
03/19/10	Threat to livestock	Loner/Disperser?	Lincoln	-	None
05/05/10	Harassment of horses	Loner/Disperser?	Marinette	-	Non-lethal
06/04/10	Threat to livestock	Disperser?	Marathon	-	None
<b>TOTALS</b>	<b>2 threat to livestock 2 threat to horses</b>	<b>1 pack 3 loner/dispersers</b>	<b>4 counties</b>		<b>4 farms Non lethal used at 2 farms</b>

<sup>a</sup>NC = No claim received as of date of report preparation

<sup>b</sup>Believed to be a hybrid

<sup>c</sup>Trapping in response to health & safety concerns at this farm; animals euthanized are listed in table 10c.

**Table 10b. Wolf depredation cases on dogs in 2010.**

<b>Date</b>	<b>Animal Lost</b>	<b>P=Pet H=Hunting</b>	<b>Pack Involved</b>	<b>County</b>	<b>Payments<sup>a</sup></b>	<b>Control Actions</b>
<b><u>Zone 1</u></b>						
01/15/10	1 dog inj. ( Lab)	P	Tupper Creek?	Sawyer	\$2495.40	None
02/03/10	1 dog inj. (Redbone)	H	Peshtigo Brook	Oconto	\$151.00	None
04/21/10	1 dog inj. (Pit Bull mix)	P	Belden Swamp	Douglas	NC	None
05/16/10	1 dog (Lab)	P	Shanagolden	Ashland	\$2500.00	None
05/26/10	1 dog inj. (Lab mix)	P	Casey Creek	Douglas	\$303.88	None
07/10/10	1 dog (Plott Hound)	H	Giant Pine	Forest	\$2500.00	None
07/16/10	1 dog (Redtick Hound)	H	Hungry Run	Ashland	\$2500.00	None
07/25/10	1 dog (Plott Hound)	H	Flag River	Bayfield	\$2500.00	None
07/26/10	1 dog (Walker Hound)	H	Pelican Lake	Oneida	\$2500.00	None
07/29/10	2 dogs (Plott & Walker)	H	Flag River	Bayfield	\$5000.00	None
07/31/10	1 dog (Walker Hound)	H	Riverside	Burnett	\$2500.00	None
08/02/10	1 dog (Walker Hound)	H	Peshtigo Brook	Oconto	\$2500.00	None
08/07/10	1 dog (Plott Hound)	H	Peshtigo Brook	Oconto	\$2500.00	None
08/07/10	1 dog (Plott Hound)	H	Giant Pine	Forest	\$2500.00	None
08/08/10	1 dog (Plott Hound)	H	Lake Nebagamon?	Douglas	\$2500.00	None
08/14/10	1 dog (Bear Hound)	H	Pelican Lake	Oneida	\$2500.00	None
08/21/10	1 dog (Plott Hound)	H	Ranger Island	Lincoln	\$2500.00	None
08/29/10	1 dog (Plott Hound)	H	Peshtigo Brook	Oconto	\$2500.00	None
09/19/10	1 dog (Redbone)	H	Pelican Lake	Oneida	\$2500.00	None
09/27/10	1 dog (Bluetick)	H	Flag River	Bayfield	\$2500.00	None
10/10/10	2 dogs (Walker & Bluetick)	H	Peshtigo Brook	Oconto	\$4500.00	None
10/20/10	1 dog (Gordon Setter)	P	Kidrick Swamp	Taylor	\$2040.00	None
12//06/10	1 dog inj. (Walker Hound)	H	Moose Road	Douglas	\$787.80	None
<b>ZONE 1 TOTALS</b>	<b>20 dogs killed 5 dogs injured</b>		<b>14 packs</b>	<b>10 counties</b>	<b>\$52,778.08</b>	
<b><u>Zone 2</u></b>						
01/09 to 07/24/10	1 dog killed, 2 dogs inj. (Husky mix & Malamute)	P	Bear Bluff	Jackson	\$2592.00	Non-lethal; Trapping <sup>b</sup>
05/15/10	1 dog (Min. Cocker Spaniel)	P	Disperser?	Adams	\$1205.00	None
08/16/10	1 dog (Beagle mix)	P	Bear Bluff	Jackson	\$200.00	None
08/20/10	1 dog inj. <sup>c</sup> (Bulldog)	P	Mill Bluff	Juneau	\$113.70	None
09/21/10	1 dog inj. (Ger.Shorthair)	H	Bear Bluff	Jackson	\$218.60	None
<b>ZONE 2 TOTALS</b>	<b>3 dogs killed 4 dogs injured</b>		<b>2 packs 1 disperser</b>	<b>3 counties</b>	<b>\$4,329.30</b>	<b>Non-lethal &amp; trapping at 1 location</b>

**Table 10b. Continued**

Date	Animal Lost	P or H	Pack Involved	County	Payments <sup>a</sup>	Control Actions
<b>Zone 3</b>						
02/26/10	1 dog inj. (Am.Samoyed)	P	Fogarty Marsh	Portage	\$30.80	None
03/26/10	1 dog (Brittany Spaniel)	P	Lamb's Creek	Dunn	\$2500.00	None
05/10/10	1 dog inj. (Spaniel/ Pit Bull)	P	Miller Creek	Shawano	\$263.86	None
06/07/10	1 dog inj. (Lab/ Collie mix)	P	Blue Hills South	Barron	\$530.00	None
08/29/10	1 dog inj. (Bluetick)	H	Sand Creek	Burnett	\$773.25	None
10/02/10	1 dog inj. (Lab)	P	Lamb's Creek	Dunn	\$101.72	None
<b>ZONE 3 TOTALS</b>	<b>1 dog killed 5 dogs injured</b>		<b>5 packs</b>	<b>5 counties</b>	<b>\$4,199.63</b>	
<b>STATEWIDE TOTALS</b>	<b>24 dogs killed 14 dogs injured</b>		<b>21 packs 1 disperser</b>	<b>17 counties</b>	<b>\$61,307.01</b>	<b>Non-lethal &amp; trapping at 1 location</b>

<sup>a</sup>NC = No claim received as of date of report preparation

<sup>b</sup>Trapping in response to health & safety concern; animals euthanized are listed in table 10c.

<sup>c</sup>Unconfirmed

**Table 10c. Human Safety Concerns and Threats to Pets in Wisconsin in 2010.**

Date	Threat	Pack	County	Control Action
<b>Zone 1</b>				
01/11/10	Health & Safety Concern	Pine Creek	Ashland	None
05/10/10	Health & Safety Concern	Harrison Hills	Lincoln	Non-lethal
05/26/10	Health & Safety Concern	West Firelane	Ashland	None
05/28/10	Health & Safety Concern	Harrison Hills	Lincoln	None
06/03/10	Health & Safety Concern	West Firelane	Ashland	None
09/20/10	Health & Safety Concern	Chaney Lake	Iron	Non-lethal
09/21/10	Health & Safety Concern <sup>a</sup>	Wintergreen S.	Price	Non-lethal & Trapping 10 wolves & 1 wolf-dog hybrid euthanized
<b>Zone 2</b>				
01/31/10	Threat to dogs & human safety <sup>b</sup>	Bear Bluff	Jackson	Non-lethal & Trapping - 6 wolves <sup>c</sup> euthanized
09/02/10	Threat to dogs	Bear Bluff	Jackson	None
09/28/10	Health & Safety Concern	McKenna	Jackson	None
<b>TOTALS</b>	<b>9 Health &amp; safety concern 2 Threat to pets</b>	<b>7 packs</b>	<b>5 counties</b>	<b>Non lethal at 4 locations Trapping at 2 locations 16 wolves<sup>c</sup> &amp; 1 wolf-dog hybrid euthanized</b>

<sup>a</sup>Also livestock depredations at this site (see Table 10a).

<sup>b</sup>Also dog depredations at this site (see Table 10b).

<sup>c</sup>Four with indeterminate genetic lineage may be hybrids

**Table 11.** *Suspected wolf dog hybrid incidents and problems in Wisconsin in 2010.*

<b>Date</b>	<b>County</b>	<b>No. of wolf dogs Age/Sex</b>	<b>Problem</b>	<b>Outcome</b>
01/06/10	Dane	1 Y?/F	Found dead near state park	UW Zoo. Collect, genetic test as wolf?
02/01/10	Waupaca	1 A/?	Roaming loose in rural area	Unknown
02/13/10	Dane	1 A/M	Roaming loose in town	Unknown
02/15/10	Sauk	1 A/?	Roaming loose in rural area	Unknown
03/30/10	Monroe	1 ?/M	Vehicle killed	Disposed
04/18/10	Richland	1 A/?	Possible hybrid growled at homeowners	Unknown
05/16/10	Portage	1 A/?	Along roadside	Unknown
06/07/10	Ashland	1 A/?	Roaming loose in town	Unknown
07/03/10	Waupaca	1 A/?	Caught on trail cam	Unknown
08/26/10	Price	1 A/F	Health & Safety concern	Euthanized
08/29/10	Oneida	2 A/?	Roaming loose	Unknown
09/08/10	Bayfield	1 A/M	Found dead	Disposed
09/23/10	Juneau	1 A/?	Roaming loose	Unknown
09/27/10	Juneau	1 A/M, 1 A/F 1 A/M, 1 A/F	Escaped from captivity Possible hybrids	Re-captured
10/1 to 10/10/10	Jackson	1 Y/F, 1 P/M	Health & safety concern	Euthanized
10/29/10	Waupaca	1 A/?	Possible hybrid captured on trail camera	Unknown
11/01/10	Columbia	1 A/?	Roaming loose near home	Unknown
12/03/10	Milwaukee	1 A/?	Roaming loose on seminary grounds	Unknown

**Appendix 1. Wolf pack territories 2010-2011. (mapped in Figure 2)**

<b>Pack Name</b>	<b>Map #</b>	<b>Year<sup>a</sup></b>	<b>Collared Wolf</b>	<b># of radio locations</b>	<b># of other locations<sup>b</sup></b>	<b>Area (Mi<sup>2</sup>)</b>
<b><u>Zone 1</u></b>						
Ada Lake	146	Approx.	none	0	3	NE
Alcohol Creek	98	Approx.	none	0	1	NE
Amnicon River	9	2011	W669 <sup>c</sup>	47(43)	8	46.3
Amsterdam Slough	29	Approx.	none	0	0	NE
Atkins Lake	140	Approx.	none	0	4	NE
Augustine Lake	113	Approx.	none	0	8	NE
Averill Creek North	127	2010	W647 <sup>c</sup>	0	14	NE
Averill Creek South	96	Approx.	none	0	6	NE
Bean Brook	39	Approx.	none	0	1	NE
Bearsdale	47	2011	W663 <sup>c</sup>	48(47)	5	26.4
Beaver Dam Lake	63	2011	W671 <sup>c</sup>	51	8	90.1
Belden Swamp	2	2011	W760 <sup>c</sup>	48	4	25.6
Bibon Swamp	54	Approx.	none	0	1	NE
Bird Sanctuary	19	2011	W672 <sup>c</sup>	50(48)	2	48.3
Black Lake	67	2011	W573 <sup>c</sup>	43(42)	130	69.1
Blue Hills North	37	Approx.	none	0	3	NE
Bob's Lake	147	2011	M734	56	2	56.4
Bootjack Lake	107	2011	W623 <sup>c</sup>	56(55)	4	83.3
Bradley	122	2009	W617 <sup>c</sup>	0	5	NE
Breizman Lake	3	Approx.	none	0	5	NE
Brule River	11	Approx.	W637 <sup>c</sup>	19	4	NE
Brush Creek	66	2011	W651	54(52)	3	42.0
Camp 6	152	Approx.	none	0	4	NE
Carpenter Creek	88	2011	W752	22	1	10.7
Casey Creek	14	2011	W757	33(29)	8	32.7
Casian	134	2011	W688 <sup>c</sup>	50(47)	3	129.5
Catawba	91	Approx.	none	0	1	NE
Cedar Lake	117	2010	W674 <sup>c</sup>	0	3	NE
Chain Lake	16	Approx.	W791 <sup>c</sup>	16(10)	4	NE
Chase Brook	24	Approx.	none	0	8	NE
Chequamegon Waters	93	Approx.	none	0	2	NE
Chippewa River	111	Approx.	none	0	1	NE
Chittamo	42	2011	W784 <sup>c</sup>	33(32)	5	50.4
Clearwater Creek	129	Approx.	none	0	3	NE
Clifford	101	Approx.	none	0	4	NE
Crescent Flats	131	2007	W568 <sup>c</sup>	0	8	NE
Crex Meadow	30	2010	W698 <sup>c</sup>	0	5	NE
Crotte Creek	20	2011	W602	50	2	28.0
Davis Lake	78	Approx.	none	0	7	NE
Delta	51	2010	W627 <sup>c</sup>	0	2	NE
Dover Loop	102	Approx.	none	0	5	NE
Dugan Lake	38	Approx.	none	0	3	NE
Dunbar	158	2009	W646 <sup>c</sup>	0	6	NE
Eagle Creek	155	Approx.	none	0	12	NE
Echo Valley	61	Approx.	none	0	3	NE
Eddy Creek	82	Approx.	none	0	1	NE
Escanaba Lake	135	2011	W500B	56	3	98.6

Appendix 1. *Continued.*

Pack Name	Map #	Year <sup>a</sup>	Collared Wolf	# of radio locations	# of other locations <sup>b</sup>	Area (Mi <sup>2</sup> )
Evergreen	142	2011	M2761 <sup>c</sup>	56(52)	4	236.4
Falun Meadows	31	Approx.	none	0	8	NE
Flag River	58	Approx.	W673 <sup>c</sup>	14	7	NE
Frog Creek	43	Approx.	none	0	6	NE
Ghost Lake	45	2011	W694 <sup>c</sup>	32(28)	34	40.4
Giant Pine	139	2011	M2749 <sup>c</sup>	55	18	192.6
Green Creek	92	Approx.	none	0	3	NE
Harrison Hills	128	2010	W617 <sup>c</sup>	0	7	NE
Haystack Corner	84	2011	W650	53(52)	1	85.0
Hellhole Creek	65	Approx.	none	0	4	NE
Hoffman Lake	109	2009	W632 <sup>c</sup>	0	14	NE
Hungry Run	75	Approx.	none	0	18	NE
Ino Swamp	52	2009	W561 <sup>c</sup>	0	5	NE
Island Lake	160	Approx.	none	0	5	NE
Jack Lake	141	Approx.	none	0	4	NE
Jackson Box	4	Approx.	none	0	3	NE
Kakagon Sloughs	73	2011	W667 <sup>c</sup>	51(47)	0	58.4
Kidrick Swamp	94	Approx.	none	0	2	NE
Knowles Creek	153	Approx.	none	0	3	NE
Lake Nebagamon	12	2010	W679 <sup>c</sup>	15	12	NE
Lea Lake	85	2011	W759	52	1	22.6
Leder Lake	21	Approx.	none	0	2	NE
Lipsett Lake	26	2011	W774 <sup>c</sup>	35	2	24.4
Little Black River	97	Approx.	none	0	2	NE
Little Rice River	123	2011	W687,W755	66(63)	3	46.0
Little Rock Lake	119	2011	W692 <sup>c</sup>	56	4	49.5
Log Creek	76	Approx.	none	0	3	NE
Lost Lake	149	Approx.	none	0	1	NE
Magee Creek	112	2010	M726,W696 <sup>c</sup>	0	2	NE
Main Creek	86	Approx.	none	0	1	NE
Marheimie Creek	100	2011	W686	56(55)	3	43.3
Mason	55	Approx.	W627 <sup>c</sup>	17(14)	3	NE
McArthur Pine	148	Approx.	none	0	4	NE
Merril Lake	116	Approx.	none	0	1	NE
Miles Lake	108	2010	W503 <sup>c</sup>	0	1	NE
Mondeaux Flowage	95	Approx.	none	0	3	NE
Moose Lake	7	Approx.	none	0	4	NE
Moose Road	25	2011	W564 <sup>c</sup>	50	6	45.2
Moquah	57	2010	W662 <sup>c</sup>	0	6	NE
Moreland Lake	49	2011	W670,W757 <sup>c</sup>	66(64)	5	23.2
Morgan Lake	151	2010	M719 <sup>c</sup>	0	5	NE
Muck Lake	13	Approx.	none	0	3	NE
Mud Lake	150	Approx.	W783 <sup>c</sup>	4	4	NE
Mukwonago Trails	68	Approx.	none	0	10	NE
Murray's Landing	110	2009	W680 <sup>c</sup>	0	3	NE
Muskrat Creek	138	Approx.	none	0	4	NE
Musser Creek	103	Approx.	none	0	11	NE
Nail Creek	36	Approx.	none	0	3	NE

Appendix 1. *Continued.*

<b>Pack Name</b>	<b>Map #</b>	<b>Year<sup>a</sup></b>	<b>Collared Wolf</b>	<b># of radio locations</b>	<b># of other locations<sup>b</sup></b>	<b>Area (Mi<sup>2</sup>)</b>
Namakagon Barrens	22	Approx.	none	0	10	NE
Nineweb Lake	137	Approx.	W645 <sup>c</sup>	0	4	NE
North Empire	5	Approx.	none	0	8	NE
North Willow	120	2011	W754,W792,W793	81	3	80.8
O'Brien Lake	114	Approx.	none	0	2	NE
Oriente Falls	59	Approx.	none	0	8	NE
Ox Creek	18	2011	W637 <sup>c</sup>	24(23)	2	27.1
Pelican Lake	132	Approx.	none	0	6	NE
Pemene	159	2011	W782 <sup>c</sup>	43(42)	12	56.4
Peshtigo Brook	154	Approx.	none	0	8	NE
Pigeon Lake	53	2011	W615	50	6	42.3
Pike River	156	Approx.	none	0	7	NE
Pikes Peak	8	2011	W616	49	0	37.4
Pincherry Lake	136	Approx.	none	0	1	NE
Pine Creek	77	Approx.	none	0	8	NE
Pine Lake	115	2011	W508	56	0	43.1
Pokegama River	1	Approx.	none	0	2	NE
Poplar River	15	Approx.	none	0	5	NE
Porcupine Lake	56	2004	W241 <sup>c</sup>	0	5	NE
Prairie River	130	Approx.	none	0	3	NE
Price Creek	79	2011	W691,W752 <sup>c</sup>	43	3	70.9
Rainbow Lake	50	2011	W570,W626,W697	72	3	64.5
Ranger Island	126	2004	G99,W479 <sup>c</sup>	0	20	NE
Riverside	23	2011	W776 <sup>c</sup>	39	7	31.6
Round Lake	69	Approx.	none	0	2	NE
Sabin Lake	48	2010	M2737, W511 <sup>c</sup>	8	6	NE
Scotchman Lake	121	2011	W690	26(24)	0	14.7
Seeley Hills	46	Approx.	none	0	5	NE
Shanagolden	71	2011	W475 <sup>c</sup>	28	11	43.8
Shoberg Lake	17	2011	W664 <sup>c</sup>	50(48)	4	38.9
Siskiwit Lake	60	2003	W369 <sup>c</sup>	0	6	NE
Skinner Creek	89	2011	W555 <sup>c</sup>	53	5	43.6
Smoky Hill	44	2008	W638 <sup>c</sup>	0	12	NE
Somo River	125	2006	W514 <sup>c</sup>	0	2	NE
South Branch	143	Approx.	none	0	2	NE
South Empire	6	Approx.	none	0	3	NE
South Range	10	Approx.	none	0	9	NE
Spirit Lake	99	Approx.	W456 <sup>c</sup>	0	1	NE
Spread Eagle Barrens	157	Approx.	none	0	2	NE
Spring Brook	40	Approx.	none	0	6	NE
Spring Creek	90	Approx.	none	0	2	NE
Stella Lake	133	Approx.	none	0	4	NE
Sterling Barrens	32	Approx.	none	0	12	NE
Stuntz Brook	27	Approx.	none	0	1	NE
Swamp Creek	124	2009	W611 <sup>c</sup>	0	7	NE
Thornapple River	80	Approx.	none	0	2	NE
Thunder Creek	104	2011	W687 <sup>c</sup>	38	4	40.7
Torch River	72	2011	W764 <sup>c</sup>	35(34)	3	35.4

**Appendix 1. Continued.**

<b>Pack Name</b>	<b>Map #</b>	<b>Year<sup>a</sup></b>	<b>Collared Wolf</b>	<b># of radio locations</b>	<b># of other locations<sup>b</sup></b>	<b>Area (Mi<sup>2</sup>)</b>
Tranus Lake	41	Approx.	none	0	5	NE
Tupper Creek	87	Approx.	none	0	4	NE
Tuscobia Trail	81	2011	W630	34(32)	0	33.4
Twin Lakes	62	2011	W773	46	0	40.3
Venison Creek	70	Approx..	none	0	3	NE
Webb Creek	28	2011	W761 <sup>c</sup>	24	1	28.7
Weirgor Lake	35	2008	W606 <sup>c</sup>	0	3	NE
West Branch	144	Approx.	none	0	1	NE
West Firelane	74	2011	W779,W780 <sup>c</sup>	20(19)	3	64.8
White River	64	Approx.	none	0	0	NE
Whitney Lake	118	2008	W649 <sup>c</sup>	0	3	NE
Wilson Flowage	106	Approx.	none	0	6	NE
Winter	83	Approx.	none	0	19	NE
Wintergreen	105	2011	W770,W682,W793 <sup>c</sup>	63(56)	813	70.9
Wolf Creek	33	Approx.	none	0	0	NE
Wolf Lake	34	Approx.	none	0	8	NE
Zoar	145	Approx.	M2778 <sup>c</sup>	5	2	NE
<b>Zone 1 Avg. territory size = 55.6 mi<sup>2</sup> (n=47)</b>						
<b><u>Zone 2</u></b>						
Augusta	161	Approx.	none	0	7	0.0
Ballard Road	167	Approx.	none	0	11	0.0
Bear Bluff	174	2011	W778,W790 <sup>c</sup>	130	5	20.6
Brushy Ridge	168	Approx.	none	0	9	0.0
Caves Creek	188	Approx.	none	0	3	0.0
Colburn	185	2011	W762,W763 <sup>c</sup>	25(24)	19	93.9
Creamery	184	Approx.	none	0	4	0.0
Davidson Creek	169	Approx.	W487 <sup>c</sup>	19	6	0.0
Dickison Creek	162	Approx.	none	0	7	0.0
Eau Claire River	163	Approx.	W657	20(19)	8	0.0
Iron Run	164	2010	W676 <sup>c</sup>	0	7	0.0
Leola Marsh	186	Approx.	W763	18(16)	0	0.0
Mather East	179	2011	W635 <sup>c</sup>	67	21	62.3
Mather West	175	2010	W641 <sup>c</sup>	0	0	0.0
McKenna	176	Approx.	none	0	8	0.0
Meadows Creek	165	2011	W657 <sup>c</sup>	28(25)	2	34.3
Mill Bluff	190	Approx.	none	0	5	0.0
Noch Hanai	170	2011	W683,W772 <sup>c</sup>	31(29)	48	25.0
Petenwell	187	Approx.	W763 <sup>c</sup>	9(8)	3	0.0
Pray	171	2011	W652,W771 <sup>c</sup>	59(49)	6	44.2
Quincy Bluff	189	Approx.	none	0	3	0.0
Rattail	183	Approx.	none	0	2	0.0
Seneca	181	2004	W341,W414 <sup>c</sup>	0	9	0.0
Silo	180	Approx.	none	0	17	0.0
South Bluff	177	2008	W559 <sup>c</sup>	0	20	0.0
Starlight	172	2011	W654 <sup>c</sup>	49	3	29.8
Turner Creek	178	Approx.	none	0	1	0.0
2-Korner	182	2011	W684 <sup>c</sup>	49	3	18.2
Wedges Creek	166	2010	W677 <sup>c</sup>	0	4	0.0

**Appendix 1. Continued.**

<b>Pack Name</b>	<b>Map #</b>	<b>Year<sup>a</sup></b>	<b>Collared Wolf</b>	<b># of radio locations</b>	<b># of other locations<sup>b</sup></b>	<b>Area (Mi<sup>2</sup>)</b>
Wildcat Mound	173	Approx.	none	0	7	0.0
<b>Zone 2 Avg. territory size = 41.0 mi<sup>2</sup> (n=8)</b>						
<b>Zone 3</b>						
Ackley Wildlife Area	194	Approx.	none	0	2	0.0
Blue Hills South	193	Approx.	none	0	4	0.0
Clam River	191	2007	M2715 <sup>c</sup>	0	3	0.0
Clear Creek	197	Approx.	none	0	3	0.0
Dewey Marsh	205	Approx.	none	0	9	0.0
Fogarty Marsh	208	Approx.	none	0	1	0.0
Ft. McCoy	198	Approx.	none	0	20	0.0
Lake Mary	195	Approx.	none	0	4	0.0
Lake Noquebay	196	Approx.	none	0	11	0.0
Lamb's Creek	209	Approx.	none	0	7	0.0
Long Lake	201	Approx.	none	0	2	0.0
Mead	204	Approx.	none	0	2	0.0
Miller Creek	202	2011	W658	61	4	62.0
Navarino	207	Approx.	none	0	4	0.0
Sand Creek	192	Approx.	none	0	2	0.0
South Post	199	Approx.	W751 <sup>c</sup>	15	18	0.0
Spence Lake	200	Approx.	none	0	6	0.0
Split Rock	206	Approx.	none	10	9	0.0
Tilleda	203	Approx.	W659 <sup>c</sup>	16(13)	4	0.0
<b>Zone 3 Avg. territory size = 62.0 Mi<sup>2</sup> (n=1)</b>						

NE = No estimate

<sup>a</sup> Pack territory boundaries based on available radio locations between 15 April of the previous year to 14 April of the year listed. Approx = Territory boundaries were approximated based on track surveys, mortalities, depredations, public and agency reports, and historical location of pack.

<sup>b</sup> Other locations from track surveys, mortalities, depredations, & public and agency reports in 2010-2011.

<sup>c</sup> Territory boundaries based on radiolocations have been significantly modified based on additional location information for this pack and/or surrounding packs.

**APPENDIX 2. Nicknames used for radio-collared wolves**

<b>Wolf No./ Sex</b>	<b>Age<sup>a</sup></b>	<b>Total Radio- locations<sup>b</sup></b>	<b>Nickname</b>	<b>Status</b>	<b>Sponsor</b>
M2737M	A	130		Alpha	MI DNR
M2749F	A	178		?	MI DNR
M2761F	A	65		Subordinate?	MI DNR
M2778F	A?	5		Alpha?	MI DNR
M734M	A	67		Alpha	MI DNR
475F	A	241	Jude2	Alpha	
487M	A	66		Alpha	
500B F	A	209	Yunawiko	Alpha	North Lakeland Discovery Center
508F	A	289	Chris	Alpha	Bruce Bacon <sup>c</sup>
520F	A	153	Anna	Subordinate	Central MI University
555M	A	87		Alpha?	
564F	A	147		Alpha	
570F	A	91		Subordinate?	
573F	A	181	Star	Subordinate	Louis Foundation
602F	A	196		Alpha	
615F	A	145		Alpha	
616F	A	145	Cole	Alpha	
623F	A	158	Janet	Alpha?	
626F	A	142		Alpha	
627F	A	98		Subordinate	
630F	A	82		Alpha	
634F	A	66		Alpha	
635F	A	99		Alpha	Eric Ashburn <sup>c</sup> ; Ho-Chunk Nation
637M	A	95		Subordinate	
639F	A	46		Subordinate	Anonymous <sup>c</sup>
650F	A	111		Subordinate	
651M	A	110		Alpha?	
652F	A	89		Alpha?	
654F	A	94	Hinake	Alpha?	Ho-Chunk Nation
657M	A	69	Haga	Alpha	Gerry Gross <sup>c</sup> ; Ho-Chunk Nation
658F	A	61		Alpha?	Mohican Nation
659F	A	16	#88	Subordinate?	Mohican Nation
663F	A	101	Moon	Subordinate?	Tracy Hetebrueg <sup>c</sup> ; Louis Foundation
664F	A	102	Fria	Alpha	Ed Coulombe <sup>c</sup>
667M	A	105	Nii-Jii	Alpha?	
669F	A	75	Sprout	Subordinate	Jeff Lauren <sup>c</sup>
670F	A	86		Alpha	
671F	A	85		Subordinate?	
672F	A	109		Subordinate	
673M	A	14		Subordinate	Bill Withers
682M	A	56		Subordinate	
683M	A	11		Alpha?	Ho-Chunk Nation
684F	A	76	Hinake Xunu	Alpha	Ho-Chunk Nation
686M	A	93		Subordinate	

**APPENDIX 2. Cont.**

<b>Wolf No./ Sex</b>	<b>Age<sup>a</sup></b>	<b>Total Radio- locations<sup>b</sup></b>	<b>Nickname</b>	<b>Status</b>	<b>Sponsor</b>
687M	A	92	Timothy	Alpha	
688F	A	74		Subordinate	Anonymous <sup>c</sup>
690F	A	26	Molley	Subordinate	C.Evenhouse <sup>c</sup>
691M	A	86		Subordinate	
692F	A	92	Allison	Subordinate?	
694F	Y	75		Subordinate	
697M	A	31		Alpha	Anonymous <sup>c</sup>
751F	A	15	Grace	Alpha?	U.S. Military
752F	Y	47		Subordinate	
753F	Y	21		Subordinate	Anonymous <sup>c</sup>
754F	Y	39	Francine	Subordinate	
755F	Y	51	Elsa	Subordinate	
757M	A	71		Alpha	Anonymous <sup>c</sup>
759M	Y	52		Subordinate	
760F	Y	48		Subordinate	
761M	Y	24		Subordinate	Dale Richter <sup>c</sup>
762M	A	12		Alpha?	
763F	Y	43		Alpha	
764M	A	35	Chester	Subordinate?	
768M	A	16		Subordinate	Mohican Nation
770M	A	28		Subordinate?	
771F	A	11		Subordinate?	Ho-Chunk Nation
772M	A	21		Subordinate?	Ho-Chunk Nation
773M	Y	46		Subordinate	
774F	Y	36		Subordinate	
776F	A	39		Subordinate	
777F	Y	43	Sheba	Subordinate	
778F	Y	530		Subordinate	
779M	P	29		Subordinate	
780F	Y	10		Subordinate	Jeff Loren <sup>c</sup>
781M	Y	21		Subordinate	
782F	Y	43		Subordinate	
783M	A	4	Marvin	Alpha	Marvin Davis <sup>c</sup>
784M	A	33		Alpha	
790F	A	11		Subordinate?	
791M	A	24		Alpha	Anonymous <sup>c</sup>
792F	P	24	Spot	Subordinate	Marty Kiepke <sup>c</sup>
793F	Y	45	Lily	Subordinate	

<sup>a</sup>Age as of 1 May 2010

<sup>b</sup>To 15 April 2011

<sup>c</sup>Trapper who captured wolf and turned it over to DNR

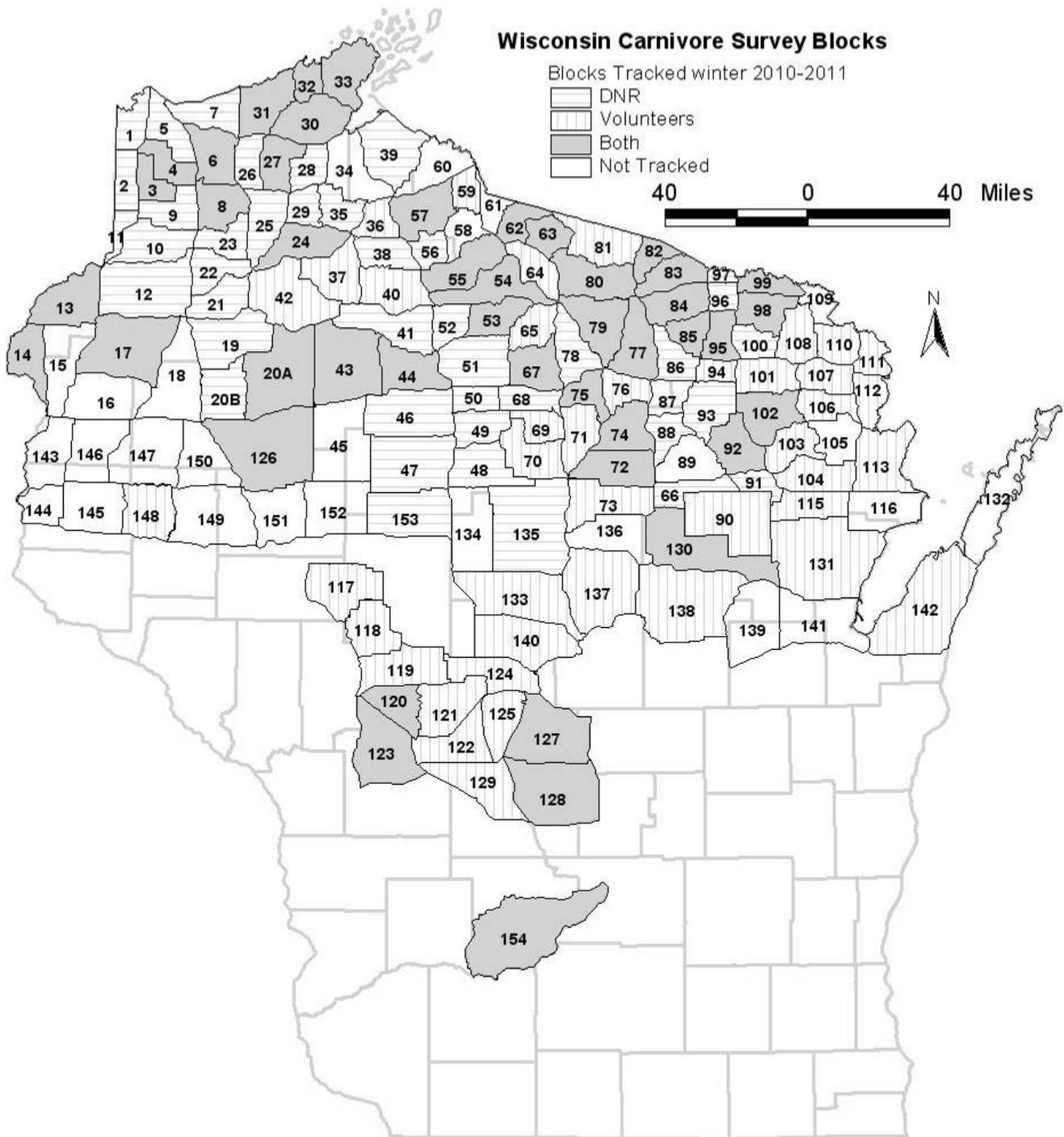
**APPENDIX 3. 2010-2011 Volunteer Trackers (137 individuals participated in volunteer surveys)**

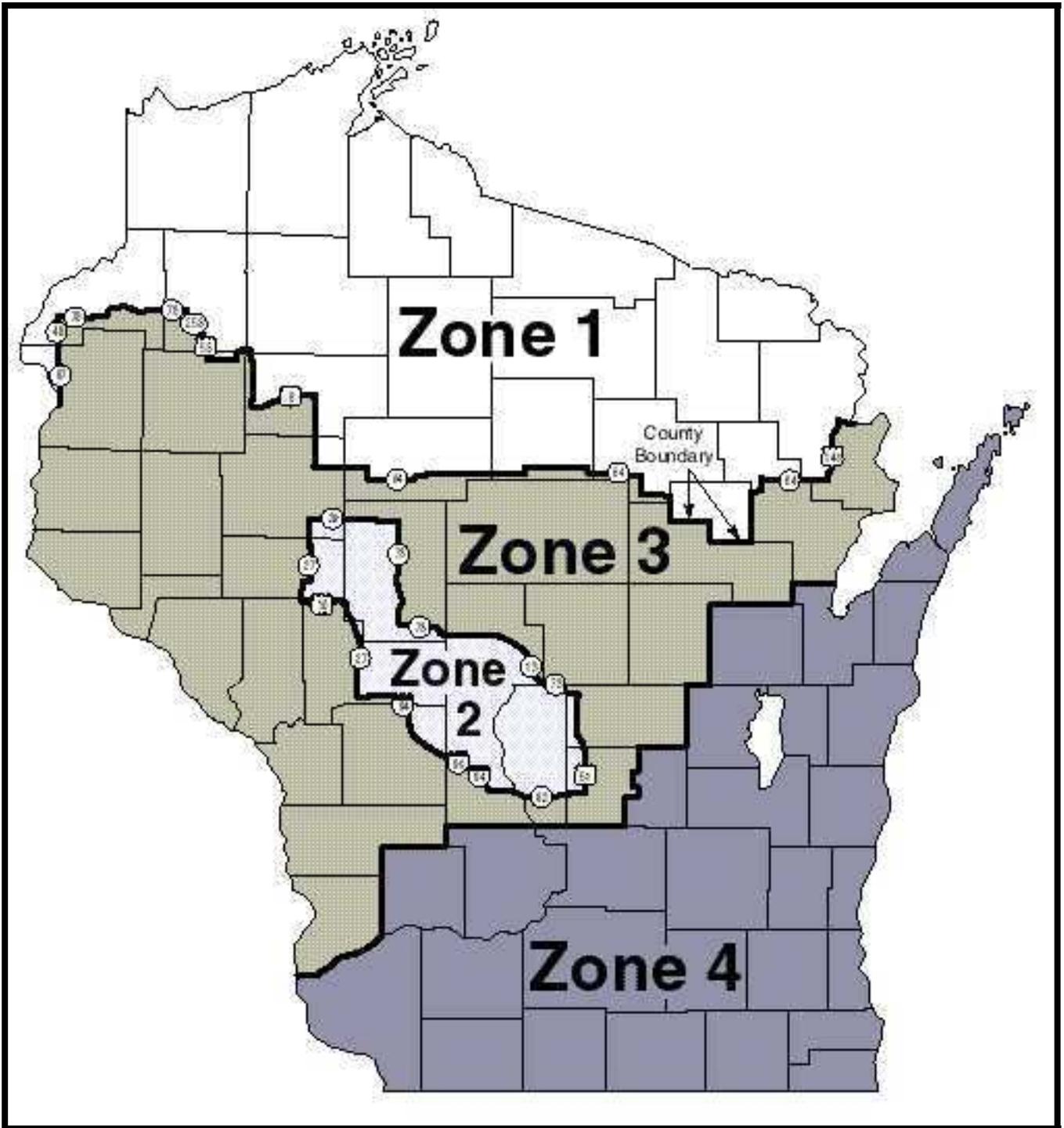
<b>Survey Block</b>	<b>Name</b>	<b>Survey Block</b>	<b>Name</b>
003	Kathleen Kindel, Arthur Haugen	075	Tom, Deb, & Scott Zaremba, Norm Poulton
004	Kathleen Kindel, Arthur Haugen	076	Ray Leonard, Chris Giese
006	Keith Thomsen, Dianne Lueder,	077	Timothy Beissinger, Bob & Maggie Armstrong, Renee Miller
008	Kim Heidtke, Harv Janda	079	Jon & Judy Cassady
013	Rick Peterson, Rebecca Anderson, Joan McNaughton	080	Paul Lueders
	Jim & Shirley Evrard	081	Sherry Leitner
014	Rebecca Anderson, Rick Peterson, Ali Thomas	082	Debby Soberg, Al & Nancy Warren
	Joan McNaughton, Jerry McNally, Timothy Stout	083	Ron Harms, Fred Knoch, Debby Solberg, Jeremy Hubbard
017	Jim & Donna Onstott, Timothy Stout	084	Karen Young, Kay Scharpf, Jeremy Hubbard
020A	Lenny Seyberth	085	Chris Giese, Jeremy Hubbard
024	Tom Matthiae, Mike Scheer	090	Don Reiter
027	Stevie Macy, Joelle Fiedorowicz, Ethan Rossing	092	Ron VanderVelden, Mike Joyce, Jerry Brickner
030	Ethan Rossing	094	Eric & Petra Kegley
031	Tom Podlesny	095	Keith & Jennifer Fourrier
032	Jerry Van Cleve	098	Jeremy Hubbard
033	Ethan Rossing	099	Jeremy Hubbard
036	David Wilttrout	101	Mike Ravet
037	Dave Wilttrout, Kathy Moe, Danielle Moe	102	Mike Ravet, Ron VanderVelden
040	Ed Peters, David Wilttrout	103	Pati Holman
042	David Wilttrout	104	Pati Holman, Phillip Kerch, Dan Zwicker, Ron VanderVelden
043	Stacy Camren	106	Mike Ravet
044	Sarah & Denise Walcisak, Steve & Elizabeth Hoecker	107	Mike Ravet, Ron VanderVelden
053	Paul Lueders	108	Ron VanderVelden, Dennis Marcely, Jordan & Jason Hughey
054	Tamara & Roger Grahl	110	Ron VanderVelden, Dennis Marcely
055	Jim, John & Barbara Moore	111	Ron VanderVelden
057	Dennis & Patti Bowen	112	Ron VanderVelden
059	Maggie Tarasewicz	113	Mike Ravet
060	Bobbie Rongstad, Tom Podlesny	115	Ron VanderVelden
062	Terri Minnick	117	Joe Seymour, Deb Schretenthaler, Linda Nelson
063	Ann & Duane Swift	118	Linda Nelson
064	David Blunk, Terri Minnick	119	Ray Leonard, Linda Nelson, Celia Sturzl, David Stanley, Larry & Emily Scheunemann, Julia Robson
065	Norm Poulton		
067	Norm Poulton, Alan & Sharon VanRaalte	120	Linda Nelson, Emily Scheunemann, Scott Thiel
069	Jim Lohff	121	Eugene & Megan Zopfi, Julia, Christine & Peter Robson,
070	Jim Lohff		Bob, Ludia & Casey Sherman
071	Deb & Tom Zaremba, Norm Poulton	122	Arnie Erickson, Linda & Roy Easley, Michelle Somers, Chris Giese, Don & Carol Nelson
072	Dana Schwichtenberg, Mary Bowden	123	Tim & Travis Wilder, John Polk
073	Dana Schwichtenberg, Mary Bowden	124	Heather Heimann, Ray Leonard, Julia Robson
074	Warren Meyer, Richard Hartwig		

**APPENDIX 3. Continued**

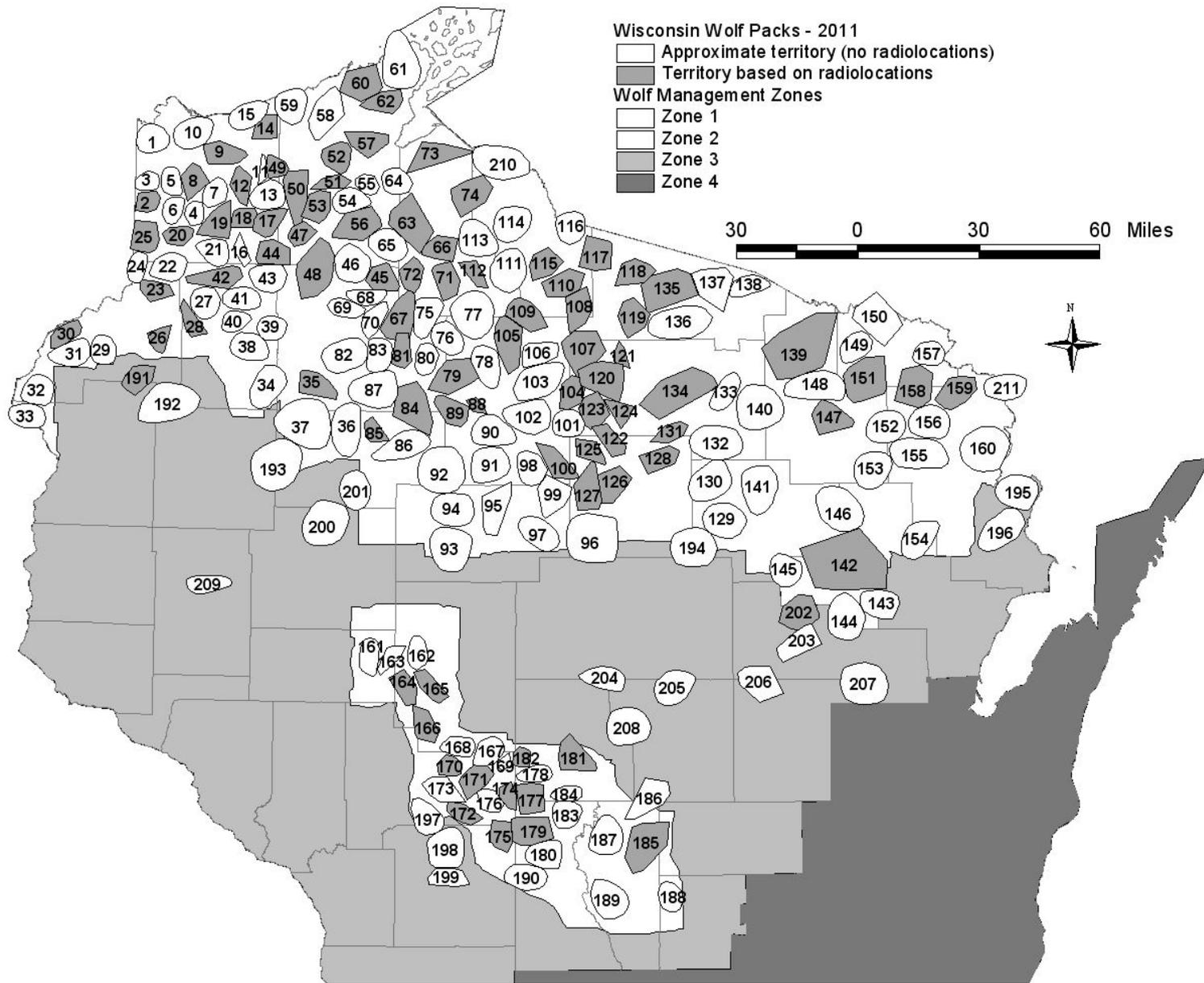
<b>Survey Block</b>	<b>Name</b>	<b>Survey Block</b>	<b>Name</b>
125	Richard Stoelb, Gil Williams, Peter Robson, Judy Ettenhofer	133	Peter & Katie Gebhardt
126	Linda Nelson	137	Kate Henry, Heather Heiman, Ray Leonard
127	Jim Kocinski, Debbie Pett, Wayne Gjersvig	138	John Ewen, Thomas Hilderbrandt, Chris Olson
128	Jim Kocinski, Debbie Pett, Randy & Barb Jurewicz, Wayne Gjersvig	140	Heather Heimann
129	Arnie Erickson, Cindy Mueller, Bea Weyers, Wayne Gjersvig	142	Laura Keyser
130	Chris Olson, Thomas Hilderbrandt, John Ewen	148	Alice & John Droske
131	Robert Patenaude, David Reineke	154	Mike Smith

### APPENDIX 4.





**Figure 1.** Wisconsin Wolf Management Zones as established by the 1999 State Wolf Management Plan.



**Figure 2.** Gray Wolf Distribution in Wisconsin: Winter 2010-2011 (Refer to Table 3 & Appendix 1)

**Figure 3. Changes in Wisconsin Gray Wolf Population: 1980-2011**

