



Perspective

Where can wolves live and how can we live with them?



L. David Mech

U.S. Geological Survey, Northern Prairie Wildlife Research Center, 8711 – 37th St. SE, Jamestown, ND 58401-7317, United States

ARTICLE INFO

Keywords:

Canis lupus
Ecological benefits
Endangered species
Livestock depredations
Poaching
Population
Wolf
Wolf-human conflict

ABSTRACT

In the contiguous 48 United States, southern Canada, and in Europe, wolves (*Canis lupus*) have greatly increased and expanded their range during the past few decades. They are prolific, disperse long distances, readily recolonize new areas where humans allow them, and are difficult to control when populations become established. Because wolves originally lived nearly everywhere throughout North America and Eurasia, and food in the form of wild and domestic prey is abundant there, many conservation-minded people favor wolves inhabiting even more areas. On the other hand, wolves conflict in several ways with rural residents who prefer fewer wolves. This article discusses the recovery of wolves, their benefits and values, the ways in which they conflict with humans, and the potential for their expansion into new areas. It concludes that wolf conservation will best be accomplished by each responsible political entity adaptively prescribing different management strategies for different zones within its purview. Some zones for some periods can support total protection, whereas in others, wolf numbers will have to be reduced to various degrees or removed.

1. Introduction: wolves are showing up in many new places

On August 26, 2015, Illinois passed a law protecting gray wolves (*Canis lupus*) in that state. Wolves in Illinois? Although no wolf pack resides there yet, several wolves dispersing from Minnesota, Wisconsin, or Michigan have made it there before reaching their demise, so Illinois is preparing for when wolves start breeding there.

Besides spreading from the U. S. upper Midwest, wolves have been rapidly expanding their range in the West. Natural dispersers from Canada recolonized northwestern Montana in the 1980s (Ream et al., 1991). Wolves reintroduced into Wyoming and Idaho (Bangs and Fritts, 1996) mixed with them, and the population proliferated into Oregon and Washington, and from Oregon to California (Jimenez et al., 2017) (Fig. 1). Another reintroduction has been underway in Arizona and New Mexico (Harding et al., 2016). Wolves were once the most widely distributed, non-human, land mammal worldwide (Young and Goldman, 1944) living everywhere from Mexico City to northernmost Canada, and southern India to northern Greenland and Russia. Even today they inhabit most of Canada and Eurasia, including India and the Mideast (Boitani, 2003.)

Wolves are highly prolific. Annual litter sizes average six (Mech, 1970), winter densities sometimes reach 182/1000 km² (Fuller et al., 2003; McRoberts and Mech, 2014), and established populations increase at mean rates of up to 20% per year (Fuller et al., 2003). In northern Michigan, for example, the population increased from 30 in 1993 to 434 in 2016 (Beyer et al., 2009). Maturing 1–4-year-old wolves

of both sexes often disperse hundreds of kilometers (Mech and Boitani, 2003). A wolf from the upper Midwest turned up at least 870 km away, in Kentucky, (McSpadden, 2013); a wolf in southeastern Norway dispersed to northeastern Finland 1092 km away (Wabakken et al., 2007).

Although once exterminated from all of the contiguous U.S. except Minnesota and Isle Royale National Park, Michigan, primarily by government poisoning (Young and Goldman, 1944), wolves from the current lower U. S. reservoir of 6000 could reach just about any state. Similarly, although wolves were eradicated long ago from much of western and northern Europe, they have recently been recolonizing parts of France, Germany, Switzerland, Denmark, and Scandinavia (Fig. 1B) from large populations in Spain, Italy, Russia, and eastern Europe (Chapron et al., 2014). In Canada, wolves have been returning to southern and eastern areas from their vast northern reservoir. Because wolves thrive on various species of deer and other ungulates as well as livestock, which inhabit every U.S. state and most countries, there is plenty of food for wolves throughout their former range.

2. Legal status of wolves in the United States

Thus the question arises as to why wolves cannot again live almost everywhere in their original range (Durkin, 2014). This article describes the current biological and legal status of gray wolves in the contiguous 48 United States and Europe, and their increasing conflict with humans and explores the question of where and how they can live sustainably.

E-mail address: mechx002@umn.edu.<http://dx.doi.org/10.1016/j.biocon.2017.04.029>

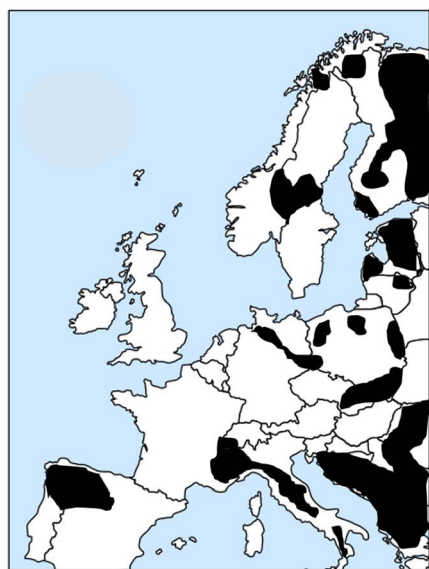
Received 25 January 2017; Received in revised form 12 April 2017; Accepted 25 April 2017

Available online 05 May 2017

0006-3207/ Published by Elsevier Ltd.



A



B

Fig. 1. A. Current distribution of the gray wolf (*Canis lupus*) in the contiguous United States. Original distribution was the entire area except possibly the Southeast, where the red wolf (*Canis rufus*) lived. B. Current distribution of the gray wolf (*Canis lupus*) in western and central Europe. Original distribution was the entire area.

Currently U.S. wolves are protected by the federal Endangered Species Act throughout the 48 contiguous states except for a few western states where Congress delisted them: Montana, Idaho, northern Utah (where no breeding population is known to exist), eastern Oregon and eastern Washington (Mech, 2013). In the latter two states and California they are also protected by state law and are increasing. Even in Montana and Idaho, where regulated annual harvesting has occurred since 2011, the populations have held their own or increased (USFWS et al., 2016). Although the U.S. Fish and Wildlife Service (USFWS) has removed (delisted) the wolf in the West and in the Upper Midwest several times from the Endangered Species List, courts have relisted them each time based on legal technicalities (Mech, 2013). The latest ruling, on December 19, 2014, held that the USFWS cannot separately delist individual wolf populations such as the 3700 wolves in the Upper Midwest but must base its delisting on the entire gray wolf population in the 48 contiguous states. At this writing, an appeal of that decision is underway by the USFWS.

Even if the gray wolf is delisted in part or all of its current U.S. range, the population will almost certainly continue to increase and recolonize new areas. When delisted, wolves would be managed by individual states. States usually try to balance the need to maintain viable wolf populations with the needs and desires of their human

populations, which vary from folks who want no wolves to those who believe wolves should be totally protected. Most state wildlife-management agencies try to cater to wolf advocates through closed hunting and trapping seasons for much of the year and to people favoring fewer wolves by allowing regulated taking for livestock-depredation control and to try to limit conflict. The USFWS closely monitors each state's wolf management and population trajectory to make sure the population is not threatened with falling below recovery levels. If such a situation should arise, the USFWS can immediately relist the wolf. After at least 5 years of post-delisting monitoring, the USFWS can still relist whenever conditions warrant, although that requires a lengthier process.

However, the USFWS would likely never have to relist the wolf. Wolves have been off the federal Endangered Species List during some years in Minnesota, Wisconsin, and Michigan (2007–2008, part of 2009, and 2012–2014), Montana, Idaho and eastern Oregon and eastern Washington (2009, and 2011 to the present) and managed by those states. The populations, nevertheless, have maintained themselves or increased. Dispersers from these populations continue to show up in other states (Treves et al., 2009; Jimenez et al., 2017).

The states where wolves were delisted did allow livestock-depredation control, and most allowed regulated public wolf harvesting. Some states tried to reduce their wolf populations through public take. However, most took fewer wolves than the annual increment from reproduction, so some even liberalized their regulations. Still, as anticipated (Mech, 1998, 2010), the states found it very difficult to reduce their wolf populations. Montana's population of at least 497 wolves in 2008, for example, included at least 536 in 2015 after 8 years of increasingly liberal harvesting regulations and a public take of more than 750 wolves plus more than 590 killed for depredation control (Table 1).

3. Wolf population control

A common belief among the public is that wolves control their own numbers by social factors such as territoriality. That view was held by most scientists (Pimlott, 1967; Mech, 1970) until evidence mounted that wolf numbers were determined by food supply (Packard and Mech, 1980; Keith, 1983; Fuller, 1989; Fuller et al., 2003; Hatton et al., 2015). The social-factor hypothesis was raised again as a possible wolf-population-control factor in systems with unusually high prey densities (Cariappa et al., 2011; Cubaynes et al., 2014), but that hypothesis was challenged (McRoberts and Mech, 2014). Even with the highest prey density studied in any wolf-prey system, wolf density was still predicted by prey density (Mech and Barber-Meyer, 2015).

The only other way most wolf populations have been limited is by human control. Occasionally in the Arctic, rabies limits wolves temporarily (Weiler et al., 1995; Ballard and Krausman, 1997), and when canine parvovirus first appeared, it limited wolf numbers for a few

Table 1
Wolf population and public harvest information for Montana (U.S. Fish and Wildlife Service et al., 2016).

Year	Minimum Population	Next year harvest	
		Quota	Killed ^a
2008	497	75	72
2009	524	^b	^b
2010	566	220	211
2011	653	No quota	225
2012	625	No quota	230
2013	627	No quota	206
2014	554	No quota	^c
2015	536	No quota	205

^a Plus 590 killed for depredation control, 2009–2014.

^b Wolves were restored to the federal Endangered Species List for this year.

^c 94 in 2013–2014 season and 119 in the 2014–2015 season.

Download English Version:

<https://daneshyari.com/en/article/5743199>

Download Persian Version:

<https://daneshyari.com/article/5743199>

[Daneshyari.com](https://daneshyari.com)