

WOLF POPULATION STATUS IN THE ALPS: PACK DISTRIBUTION AND TREND FROM 1993 TO 2009

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Introduction

Wolves are naturally recolonizing the southwestern Alps since the late 80's (Lucchini et al. 2002; Valiere et al. 2003) through dispersal from the north Apennine wolf subpopulation (Fabbri et al. 2007). A moderate bottleneck occurred during the recolonization process, and gene flow between the Apennines and the Alps was moderate too (corresponding to 1.25-2.50 wolves per generation) (Fabbri et al. 2007). Bottleneck simulations showed that a total of 8-16 effective founders explained the genetic diversity observed in the Alps (Fabbri et al. 2007). Therefore, the levels of genetic diversity in the current expanding alpine wolf population will depend on future successful migrants from the Apennines, as well as on the new migrants coming from the Dinaric and Carpathian wolf population (Rauer and Groff pers. comm.).

Following the Guidelines for Population Level Management Plans for Large Carnivores, the wolf population in the Alps has been identified as a unique population segment (Linnell, et al. 2007). Although it is connected demographically and genetically to the Italian wolf population in the Apennines (Fabbri et al. 2007), the Alpine range exhibits different ecological and socio-economic contexts (Linnell et al. 2007) that can be one of the component to define it a population segment. Because they live at low density over large territories of about 300 km², packs may extend beyond administrative borders, increasing the need of standardized monitoring techniques between countries to actually monitor wolves at the population level.

The information provided in this report on the wolf population over the Alps is issued from the work of the Wolf Alpine Group, which is a technical group comprised of the research and management institutions of Italy, France, Switzerland, Germany, and Austria in charge of wolf monitoring in the Alpine area. The present data come from Centro Gestione e Conservazione Grandi Carnivori - Regione Piemonte, and Parco Nazionale Gran Paradiso for Italy; from the Office National de la Chasse et de la Faune Sauvage (ONCFS) for France, from KORA for Switzerland, from Bavarian Environment Agency (LFU) for Germany and from the University of Wien for Austria.

Methods

Similar monitoring techniques are applied over the Alpine countries, which consist in sign surveys, snow-tracking sessions in winter, wolf howling sessions in summer, all associated with standardized non-invasive molecular tracking. However, a more intensive and systematic monitoring protocol is applied in France and Western Italy, where packs are present.

We identified the "wolf pack" as the biologically meaningful measure of population trend and distribution, such as in other wolf population monitoring systems worldwide (Mech and Boitani,

2003). A pack is defined as the main wolf reproductive unit documented either by a detected reproduction event or identified by at least one male and one female holding a territory over two consecutive winters (i.e. potentially reproductive units) as recorded by non-invasive genetic tracking. Therefore, dispersers or solitary but sedentary wolves are not reported either in the map or in the population trend evaluation.

Results and discussion

In 2009, 33 wolf packs have been detected over the French and Italian Western part of the Alps (Figure 1 and 2). The wolf presence has been regularly documented in Switzerland since the 90s, and more recently documented in Germany, Austria, and the Eastern Italian Alps. But so far, no evidence of wolf pack formation was detected within all of these countries and therefore not included yet in the map. Common genotypes have been recorded between Italy and Germany with a dead wolf recorded in Bavaria previously sampled in Italian alps, and also more recently between France and Austria with a male sampled in late 2009 in Austria previously detected in the northern part of the French alps one year before passing by the Grison Canton (CH), as well as a wolf passing through Swiss and currently monitored in Trentino (C.Groff, pers.comm.). This demonstrates the animal movements within the whole alpine range.

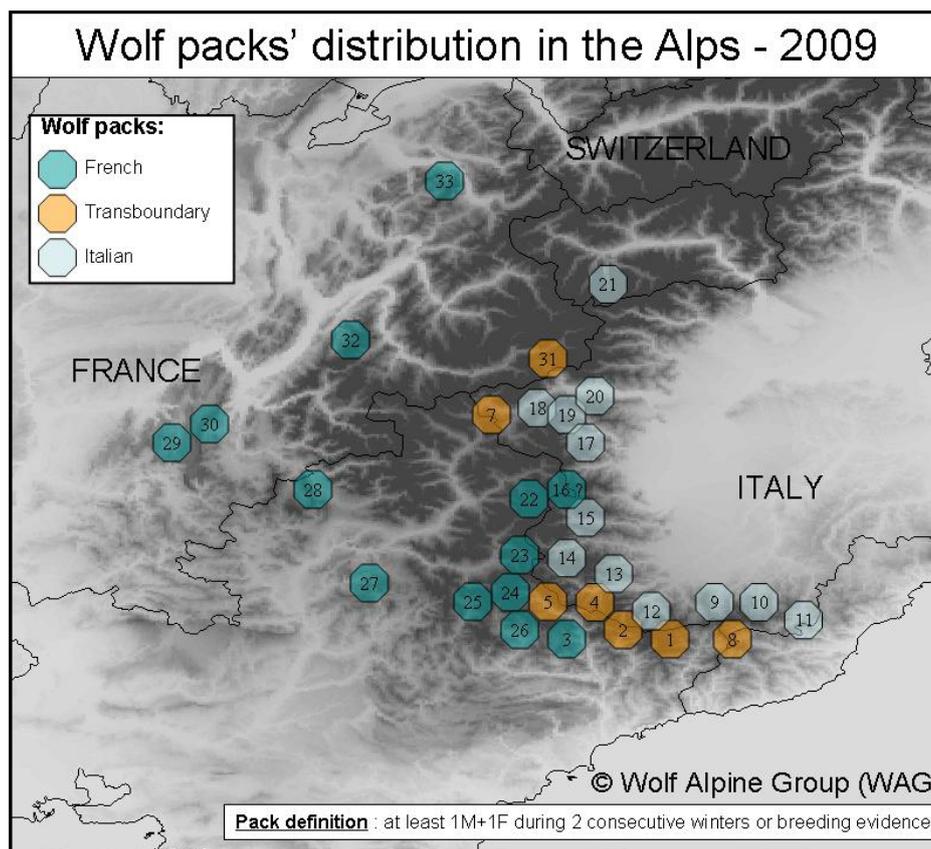


Figure 1 : Wolf pack distribution in 2009 over the Alpine range - These packs either reproduced the previous summer or consisted of at least one male and one female present in the same area for 2 or more consecutive winters (e.g. potentially reproductive units) as recorded by non-invasive tracking. Question marks on the map indicate areas where the presence of a transboundary pack is likely, but not yet confirmed.

A positive trend of the number of reproductive units is documented over the years showing this natural recolonization process, which is still mainly interesting the Western Alps of Italy and France (Figure 1). Population size estimation has also been evaluated using “Capture recapture” models based on non-invasive genetic samples analysed both in France (Cubaynes et al. 2010) and Italy (Marucco et al. 2009). However, this approach is not yet applicable to the entire population due to incongruities in datasets and also methodological constraints of genetic procedures over labs. A research project is conducted by the WAG with the reference genetic labs to solve this issue.

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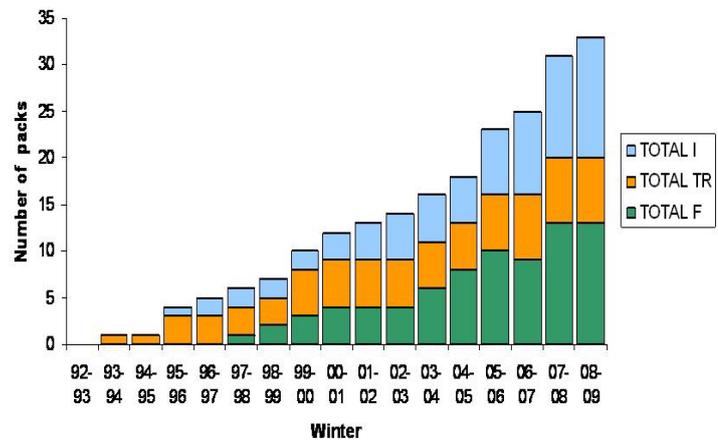


Figure 2 : Yearly trend of pack numbers detected over the alpine population since 1992.