Biological Conservation 227 (2018) 319–325

Contents lists available at ScienceDirect

Biological Conservation

journal homepage: www.elsevier.com/locate/biocon

Perspective

Legal obligations regarding populations on the verge of extinction in Europe: Conservation, Restoration, Recolonization, Reintroduction

José Vicente López-Bao[a,*], Floor Fleurke[b], Guillaume Chapron[c], Arie Trouwborst[b]

[a] Research Unit of Biodiversity (UO/CSIC/PA), Oviedo University, Spain
[b] Department of European and International Law, Tilburg University, the Netherlands
[c] Department of Ecology, Grimsö Wildlife Research Station, Swedish University of Agricultural Sciences, Sweden

ARTICLE INFO

Keywords:
Canis lupus
Wolf
Reintroduction
Conservation
Habitats directive

ABSTRACT

After more than two decades of implementation of the Habitats Directive (Directive 92/43/EEC), some fundamental aspects of the directive are still unclear, and subject to interpretive uncertainty, which limit its correct implementation. For example, obligations for Member States in situations where a protected population has almost, or has just, gone extinct are unclear. The isolated and protected population of wolves (*Canis lupus*) in the Sierra Morena region in Spain – the only wolf population in the southern half of the Iberian Peninsula – has been steadily declining to the point where it is doubtful whether any wolves are left. Using this illustrative example, we provide clarifications on the obligations by Member States in situations where populations are on the verge of extinction. Our analysis shows that Articles 6 and 12 of the Habitats Directive require Member States to restore populations that are quasi extinct. From a legal perspective, even the complete extinction of the species would not exonerate Member States from its obligations regarding the species in the Natura 2000 sites concerned. In this line, we argue that the Spanish authorities should not wait with recolonization, reinforcement and/or reintroduction actions until the complete absence of wolves in the Sierra Morena is conclusively proven. Two scenarios appear to meet legal requirements: *i*) active reinforcement/reintroduction, or *ii*) an active and effective policy towards a rapid natural recolonization of Sierra Morena by northern wolves. However, based on the observed wolf trends in Spain and Portugal during the past five decades, a reconnection between northern and Sierra Morena wolves seems unlikely in the foreseeable future even if actively promoted. Considering the urgency of actions required to avoid that this population will be the first wolf population to become extinct in Europe in modern times, in order to comply with European obligations, the adopting and carrying out a reintroduction/reinforcement scheme to restore the Sierra Morena wolf population is required. Such a scheme needs to be accompanied by a comprehensive enforcement plan to assure that reintroduced wolves will thrive.

1. Introduction

Conservation legislation has shown to be instrumental in preserving biodiversity. In the European Union (EU), the Birds Directive of 1979 (Directive 2009/147/EC) and the Habitats Directive (HD) of 1992 (Directive 92/43/EEC) have been the primary legal instruments protecting species and habitats. Positive associations have been identified between the two directives and the conservation of, for instance, bird and large carnivore populations (Donald et al., 2007; Chapron et al., 2014; Sanderson et al., 2015); although enforcement failures remain an issue (López-Bao et al., 2015). The HD is one of the strongest legal tools in nature conservation, requiring the 28 EU Member States to take appropriate actions in order to reach and maintain the Favourable Conservation Status (FCS) of the species listed in its Annexes (Born et al., 2015). The status of a species is deemed favourable (FCS) when according to article 1(i) in the HD, the species "is maintaining itself on a long-term basis as a viable component of its natural habitats" and "there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis" (Epstein et al., 2016; Trouwborst et al., 2017a).

However, after 25 years of implementation, some fundamental aspects of the HD are still unclear and subject to interpretive uncertainty. Examples concern the interpretation of the key FCS concept (Epstein et al., 2016; Trouwborst et al., 2017a), or doubts concerning the conditions under which protected species may be hunted (Epstein, 2017; Trouwborst and Fleurke, 2018). Such interpretive uncertainty can affect the consistency and effectiveness of the HD application across Member States and different species-specific cases (Trouwborst et al.,

* Corresponding author.
E-mail address: jv.lopezbao@gmail.com (J.V. López-Bao).

https://doi.org/10.1016/j.biocon.2018.09.027
Received 27 February 2018; Received in revised form 10 September 2018; Accepted 21 September 2018

2017b). Unclarity also clouds the nature and extent of Member States' obligations in situations where a protected population has almost, or has recently, gone extinct.

In this piece, we attempt to reduce the lack of clarity regarding Member States' obligations in situations where a protected population is close to extirpation, or has just, gone extinct. We used as case study the obligations of Spain in relation to the conservation of wolves (*Canis lupus*) in the Sierra Morena region (S Spain) – the only wolf population in the southern half of the Iberian Peninsula. This population has been steadily declining to the point where it is now considered likely that the population is extinct. Wolves in this part of Spain are subject to various conservation requirements under international and EU law, in particular the 1979 Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and the HD (the Sierra Morena wolf population is listed in Annexes II and IV of the HD). The present situation therefore begs the question how this quasi-extinction of the Sierra Morena wolf population is relevant to the legal obligations of Spain.

To do this, we carried out an interdisciplinary exercise combining the particularities of the selected case study with the conservation requirements for EU Member States under international and EU law, including i) the evaluation of the obligations of Member States regarding conservation and restoration of protected species (i.e. to what extent have the past actions of the Spanish authorities in respect of the Sierra Morena wolf population been in line with their EU obligations); ii) the assessment of the obligations when a population has (almost) gone extinct (i.e., what the obligations of Spain are in the present circumstances of the Sierra Morena wolf population), and iii) what the obligations of Member States (Spain in our case) are once it becomes acknowledged that a population has gone extinct.

2. Methodological approach

We combined legal and ecological analyses; increasingly recognized as an important joint approach to enhance compliance of conservation instruments (Epstein et al., 2016; Chapron et al., 2017; Trouwborst et al., 2017a).

Regarding law, we employed standard international and European law research methodology (Cryer et al., 2011; Trouwborst, 2015). This consists of the identification and analysis of relevant legal instruments and provisions, including their interpretation according to the pertinent rules from the international law of treaties as codified in the 1969 Vienna Convention on the Law of Treaties, and as refined in respect of European law by the CJEU, while taking into account any relevant guidance issued by the European Commission. Furthermore, given that Spain (like all other Member States and the EU itself) is a contracting party to the Bern Convention, its obligations under the HD must be interpreted consistently with that Convention. To inform the said general legal analysis, we present the relevant factual information of our illustrative example, including the official development of wolf numbers and range in the Sierra Morena region in recent decades, the factors that have driven this wolf population to the current situation, and the prospects for a natural recolonization of the Sierra Morena region by wolves from the NW Iberian population in the near future.

A detailed study of the Sierra Morena wolf case is particularly relevant because it constitutes an anomaly in the broader European context of wolf populations (López-Bao et al., 2015) and other large carnivore populations recovery (Chapron et al., 2014). It is also interesting because wolf management in Spain is decentralized and under the jurisdiction of the Autonomous Regions, even if Spain as a Member State is ultimately responsible for meeting its EU obligations (Court of Justice of the EU –hereafter CJEU– 12 June 1990, Case C-8/88).

3. Case study: wolves in Sierra Morena

The range of the Sierra Morena wolf population has traditionally covered the Sierra Morena mountains of the Autonomous Regions of Andalusia, Castilla-La Mancha and Extremadura (S Spain). This isolated (at least since the 1970s) wolf population was estimated to number 6–10 packs in 1988 (Blanco et al., 1990). However, contrary to the trends observed in all other European wolf populations in recent times (Chapron et al., 2014), after three decades of protection (see below), this wolf population has not recovered, but instead dramatically declined. In 2005, the Spanish authorities approved a short-term recovery goal of 15 packs within the strategy for the conservation and management of the wolf in Spain (Spanish Wolf Working Group, 2005). So far, this conservation goal has not been reached. In 2012, only one pack was detected in the Sierra Morena (López-Bao et al., 2015) and, since then, no single pack has been detected in the period 2013–2014 (MAPAMA, 2016). In Andalusia, between 2013 and 2014, ninety-four 10×10 km cells (9400 km^2) were surveyed searching for wolf signs (mainly footprints and faeces). After the genetic analyses of 34 wolf-like faeces, only five scats from 5 different cells were classified as wolf (MAPAMA, 2016). According to official data, this is the first time that no packs have been reported in this wolf population.

This isolated wolf population faces the same fate as one of the most charismatic wolf population worldwide, the Isle Royale wolf population (Marris, 2015). While detailed information about the incidence of inbreeding and hybridization events is scarce (Ferrand et al., 2005; Gómez-Sánchez et al., 2018) or infectious diseases in the Sierra Morena population, multiple facts still suggest that, in the absence of effective human persecution, population growth and recovery should have been expected (Vila et al., 2003; López-Bao et al., 2015).

Wild prey abundance and vegetation cover cannot be considered constraining factors for wolves in this area. In fact, the wolf habitat in the Sierra Morena could be viewed as more suitable than other areas with wolves in Iberia (e.g., Blanco and Cortés, 2007; Llaneza et al., 2012). This area shows a low density of paved roads (0.16 km/km^2) and a low human population density (ca. 3 inhabitants/km^2) (Blanco et al., 1990; Blanco, 2001; Muñoz-Cobo et al., 2002). The main land use is large fenced private properties (covering 85% of the estimated wolf range in 2002; Muñoz-Cobo et al., 2002) running recreational big game hunting businesses through intensive game ranching (hunting business started in the 1970s, and nowadays is the dominant land use). Game management causes red deer (*Cervus elaphus*) densities to approach the highest figures in Europe (20–60 heads/km^2, but up to ca. 100 heads/km^2; Azorit et al., 1998; Blanco, 2001). However, although the intense game management in this area could facilitate predation on game by wolves, the estimated impact of this small wolf population on the deer population has been estimated negligible (Blanco et al., 1992).

Despite such a small impact, poaching might have been more frequent than previously assumed because of the generalized perception of the incompatibility between wolves and recreational big game hunting business (i.e., perceived competition for game and other economic losses to hunting business; Blanco et al., 1990; Blanco, 2001; Muñoz-Cobo et al., 2002; López-Bao et al., 2015). In 2000, after surveying attitudes towards wolves in the Sierra Morena area, Aguilar (2016) documented that over a total sample size of 1703 participants (including farmers, rangers, hunters, students, teachers and the general public, across 125 municipalities in the Sierra Morena), 62% of people agreed that game management in the large fenced private properties is not compatible with the presence of wolves, being this figure of 63% and 42% in the particular case of rangers ($n = 79$) and hunters ($n = 59$), respectively (Aguilar, 2016). Interestingly, overall, 71% of people was, at the same time, favourable to the conservation of wolves (74% in the particular case of hunters, $n = 59$; 36% in the case of farmers, $n = 107$; Aguilar, 2016).

Until the late 19th century, published information (Valverde, 1971) suggests that wolves occupied almost the entire Iberian Peninsula. But after an intense legal and illegal persecution period occurring up to the 1970s (In Spain, a governmental agency called "*Junta de Extinción de Alimañas*" promoted predator control until the 1970s; Corbelle-Rico and