

Status and hunting management of the brown bear (*Ursus arctos*) in the Western Carpathians

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Introduction

We present some key findings from our assessment of the status of the brown bear (*Ursus arctos*) in Slovakia (Rigg and Adamec 2007).

Bears in the Western Carpathians have recovered from 20–60 in the 1930s to a current estimate of c.800–900 individuals (Fig. 1).

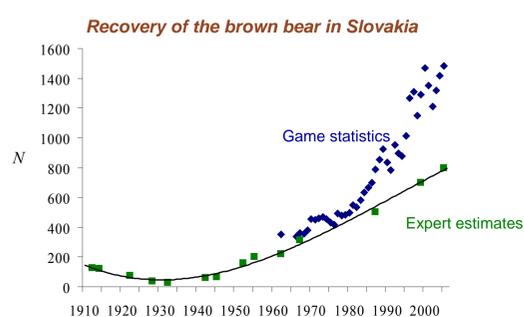


Figure 1. Expert estimates as well as game statistics suggest that the Western Carpathians sub-population is still growing.

Slovakia accounts for >81% of the occupied range and >95% of bears in the Western Carpathians (Fig. 2), the remainder being in Poland and the Czech Republic. Management actions in Slovakia therefore play a key role.

Natura 2000 sites may not prevent suitable habitats becoming fragmented and bears in the Western Carpathians being genetically isolated unless mitigation measures are taken. But public acceptance of bears and their conservation is influenced by a perception that “over-populated” bears are the cause of bear-human conflicts.

Brown bear distribution in Slovakia

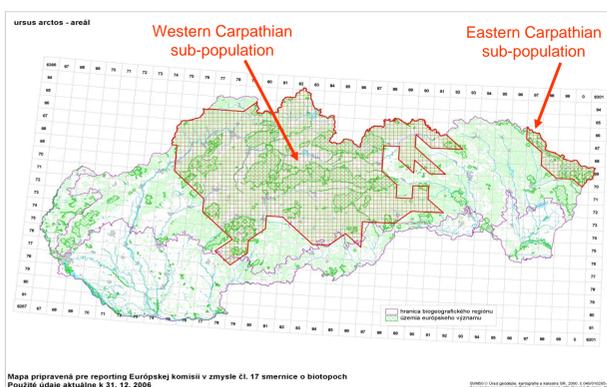


Figure 2. Bear distribution in Slovakia as reported by the Slovak Republic to the European Commission in 2006.

Historically, lethal control has been the method of choice for limiting damage by bears. Although no longer legally hunted in Poland or the Czech Republic, the brown bear is both a protected species (under national and EU legislation) and a game species in Slovakia, where the annual quota is set at c.10% of the estimated population.

Conclusions

- Recent levels of legal hunting appear to be sustainable, but there is a need for more robust monitoring of population parameters.
- Damage levels have fallen despite there being more bears and less legal hunting.
- Even substantial protected area networks may not prevent degradation, fragmentation and loss of habitat becoming important problems.
- To improve acceptance of bears, we recommend prioritizing prevention of conflicts with electric fences, guarding dogs, bear-proof bins etc. and raising awareness of safety advice.

Results

Population size, growth and density

- The observed annual growth rate since 1932 has averaged 4.5% per year (Fig. 1).
- We estimate the current population size between 770 and 870 individuals in a total occupied range of 16,500 km² (Fig. 2).
- Mean density is c.5 bears/100 km², with 11 bears/100 km² in some mountain ranges.

Hunter harvest and bear-human conflict

Legal hunting is the largest cause of known mortality (Fig. 3), but has not prevented population growth. We estimate maximum sustainable yield at 8.5% p.a. (c.70 bears). In 2000–2006, 11–35 bears p.a. were shot.



Figure 3. Approximately 90% of known bear mortality in Slovakia is human-caused. Legal harvest (“regulation shooting”) removes c.4% of the population per year.

Bears weighing >100 kg are more likely to be male (Fig. 4a). Focusing quotas on bears <100 kg has reduced the proportion of males harvested from 79% in 1958–1980 to 62% in 1994–2005 (Fig. 4b), but this measure is very unpopular among trophy hunters and probably contributed to a decrease in the harvest rate since 1992.

Sex ratios of hunter-harvested bears

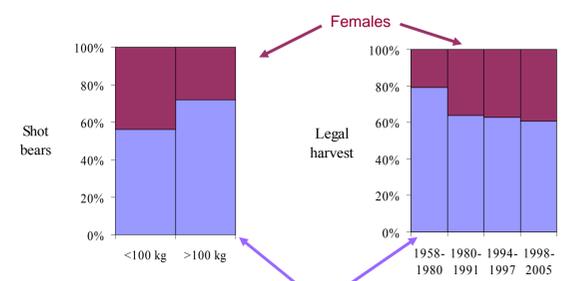


Figure 4a. Sex ratio by weight of 410 bears shot in 1994–2005.

Figure 4b. Sex ratio of 1,144 bears legally shot in 1958–2005.

Materials and methods

- Distribution was mapped using hunters’ reports.
- Current population size was estimated using results from model area censuses to recalibrate official game statistics.
- Population growth was calculated from natural logarithms of contemporary expert estimates of population size in 1932–2005.
- Hunting, mortality and damage (adjusted to constant prices) were assessed from records held at Slovakia’s State Nature Conservancy.

Literature cited

Rigg R. and Adamec M. (2007). *Status, ecology and management of the brown bear (Ursus arctos) in Slovakia*. Slovak Wildlife Society, Liptovský Hrádok. 128 pp.

Acknowledgments

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Further information

Please contact Robin Rigg at info@slovakwildlife.org. More information on this and related studies, including PDFs, can be found on The BEARS Project website at: www.medvede.sk.