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Mortality cases of wisents in Bieszczady Mountains

Kajetan Perzanowski[1], Mirosław Welz[2], Maciej Januszczak[1], Stanisław Kaczor[3], Aleksandra Wołoszyn-Gałęza[1]

[1] Carpathian Wildlife Research Station, MiIZ PAN
[2] Wojewódzki Inspektorat Weterynarii w Krośnie
[3] Powiatowy Inspektorat Weterynarii w Sanoku

Abstract: Analysed were mortality cases of wisents (*Bison bonasus*) in Bieszczady during the period 2000–2013. In total, 84 wisents were found dead, including 42 bulls, 37 cows and 5 calves. The recorded mortality level was low, below 10 animals per year until 2012, when after the outbreak of bovine tuberculosis at Stuposiany Forest District it grew up to over 20 per year. Apart of TB, the most important factors influencing the mortality were injuries (17 cases) and predators (16 cases). The highest number of mortality cases over this period (29) was recorded in the Baligród Forest District where predation was reported as the most frequent reason of wisents' deaths (11 cases). According to collected data, the most threatening factor for free ranging wisent populations are infectious diseases, which may lead to elimination of whole herds. Plans for further reintroductions aimed at an extension of the present range of wisents in Europe, should consider this threat as probably the most crucial for the future of the species in our continent.

Key words: European bison, Carpathians, mortality, bovine tuberculosis

Introduction

Wisent as the largest mammal of our continent does not have in practice natural enemies. Causes of wisents being attacked by wolves or bears are not frequent, and usually do not have a significant influence upon their population numbers. However probably, because of exceptionally low level of genetic variability, wisents have low resistance towards infectious diseases, which in many cases resulted in elimination of whole breeding groups or free ranging herds (Krasińska, Krasiński 2007; Perzanowski, Marszałek 2012).

Together with an extension of wisents' range in Poland, the problem of traffic accidents has also appeared. In some regions this factor was significant for limiting the population growth (Tracz, Tracz 2010; 2011).

Due to their body mass, exceptional trophy in the form of horns and the pelt, wisent is also in some regions an attractive object for poachers (Perzanowski, Marszałek 2012).

All those factors may become a reason for the failure of reintroduction programs, so during the planning phase the probability of their incidence should be evaluated, and appropriate preventive measures should be applied in advance.

The aim of this paper was the summary of wisent mortality causes at the area of Bieszczady Mountains in last 14 years.

Study area, material, methods

Materials for this paper were collected at the area of Bieszczady from years 2000–2013, within home ranges of dwelling there free ranging wisent population, counting 270 individuals in 2013. We have based our analysis upon registers and reports elaborated by County Veterinary Inspectorates and Provincial Veterinarian from Krosno, as well as upon data collected during the routine monitoring of this population by the staff of Carpathian Wildlife Research Station of Museum and Institute of Zoology PAS, and foresters from Bieszczady.

Results and Discussion

During 14 years of the study, recorded mortality of wisents in Bieszczady amounted to 84 cases. Among them, there were 42 bulls, 37 cows and 5 calves. Generally, known mortality that was fairly low until 2011, being lower than 10 annually, grew up dramatically in 2012 and 2013 due to an outbreak of bovine tuberculosis at Stu-

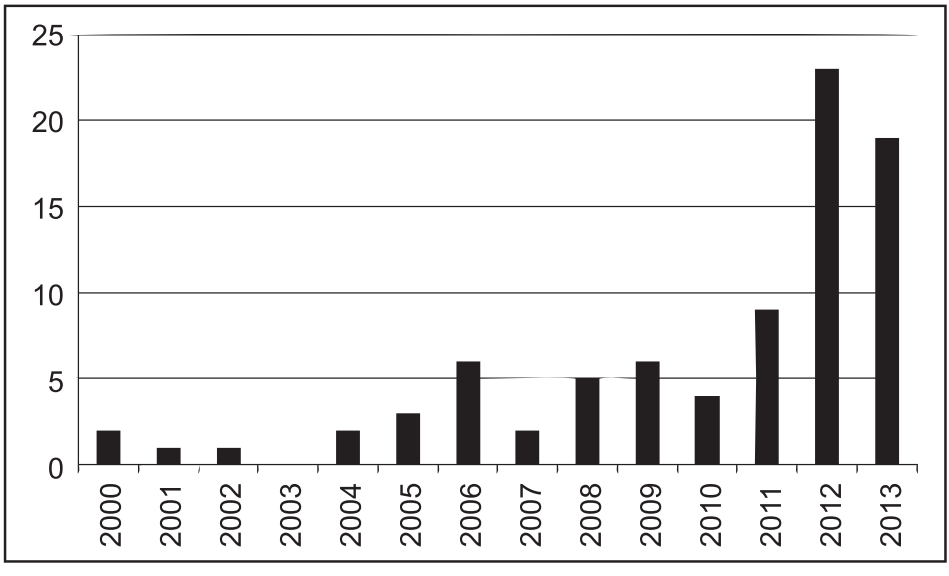

Fig. 1. Numbers of recorded cases of wisent mortality in Bieszczady Mountains between 2000–2013.

posiany Forest District and elimination of the whole herd there by the end of 2012 and beginning of 2013 (Fig. 1).

Nevertheless, over this time period – the highest number of dead wisents was recorded at Baligród Forest District (29), while in districts Cisna, Lesko and Lutowiska, only several dead wisents have been found. From Bieszczady National Park, where wisents are present only at very limited area, and during relatively small part of the year, only one mortality case was reported. In total – 55 deaths of wisents were recorded in western and 29 in the eastern subpopulation (Tabl. 1; Fig. 2).

In general six major causes of mortality were identified: old age, predators, injuries, diseases, (separately the bovine tuberculosis), and poaching. Among them the most important was the outbreak of bovine tuberculosis (eliminated 21 animals), but relatively high numbers were lost due to injuries (17), and to predators (16). However data about the number of wisents actually killed by predators can be overestimated since this account may include also animals dying because of other reasons and being only fed upon *post mortem* by wolves or bears. Over those 14 years, six cases of poaching were recorded. Six animals were eliminated either due to extremely poor state of health or for a random control of TB incidence (Tabl. 2).

Over the most of the analysed period, natural mortality of wisents in free ranging herds of Bieszczady was low, comparing to mortality levels typical for other large herbivorous mammals of the region like deer or wild boars (Perzanowski, Kanzaki 2000; Perzanowski, Krzakiewicz 2000). An analysis of various factors causing mortality of wisents in Bieszczady Mountains shows that the most threatening the existence of free ranging wisent populations are outbreaks of infectious diseases, which may lead to elimination of whole herds in very short period of time. Therefore, plans for further reintroductions aimed at an extension of the present range of wisents in Europe, should consider this threat as probably the most crucial for the future of the species in our continent.

Table 1. Numbers of wisent mortality cases in Bieszczady forest districts between 2000–2013.

Forest District	Numbers
Baligród	29
Cisna	4
Komańcza	16
Lesko	6
Lutowiska	5
Stuposiany	23
BdPN	1
Total	84

Table. 2. Recorded causes of wisent mortality in Bieszczady between 2000–2013.

Cause of death	Numbers
Age	4
Predators	16
Injuries	17
Diseases (other than TB)	10
Bovine tuberculosis	21
Poaching	6
Unknown	10
Total	84

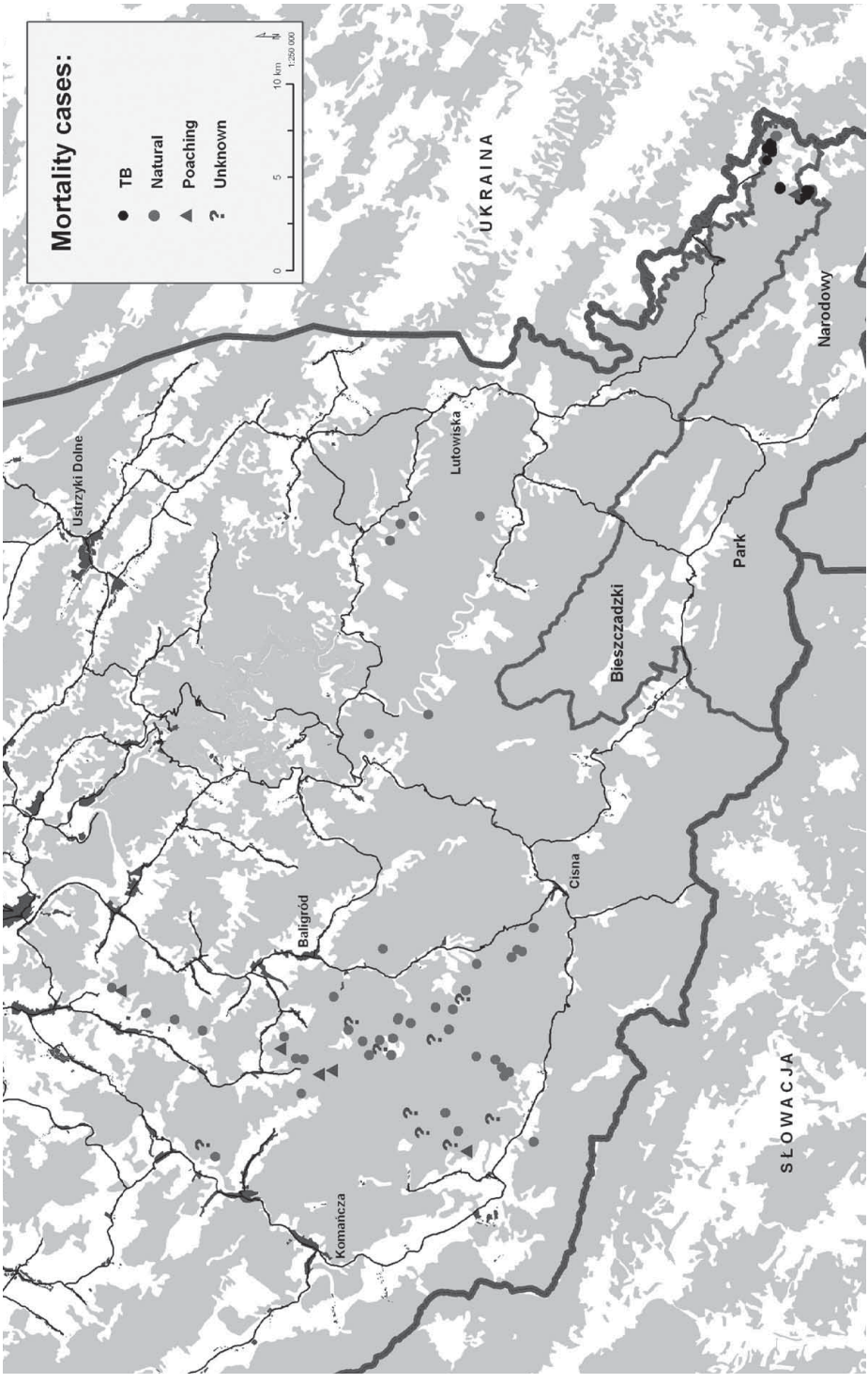

Fig. 2. Spatial distribution of wisent mortality cases in Bieszczady Mountains between 2000–2013.

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Przypadki śmiertelności żubrów w Bieszczadach

Streszczenie: Analizowano przypadki śmiertelności żubrów z wolno żyjącej populacji w Bieszczadach w okresie 2000–2013 r. Ogółem w tym okresie stwierdzono przypadki śmierci 84 osobników, w tym 42 byków, 37 krów i 5 cieląt. Ogólnie, poziom stwierdzanej śmiertelności był niski, poniżej 10 osobników rocznie, aż do roku 2012, kiedy wybuch epidemii gruźlicy bydlęcej w stadzie bytującym w Nadleśnictwie Stuposiany doprowadził do wzrostu poziomu śmiertelności do ponad 20 osobników rocznie. Poza gruźlicą najbardziej istotnym czynnikiem powodującym śmiertelność żubrów były urazy (17 przypadków) i drapieżnictwo (16 przypadków). Najwięcej przypadków śmiertelności żubrów (29) podczas tego okresu zanotowano w Nadleśnictwie Baligród. Na podstawie zebranych danych czynnikiem najbardziej zagrażającym wolno żyjącym populacjom żubrów są choroby zakaźne, mogące doprowadzać do eliminacji całych stad. Dlatego przyszłe plany reintrodukcji, mające na celu dalsze zwiększanie zasięgu występowania żubra, powinny uwzględniać to zagrożenie stwierdzono, że jako być może najbardziej istotne dla przyszłości tego gatunku na naszym kontynencie.