



Influence of meteorological factors on brown hare's abundance in Slovakia and the Czech Republic in 2001 - 2008



foto: Ondrej Morhac

Authors:

Andrej Kvas

Jaroslav Rožnovský

Peter Borsányi

Department of Natural Environment, Faculty of Forestry, Technical University in Zvolen

Czech Hydrometeorological Institute, Brno

Slovak Hydrometeorological Institute, Banská Bystrica

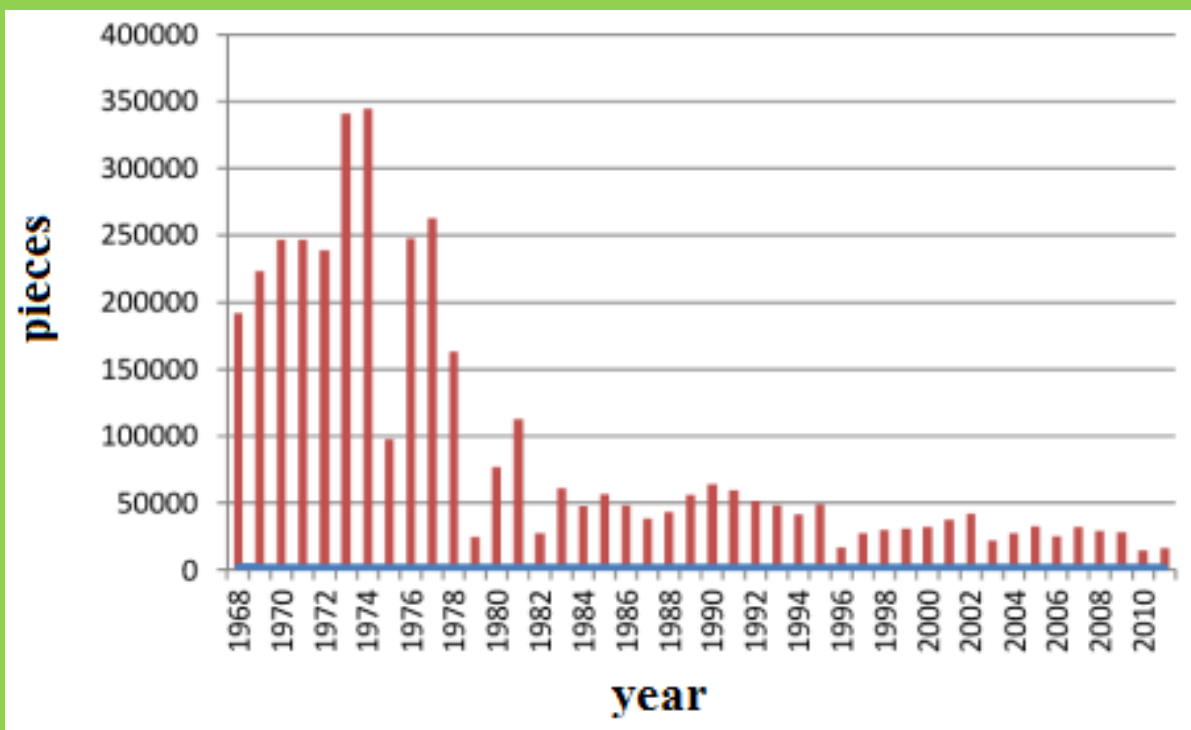


Introduction

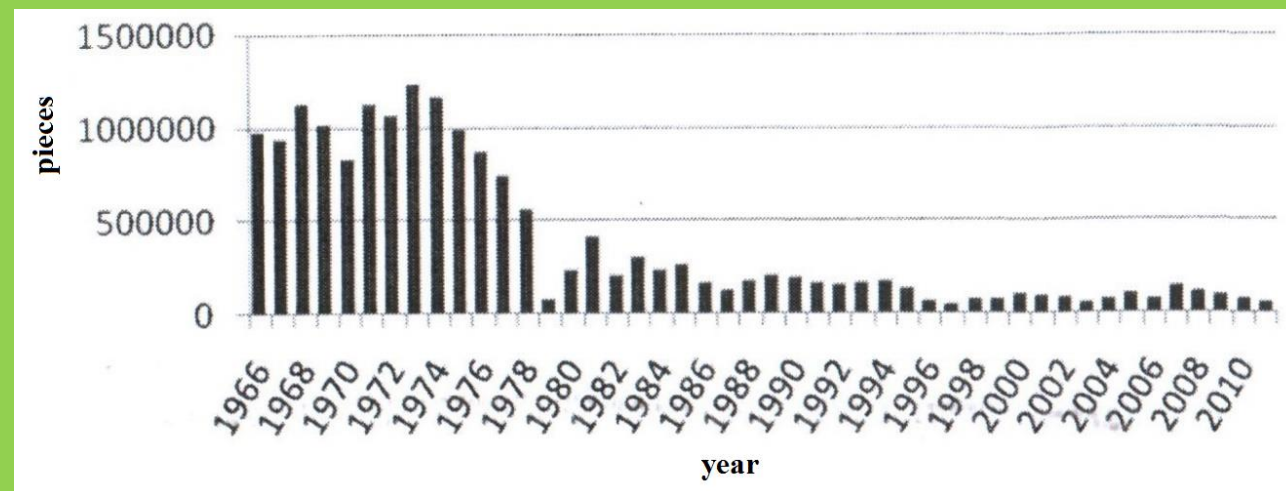
- former Czechoslovakia, the main game species
- caught numbers representing several hundred thousands
- the substantial financial profits for local hunting associations
 - Present: many changes in landscape structure, changes in land management (agriculture)
- another important cofactor is climatic conditions
- wet weather makes the species more prone to diseases
 - rabbit vs hare
- a small decrease in the number of hares in recent years = the effect of weather



Brown hare abundance



Number of hares hunted in SR in 1968 – 2011
(Hlaváčová, 2013)



Number of hares hunted in CzR in 1966 – 2011
(Matoušková, Ernst, 2013)



Materials and Methods

Hunting area in the CzR - The Hunting association (HA) Postoupky – Hradisko

- Since 1970, the brown hare, together with the pheasant, represented the prominent game species
- The HA Postoupky – Hradisko has an area of 691ha. It is situated in the central Moravia, near the town of Kroměříž.
- 50 % of the area are lowlands
- 50% of the area consists of moderately undulated landscape
- The concerned climatic region is warm, with more than 50 summer days.
- The average temperature in January does not drop under -3°C.

Hunting area in the SR - district Hlohovec

- The hunting ground area in the district Hlohovec is 22 753 ha
- There are present our two most common ones: the pheasant and the brown hare.
- The town of Hlohovec with its surroundings is situated in the warm climatic region of Slovakia.
- The annual precipitation sum is 558 mm.
- The annual precipitation course shows a maximum in July (82 mm), with minimums in January and February (31 mm).

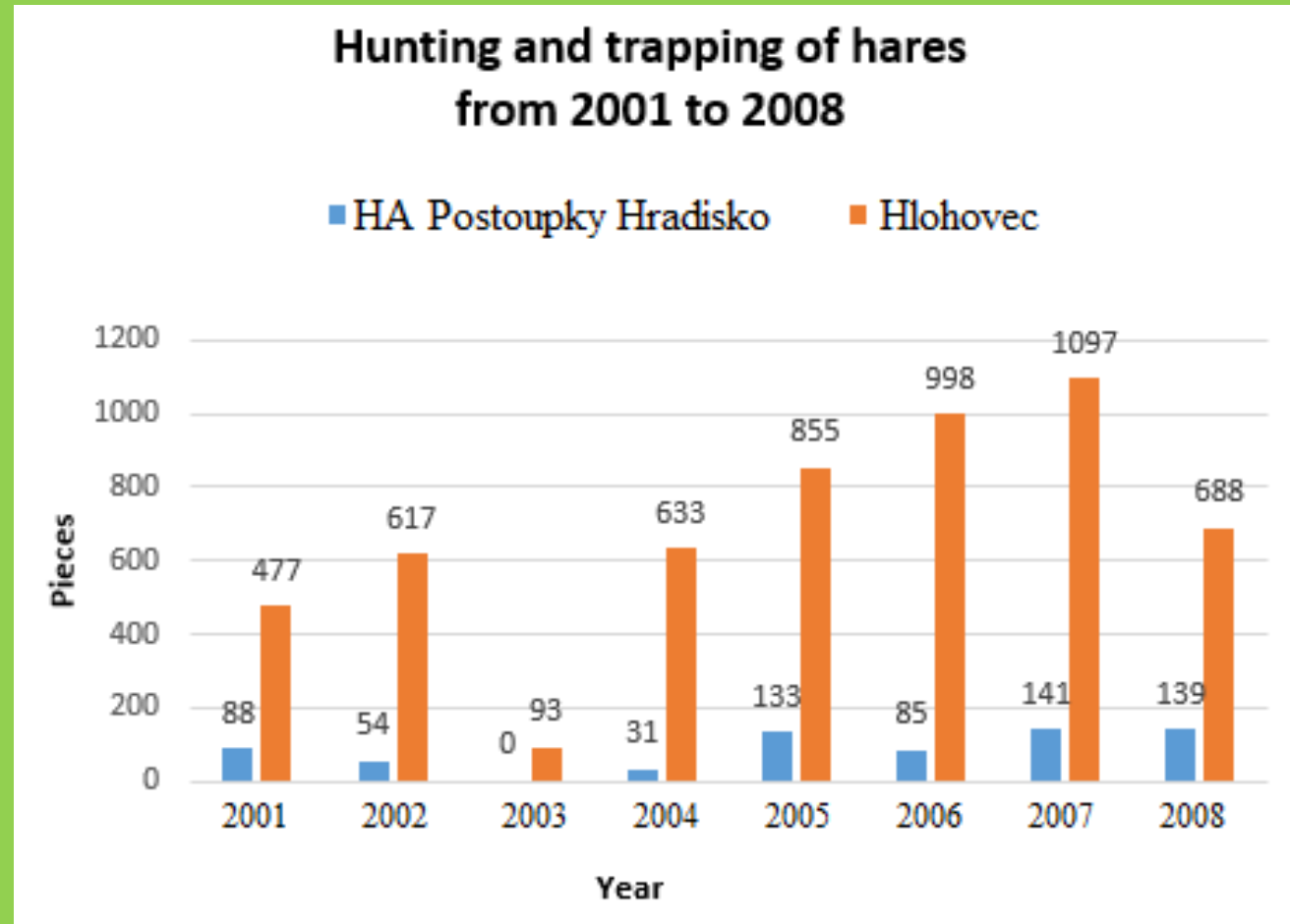


Methods

- Shot numbers in the hunting grounds HA Postoupky – Hradisko and Hlohovec district (per 100 ha).
- The meteorological data were provided by the Czech and the Slovak Meteorological Institutes:
 - stations Holešov (temperature and precipitation),
 - Hlohovec (precipitation), Jaslovské Bohunice (temperature).
- Monthly air temperature and precipitation total, in the years from 2001-2008.
- Evaluated the deviation of the monthly temperature and the percentage of monthly precipitation related to the long term average.
- Positive (prosperous) year: shot number of hares at least 1.2 times higher, compared to the shot number in the preceding year.
- Evaluation based on thermopluviograms.



Results and discussion



Prosperous years:

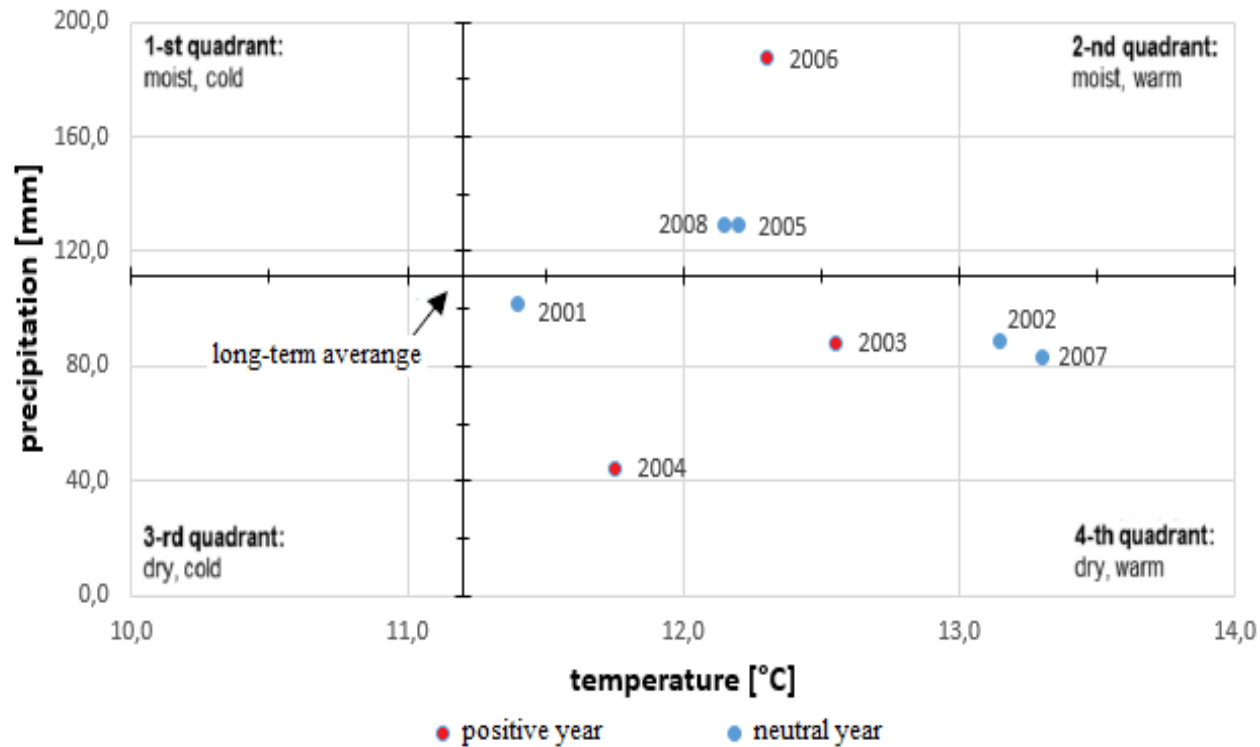
Postoupky Hradisko (2003, 2004, 2006), the district Hlohovec (2001, 2003, 2004).



Termopluviograms for the months of April to May (2001 – 2008)

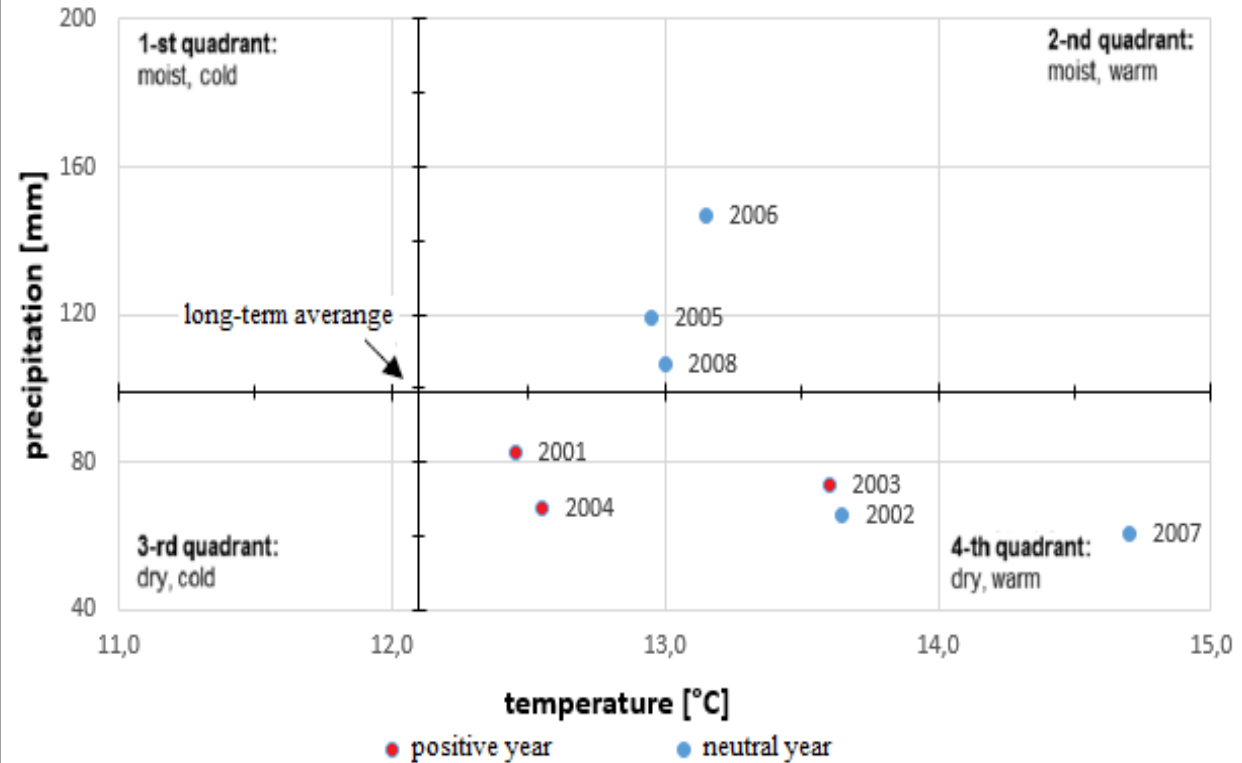
Holešov

long - term average (1961-1990): $t_{IV-V} = 11,2 \text{ }^\circ\text{C}$; $p_{IV-V} = 111,4 \text{ mm}$



Hlohovec / Jaslovské Bohunice

long - term average (1961-1990): $t_{IV-V} = 12,1 \text{ }^\circ\text{C}$; $p_{IV-V} = 99,0 \text{ mm}$

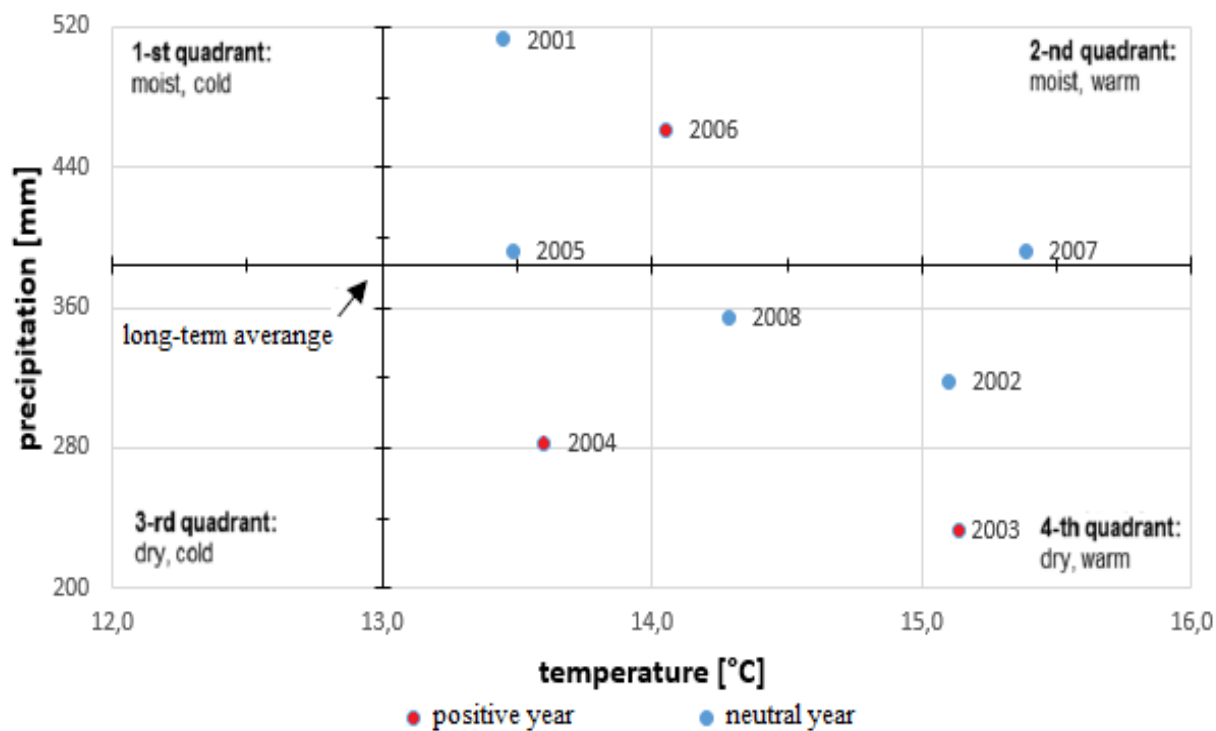




Termopluviograms for the months of March to August (2001 – 2008)

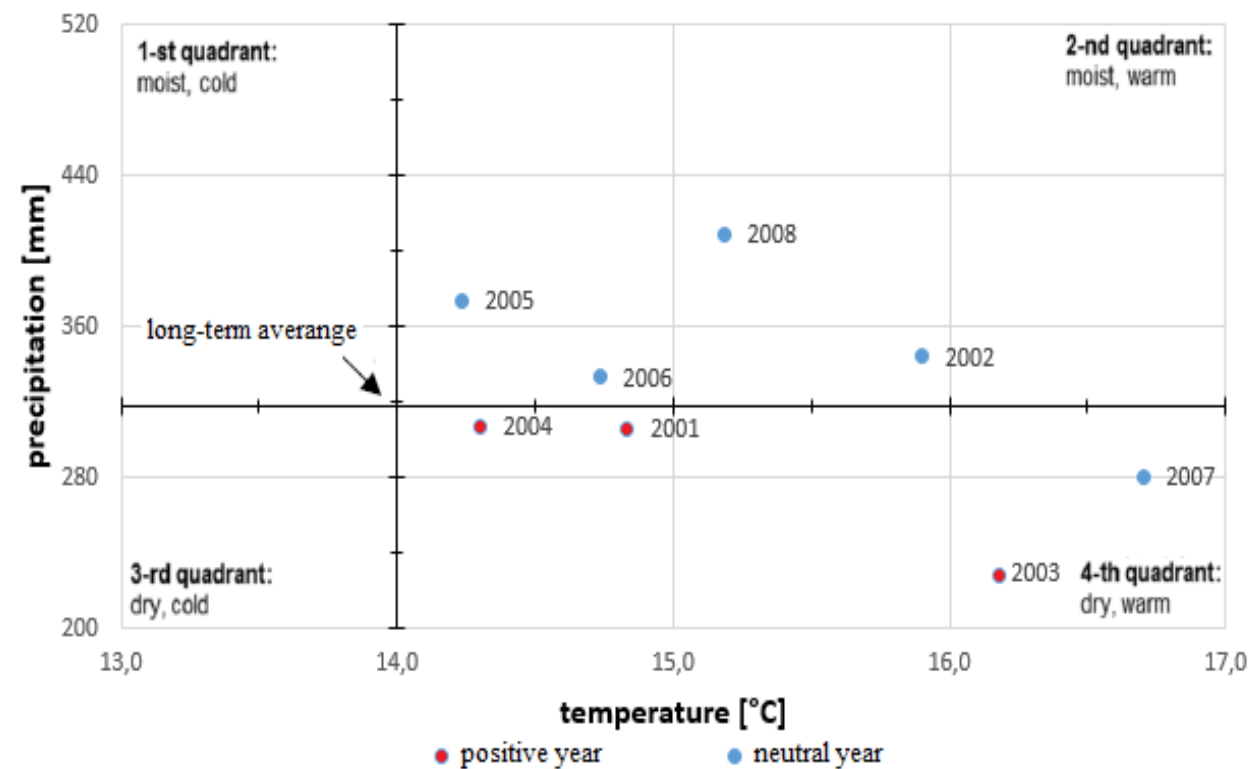
Holešov

long - term average (1961-1990): $t_{\text{III-VIII}} = 13,0 \text{ }^{\circ}\text{C}$; $p_{\text{III-VIII}} = 384,2 \text{ mm}$



Hlohovec / Jaslovské Bohunice

long - term average (1961-1990): $t_{\text{III-VIII}} = 14,0 \text{ }^{\circ}\text{C}$; $p_{\text{III-VIII}} = 318,0 \text{ mm}$





Conclusion

The prominent meteorological factors influencing the brown hare population are temperature and precipitation.

The most obvious impact was during the reproduction period (March to August), especially in April and May.

Brown hare abundance is favourably stimulated by warm and dry weather.

In case when these two prerequisites are not met, young hares die in high numbers as the result of sub-cooling.



Credit: FLPA / Alamy Stock Photo

Thank you for your attention!

RaOP 2020 conference