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The Eurasian lynx in Continental Europe





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Original contributions and short notes about wild cats are welcome

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Cover Photo: Camera trap picture of two Eurasian lynx kittens in north-eastern Switzerland. 11 December 2014 (Photo KORA).

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Favourable conservation status and population level management – the Bohemian-Bavarian-Austrian lynx population as a case study

For strictly protected species, the European Union's Habitats Directive obliges member states to keep or head for a favourable conservation status FCS. Within the "3Lynx-Project", 11 partners from 5 countries developed a population level based conservation strategy. To operationalize the FCS-concept, we used the criterion D (population size) of the IUCN Red List category Near Threatened and translated it into specific minimum population size. For the Bohemian-Bavarian-Austrian BBA lynx *Lynx lynx* population we came up with 250 mature animals, being implied that connectivity to other lynx populations is simultaneously assured. The key monitoring unit is defined as the number of reproducing females. To reach FCS, a number of 165 verified females with kittens within the BBA-population is targeted.

The European Union's Habitats Directive obliges member states to keep or head for a favourable conservation status (FCS) for strictly protected species (European Economic Community 1992). The Eurasian lynx as listed in Annex II and IV of the Habitat Directive is a species with high spatial demands averaging 1 adult animal per 100 km² only (Breitenmoser & Breitenmoser-Würsten 2008). The big challenge is how to integrate a population large enough for FCS into the human dominated, cultural landscape of Central Europe.

Within the so called "3Lynx Project", eleven partners from five countries (Czech Republic, Germany, Austria, Italy and Slovenia) worked on harmonisation of lynx monitoring and exchanged regional and national experience on conservation efforts with respect to population level management (e.g. Wölfl et al. 2021). The main emphasis lay on the development of a conservation strategy for the Bohemian-Bavarian-Austrian BBA lynx population (Fig. 1). There, lynx live along the mountain ranges stretching along the border area between Czech Republic, Germany and Austria (Fig. 2).

Lynx were extirpated in this area in the 19th century – last records stem from early beginnings of the 20th century (Bufka & Červený 1996). In the 1980s a total of 17 lynx of Carpathian origin were reintroduced in the area of the later founded Šumava National Park (Bufka & Červený 1996, Volfová & Toman 2018). Within the next decades this nucleus developed into the currently existing BBA lynx population (e.g. Wölfl et al. 2001, Wölfl et al. 2021). Although suitable habitat is largely available, the BBA lynx population is – with 107 independent animals and 32 family groups (Mináriková et al. 2019) – still relatively small and isolated. Moreover, parts of the area are quite fragmented. These factors contribute to the risk of low genetic variability leading to extinction again.

The "Guidelines for population level management plans for large carnivores in Europe" (Linnell et al. 2008) have been recommended by the EU commission to give practical advice for defining and reaching FCS on population level for medium sized mammals. This means a transboundary conservation approach in terms of numbers and space for most of Europe's large carnivore's occurrences.

Within the 3Lynx-Project the overall vision for the BBA lynx population is therefore stated as follows: the continuous development of the BBA lynx population towards a long-term survival in a favourable conservation status which implies 1) lynx spread all over suitable habitat within the BBA area, 2) lynx reach sufficient numbers within the BBA area, 3) BBA lynx population is connected with other lynx sub-populations to build up a functioning metapopulation, and 4) lynx is accepted by humans as an integral part of the Central Europe ecosystem.

Concerning habitat within and around the BBA area, conservation steps are 1a) to secure and improve lynx habitat on a small habitat specific scale (e.g. key reproductive sites and prey base); 1b) to secure and improve connectivity within BBA area (e.g. permeability of roads or highways, mountain valleys which are very often continuously built up by settlements with less and less possibilities for animal movement); 1c) secure and improve connectivity to other lynx populations (Carpathian, Alpine or Harz mountains). For reaching connectivity to the Carpathian population, the so-called "CELTIC" concept (Conservation of the Eurasian Lynx – Management and International Cooperation; Wölfl et al. 2001) could serve as a guideline.



Fig. 1. Participants of a workshop of the 3Lynx project gathering for the development of a conservation strategy for the BBA lynx population (Photo Czech Ministry of Environment).

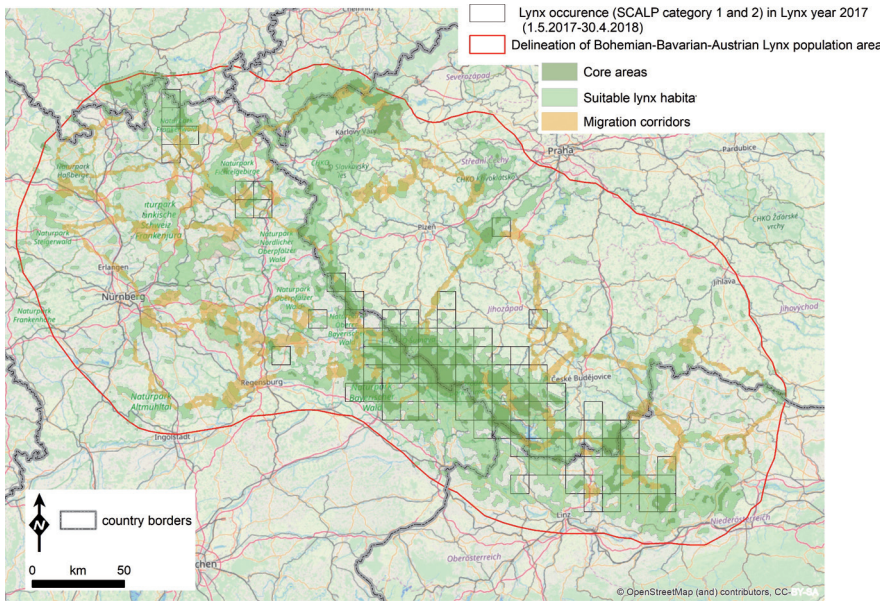


Fig. 2. Delineation, suitable habitat and current distribution of the Bohemian-Bavarian-Austrian (BBA) lynx population (Lynx Year 2017: 01.05.17–30.04.2018; Mináriková et al. 2019).

An important issue for “reaching sufficient numbers” is the translation of the legal obligation for FCS into practical goals. One pragmatic approach is to refer to the criterion D (population size) of the IUCN Red List category Near Threatened and use the translation into numbers given in the “Guidelines for population level management plans of Large Carnivores in Europe”, being for an isolated lynx population 1,000 mature animals (category Near Threatened), or 250 mature animals for an occurrence being connected to other populations (category Vulnerable). For lynx, 1,000 mature animals would mean a spatial demand of approximately 100,000 km². The BBA area is not large enough to correspond to these numbers, so the logical consequence is to pursue two parallel approaches: hosting at least 250 mature lynx and securing genetic exchange between neighbouring sub-populations. As the 250 mature animals are stated in the above mentioned guidelines as the absolute minimum numbers we propose to count only actually reproducing animals to be well above the critical bottom line. Taking lynx social or-

ganisation into account (on average one male covers the home ranges of two females – see Fig. 3) to reach 250 animals taking part in reproduction we therefore propose to strive for at least 165 reproducing females and 85 males within the BBA population. The key monitoring unit should be the „lynx family group”, which means a female lynx with documented kitten(s) – synonymous to “reproducing female or lynx family”. Taking the spatial ratio of 2 females per 1 male into account we then head for at least 165 lynx families to reach FCS within the BBA population. These required numbers are to be distributed between the three EU member states Czech Republic, Germany and Austria, respectively, according to available habitat. To further assess, refine and evaluate the given argumentation we will conduct additional analyses (population viability analysis, occupancy and habitat model) after the 3Lynx project. To support these analyses with data we will focus on improving our data base on population structure and dynamics and on a comprehensive evaluation of the inbreeding coefficient.

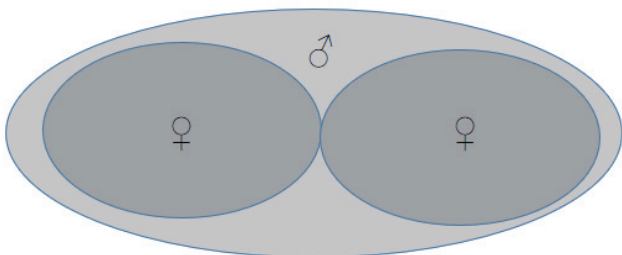


Fig. 3. Lynx social organisation – on average one adult male covers the territories of two adult females.

Regarding the acceptance of lynx as an integral part of the transboundary ecosystem a communication concept has been developed within the 3Lynx-Project which will be part of the BBA conservation strategy as well.

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