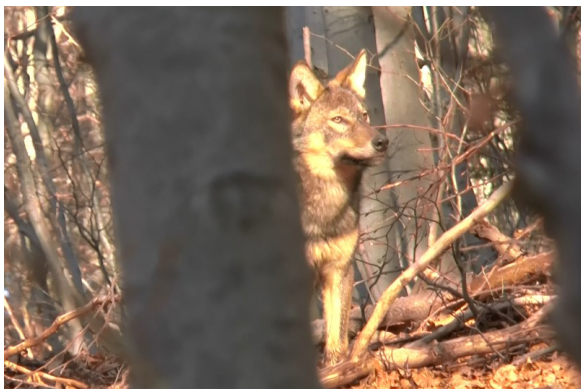
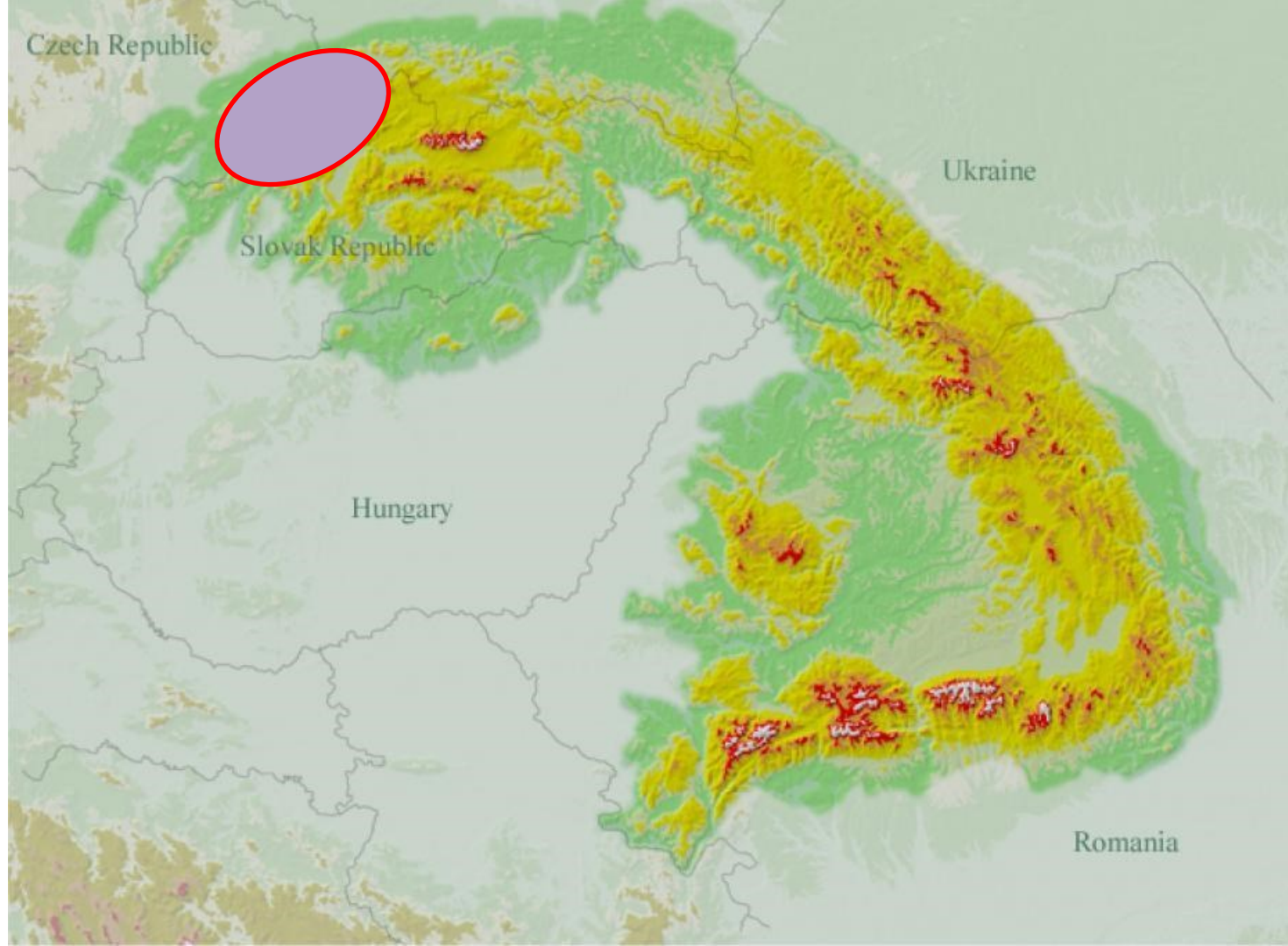


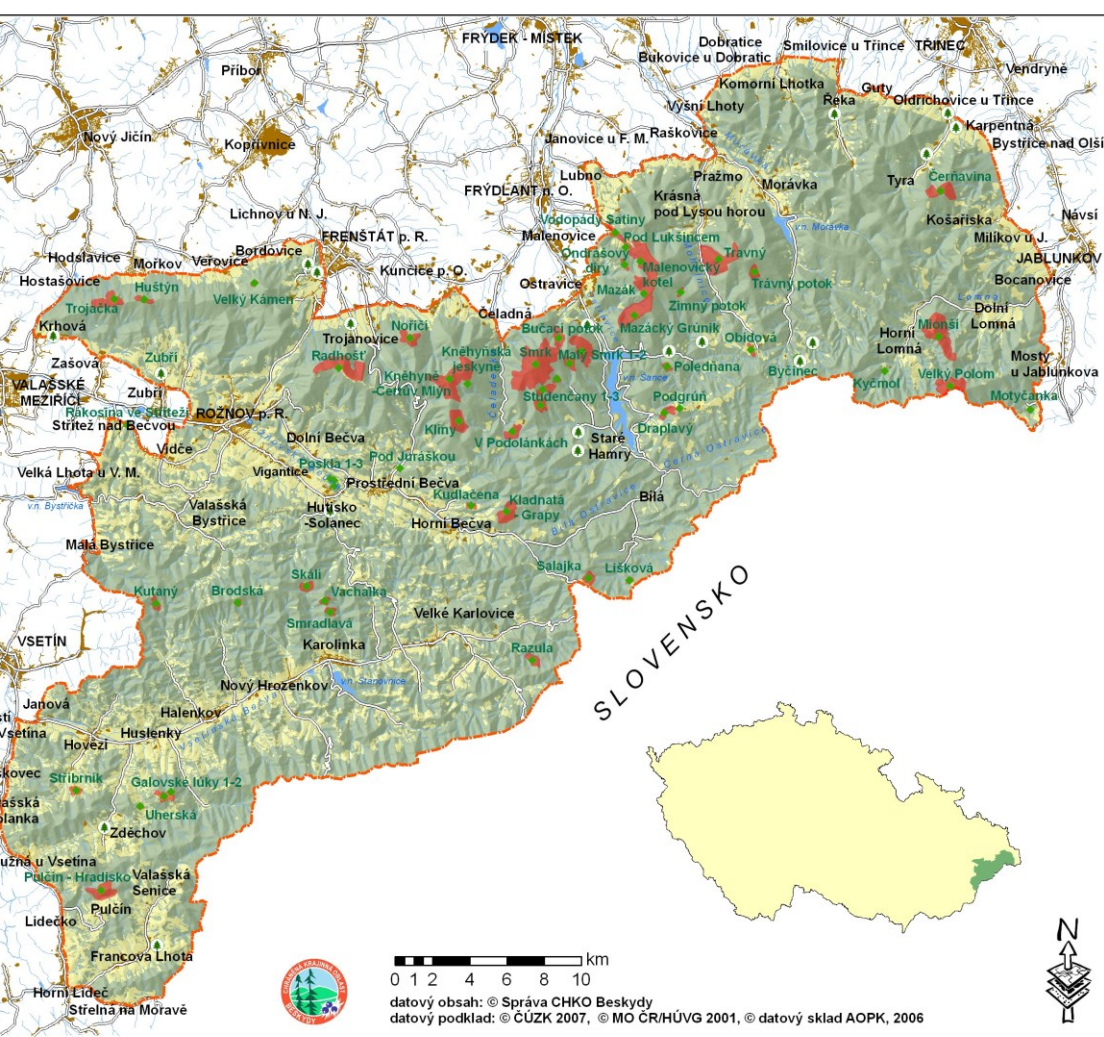
Beskydy pilot area overview: large carnivores at the edge of the Western Carpathians

Miroslav Kutal & Martin Duřa

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Friends of the Earth Czech Republic, Olomouc local group







Proteted landscape area Beskydy

- 1160 km²
- 350-1324 m above sea level
- 70 % forests

Památčné stromy a MZCHÚ v CHKO Beskydy

Legenda

- památčné stromy
- MZCHÚ
- hranice CHKO
- silnice
- zástavba
- vodní plochy
- vodní toky
- lesy
- ostatní plochy



0 2 4 6 8 10 km

datový obsah: © Správa CHKO Beskydy
 datový podklad: © ČÚZK 2007, © MO ČR/HÚVG 2001, © datový sklad AOPK, 2006

























Beskydy: model area for large carnivore recolonization and conservation

- Recolonization of LC species in different times
- Different level of protection or management strategies
- Often unknown impact of anthropogenic threats on LC populations



Case study 1: Wolf

- First wolves recolonized the area in mid 1990's
- Hunting in Slovakia without any scientific evaluation of impact on population (Kutal & Dul'a 2020)



Hunting wolves is legal in Slovakia unless it threatens populations, but available data are insufficient to determine its effects.

Edited by Jennifer Still

Evidence-based hunting policy needed in Slovakia

The Swiss people recently rejected a law that would have allowed protected animals to be hunted (1), but hunting of valuable species such as wolves still occurs in Slovakia and elsewhere in Europe. The European Union's Habitats Directive allows deliberate killing of wolves in some countries (2) unless hunting would threaten the sustainability of the population, but population data are inadequate in some countries. Slovakia must implement evidence-based policies to protect wolf populations.

In 2016, Slovakia made changes to increase wolf hunting regulations and improve population monitoring (3). However, the changes have not been implemented nationally. Recently, the Slovak Ministry of Agriculture and Rural Development approved a quota of 50 wolves for the upcoming winter season (4). Such policies should be based on a scientific assessment of the viability of wolf populations (5). Instead, the Ministry justified the number by citing misleading arguments about sheep farming and food security (4).

In contrast to the government's claims, wolves kill less than 0.1% of Slovakia's sheep and goats (6). The recent policy also fails to acknowledge that sheep breeding in Slovakia declined between 2009 and 2019, when 28 to 156 wolves were killed per year, suggesting that hunting did

not mitigate the problem (6). The food security justification is also spurious: Sheep and goat products are only a small part of Slovakia's diet and accounted for less than 0.4% of gross agricultural production in the past 10 years (7). Instead of relying on misleading justifications for hunting, Slovakia should find alternative methods to minimize the risk of damages from large carnivores. However, the country has so far opted not to use EU funds available for this purpose (8).

Policies in Slovakia target wolves as the only source of problems in the agricultural sector and ignore the market-based causes of the sheep decline that have been shown elsewhere in Europe (8,10). Although wolf numbers are trending positively in Europe (11), Slovak hunting affects wolf recovery in neighboring Czechia, where the wolf population is protected (12). Without reliable evaluation of hunting impact, Slovakia cannot make informed policy decisions, despite the country's nominal adherence to EU regulations. Slovakia's failure to collect adequate data and base policy on science is a dangerous precedent that undermines biodiversity conservation efforts in Europe and worldwide.

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COMPETING FINANCIAL INTERESTS

M. K. is a member of the Institutional Unit for Conservation of the Large Carnivore Initiative for Europe (LCIE) of the South-Czech Republic.

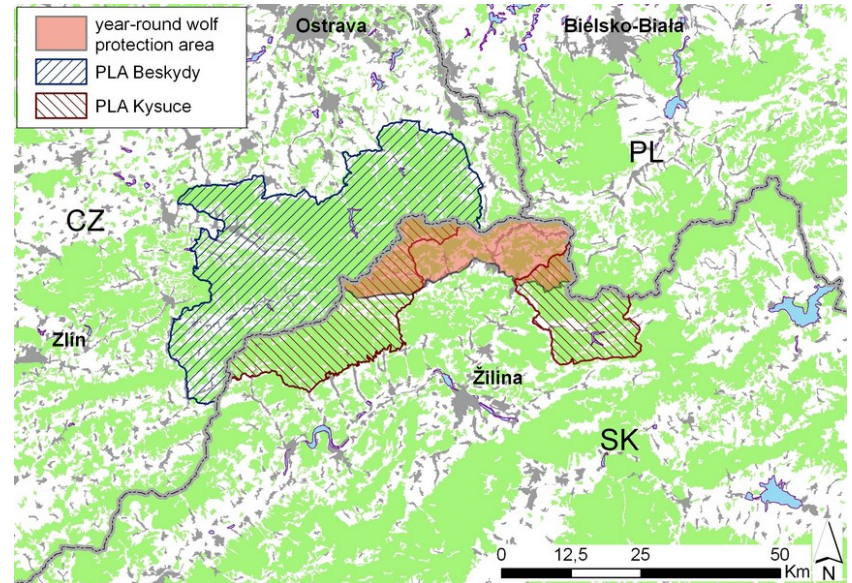
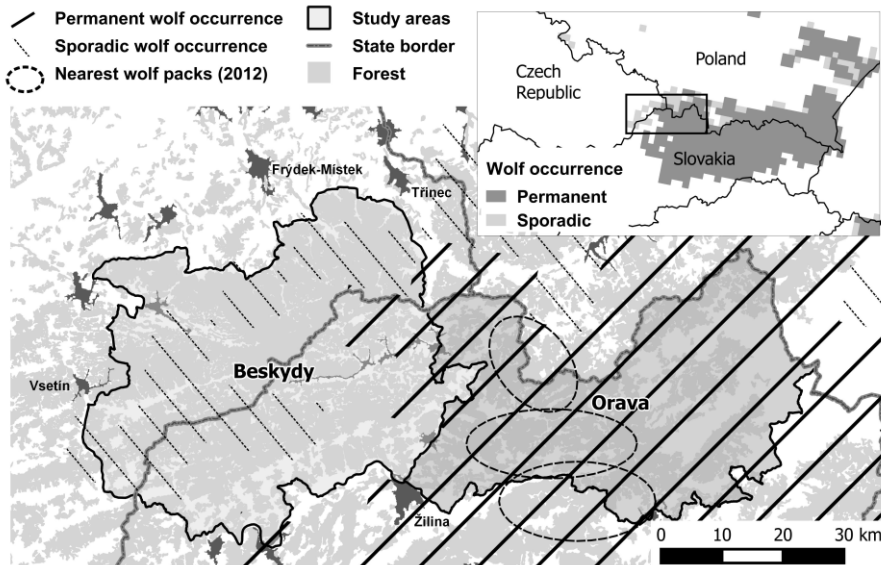
10.1126/science.1211111

Computational social science: On measurement

In their Policy Forum, "Computational social science: Obstacles and opportunities" (8 August, p. 1048), D. M. J. Lazer et al. propose ethical data infrastructure for computational social science research. Concerning our access to what firms track data, they discuss third-party market data from such companies as Nielsen and ComScore because of "opaque" methods and

Case study 1: Wolf

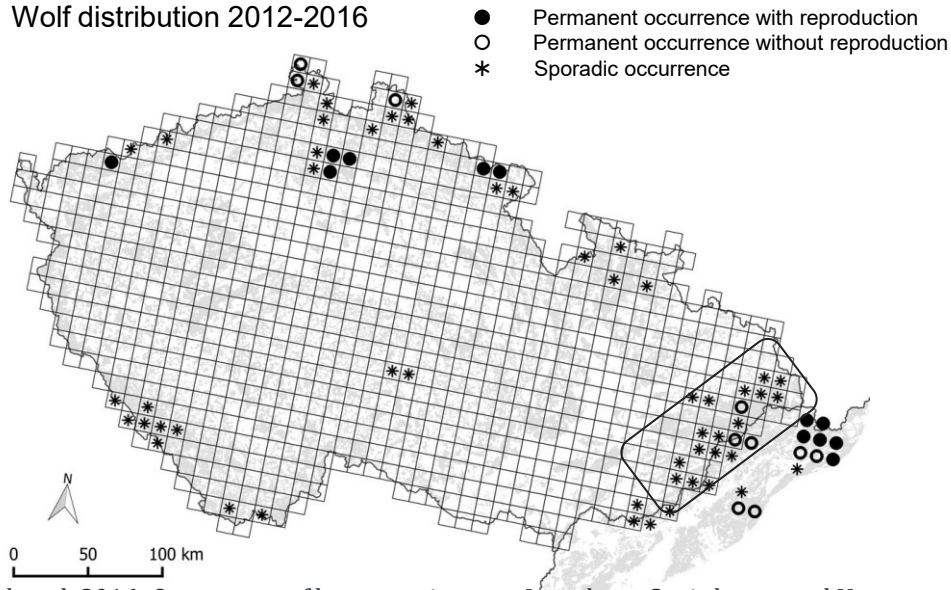
- Trans-boundary effects of wolf hunting exist (Kutal et al. 2016)
- Some conservation measures (zoning, better control of kills) implemented in 2013



Case study 1: Wolf

- First evidence of reproduction in the Czech side since 2019
- Year-round protection of the wolf in Slovakia since 1.6.2021

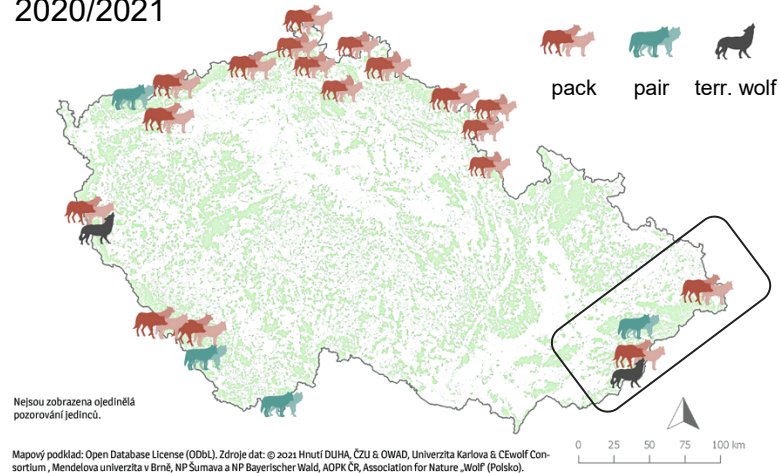
Wolf distribution 2012-2016



Case study 1: Wolf

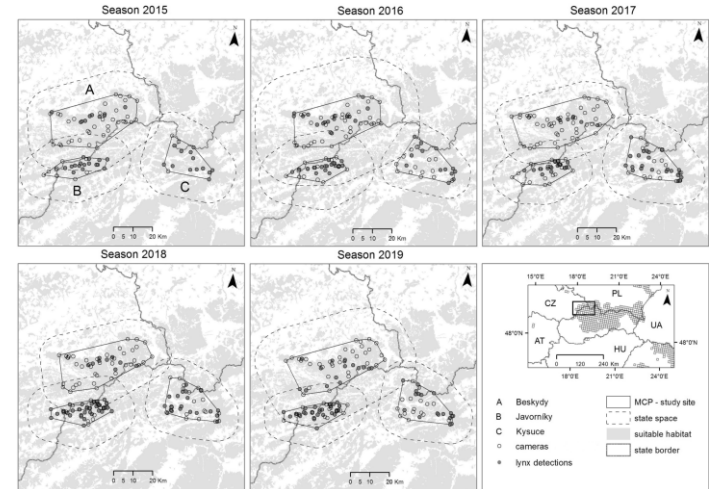
- First evidence of reproduction in the Czech side since 2019
- Year-round protection of the wolf in Slovakia since 1.6.2021

Wolf territories
2020/2021



Case study 2: Lynx

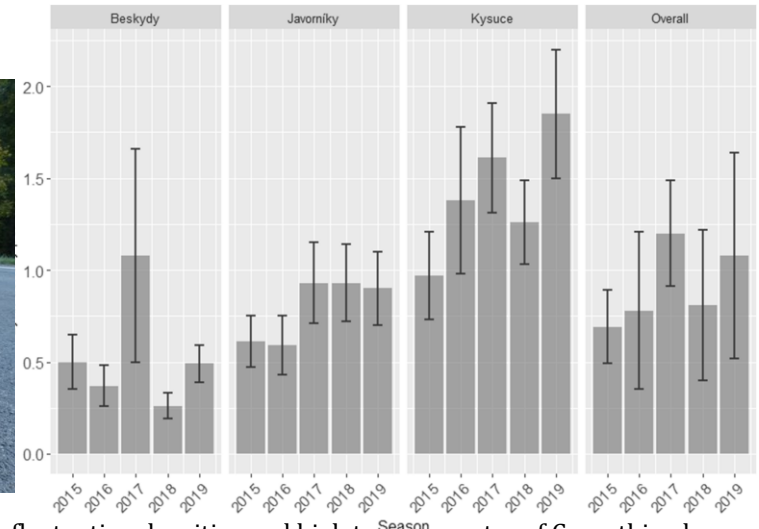
- Czech-Slovak-Polish borderland - periphery of the Western Carpathians
- long-term intensive camera-trapping survey (2015-2019)
- SCR models, the multistate closed robust design (apparent survival, transmigration and capture probability, estimation of individual turnover)



Dul'a, M., Bojda, M., Chabanne, D.B.H. et al. Multi-seasonal systematic camera-trapping reveals fluctuating densities and high turnover rates of Carpathian lynx on the western edge of its native range. *Sci Rep* 11, 9236 (2021).

Case study 2: Lynx

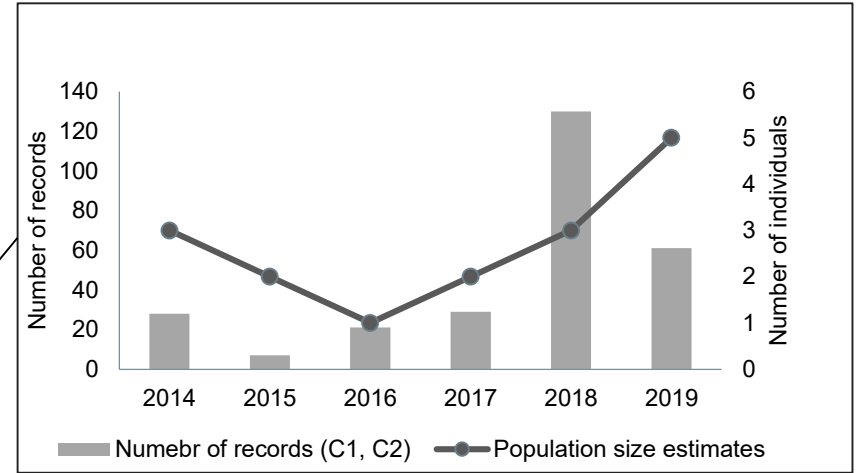
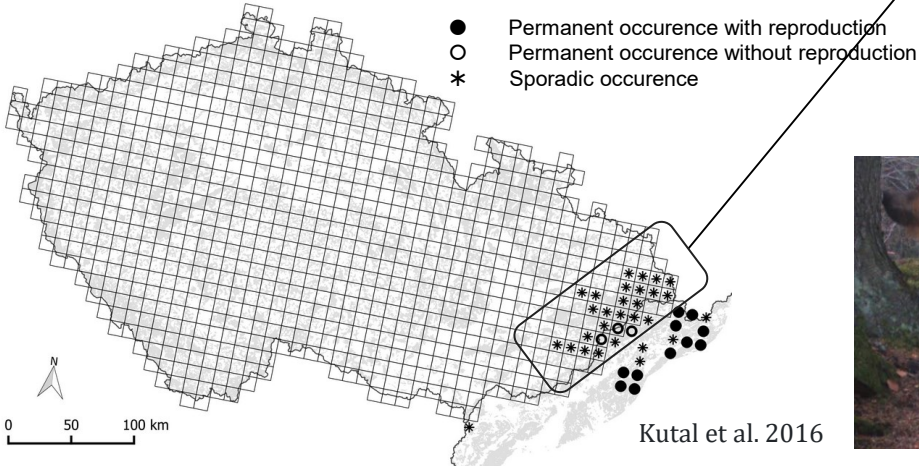
- **1.5–4.1-fold** changes in asynchronous fluctuated densities, high individual's turnover (**46.3 ± 8.06%** in all independent lynx and **37.6 ± 4.22%** in adults)
- low persistence of adults (only 3 out of 29 individuals detected in all seasons)
- low overall apparent survival: **0.63 ± 0.055**
- results indicate high anthropogenic pressure



Case study 3: Bear

- Sporadic occurrence since 1970's
- Highly fluctuating since 2000

Brown bear 2012-2016



Case study 3: Bear

- 2 cases of bold individual - „problematic“ bear behaviour
- damages on unprotected or insufficiently protected small livestock, beehives



	year 2000	year 2018
sheeps	27	55
goats	0	2
calfs	1	0
rabbits	239	1
poultry	28	2
beehives	7	10



Case study 3: Bear

The first telemetry monitoring of brown bear (*Ursus arctos*) in the Czech Republic



Case study 3: Bear

The first telemetry monitoring of brown bear (*Ursus arctos*) in the Czech Republic

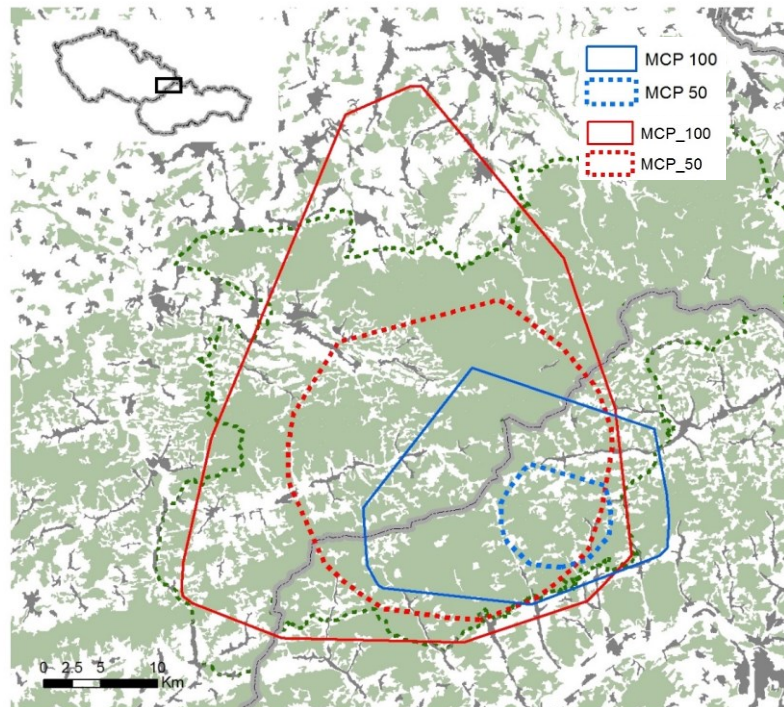
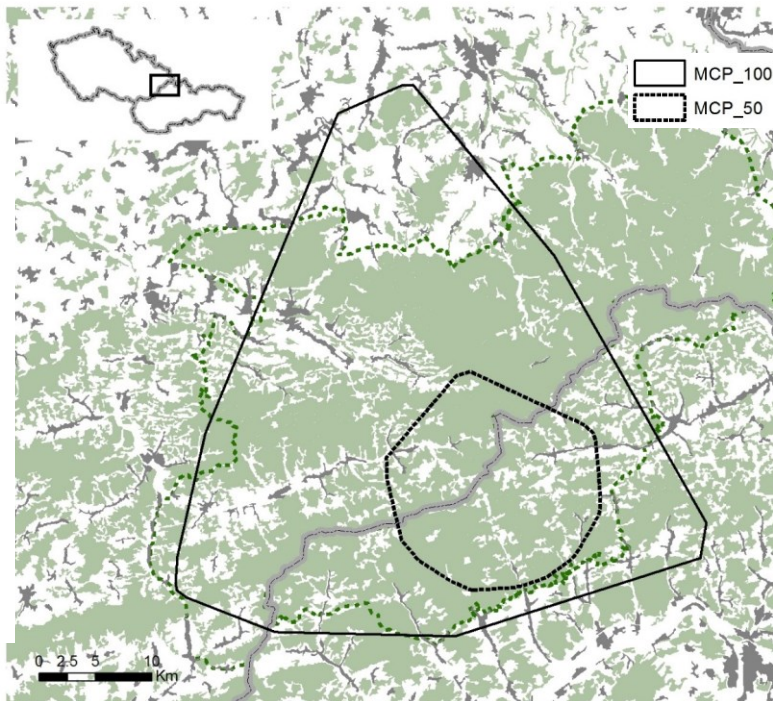


5 months
home
range

9.4.–8.9.

MCP 100
1448 km²

MCP 50
272 km²



„Den exit,
reproduction
season“
9.4.–15.6.

MCP 100
1334 km²

MCP 50
614 km²

„Forest fruit
season“
15.6.–31.8.

MCP 100
405 km²

MCP 50
67 km²

Case study 3: Bear

Mitigation of human-bear conflicts



Case study 3: Bear

Mitigation of human-bear conflicts



Coexistence is possible!

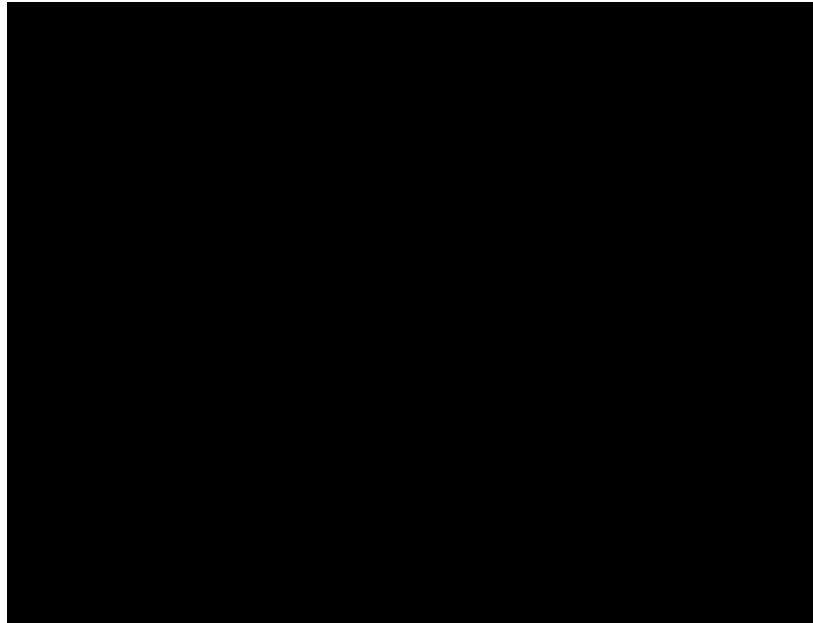
Conclusions

- Long-term surveys – crucial for evaluation of population trends and for reliable estimates of demographic parameters
- Scientific evidence and research - fundamental for establishing successful management and conservation measures
- Mitigation conflicts - improvement of preventive measures, changing attitudes towards large carnivores, increase acceptance in human-dominated landscape



Thank you for your attention!

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Acknowledgement