

# USDA-WILDLIFE SERVICES

## WOLF DAMAGE MANAGEMENT IN MINNESOTA 2022

### Background

The USDA-Wildlife Services (WS) Minnesota gray wolf (*Canis lupus*) depredation management program uses a variety of methods to manage wolf damage. Wolves in Minnesota regularly kill and/or injure livestock (cattle, sheep, poultry and occasionally horses and other domestic animals) and pets (primarily dogs). While the overall damage to livestock producers and pet owners is relatively small, the financial losses and personal impact to livestock producers and pet owners can be significant.

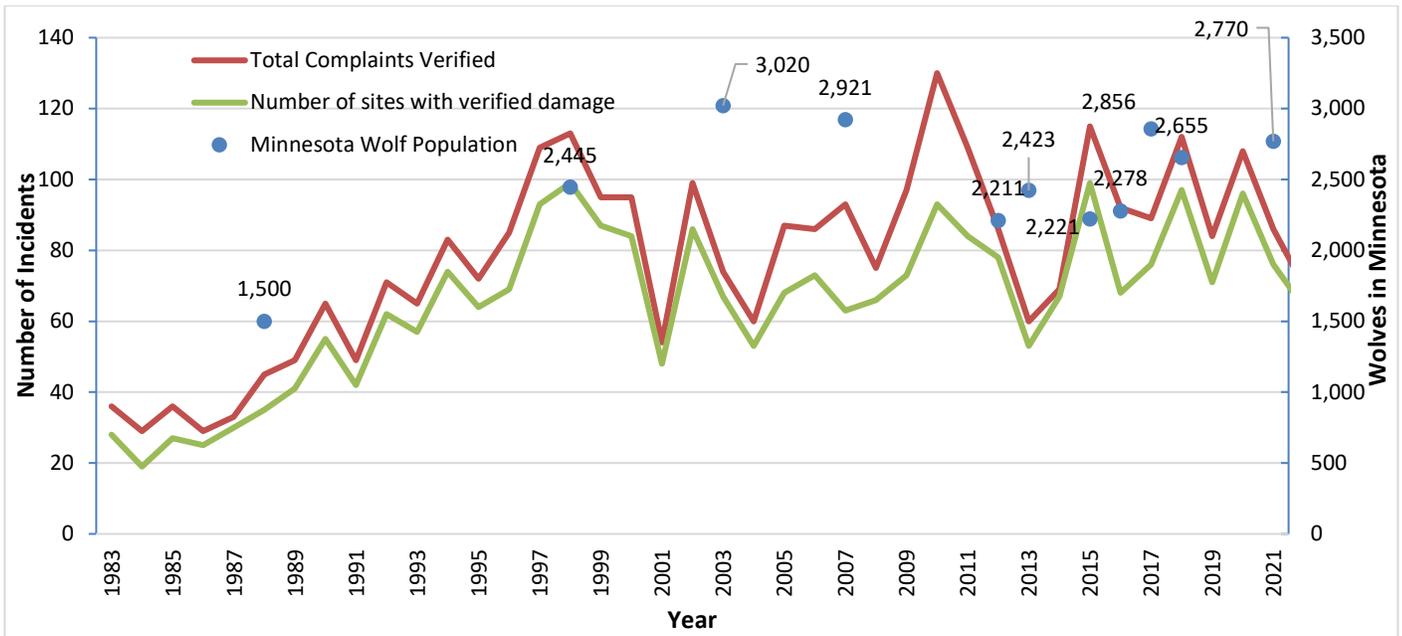
The Minnesota Department of Natural Resources (MNDNR) estimated that there were 2,691 wolves in approximately 498 packs in Minnesota over the winter of 2021-2022 (Erb and Humpal, 2022). WS investigates reports of livestock and pet losses to wolves and wolf threats to human safety in cooperation with the MNDNR Enforcement Division. State statute also authorizes peace officers from the county sheriff's office, University of Minnesota Extension agents or licensed veterinarians that have been trained in wolf damage identification to verify wolf damage for the purposes of compensation through the MN Department of Agriculture. If wolf damage is verified and there is potential for further losses, WS may initiate wolf removal efforts near the depredation site to reduce the likelihood of additional damage. WS also provides technical assistance to cooperators to reduce wolf damage and recommends the use of non-lethal methods whenever possible to reduce conflicts with wolves. The WS program also assists state and federal agencies in documenting the extent of wolf depredations in Minnesota and provides wolf related information to livestock producers, resource managers, Tribes, private citizens, and other interested parties. The ability to mitigate losses associated with wolves promotes public acceptance of this species and contributes to the sustainability of wolves in Minnesota.

### 2022 Summary

In 2022, MN WS's program received 139 calls for wolf damage management assistance from livestock, poultry, pet owners or citizens concerned about public safety.

A total of 70 of the 139 requests for assistance were verified as wolf-killed or injured domestic animals or public safety concerns. In response WS implemented a variety of non-lethal and lethal measures to reduce wolf threats to domestic animals and public safety.

Verified wolf conflicts in Minnesota during 2022 were down ~19% from 2021, with 70 complaints verified at 64 sites and 147 wolves taken in response to verified damage to domestic animals (Figure 1).



**Figure 1.** Number of verified wolf complaints, depredation sites, and wolf population estimates for Minnesota from 1983 through 2022 (WS Unpublished Data).

The 70 verified wolf complaints in 2022 included 69 depredations on livestock/poultry (Table 1). Cow/calf depredations continued to account for the largest number of domestic livestock impacted by wolves again in 2022. Of the 70 verified complaints for 2022 one involved a depredation on domestic dogs. The 147 wolves taken in 2022 was lower than the previous 9-year average of 182 wolves taken which correlates with the ~19% decrease in verified wolf complaints in from 2021 to 2022.



Year	2012 <sup>3</sup>	2013 <sup>3</sup>	2014 <sup>3</sup>	2015	2016	2017	2018	2019	2020	2021	2022
Total complaints received	126	130	115	220	157	152	180	166	207	187	139
Total complaints verified <sup>1</sup>	86	60	69	115	92	89	113	84	108	86	70
Verified livestock and poultry complaints	81	53	62	92	80	80	101	80	105	83	69
Verified complaints involving dogs	9	6	5	18	8	6	7	3	1	3	1
Percentage of total complaints verified	68	46	60	52	59	59	63	51	52	45	50
Number of farms/sites with verified losses	78	53	67	99	76	76	97	71	96	76	64
Number of wolves taken	215	95	172	220	191	199	189	168	221	152	147
Number of wolves killed	215	95	172	213	183	190	189	166	216	152	142
<b>Verified Wolf Killed Domestic Animals</b>											
Calves	63	58	44	67	63	68	82	74	76	62	62
Cows	9	6	8	17	13	8	9	11	7	10	5
Sheep	5	0	21	12	3	3	7	2	4	10	5
Dogs	6	5	2	16	5	6	4	2	1	1	5
Horses	2	1	0	0	1	0	2	0	0	1	0
Turkeys	0	0	0	0	1	0	0	0	0	0	0
Other**	14	30	2	7	2	7	11	10	5	6	0
<b>Verified wolf-wounded domestic animals</b>											
Calves	6	2	5	5	5	4	12	8	14	19	4
Cows	0	0	8	0	0	0	2	1	2	1	5
Dogs	2	0	5	4	4	2	5	2	0	2	0
Other <sup>2</sup>	1	3	0	0	1	3	0	2	1	0	0

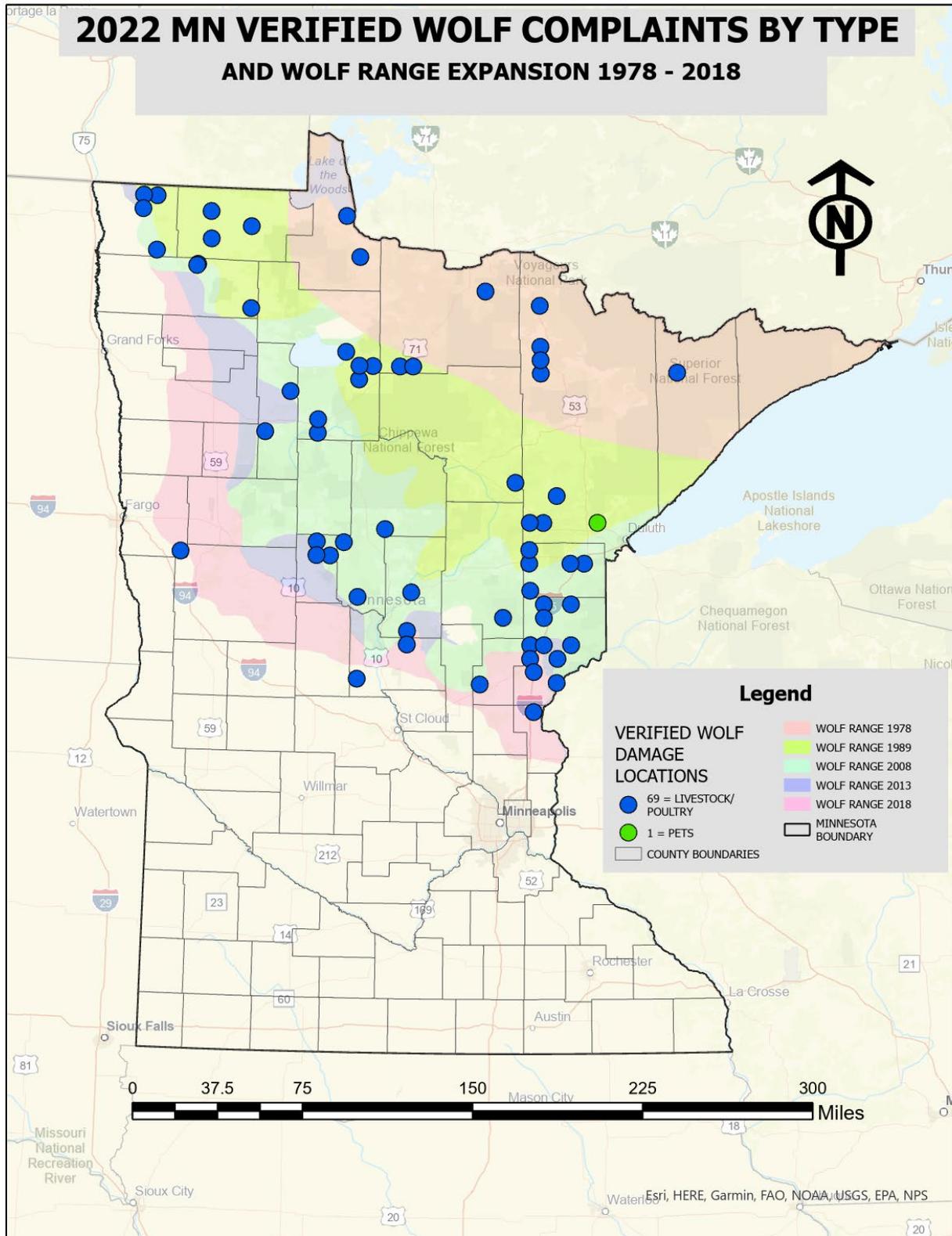
**Table 1.** Wolf depredation on domestic animals in Minnesota, 2011-2022.

<sup>1</sup> A verified complaint is one in which WS determines that wolves have killed or injured one or more domestic animals as evidenced by: (1) Observing wounded animals or remains of animals killed and (2) Finding evidence of wolf involvement (ie. tracks, scat, other indicators).

<sup>2</sup> Others includes a variety of domestic animals including chickens, donkeys, pigs, llamas, bison, rabbits, goats, and captive deer.

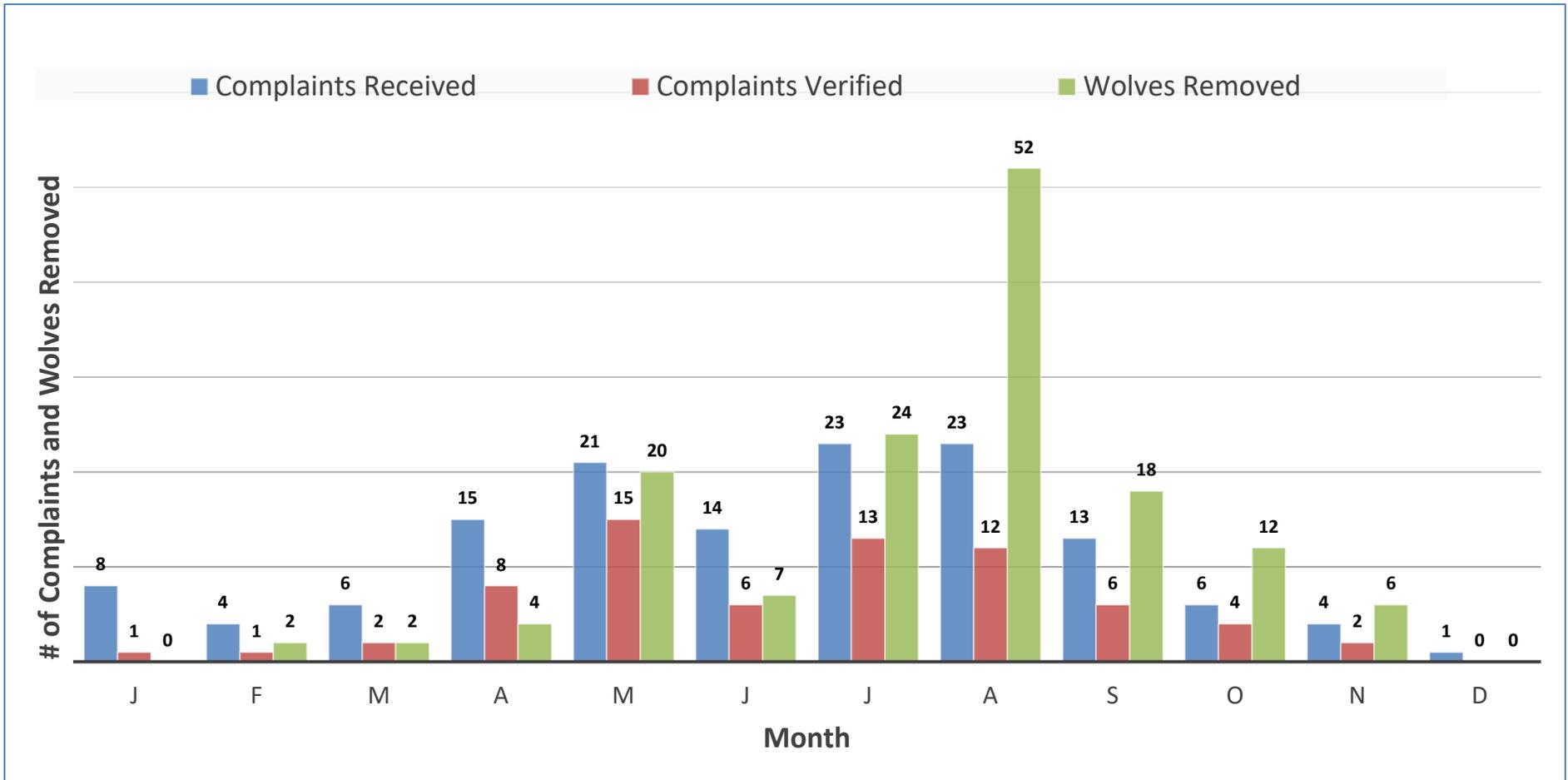
<sup>3</sup> From 2012 to 2014, primary authority for wolf management in the Western Great Lakes DPS was transferred to the state and tribes. The state transferred to a system that allowed “certified wolf controllers” to respond to wolf complaints in addition to WS and MNDNR staff. The MNDNR only requested WS assistance with WDM from April to October during these years. Numbers in this table do not include wolves that were removed by “certified wolf controllers” while wolves were under state management.

The distribution of verified wolf damage complaints during 2022 is shown in Figure 2, along with the approximate range expansion of Minnesota’s wolf population from 1978 through 2018.



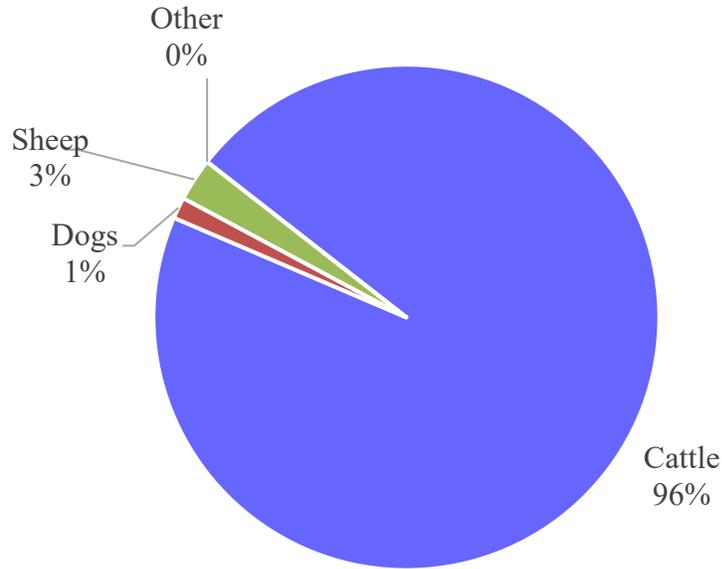
**Figure 2.** Location of verified wolf complaints in Minnesota in 2022, overlaid with range expansion.

The seasonal distribution of wolf depredation complaints by month during 2022 (Figure 3). This seasonal pattern of depredation complaints is consistent with historic complaint distributions in MN with peak depredations occurring in the spring and summer months. Within the April-October primary depredation season there also exists a relatively predictable bi-modal pattern of wolf depredations. Wolf damage complaints in the spring appear to correlate with cattle calving operations and decline slightly and for a relatively short period of time after deer fawning occurs. A second peak in wolf depredations tends to occur in mid-late summer that seems related to wolf packs provisioning young of the year wolves.



**Figure 3.** Seasonal Distribution of Wolf Depredations in 2022. As in previous years, wolf complaints are received throughout the year with complaints typically peaking during the summer months.

Most verified wolf complaints in 2022 (Figure 4), as in previous years, were related to cattle, followed by sheep and dogs.



**Figure 4.** 2022 verified wolf complaints by type.

Verified wolf complaints occurred in 20 of Minnesota’s 87 Counties in 2022 with the greatest numbers occurring in Pine, St. Louis, Carlton, Beltrami, Kittson, Roseau and Wadena counties (Table 2).

County	Verified wolf complaints in 2022	Wolves removed	County	Verified wolf complaints in 2022	Wolves removed
Aitkin	1	2	Lake of the Woods	2	3
Beltrami	6	6	Mahnomen	0	0
Carlton	5	20	Marshall	2	0
Cass	2	2	Morrison	2	6
Chisago	1	0	Norman	0	0
Clay	1	2	Otter Tail	0	0
Clearwater	2	3	Pine	10	25
Itasca	1	3	Polk	0	0
Kanabec	1	4	Roseau	3	10
Kittson	4	6	St. Louis	8	22
Koochiching	3	6	Wadena	3	13
			<b>TOTAL</b>	<b>70</b>	<b>147</b>

**Table 2.** Verified wolf complaints and wolves taken by county in Minnesota during 2022.



## Nonlethal Initiative/Conflict Prevention

The USDA Wildlife Services program in Minnesota has always incorporated a nonlethal/conflict prevention component in its wolf depredation management practices. In 2020, however, funding became available to further enhance the conflict prevention component of our existing wolf damage management program in Minnesota. The conflict prevention component of the MN WS program is intended to provide livestock producers and pet owners a non-lethal alternative to lethal removal of wolves to help prevent or minimize livestock or pet losses due to wolf depredations. Prior to 2020, Minnesota WS personnel had limited options and resources available to provide assistance where wolves were present but hadn't caused a verifiable loss of livestock or pets.



VWP GPS collared wolf attempting to breach fence at the Sheep Ranch

With the initial non-lethal funding in 2020, MN WS was able to hire a fulltime seasonal conflict prevention specialist, as well as purchase equipment, such as fladry, to deploy in instances where wolves were present, but hadn't caused verifiable damage that warranted lethal removal of the wolves. Continued funding in 2021 and 2022 along with increased demand for assistance resulted in MNWS's Conflict Prevention Specialist working through their third season as a full-time, year-round employee.

While requests for wolf damage management assistance occur year-round, the most active part of the wolf depredation season in Minnesota typically runs from April through October.

At the height of the 2022 wolf damage season, MN WS had 6 miles of fladry/turbo fladry, 30 trail cameras and 8 electric fence chargers deployed in the field. In 2022 MN WS worked with 14 different cooperators on conflict prevention projects. (Figure 6).

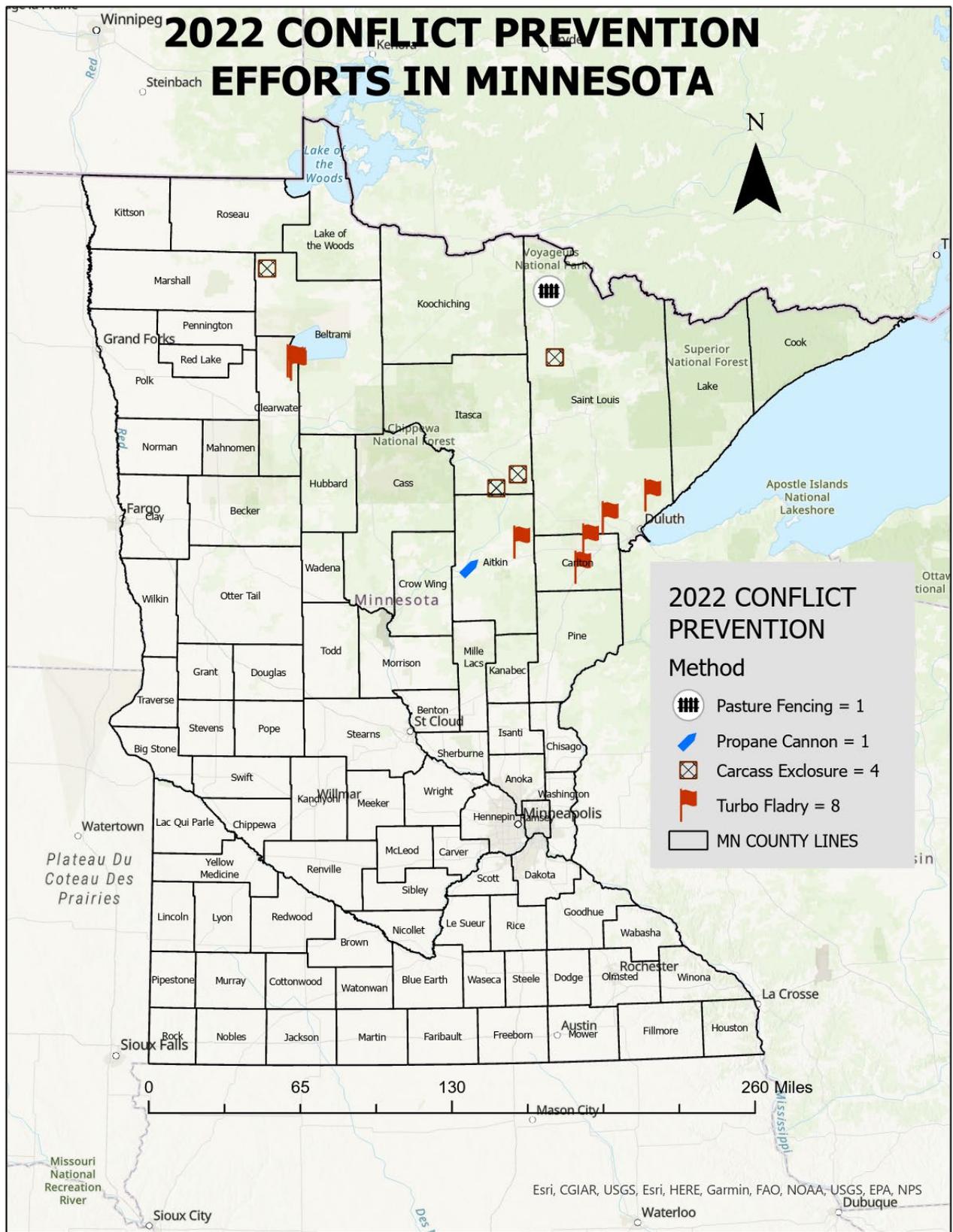
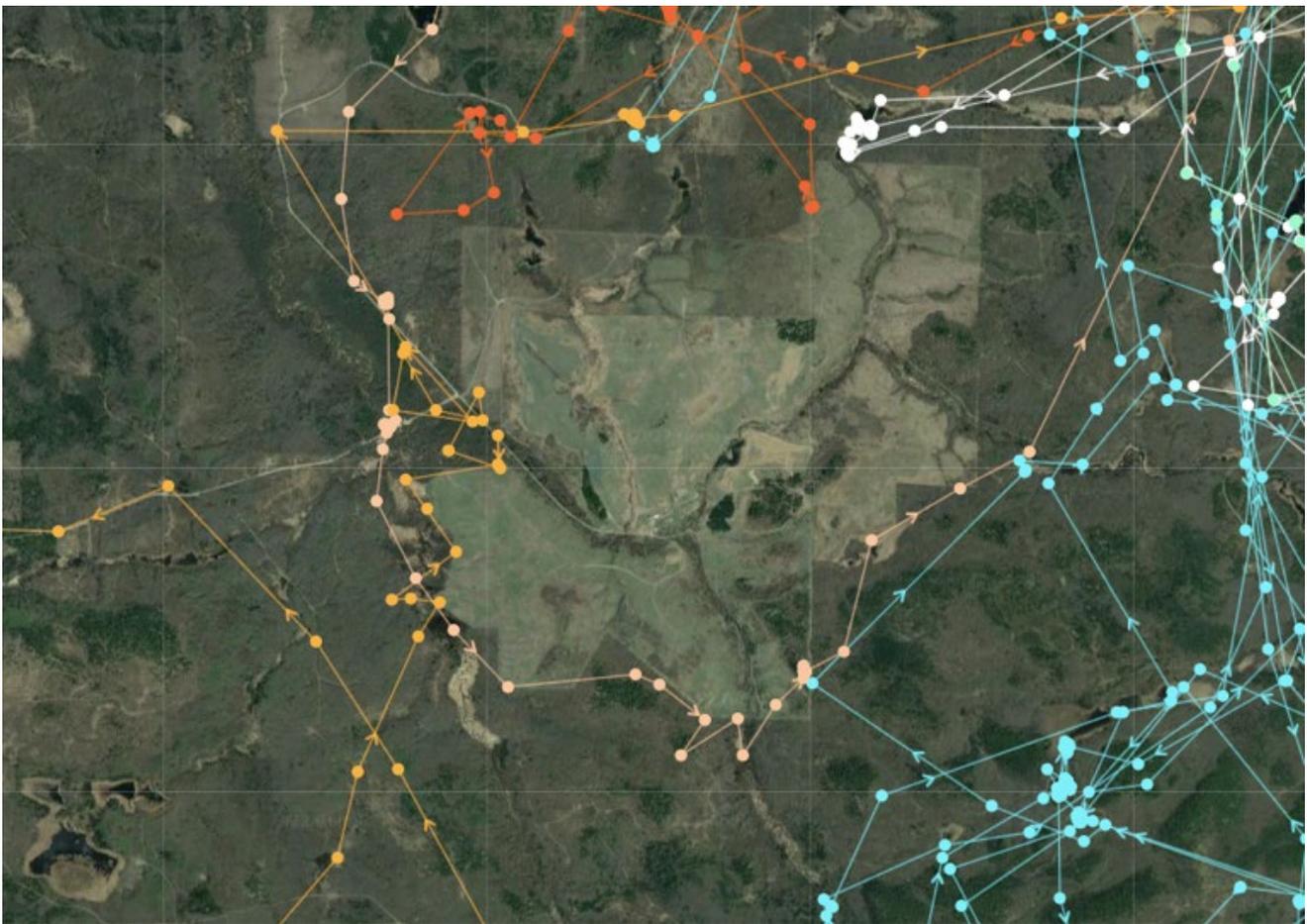


Figure 6. Location and type of conflict prevention projects in MN in 2022.

## Sheep Ranch Update

In 2022 WS-MN completed our largest fencing project to date, enclosing 1500 acres with eight miles of standing woven wire fence, comprised of a combination of 75” and 49” fence and 26” ground apron. The “Sheep Ranch” as it is referred to, is a relatively large cattle operation functioning in a very remote area of northern Minnesota. This isolated cattle operation has been dealing with wolf damage for over 20 years. In collaboration with the Producer, National Wildlife Research Center (NWRC), Minnesota Department of Agriculture (MDA), and the University of MN - Voyageurs Wolf Project (VWP) we were able to complete this large fencing project and enclose all the Sheep Ranch with fencing adequate to deter wolves from entering. This project took 7 months to complete between 2021 and 2022. WS-MN specialist’s technical role in this project was to help the producer with the MDA grant project to help secure funding, develop a plan for the fence’s outline and coordinate supplies and materials for building the fence. Once the logistics were determined, WS-MN worked with the producer to build the standing portion of the fence, VWP’s contributions were to deploy and attach ground apron to the standing fence to help prevent predators from digging underneath the fence. In the spring of 2022, during calving season the producer reported a noticeable change in his herds behavior compared to years prior when wolf pressure would stress his calving livestock. Prior to the fence completion, wolf losses of cattle occurred annually. Subsequent to the fence completion and by utilizing GPS collar data supplied by VWP and trail cameras used by WS-MN, we observed a large reduction in wolf activity in and around the Sheep Ranch with no losses reported since fence completion.



GPS collar data provided by VWP showing collared wolves remaining outside of the fence installed at the Sheep Ranch. September 2022



Wolf activity along the perimeter of the new permanent fence.

## Outreach

In the winter of FY22, MN-WS staff participated in “Cow-Calf Days” a seminar tour and trade show hosted by the University of Minnesota’s Extensions “Beef Team.” This seminar tour allowed WS-MN to reach 350 individuals at 5 different locations across northern Minnesota. Cow-Calf Days gave MN-WS an opportunity to show producers across Minnesota what new tools and techniques WS is using to help mitigate predator-livestock conflict.

Three MN WS staff attended and participated in the 2022 International Wolf Symposium in Minneapolis, MN in October 2022. WS had two presentations, one MN specific and one related to the WS Non-lethal Initiative (NLI) as well as a poster highlighting MN WS NLI activities.

MN WS provided an overview of MN WS NLI activities and to promote the use of compost enclosures to a Minnesota State Cattlemen’s Association local chapter meeting in Pine County.

MN WS had an informational booth at the Minnesota State Cattlemen’s Association state convention highlighting MN WS activities including wolf damage management.

WS-MN’s nonlethal initiative was noted twice by local news organizations this year for our work with VWP and the producer who operates the Sheep Ranch. The Duluth News Tribune as well as KARE11 (a Twin Cities based local news source) ran segments on the work being done at the Sheep Ranch. Both stories (one being an article, the other being a video segment) shined a positive light on the multi-faceted collaboration used to resolve a long-standing wolf-livestock conflict.

## Composting Exclosures

WS-MN developed a pilot project in the summer of 2022 to give producers a way to dispose of dead livestock that discourages wolf scavenging activity near livestock by reducing wolves access to dead livestock carcasses. With a predator resistant fence and composting to break down the carcass(es), there should be less incentive for predators to spend time on/near the producer's property scavenging carcasses, which should result in fewer livestock losses. WS-MN installed four "Livestock Composting Exclosures" in 2022, these exclosures measure 70'x70' with 75" standing woven wire and a 20" ground apron around the perimeter of the fence to prevent digging under. Ongoing monitoring of the use and success of these exclosures is planned for 2023.



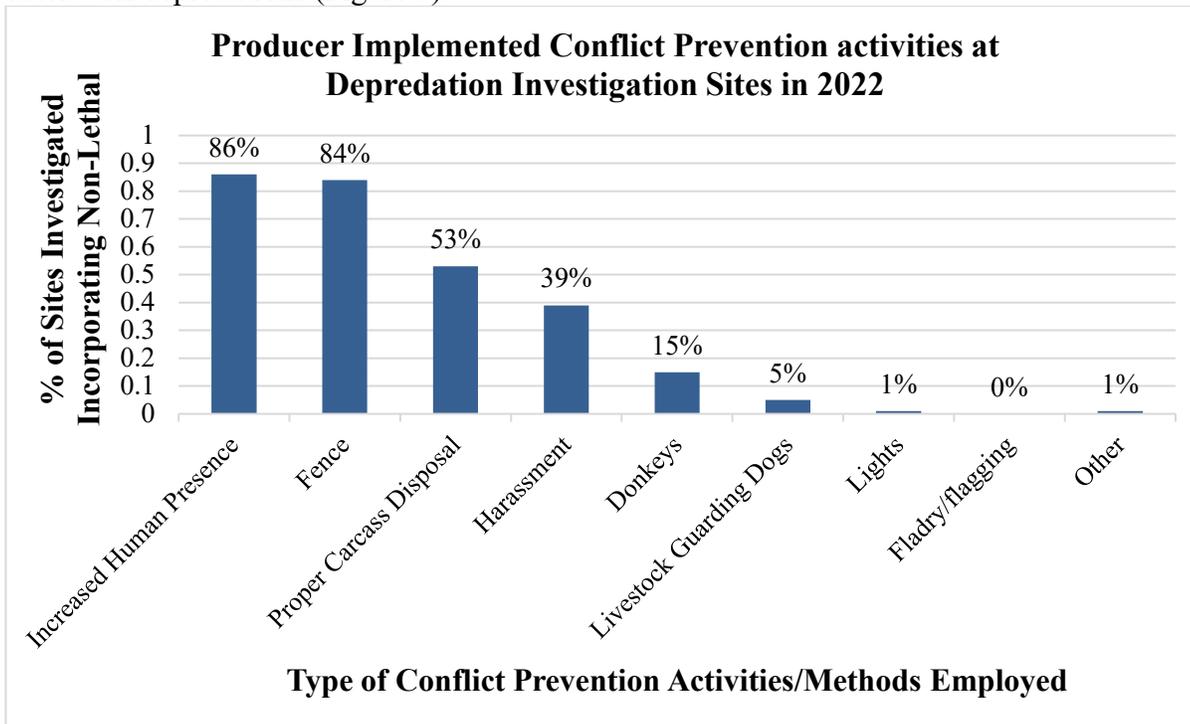
Composting exclosure built in fall of 2022 in northern St. Louis County, MN.



Wolves feeding on improperly disposed of carcass prior to composting enclosure being installed.

### Other Wolf Damage Management Activities

Beginning in 2021, WS personnel started documenting producer-implemented non-lethal practices they observed during wolf depredation investigations. Producer-implemented non-lethal practices include such things as increased human presence, fencing, proper livestock carcass disposal or composting, harassment of wolves, livestock guarding animals, lights, flagging, and other practices that help prevent or deter wolf depredations (Figure 9).



**Figure 9.** Producer-implemented conflict prevention practices documented by WS personnel in 2022 at 64 sites with verified wolf damage.

## Legal Changes

Effective February 10, 2022, gray wolves in MN once again became federally protected under the ESA as a threatened species. MN WS continued to provide wolf damage management assistance per federal statute and guidance during the year, coordinating activities with state and tribal authorities as appropriate.

## Compensation

Livestock verified as killed by wolves are eligible for compensation from the Minnesota Department of Agriculture (MDA). Compensation paid by MDA for wolf related damage in MN is indicated in Table 3. No compensation is currently paid for pets that are killed or wounded by wolves in Minnesota or for livestock that are wounded, unless injuries to livestock are so severe the animal needs to be euthanized.

State Fiscal year (July 1-June 30)	Total wolf claims	Number of wolf claims
1993	\$30,996	NA
1994	\$34,328	NA
1995	\$29,697	NA
1996	\$31,777	NA
1997	\$39,309	NA
1998	\$57,480	111
1999	\$66,052	103
2000	\$91,585	121
2001	\$80,174	70
2002	\$69,515	67
2003	\$82,646	97
2004	\$42,077	47
2005	\$45,100	37
2006	\$72,895	71
2007	\$81,683	82
2008	\$95,526	82
2009	\$88,366	87
2010	\$106,615	104
2011	\$102,230	128
2012	\$119,659	81
2013	\$113,714	94
2014	\$109,475	98
2015	\$106,102	65
2016	\$253,313	137
2017	\$156,020	96
2018	\$165,912	117
2019	\$107,460	78
2020	\$116,150	76
2021	\$146,175*	77*
<b>2022</b>	<b>\$100,650**</b>	<b>78**</b>

**Table 3.** Compensation paid by Minnesota Department of Agriculture for livestock killed by wolves. \* 14 claims pending for 2021, \*\*2 claims pending for 2022. Source: Minnesota Department of Agriculture.

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### **Literature Cited**

Erb, J., C. Humpal, 2022. Minnesota Wolf Population Update, Minnesota Department of Natural Resources, St. Paul.

Minnesota Wolf Management Plan. 2022. Minnesota Department of Natural Resources, St. Paul, Minnesota, 67 pp.