

**WISCONSIN GRAY WOLF POST-DELISTING MONITORING
27 JANUARY 2012 THROUGH 14 APRIL 2013**

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Introduction:

This report covers activities conducted from January 27th, 2012 through April 14th, 2013 on gray wolf population monitoring in Wisconsin following the removal of wolves from the federal list of threatened and endangered species in Wisconsin and other portions of the Western Great Lakes Distinct Population segment.

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 (U.S. Fish and Wildlife Service 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 set a state delisting goal of a late winter count of 250 wolves outside of Indian reservations, and a management goal of 350 wolves outside of Indian reservations.

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 (U.S. Fish & Wildlife Service 1992). Federal delisting also required a stable population of 1251 to 1400 wolves in Minnesota, and approved management plans for each state. Wolves were removed from the Federal endangered species list on January 27th 2012 and management authority was returned to the states.

The enclosed report describes wolf management activities conducted in Wisconsin between January 27th, 2012 and June 30th, 2013, and represents the first full year of Post Delisting Monitoring. Data are reported by wolf harvest units established in 2012 (figure 1). We report data across 2 date ranges. Data reported by “reporting period” covers the full date range of this report January 27th 2012-June 30th 2013. Data reported by “monitoring period” covers the wolf monitoring year April 15th 2012-April 14th 2013. This is done to facilitate evaluation of management actions which occurred between population estimates conducted in April of each year.

WOLF POPULATION MONITORING

Wolf population monitoring was conducted using a territory mapping with telemetry technique. A full description of methods is provided by Wydeven et. al (2009). During the 2012-2013 monitoring period 63 wolves were monitored by radio telemetry (Table 1b). Mortality on radio collared wolves was higher than historic averages, 21 radio collared animals died during the monitoring period (Table 2b). Radio telemetry collars were deployed on 25 wolves to support monitoring efforts (Table 3).

The wolf population showed population growth through April, 2012 (figure 2) when the minimum state-wide wolf population was estimated to be 815-880 (Table 1a). In the period April 15, 2012 – April 14, 2013 WDNR personnel recorded 230 wolf mortalities (Table 2b) representing 28.22% of the 2012 minimum population. The minimum state-wide wolf

population was estimated to be 809-834 in April, 2013 (Table 1b). The observed decline of 0.74% between year minimum counts suggests observed mortality levels did not significantly impact the population.

Statewide Wolf Distribution

Wolf range was estimated to be 17,221 miles² distributed through the northern (15,188 miles²) and central (2,033 miles²) forested regions of Wisconsin in April 2013 (Figure 1). Two hundred thirteen packs were identified in 2012 and 214 in 2013 (Tables 1a&b). Mean winter annual pack territory size for 40 packs with ≥ 20 locations was estimated to be 43.1 mi² (SD = 19.4) (Table 1b). Using the 2013 minimum population count of 809-834 wolves, wolf density is estimated to be 1 wolf per 20.65 to 21.29 miles² of wolf range. Density was calculated by dividing occupied wolf range by the minimum population count range. This method differs from the density calculations in prior WDNR reports. Public observations were collected to obtain information on wolf distribution and to contribute to population estimates. A total of 276 observations were reported (table 4, figure 3).

Wolf Mortality

Mortality was monitored through field observation, necropsy of collared and suspicious mortalities, and mandatory reporting of harvest and depredation control mortalities. Cause of death was determined through field investigation or necropsy.

Management actions increased wolf mortality rates within the reporting period. Newly authorized harvest and depredation control actions represented the highest sources of mortality. Human caused mortality represented 96.6% of mortalities with known cause (Tables 2a,b&c). We speculate the reporting rate for wolf mortalities has declined since federal delisting, this may partially explain the low number of natural mortalities detected.

Hunters and trappers were required to submit biological samples to WDNR. Teeth were collected from all submitted carcasses and aged via cementum annuli by Matson's Laboratory, Milltown, MT. Wolves less than 1 year old represented 50% of the harvest sample and yearlings represented 25% (table 5). Three females of prime breeding age (≥ 3 years old) were harvested (table 6).

Disease / Parasite Occurrence in Wolves

Parasite occurrence was recorded from field investigations of non-harvest mortalities and when live wolves were captured for research purposes. Symptoms consistent with mange were recorded in 9.8% of examined mortalities (n=133) and 8.0% of research captures (n=25) (Table 3). Tick exposure was noted in 60.0% of research capture animals, tick exposure did not appear to be unusually heavy in the 2012-2013 monitoring year. No disease related mortalities were detected.

WOLF DEPREDAATION MANAGEMENT

Wolf depredation incidents were investigated by United States Department of Agriculture – Wildlife Services. Wolf depredation was confirmed on 12 farms from January 27th – April, 14th 2012, on 43 farms from April 15th, 2012 – April 14th, 2013, and 11 farms from April 15th – June 30th 2013 (tables 7 a,b&c). An additional 10 non-livestock depredations were recorded during the reporting period. In livestock and threats to human safety cases, USDA-WS initiated wolf trapping and euthanasia. Seventy nine landowners held shooting permits in the period January 27 – April 14, 2012, 127 permits were held April 15 – April 14, 2013. Act 169 authorized the use of lethal means without permit when a wolf is in the act of depredating a domestic animal, 21 wolves were removed under landowner permit or in the act of depredating. A total of 84 wolves were removed in conflict situations within the reporting period (Tables 7 a,b&c).

REGULATORY CHANGES AFFECTING WOLF MANAGEMENT

Wisconsin Act 169 was enacted on April 2nd 2012. The law reclassified wolves as a game species and the WDNR was directed to establish a harvest season in 2012. Legal harvest methods specified in the law include the use of electronic calls, bait, hounds to pursue wolves, foothold traps and cable restraints. The harvest season is set from October 15th – February 28th with zones closing as individual quotas are met. Harvest permit issuance and costs are also set in this statute. The statute specifies all depredation payments funds will be generated through the sale of wolf harvest licenses and applications with payments pro-rated if funds are insufficient. Payments will be made for livestock, captive cervids and domestic pets including hunting dogs not actively engaged in wolf harvest. The WDNR holds the authority to determine harvest zones and set harvest quotas.

Management decisions continue to be guided by the 1999 wolf management plan which identifies a population objective of 350 wolves outside Tribal Reservation lands (Wisconsin DNR 1999). Harvest quotas in 2012 and 2013 were designed to begin reducing the population toward the established objective. Harvest zones (figure 1) were designed to allow the focus of harvest in areas of highest human conflict with lower harvest rates in areas of primary wolf habitat. Zero quota areas were established for state-licensed hunters and trappers within the reservation boundaries of the Bad River, Red Cliff, Lac Courte Oreilles, Lac Du Flambeau, Menominee and Stockbridge-Munsee reservations. The Ojibwe did not authorize tribal members to harvest wolves. The reported tribal wolf harvest off-reservation lands was zero.

In accordance with treaty rights held by the Ojibwe tribes and based on Voigt case requirements, the WDNR reduced the state-licensed quota to allow for tribal harvest in response to tribal declaration. The 2012 quota of 201 was reduced based on wolf counts within the area of each zone delineated as ceded territory. Fifty percent of the ceded territory quota amounted to 85 wolves, thus the state-licensed quota was reduced to 116 and 117 were harvested (table 8, figure 4). In 2013 the state-licensed quota was reduced by 10% in the Ceded Territory in response to Tribal Declaration and 2012 demonstrated harvest. The quota of 275 was reduced by 24 to a final state-licensed quota of 251.

WDNR personnel consulted with the Van Deelen lab at the University of Wisconsin Department of Forest and Wildlife Ecology to assess the likely impacts of harvest on the wolf population. Population modeling conducted by the Van Deelen lab estimates one-year population reduction of 3.4-22.6% (median 12.72%) if the total 2013 quota of 275 is achieved, other mortality rates remain at historic levels and depredation control results in removal of 10% of the wolf population (unpublished data). This model predicts the wolf population will be 595 (95% CI: 512-677) in 20 years if harvest and mortality rates (percent of the population) remain constant. Assumptions of this model include harvest occurs prior to the breeding season, background mortality risk remains constant, harvest in MN and MI remain at 2013 rates, all mortality sources are additive and wolf behavior and dispersal do not change in response to harvest.

LAW ENFORCEMENT

Population monitoring and law enforcement efforts detected 24 illegally killed wolves within the monitoring period. Investigations were conducted in 35 cases and 15 citations were issued (table 9).

OTHER INFORMATION ON THE STATUS OF WOLVES

The Wisconsin Natural Resource Board directed the WDNR to develop a new wolf management plan. The WDNR established a new wolf advisory committee made up of representatives from the WDNR, USDA-WS, US Forest Service, US Fish and Wildlife Service, Great Lakes Indian Fish and Wildlife Commission, WI Conservation Congress, WI Cattleman's Association, WI Bear Hunters Association, Timber Wolf Alliance, WI Bowhunters Association, WI Trappers Association, Safari Club International, Hunters Rights Coalition, WI County Forest Association and WI Wildlife Federation. The committee began wolf plan discussions in June, 2013. A finalized and approved plan is anticipated to begin influencing management decisions in 2015.

Information on wolf prey species

White-tailed deer are a primary prey species in Wisconsin. White-tailed deer density remained above management goals in all but 1 wolf harvest unit (Table 10). There have been no significant changes in deer management which would limit wolf prey availability.

LITERATURE CITED

U.S. Fish and Wildlife Service. 1992. Recovery Plan for the Eastern Timber Wolf. Twin Cities, MN. 73 pp.

Wisconsin DNR. 1989. Wisconsin Timber Wolf Recovery Plan. Wisconsin Endangered Resources Report. 50:37 pp.

Wisconsin Department of Natural Resources. 1999. Wisconsin Wolf Management Plan. Madison: PUBL-ER-099 99, Wisconsin Department of Natural Resources. <http://dnr.wi.gov/files/PDF/pubs/ER/ER0099.pdf>

Wydeven, A.P., J.A. Wiedenhoef, R.N. Schultz, R.P. Thiel, R.L. Jurewicz, B.E. Kohn, and T.R. Van Deelen. 2009. History, population growth, and management of wolves in Wisconsin. Pp. 87-105. *in* A.P. Wydeven, T.R. Van Deelen, and E.J. Heske. Recovery of Gray Wolves in the Great Lakes Region of the United States: An Endangered Species Success Story. Springer, New York, NY, USA. 350 pp.

Table 1a. *Pack and lone wolf summaries for Wisconsin in winter 2011-2012.*

Management Zone		# of Packs	# of Wolves in Packs	Loners	Total # of Wolves	# of radio monitored Wolves	Average pack territory^a (mi²)
1	Off Reservations	154	573-612	12	585-624	34	
	On Reservations	8	34-35	1	35-36	5	
	Total	162	607-647	13	620-660	39	48.5 N=37
2	Off Reservations	32	119-135	0	119-135	6	
	On Reservations	0	0	0	0	0	
	Total	32	119-135	0	119-135	6	33.8 N=6
3	Off Reservations	18	64-73	5	69-78	2	
	On Reservations	1	5	1	6	1	
	Total	19	69-78	6	75-84	3	17.3 N=2
4	Off Reservations	0	0	1	1	0	
	On Reservations	0	0	0	0	0	
	Total	0	0	1	1	0	-
Statewide	Off Reservations	204	756-820	18	774-838	42	
	On Reservations	9	39-40	2	41-42	6	
	Total	213	795-860	20	815-880	48	45.2 N=45
Outside WI		1	3	1	4	0	-

^aPack territory size is only calculated for packs with ≥20 radiolocations for the period 15 April 2011 to 14 April 2012.

Table 1b. *Pack and lone wolf summaries for Wisconsin in winter 2012-2013.*

Harvest Zone		# of Packs	# of Wolves in Packs	Loners	Total # of Wolves	# of radio monitored Wolves	Average annual pack territory ^a (mi ²)
1	Off Reservations	83	323-338	3	326-341	29	
	On Reservations	4	15	0	15	2	
	Total	87	338-353	3	341-356	31	45.7 (n=20)
2	Off Reservations	39	149-150	4	153-154	9	
	On Reservations	5	15	0	15	4	
	Total	44	164-165	4	168-169	13	54.3 (n=10)
3	Off Reservations	31	102-105	2	104-107	5	
	On Reservations	0	0	0	0	0	
	Total	31	102-105	2	104-107	5	35.1 (n=5)
4	Off Reservations	7	24	1	25	1	
	On Reservations	0	0	0	0	0	
	Total	7	24	1	25	1	-
5	Off Reservations	35	138-144	0	138-144	12	
	On Reservations	0	0	0	0	0	
	Total	35	138-144	0	138-144	12	18.3 (n=5)
6	Off Reservations	10	28	5	33	1	
	On Reservations	0	0	0	0	0	
	Total	10	28	5	33	1	-
Statewide	Off Reservations	205	764-789	15	779-804	57	
	On Reservations	9	30	0	30	6	
	Total	214	794-819	15	809-834	63	43.1 (n=40)
Outside WI		2	6	3	9		-

^a Pack territory size is only calculated for packs with ≥20 radiolocations for the period 15 April 2012 to 14 April 2013

Table 2a. Wolf mortality in Wisconsin 27 January 2012 to 14 April 2012.

Cause of Death	Wolf Harvest Zones						State Total	% of Total
	1	2	3	4	5	6		
Human Caused Mortality								
Agency Control	6		5				11	
Landowner Control	1						1	
Total Depredation Control	7		5				12	60%
Vehicle collision	1		2 ^a		1	1	5	25%
Illegally killed	1					2	3	15%
Capture related							0	
Unknown human caused							0	
Total human caused	9	0	7	0	1	3	20	100%
Natural Mortality								
Disease / Injury							0	
Intra-specific aggression							0	
Euthanized (non-control)							0	
Unknown natural causes							0	
Total natural causes	0	0	0	0	0	0	0	
Unknown causes	0	0	0	0	0	0	0	
Total Mortality	9	0	7	0	1	3	20	

^aIncludes 1 radio collared wolf not currently being monitored

Table 2b. Wolf mortality in Wisconsin 15 April 2012 to 14 April 2013.

Cause of Death	Wolf Harvest Zones						State Total	% of Total
	1	2	3	4	5	6		
Human Caused Mortality								
Agency Control	20 ^a		22			4	46	
Landowner Control	11 ^b		2		1	4 ^a	18	
Total Depredation Control	31		24		1	8	64	28%
Harvested	32 ^c	19	19	5	23 ^a	19	117	51%
Vehicle collision	3 ^c	6	1	1 ^a	4	7	22	10%
Illegally killed	7 ^c	2 ^a	5 ^a	1	4 ^b	2	21	9%
Capture related							0	
Unknown human caused							0	
Total human caused	73	27	49	7	32	36	224	97%
Natural Mortality								
Disease / Injury							0	
Intra-specific aggression			1 ^a				1	<1%
Euthanized (non-control)							0	
Unknown natural causes	1 ^a						1	<1%
Total natural causes	1	0	1	0	0	0	2	1%
Unknown causes	0	2	0	0	2	0	4	2%
Total Mortality	74	29	50	7	34	36	230	

^aIncludes 1 radio collared wolf

^bIncludes 2 radio collared wolves

^cIncludes 3 radio collared wolves
21 radio collared wolf mortalities

Table 2c. Wolf mortality in Wisconsin 15 April 2013 to 30 June 2013.

Cause of Death	Wolf Harvest Zones						State Total	% of Total Known Mortality
	1	2	3	4	5	6		
Human Caused Mortality								
Agency Control	2		4				6	
Landowner Control	1	1					2	
Total Depredation Control	3	1	4				8	57%
Vehicle collision	1	1	1			2	5	36%
Illegally killed						1	1	7%
Capture related								
Unknown human caused								
Total human caused	4	2	5	0	0	3	14	100%
Natural Mortality								
Disease / Injury								
Intra-specific aggression								
Euthanized (non-control)								
Unknown natural causes								
Total natural causes	0	0	0	0	0	0	0	0%
Unknown causes	2	0	0	0	0	1 ^a	3	
Total Mortality	6	2	5	0	0	4	17	

^aIncludes 1 radio collared wolf
1 radio collared wolf mortality

Table 3. *Wolf research captures (all captured wolves were fitted with radio telemetry collars) and detection of ectoparasites in captured wolves and non-harvest mortalities in Wisconsin from 27 January 2012 to 14 April 2013. Number with mange indicates symptoms consistent with mange, not positive diagnosis.*

Sex	Age	#	Avg. Weight	# (%) w/Mange	# (%) w/Ticks
ZONE 1					
Research Captures					
F	A	5	75.8 (n=4)	0	3
F	Y	2	64.5 (n=2)	0	1
M	A	3	70.0 (n=2)	0	3
M	Y	1	50.0 (n=1)	0	1
Zone 1 capture totals		11	captures	0	8 (73%)
Zone 1 mort. w/mange		51	Non-harvest mortalities	8 (16%)	
ZONE 2					
Research Captures					
F	A	3	68.5 (n=2)	0	3 (light)
M	A	2	87.5 (n=2)	1	1 (light)
Zone 2 capture totals		5	captures	1 (20%)	4 (80%)
Zone 2 mort. w/mange		10	Non-harvest mortalities	0	
ZONE 3					
Zone 3 mort. w/mange		38	Non-harvest mortalities	5 (13%)	
ZONE 4					
Zone 4 mort. w/mange		2	Non-harvest mortalities	0	
ZONE 5					
Research Captures					
F	A	4	72.2 (n=4)	0	1 (moderate)
F	Y	1	60.0 (n=1)	0	1
M	A	4	86.0 (n=4)	1	1
Zone 5 capture totals		9	captures	1 (11%)	3 (33%)
Zone 5 mort. w/mange		12	Non-harvest mortalities	0	
ZONE 6					
Zone 6 mort. w/mange		20	Non-harvest mortalities	0	
STATEWIDE AVERAGES					
25 Research captures				2 (8.0%)	15 (60%)
133 Non-harvest mortalities				13 (9.8%)	

Table 4. Probable and possible wolf observations reported by natural resource agency personnel and private citizens in Wisconsin, 15 April 2012 to 14 April 2013.

Zone	Number of Sightings	Wolves Seen	Track or Sign Observations	Total Wolf Observations
1	29	69	15	44
2	52	98	9	61
3	12	19	5	17
4	13	20	2	15
5	32	68	9	41
6	88	116	10	98
Statewide	226	390	50	276

Table 5: Age of wolves harvested in 2012 by harvest unit. Age data obtained through analysis of cementum annuli.

unit	0	1	2	3	4	5	6	7	8	9	total
1	11	9	6		1		1				28
2	6	4	4								14
3	10	4	1	1						1	17
4	2	1		1	1						5
5	13	6	2							1	22
6	9	1	5		1						16
uk	1	1									2
total	52	26	18	2	3	0	1	0	0	2	104
%	50.00%	25.00%	17.31%	1.92%	2.88%	0.00%	0.96%	0.00%	0.00%	1.92%	

Table 6: Age of wolves harvested in 2012 by sex. Age data obtained through analysis of cementum annuli.

sex	0	1	2	3	4	5	6	7	8	9	total
M	32	17	15	2	2					1	69
F	20	11	3		1		1			1	37

Table 7a. *Wolf depredation management in Wisconsin, 27 January 2012 to 14 April 2012.*

	Wolf Harvest Zones						STATE TOTAL
	1	2	3	4	5	6	
Livestock cases							
Depredation	8	1					9
Calves killed/ injured	5	1					6
Deer	1						1
Goats	2						2
Threat	3		1		1		5
Chronic farms affected	4		1				5 of 35 (14%)
Total Farms affected	9	1	1		1		12
Non-livestock cases							
Depredation	1						1
Dogs killed/ injured while actively engaged in hunting activities							0
Dogs killed/ injured while not engaged in hunting activities	1						1
Threat	4	1			1	1	7
Control Actions							
Wolves euthanized for control	6		5				11
Wolves killed on permit or in the act	1						1
Total Wolves killed for control	7		5				12
Shooting permits issued for control	48	2	10	2	7	10	79

Table 7b. *Wolf depredation management in Wisconsin, 15 April 2012 to 14 April 2013.*

	Wolf Harvest Zones						STATE TOTAL
	1	2	3	4	5	6	
Livestock cases							
Depredation	22	3	17		2	4	48
Threat	10	2	1		1	1	15
Chronic farms affected	9		3				12 of 39 (31%)
Total Farms affected	23	5	7		3	5	43
Calves killed/ injured	18 / 2	3	18		3	5 / 1	47 / 3
Lambs	1						1
Goats	1						1
Chickens	9						1
Non-livestock cases							
Depredation	5	2			1		8
Threat	2				4	1	7
Dogs killed/ injured while actively engaged in hunting activities	3	2 / 1			1		6 / 1
Dogs killed/ injured while not engaged in hunting activities	2						2
Control Actions							
Wolves euthanized for control	20		22			4	46
Wolves killed on permit or in the act	11		2		1	4	18
Total Wolves killed for control	31		24		1	8	64
Shooting permits issued for control ^a	72	8	12	2	16	17	127

^aNumber does not include reissue of permits to individuals who had a permit earlier during the monitoring period.

Table 7c. Wolf depredation management in Wisconsin, 15 April 2013 to 30 June 2013.

	Wolf Harvest Zones						STATE TOTAL
	1	2	3	4	5	6	
Livestock cases							
Depredation	4		2			3	9
Calves killed/ injured	4		3			3	10
Threat	1		1				2
Chronic farms affected	4		1			0	5
Total Farms affected	5		3			3	11
Non-livestock cases							
Depredation	1						1
Threat			1				1
Dogs killed/ injured while actively engaged in hunting activities							0
Dogs killed/ injured while not engaged in hunting activities	1						1
Control Actions							
Wolves euthanized for control	2		4				6
Wolves killed on permit or in the act	1	1					2
Total Wolves killed for control	3	1	4				8
Shooting permits issued for control ^a	16	3	4		2	4	29

^aNumber does not include reissue of permits to individuals who had a permit earlier during the monitoring period.

Table 8. Wolf harvest in 2012.

Zone	2011-2012 off-reservation population mid-point	% Harvest Goal	Total Quota	Tribal Quota	State Quota	# Harvested	Days Open to Harvest
1	329.5	20%	65	33	32	32	49
2	171.5	20%	35	15	20	19	33
3	93	40%	37	19	18	19	70
4	26	40%	10	5	5	5	33
5	145.5	20%	25	2	23	23	58
6	37.5	75%	29	11	18	19	60
Statewide	803	25%	201	85	116	117	70

Table 9. Summary of law enforcement activity 1/1/12-6/30/13

# of Wolf Hunting related complaints received:	16
# of Wolf Trapping related complaints received:	12
# of Wolf related Investigations conducted:	35
# of Social Media Wolf related complaints/calls received:	34
# of Hunting related citations issued:	5
# of Trapping related citations issued:	10
# of Verbal Warnings Issued:	11
# of incidentally trapped wolves recovered:	4
# of Illegally harvested wolves recovered:	16
# of shot & unrecovered wolves found:	2
# of Unknown cause of death wolves found:	4
# of Other dead/injured wolves recovered: (car-kills, etc.)	12

Table 10. *White-tailed deer density estimate in wolf harvest zones in 2012.*

Wolf Harvest Zone	# of DMUs	Deer Range (mi²)	Deer Density Goal (Deer/mi²)	Post-hunt deer density (Deer/mi²)
1	16	5,953	18.1	20.1
2	15	5,264	20.3	18.7
3	10	3,435	22.2	29.4
4	6	1,830	21.5	32.2
5	6	2,492	25.7	31.5
6	66	17,099	23.5	48.3
TOTAL	119	36,073	22.1	35.6

Based on data on deer population estimates in Robert Rolley, 2013, Final Sex-Age-Kill 2012 Deer Population Estimates, Harvest data update Feb. 15, 2013, unpublished.

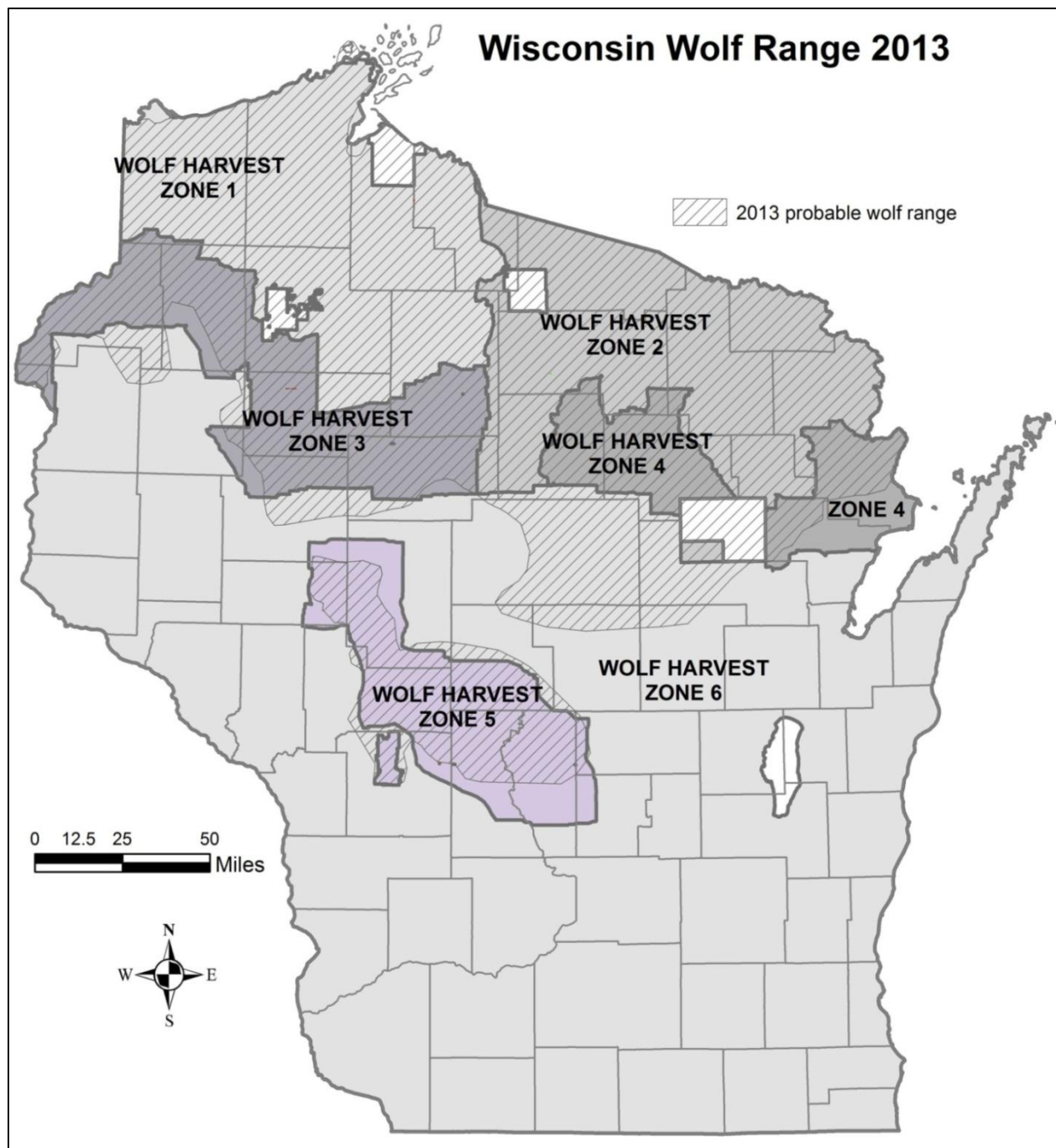


Figure 1. *Gray Wolf Distribution in Wisconsin: Winter 2012-2013*

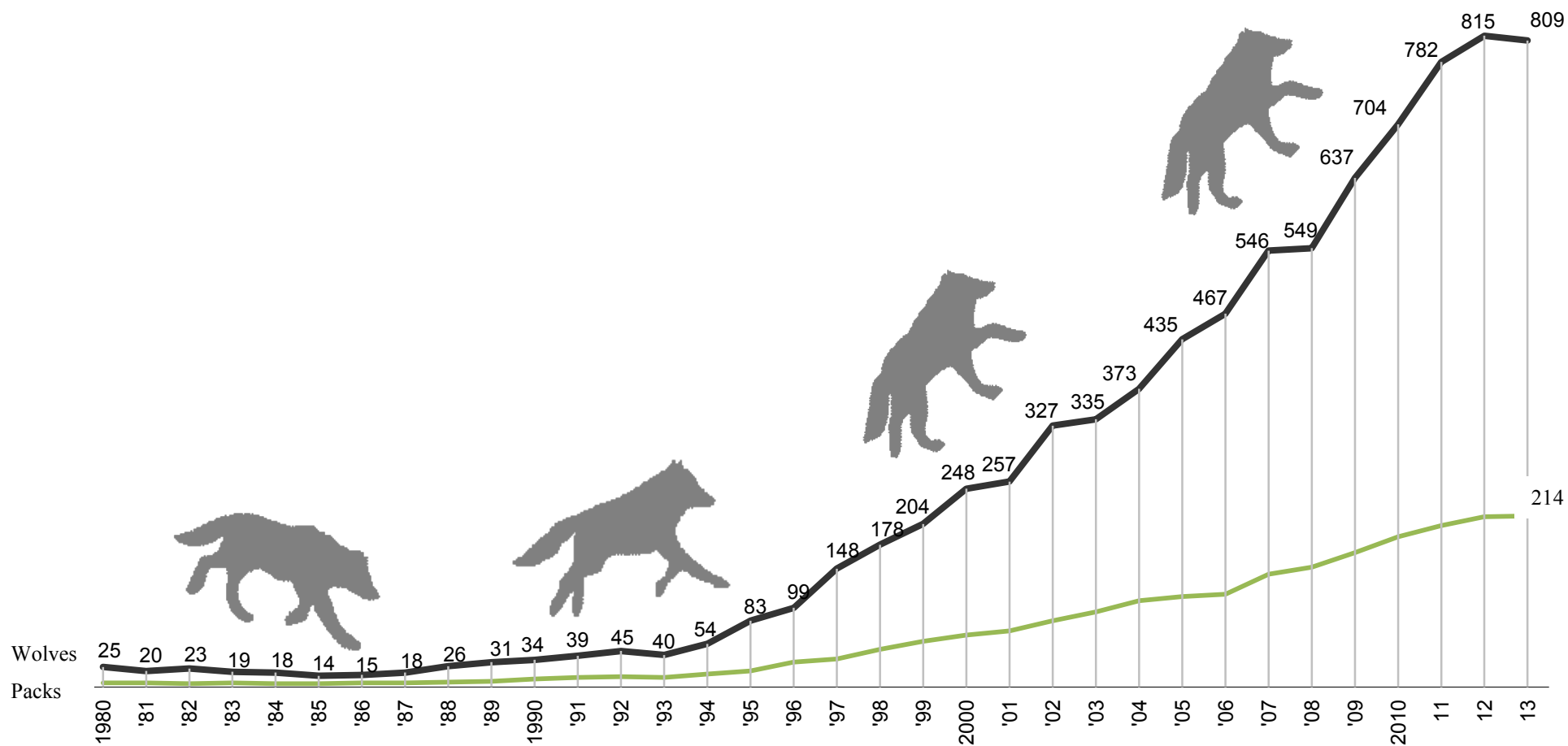


Figure 2. *Changes in Wisconsin Gray Wolf Population: 1980-2013.*

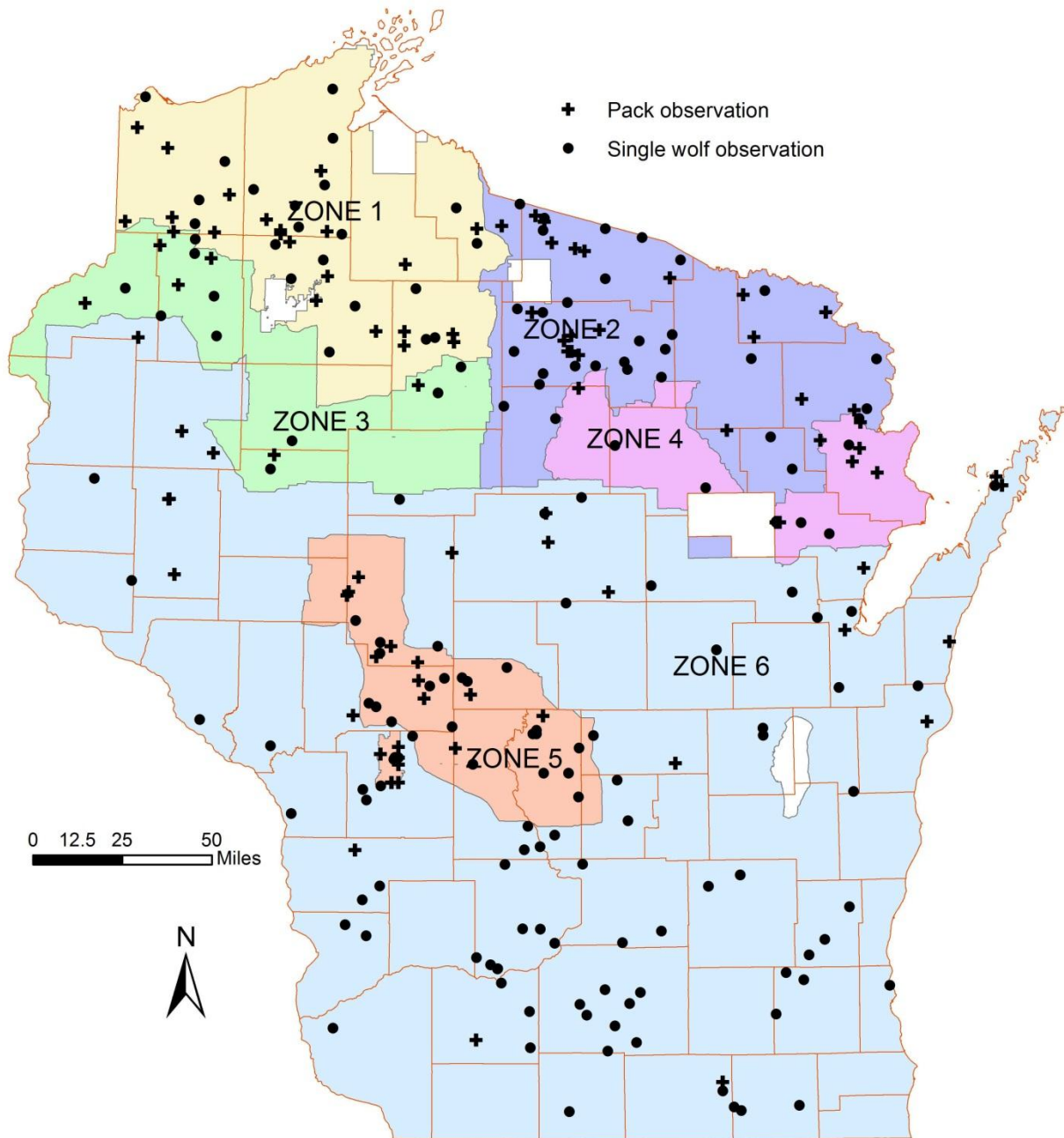


Figure 3. *Verified, probable and possible wolf observation reports, 15 April 2012 to 14 April 2013.*

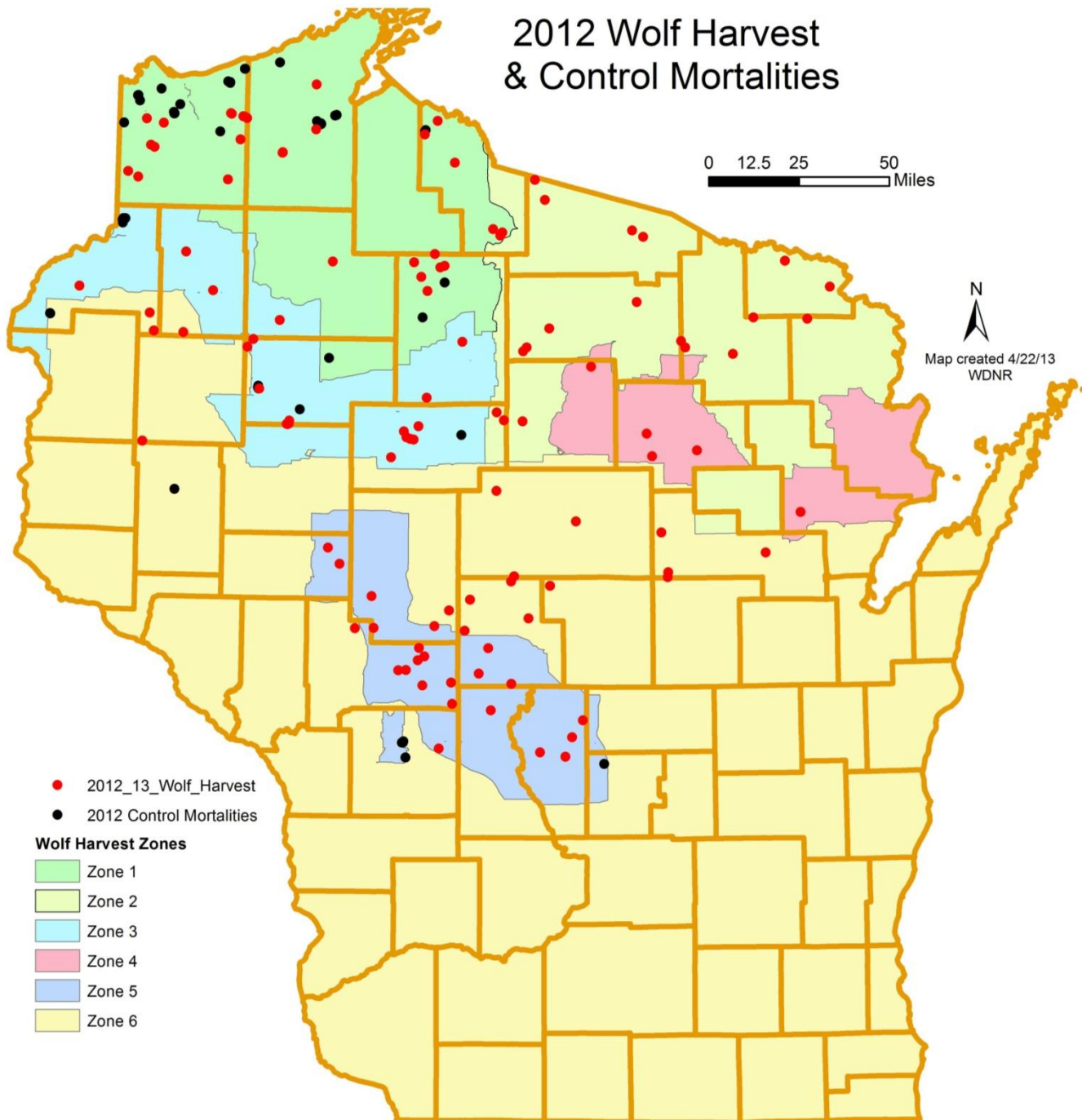


Figure 4. 2012 Wolf harvest and control mortalities.