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# The Resilient Iberian Wolf Face Another Challenge

## MANGE IS THREATENING THIS RECOVERING APEX PREDATOR

By Gonzalo Mucientes and Julio Eiroa

**D**espite centuries of persecution that dramatically reduced its population, the Iberian wolf is rebounding, forming one of the largest wolf populations in Europe. Its future may be threatened, however, by a fatal disease that has led to local extinctions in wildlife populations around the world.

Once found in every province of peninsular Spain, the Iberian wolf faced a range reduction of about 68% since the mid-1800s (Clavero et al. 2022). During recent decades, though, this wild canid has experienced a recovery. More than 2,000 Iberian wolves (*Canis lupus signatus*) were estimated to roam the northern and western portions of Spain in 2008 (Blanco et al. 2008). In Galicia, where stone pitfall traps known as foxos remain on the landscape—reminders of the persecution this species has experienced—populations are stable in coastal and mountain areas. Between 600 and 800 wolves were estimated in 90 packs between 2013 and 2015 (Xunta de Galicia 2016), with densities of between

five and 11 individuals per square kilometer in northern Galicia (Alonso, et al. 2021).

The discovery of sarcoptic mange among these wolves raises new concerns, however. Spread by the *Sarcoptes scabiei* mite, the parasitic disease has caused collapses in ungulates like the chamois (*Rupicapra pyrenaica*) and Iberian ibex (*Capra pyrenaica*), and in carnivores, such as the Eurasian lynx (*Lynx lynx*), red fox (*Vulpes vulpes*), pine marten (*Martes martes*) and gray wolf (*Canis lupus*) (Valdeperes et al. 2019).

### A new threat

The pathology and severity of sarcoptic mange depends on the host and the environmental conditions, however. That leaves wildlife biologists with a number of questions. Is the spread of sarcoptic mange a consequence of climate change? How will the wolves be affected in an environment that they share more and more with humans? Most importantly, we are left asking ourselves what we can do to conserve Iberian wolves amid these challenges.

There are reasons for optimism. Despite the mortalities the disease has caused in other species, survival is not uncommon. Once a population is affected, sarcoptic mange remains endemic, reemerging cyclically but with lower virulence. That offers hope that with adequate measures in place, the Iberian wolf can survive this latest threat.

Addressing the disease is a challenge, though. The Iberian wolf is a sparse apex predator. Proper monitoring of its populations requires extensive field work to locate tracks and

▼ A sub-adult wolf affected by severe mange moves across the landscape in broad daylight.



Credit: Segundo Grijalvo

marks that help identify individual packs (Liberg et al. 2012). To determine if wolves are infected with sarcoptic mange, we rely on visual identification of lesions consistent with mange. Characteristic lesions include severe alopecia, crusts, skin lichenification, dehydration or emaciation. In 2008, scientists found a sharp increase in the number of wolves with skin lesions in Asturias, a region in northwestern Spain (Oleaga et al. 2011). After conducting necropsies, they confirmed these lesions to be a result of mange—the first confirmed cases of the disease in Iberian wolves. Close to 20% of the wolves in the region were affected, and it appears to result in significant reductions in fertility and pup survival (Oleaga et al. 2015).

More recently, during camera trapping surveys to detect breeding wolf packs in one of Galicia's central mountain ranges, we recorded individuals with a variety of physical aspects. Some wolves looked healthy. Others—particularly sub-adult wolves and cubs—showed evidence of mange in the spring, when clinical signs tend typically peak. Some sub-adults showed signs of severe mange during the winter. Neighboring packs often appeared very different from one another, though. While one pack had healthy-looking wolves, others presented severe effects of mange. In most observations, alpha wolves look healthier than others in the pack.

### Growing outbreaks

Our latest observations point to an increase in wolves with mange symptoms, including one individual we recorded on video during the winter (<https://youtu.be/6l8WL8UKlyw>). The effects are not just superficial. Through necropsy, we recently confirmed sarcoptic mange caused the death of one cub.

Recent sarcoptic mange outbreaks in wildlife appear to demonstrate ongoing geographic spread, an increase in the number of hosts and increased virulence. Sarcoptic mange has now been reported in at least 148 species of domestic and wild mammals, making it one of the most generalist ectoparasites in mammals. Recent studies have described new locations of mange outbreaks, and geographical expansions have been described in wildlife around the world.

Given the possibility of mange contributing to population collapses in threatened and endangered species (Moroni et al. 2021), its appearance in Iberian wolves raises conservation concerns for the region's apex



Credit: Gonzalo Mucientes and Julio Eiroa



▲ A juvenile wolf affected by mange feeding on a cow carcass in broad daylight, an unusual activity.

◀ A wolf cub shows indications of mange.

Credit: Segundo Grijalvo

predator. This is a priority problem on which action must be taken. In other species, measures for sarcoptic mange control have often been implemented to mitigate the disease's impact on wildlife populations. Similar measures may also benefit the wolf.

As the past centuries have shown us, the Iberian wolf is a survivor. ■



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