

# Human-bear conflicts in the Carpathian Mountains of Slovakia

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Fig. 7. Testing a new bear resistant design with captive bears at Kosice Zoo, Slovakia.

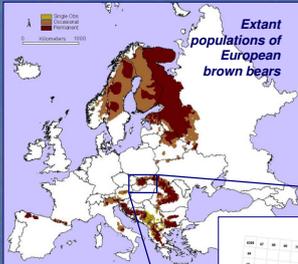
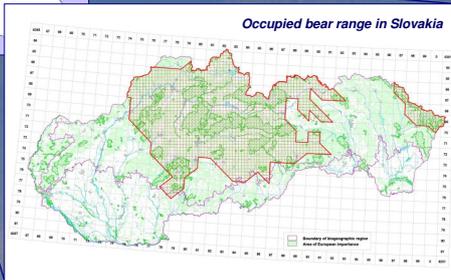


Fig. 1. Current distribution of brown bears in Europe (source: Large Carnivore Initiative for Europe).

Fig. 2. Bear distribution in Slovakia (source: prepared by the State Nature Conservancy of the Slovak Republic for reporting to the European Commission in 2006).



## Summary

Thanks to a 30-year moratorium on hunting, the brown bear (*Ursus arctos*) recovered from near-eradication in Slovakia to re-occupy much of its former range. Hunting resumed in the 1960s with the goal of limiting population growth and human-bear conflicts. The state also began to compensate verified damage. Numbers continued to grow to a current estimate of c.800–900 bears at a mean density of c.5 inds./100 km<sup>2</sup> (c.10 bears/100 km<sup>2</sup> in core areas).

Public debate and management actions have focused on population size and hunter harvest, with less attention on non-lethal conflict mitigation. Local residents and tourists have little knowledge of appropriate behavior and practices in bear country.

The Slovak Wildlife Society has been testing and implementing a variety of measures from traditional livestock guarding dogs to electric fences and bear-proof containers, whilst raising awareness through an education program ([www.medvede.sk](http://www.medvede.sk))

Hunting and nature conservation bodies continue to disagree on the goals and methods of bear population management, impeding the adoption of more effective practices and possibly also resulting in increased illegal killing. We therefore initiated a process aimed at achieving reconciliation and consensus among diverse interest groups through a series of facilitated workshops to elaborate a management plan accepted by all key stakeholders.

## Background

Habitat loss and historical persecution have resulted in a fragmented distribution of brown bears (*Ursus arctos*) in Europe (Fig. 1). While several of the small populations in Western Europe have continued to decline, there are large and expanding populations in Eastern and Northern Europe.

In Slovakia (Fig. 2), bears have recovered from 20–60 individuals in the 1930s to a current estimate of 800–900 (Fig. 3) occupying a range of around 13,000 km<sup>2</sup>. These bears are part of the Carpathian population which extends through Poland and Ukraine to Romania and consists of c.6,000 individuals. This is the largest population of European brown bears outside Russia. However, it may not be contiguous.

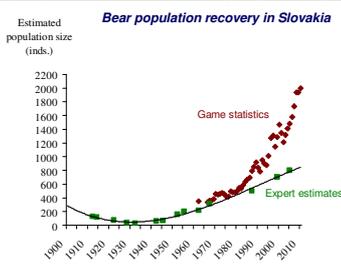


Fig. 3. There is substantial disagreement between experts' estimates of bear population size and official game statistics, which are compiled from hunters' reports. Nevertheless both sets of figures suggest that the Western Carpathians sub-population is still growing.

## Conflicts and mitigation

Following a 30-year moratorium to allow population recovery, trophy hunting resumed in the 1960s aimed at limiting further population growth and human-bear conflicts (HBC). According to official guidelines, trophy hunting should be focused on areas where HBC occurred in the previous year, the assumption being that controlling bear numbers will limit damage to socially acceptable levels.

Numbers continued to increase despite an annual quota of 5–10% and densities have reached 10 bears/100 km<sup>2</sup> in core areas. The overlap of occupied bear range with livestock farming is now about 90%. Economic damage resulting from HBC can be locally high, although is negligible on a national scale. Compensation for verified damage to agriculture has been paid since the 1960s (Fig. 4).

While the state management strategy has principally focused on hunting and compensation, not-for-profit organizations such as the Slovak Wildlife Society have promoted and supported the use of damage prevention measures. Appropriately raised and trained livestock guarding dogs have been found to reduce losses to bears and wolves (*Canis lupus*) by 70% (Fig. 6).

Technologies from North America are also being trialed and implemented in Slovakia, such as pepper spray, bear resistant garbage containers (Fig. 7) and predator-proof electric fencing. Uptake of these techniques has sometimes been slow but there are ongoing campaigns to raise public awareness and provide support (see [www.medvede.sk](http://www.medvede.sk)).

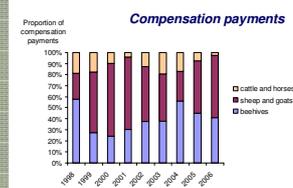


Fig. 4. The most commonly compensated forms of bear damage.

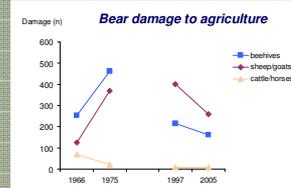


Fig. 5. Total reported annual damage by bears in Slovakia at 10-year intervals.



Fig. 6. Livestock guarding dog protecting sheep in east Slovakia.

The bear is both game and protected in national legislation. Restrictions on hunting and other factors have led to a reduction in hunter harvest over the last 20 years. Nevertheless, according to official records, damage levels do not appear to be higher now than in the 1960s (Fig. 5). This is probably at least in part an unintended consequence of reduced livestock numbers and changes in husbandry.

These efforts have often been overshadowed by disagreements between hunters and environmental lobbyists, leaving the public with the perception that HBC is worsening. A process has therefore begun to involve all key interest groups in the elaboration of a management plan through a series of facilitated workshops designed to achieve reconciliation and consensus.

## Acknowledgments

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