Population monitoring and management

Golden jackal in Slovenia: from protected species to sustainably managed newcomer predator

Potočnik, Hubert[1*]; Črtalič, Jaka[1]; Pokorny, Boštjan[2,3]; Flajšman, Katarina[3]; Kos, Ivan[1]

[1] University of Ljubljana, Biotechnical Faculty, Department of Biology, Ljubljana, Slovenia
[2] Faculty of Environmental Protection, Velenje, Slovenia
[3] Slovenian Forestry Institute, Ljubljana, Slovenia
* hubert.potocnik@bf.uni-lj.si

During the last decades, golden jackal (*Canis aureus*) population in South-eastern Europe has expanded across the Balkan Peninsula and also into Central, Eastern, and Northern Europe. The species is highly adapted to thrive in human-dominated landscapes where it takes advantage of human presence and a large amount of accessible food sources. These, together with changes in land use, prey/predator abundance and climate, have likely facilitated the expansion process. The spread of the jackal has raised numerous conservation and management issues, while the emerging ecological role of the species in the areas of recent range expansion is barely known. A similar trend has been also observed in Slovenia, which was confirmed by a rapid increase in the jackal distribution range and numbers. In 2004, the golden jackal became protected species in Slovenia. In 2014, however, the species was declared a game species, but at the same time remained on the list of protected species, which caused a legislative collision. Such status had disabled active management of the species. In order to gain basic knowledge about the population and provide the scientific background for appropriate management, a nationwide monitoring was established with the aim of determining the distribution, abundance, population trends, and potential expansion of the golden jackal in Slovenia, resulting in its removal from the list of protected species in 2019.

An important part of the monitoring is based on the integration of hunters –as very important citizen scientists– who are obliged to provide game monitoring as a public service. For this reason, new online monitoring module was developed which enabled instant recording of georeferenced signs of jackal presence of various types including photo-material and records from bioacoustic stimulation method (BAM), and harvest data have been included since 2020 when hunting of golden jackal was allowed for the first time. We developed an ad-hoc expert habitat suitability model for golden jackal in order to determine areas with intensive monitoring (including BAM sessions) versus less suitable areas with passive monitoring only. The first territorial group of jackals in Slovenia was confirmed in 2009, however in 2019 territorial response (howling) of jackals in 374 cells (3x3 km) were registered during the monitoring season. Sharp increase in abundance was also indicated with harvest data: 179 jackals were harvested in 2020, and this figure increased to 1086 harvested individuals in 2024, respectively. The jackal distribution range as a legally neo-native, newcomer predator overlaps with the ranges of two other native canid species, i.e., grey wolf (*Canis lupus*) and red fox (*Vulpes vulpes*). We examined the extent of spatial segregation between wolves and jackals and developed habitat suitability models for each species. All data on wolf's and jackal's distributions in Slovenia were collected from the national monitoring databases. For red fox, data on relative abundances were taken from the hunting records and compared to jackal distribution.