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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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Balkan lynx and the Balkan Lynx Recovery Programme

The Balkan lynx *Lynx lynx balcanicus* is a subspecies of the Eurasian lynx distributed in the south-west Balkans, with relict populations in the Mavrovo National Park and surroundings in North Macedonia and the Munella Mountains in Albania, and with single individuals in Bjeshkët e Nemuna, western Kosovo. In 2015 the Balkan lynx was assessed as Critically Endangered in the IUCN Red List. Main threats involve small population size, limited prey base, habitat degradation, and poaching. The assessment was done on the basis of 10 years of lynx research and monitoring in the range countries through the Balkan Lynx Recovery Programme. This trans-boundary project strives to (1) create capacities for a long-term conservation project, (2) monitor and study the extant population, (3) understand local people's attitudes towards lynx and other large carnivores, and engage them in conservation efforts, and (4) establish a protected-area system for the benefit of the Balkan lynx and its prey. The ongoing project is focusing on diminishing the main threats to the Balkan lynx and engaging with stakeholders and local people with regard to awareness raising, knowledge gathering, improving conservation policies, and site protection.

Based on the number of mature individuals as revealed from 10 years of monitoring and research, the Balkan lynx, a subspecies of the Eurasian lynx, was assessed as Critically Endangered in the IUCN Red List of Threatened Species (Melovski et al. 2015). Histori-

cally, the population once spread through the whole peninsula (Mirić 1981), but the major eradication of large carnivores in the continent (Breitenmoser 1998) took a toll on the Balkan lynx as well. Mirić (1981) suggested a possible bottleneck of the population even

before World War II, estimating merely 15 to 20 mature individuals. By then, the Balkan lynx had already disappeared from most of the Balkan countries and its presence was restricted to the south-western part (Fig. 1). The population gradually started to recover due to the protection status granted in 1949 and the series of protected areas declared in former Yugoslavia in the early 1950s. It ultimately reached 280 individuals by 1970s (Mirić 1981). The second decline begun at the end of the 20th century, when civil unrest in the countries of south-west Balkans led to a major decline in prey species, massive poaching of (protected) game and large-scale deforestation (Breitenmoser et al. 2000, Melovski 2013).

The Balkan lynx has been subject of conservation concerns already in the 1960s (Kratochvíl 1968). Subsequent status reports confirmed the need for action highlighting the isolation, decline and possible uniqueness of the population (Breitenmoser & Breitenmoser-Würsten 1990, Breitenmoser-Würsten & Breitenmoser 2001). It was not until 2005, when first activities for the lynx in the range countries took place, with two NGOs from Albania and Macedonia engaging in a conservation programme with support from German and Swiss partners. This initiative, supported by the MAVA Foundation and known as the Balkan Lynx Recovery Programme (BLRP; Breitenmoser et al. 2008), became one of the longest continuous conservation projects in the region. BLRP strives to create capacities both at the governmental and nongovernmental sectors, educate children in the distribution range of the Balkan lynx, monitor the population continuously and systematically, conduct basic ecological research, enlarge the protected area system relevant for lynx survival, lobby for better policy and legislation, collaborate with relevant stakeholders (particularly hunters), and build a network of interested local people in the range countries. In this article we reflect on the main achievements of the programme, emphasize the challenges and threats the Balkan lynx population is facing, and, propose solutions and mitigation measures.

Achievements 2005–2020

The main task of the newly formed Balkan lynx teams in Albania and North Macedonia were to first find evidence for the existence of the Balkan lynx and to map its distribution. For this reason, a systematic questionnaire survey was organised targeting local

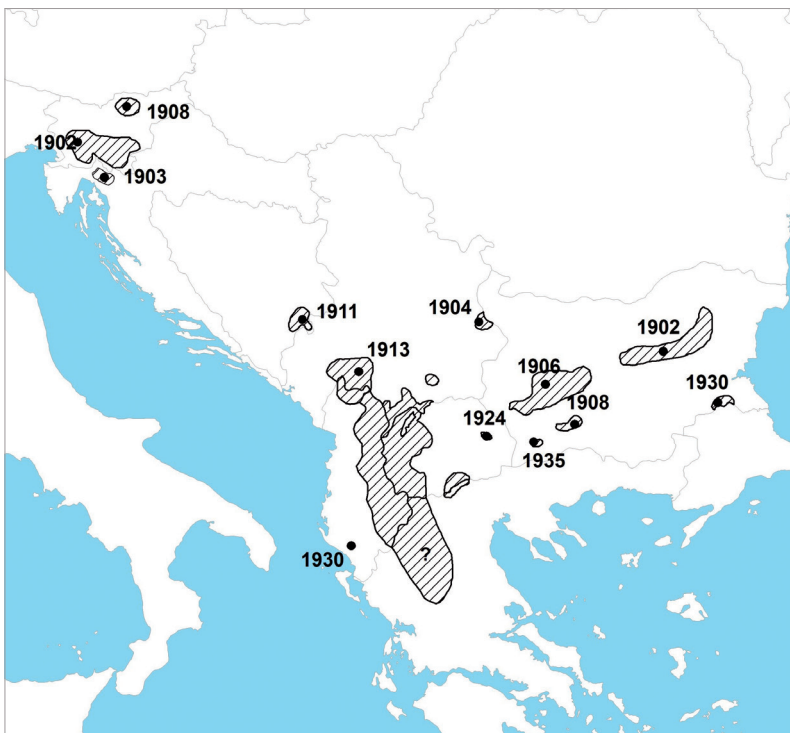


Fig. 1. Distribution of the Balkan lynx at the end of the 19th and the first half of the 20th century. The years represent last lynx sightings in the respective areas. The data for the map were derived from Mirić (1981).

people with topical backgrounds (hunters, foresters, etc.) to obtain information on lynx distribution, trend, and possible conflicts with people (Melovski et al. 2013). This baseline survey, conducted in 2006–2007 in Albania and Macedonia, and 2013 in Kosovo and Montenegro outlined the up-to-date distribution range of the Balkan lynx and revealed the most important areas for conservation and further research (Melovski et al. 2018; Fig. 2). The results from the baseline survey clearly indicated Mavrovo National Park in Macedonia as the core area for the Balkan lynx (Fig. 2). In 2008, we conducted the first systematic camera-trapping survey in the National Park. The survey was repeated in 2010, 2013, 2015 and 2018 and gave robust estimates of lynx population density and trend in the core zone. Similar research was done in Munella Mountains (Fig. 2), which came into focus only in 2011, with the first evidences of Balkan lynx from Albania by means of camera-trapping. Over the subsequent years, Munella was found to be the second core area of the Balkan lynx, a small nucleus of 4–6 individuals and the only area with confirmed reproduction outside Mavrovo (Koçi et al. 2017). Continuous camera-trapping efforts from 2013 to 2020 did not succeed in picturing any lynx in Montenegro although the colleagues from Kosovo managed to photograph at least two different individuals in Bjeshkët e Nemuna National Park in western Kosovo (Fig. 2). This was, however, the only lynx presence detected in Kosovo so far. Furthermore, lynx presence was detected in other areas close to the core area – Shebenik NP and Shara Planina. Their significance is three-fold: they contribute to the transboundary-protected area system which is relevant for the Balkan lynx, act as bio-corridors for further spread of the population, and, most importantly, they further add to the suitable habitat that can host new lynx individuals (Fig. 2).

Eleven years of radio-telemetry research in Macedonia resulted in twelve radio-collared lynx (7 males and 5 females) and provided the first information on the spatial requirements of the Balkan lynx. It revealed that its land-tenure system is similar to the lynx from Western and Central Europe (Melovski et al. 2020). Diet-wise, again, similarly to the other European populations, Balkan lynx feed mainly on ungulates (roe deer *Capreolus capreolus* and chamois *Rupicapra rupicapra*) with 75% (n=167) of the documented prey (n=222) belonging to this group of mammals (Melovski et al. 2020).

The monitoring and research in the core areas would not have been possible without collaboration with the authorities (park officials or representatives from the regional agencies for protected areas). Moreover, the BLRP team increasingly counts on the support from interest groups such as hunters, game wardens, foresters, veterinarians, and journalists and tries to engage them into the day-to-day conservation activities. The results of these collaborations are encouraging and consist of help in the field, promotion, awareness raising, veterinary assistance and more (Melovski et al. 2021).

Challenges and threats

Although strictly protected in the range countries, the Balkan lynx in the modern time is facing threats that involve unsustainable prey harvest, poaching and infrastructural development. The prey depletion is due to illegal harvest, old-fashion hunting systems that lack modern monitoring schemes, but also motivation and means to curb illegal activities inside the hunting grounds. Lynx poaching is not so prominent in the range countries. However, given the threatened status of the population, every lost individual affects the population to a large extent.

Another challenge is the influx of stray dogs. The project documented on several occasions the massive incursion of stray dogs in the area of interest as well as the impact that dogs have by scavenging prey remains of Balkan lynx and by competing for the same food (roe deer, for instance).

Less developed industrial base and low Human Development Index defines the countries in south-western Balkans as developing countries (O'Sullivan & Sheffrin 2003). Much effort is placed on the infrastructure development which, among other things, includes modernised road network, energy and tourist infrastructure. Because boosting the local and national economy is the main focus, less emphasize is placed on the mitigation measures and the negative aspect these economic and social merits bring to the wildlife. This can have a negative effect on the Balkan lynx population by further fragmenting their limited suitable habitats.

When it comes to cooperation with relevant institutions, the Balkan lynx team has experienced both, favourable and unreceptive relationship, owing much to the polarised political climate that has been in place for the past 15 years in the range countries, leading to temporal expelling of the BLRP team from

Mavrovo NP on several occasions from 2012 until 2017. The unfavourable climate for nature conservation also hampered the declarations of further protected areas in Macedonia (Melovski et al. 2021). In Albania and Kosovo, however, several protected areas have been declared between 2008 and 2013, mainly for protecting the Balkan lynx (Shumka & Trajçe 2012). However, the Munella Mountains as second most important stronghold of the Balkan lynx, still lacks any protection status due to deficient engagement from the government. The oscillating politics in the south-western Balkan countries are not only unpredictable, but obstructs long-term planning as there is no lasting commitment and reliable policy.

Solutions

Density estimation in Mavrovo National Park and its surroundings showed indications for a slight increase over the period of one decade. However, the preliminary results of the 2021 camera-trapping session indicate decrease in the population size in this most important area of the Balkan lynx. This calls for closer monitoring in the Mavrovo National Park area by means of density estimation as well as genetic monitoring. Stochastic events can have a strong impact on small and isolated populations, and possible inbreeding depression might have severe consequences on this critically endangered felid by reducing its reproductive potential. Systematic genetic monitoring should become a general practice in the next decade. For this reason, good connectivity between the subpopulations of Mavrovo and Munella have to be secured. Additionally, the spread of new individuals in new areas requires good connectivity to suitable habitats beyond the current distribution range (Ivanov 2014). We believe that achieving this requires wildlife-friendly infrastructure development, more intensive engagement with local people, and awareness raising at all levels, hopefully leading to an earnest commitment of the authorities. Moreover, research and monitoring in the range countries should continue in order to carefully observe the population developments and assess the effect of conservation measures. Political work should take advantage of beneficial opportunities. Albania, Kosovo and North Macedonia are aspiring countries to join the EU and the hope is that the stricter EU policies on nature conservation will bring directives and consistency into environmental issues. A lot of the policy work in the project will have to be di-

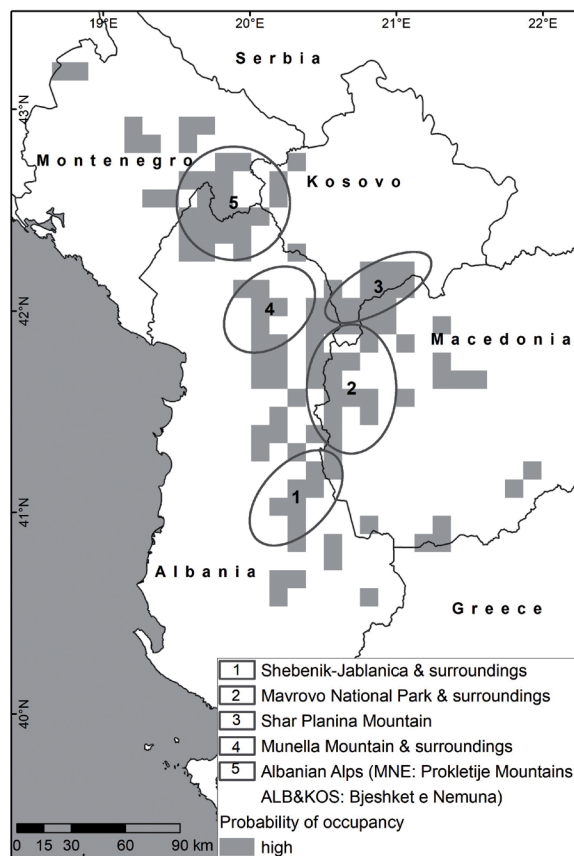


Fig. 2. Five important areas for the conservation of the Balkan lynx, identified based on high probability of occupancy (Melovski et al. 2018).

rected to mitigating the damage that the new highways might pose to the Balkan lynx and its prey. This includes the obligation of the governments to designate key areas for Balkan lynx protection with effective management bodies, but also, change of legal acts in the hunting and forestry sectors that threaten the survival of the Balkan lynx and strengthen the law enforcement. An updated IUCN Red List assessment should further shed light on the status of the population and this implies continuous monitoring and research to fill the missing gaps in Balkan lynx demographics, social status, spatial and movement ecology. Lastly, educating young people in the rural, mountain areas in the Balkan lynx distribution range, is a step forward for addressing unsustainable wildlife off-take while emphasizing sustainable, rural tourism. In parallel, the cooperation with local hunting groups needs to continue in order to engage local hunters in regular monitoring activities of wildlife. Local people are true assets for a continued and long-term conservation programme.

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