

## WISENTS IN TRANSBOUNDARY POPULATIONS – A CHANCE OR A PROBLEM?

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**Abstract.** According to European Bison Pedigree Book, wisent population in Poland by the end of 2016 counted 1698 individuals, including 1455 animals in freedom. Therefore in Poland, live over 25% of presently living wisents, i.e. the largest population of this species in the world.

Next to our state borders, there are free ranging populations in Belarus – Białowieśka Forest about 480 individuals, in Ukraine – National Park Beskyd Skolyvski – 33, and Slovakia – National Park Poloniny – 27 wisents.

Planned is the establishment of new transboundary populations at Landscape Park of Lower Oder River Valley, at Romincka, and Augustowska Forests. In many places where transboundary populations already exist or are planned, their potential joint home ranges are divided by anthropogenic (fencing – Ukraine, Belarus) or natural barriers (Oder River – Germany). The basic problem for creating such populations will be either elimination of such barriers or introduction of passages allowing for animals' movements.

Benefits provided by transboundary populations are: larger area of available habitats, a possibility for the maintenance of larger populations, and a chance for mitigation of isolation among particular herds.

However possible problems include: more difficult population management due to differences in formal status of the species in particular countries, complicated budgeting of costs connected with maintenance of such herds and compensation of damages, and a possibility for a transmission of infectious diseases, not occurring at territory of one of neighbouring countries.

Therefore, creation of transboundary populations of wisents is desirable regarding the possibility of extension of their home ranges and increase of effective numbers. Effectiveness of such initiatives will however depend upon a possibility for stable international agreements and routine cooperation. Very important is an establishment of an uniform formal status of this species in Europe or at last in EU member countries.

**Key words:** European bison, wisent, range of occurrence, population management, transboundary cooperation, barriers

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INTRODUCTION

The success that was achieved after about 80 years from the beginning of wisent restitution program in Europe, i.e. reaching of about 6000 individuals in the world population, was also connected with a considerable extension of home ranges occupied by this species in our continent. In 1952, the only wisents in the wild occurred at Białowieska Forest. At present, apart of Poland – free ranging populations are in Byelorussia, Lithuania, Germany, Russia, Romania, Slovakia and Ukraine. In Poland, almost 1500 individuals live in the wild in four lowland populations: Białowieska, Knyszyńska and Borecka Forests and in Western Pomerania. One mountain population dwells at Bieszczady. Our country, together with individuals maintained in captivity (almost 250 animals) owns over 25% of all currently living wisents, i.e. the largest in the world population of this species [Krasińska and Krasiński 2007, Krasińska *et al.* 2014].

Home ranges of all free ranging wisent populations in Poland are situated in a direct vicinity of our country borders. Due to the fact, that growing populations require an access to increasingly larger home ranges, it would be justified to explore possibilities for developing a transboundary cooperation regarding this subject, which could in a natural way mitigate such problem. The aim of this paper was the analysis of present living conditions of our free ranging wisent populations, and the assessment of the possibilities for the extension of their home ranges as transboundary populations, protected and managed jointly with neighbouring countries.

CHARACTERISTICS OF HOME RANGES OF FREE RANGING WISENT  
POPULATIONS OF POLAND

The oldest and the most numerous Polish population of wisents (about 600 individuals) dwells at the area of Białowieska Forest (some 650 km<sup>2</sup> of the Polish part), partially within boundaries of the national park, but mostly at the area of four forest districts surrounding the park, and belonging to the Regional Directorate of State Forests at Białystok (Hajnówka, Browsk, Bielsk Podlaski and Białowieża). Additionally, usually over 50 animals remains for a considerable part of the year at fields surrounding the forest. This leads to the conclusion, that present numbers of this population exceed already the carrying capacity of this forest complex, despite of its abundant food base [Krasiński and Krasińska 2007, Krasińska *et al.* 2014].

Situated in nearest proximity to the population of Białowieża is a wisent herd at Knyszyńska Forest. Those free ranging populations are the only in Poland having possibilities for a direct contact. There are data confirming periodical movements of solitary individuals between those two forest complexes. Population of Knyszyńska Forest counts now over 140 individuals, which to a large extend benefit from food

available at cultivated fields, especially at the north-eastern part of the Forest. Such behaviour is connected with the character of forest stands there – mostly coniferous, with not very attractive food supply, particularly in autumn – winter period. Although the area of Knyszyńska Forest is fairly large – some 1050 km<sup>2</sup>, wisents inhabit only its part (forest districts of Krynki, Supraśl, Waliły and recently Żednia) [Perzanowski *et al.* 2013].

Presently, the farthestmost to the north is situated wisent population at Borecka Forest (about 260 km<sup>2</sup>), counting now about 110 individuals. This forest complex consists of a highly mosaic habitats with domination of deciduous and mixed stands (78%), providing rich and diversified food supply for herbivores during the whole year. Wisents from this population rather rarely migrate beyond forest boundaries [Wyrobek and Żoch 2011].

In West Pomeranian Province, mostly at the area of forest districts Drawsko and Mirosławiec, dwells now a wisent population estimated for over 200 individuals. Among all Polish wisent populations, this one frequents open areas to the largest extend (about 70% of the herd's home range in Mirosławiec Forest District and about 20% in Drawsko Forest District). In Mirosławiec Forest District, within areas used by wisents dominate corn fields, while in Drawsko Forest District – heaths, at the area of local military training ground [Tracz and Tracz 2010, 2011].

Wisent population of Bieszczady, the only one in Poland inhabiting mountain ecosystems, is currently estimated for about 400 individuals. Its home range of about 500 km<sup>2</sup>, is covered mostly by deciduous and mixed (beech – fir) stands. A considerable part of this range constitute tree stands overgrowing former arable fields, with exceptionally rich food base, particularly in winter season dominated by wintergreen brambles. About 20% of the home range of this population are grazing grounds (forest openings and meadows, glades, and permanent grasslands adjacent to the forest [Kraśńska *et al.* 2014, Perzanowski 2015].

#### A POTENTIAL FOR ALREADY EXISTING AND PLANNED TRANSBOUNDARY WISENT POPULATIONS

At the moment, only two of our free ranging populations of wisents have in their close neighbourhood wisents, dwelling at the area of other countries. The largest such population inhabits the Byelorussian part of Białowieska Forest. It counts now about 480 individuals, but is isolated from the Polish population by the border fence installed some 20 years ago on Byelorussian side. Formerly both populations maintained mutual contact but now any exchange of individuals is impossible [Kraśńska *et al.* 2014]. Allowing for a connection of both populations would be beneficial for their genetic diversity, and additionally at Byelorussian side, there are considerable opportunities for the extension of present home range of wisents from Białowieska Forest towards other forest complexes (Fig. 1).



Fig. 1. Białowieża Forest and neighbouring forest complexes at Byelorussia (source: Google Maps)



Fig. 2. Forest complexes of Bieszczady and neighbouring areas in Slovakia and Ukraine (source: Google Maps)

Wisent population of Bieszczady remains in permanent contact with a wisent herd (27 individuals) inhabiting National Park “Poloniny” in Slovakia. Migrations of wisents across the main ridge of the Carpathians are frequently observed. Potentially, wisents from Bieszczady may also initiate a contact with recently re-established herd (33 individuals) in Ukrainian National Park “Skolyvski Beskyd” situated some 30 km from the Polish border. Along the border with Slovakia, no

barriers impending wisents' movements exist, but along Ukrainian border, formerly existing border fence is now partially reconstructed. Nevertheless, in both: southern and eastern directions (Poloniny N.P. in Slovakia, as well as Uzansky N.P. and Nadsiansky Landscape Park in Ukraine), there is a considerable potential for an extension of the present home range of wisents inhabiting Bieszczady [Perzanowski and Olech 2014] (Fig. 2).

Among planned sites for further reintroduction of wisents in Poland, a considerable potential for significant extension of their home range under the framework of transboundary cooperation is in the Augustowska Forest. This forest complex, borders with continuing to the east, forests in Lithuania. Additionally, no obstacles for animals' movements are along the state border at this area (Fig. 3).

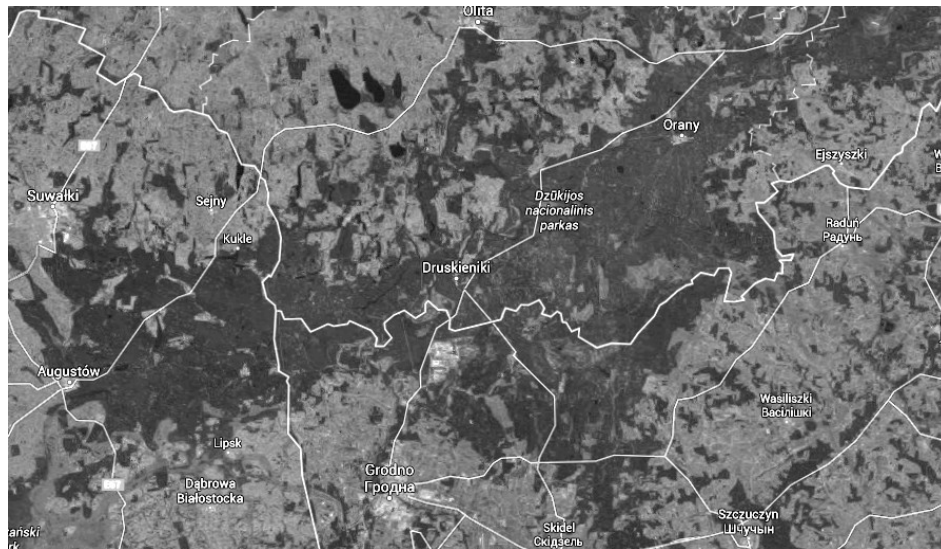


Fig. 3. Augustowska Forest and neighbouring forest complexes in Lithuania (source: Google Maps)

A compact Romincka Forest, which only smaller part (150 km<sup>2</sup>) is at the Polish side of the border (its whole area is about 360 km<sup>2</sup>), because of very high diversity of forest habitats (multispecies stands), offers exceptionally good environmental conditions for large herbivores including a free ranging wisent population [<http://www.goldap.bialystok.lasy.gov.pl>]. Along the state border no impassable barriers for wildlife exist, however unclear status of the area on Russian side, does not allow for a sound judgment whether the whole area of Romincka Forest fulfils criteria required for appropriate protection and management of a wisent population (Fig. 4).



Fig. 4. Romincka Forest on both sides of Polish – Russian border (source: Google Maps)



Fig. 5. Surroundings of the Landscape Park “Lower Oder Valley” (source: Google Maps)

Planned, according to Polish – German initiative, the establishment of free ranging wisent population within the “Lower Oder River Valley” Landscape Park (about 6 thousand ha) has relatively small chances for development because of natural barriers created by watercourses (Oder River, Western Oder as

well as numerous old river-beds and canals) of width, practically excluding possibility of their crossing by wisents. The area available for wisent herd there, would be limited to a narrow zone (2–3 km) between the main river-bed of Oder and Western Oder, additionally intersected by two roads connecting towns on both sides of state border. On the Polish side this area is separated from neighbouring forest complexes (Goleniowska Forest) by the main course of Oder River, and at German side – although the area neighbours on the south with small national park “Unteres Odertal”, the potential area for a wisent range is very limited there (Fig. 5).

### CONCLUSIONS

In many sites where transboundary wisent populations already exist or are planned, their potential joint home ranges are divided by barriers, either anthropogenic like fences at Byelorussian and Ukrainian borders or natural like Oder River at German border. Therefore the basic problem for the establishment of functional populations would be the elimination of anthropogenic barriers or creation of a linkage (not always possible) allowing for animals' movements.

Obvious benefits of transboundary populations are: larger ranges available for wisents i.e. a possibility for maintaining more numerous populations, and a chance for conditions allowing for natural migrations, which could mitigate present isolation of particular herds.

Undoubtedly however, a various legal status of the species in neighbouring countries will obstruct the management of such populations. Possible problems include: complicated calculation of the costs of herd supervision and care, its maintaining, monitoring and compensation for damages in field crops. There is also a possibility of disease transmission between territories of both countries.

Nevertheless, creation of transboundary wisent populations, being an opportunity for the extension of home range, and an increase of effective population numbers, is very desirable. Real effects will however depend upon a possibility for achieving stable (multiannual) international agreements, and assuring the conditions for routine cooperation. First, very important step towards this goal would be the establishing of a uniform legal status of this species in Europe or at least in all EU countries.

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#### ŻUBRY W POPULACJACH TRANSGRANICZNYCH – SZANSA CZY PROBLEM?

**Streszczenie.** W Polsce, według stanu podawanego w Księdze Rodowodowej Żubrów, na koniec roku 2016 żyło 1698 żubrów, w tym 1455 osobników w stanie wolnym. Oznacza to, że w naszym kraju jest ponad 25% wszystkich obecnie żyjących żubrów, a więc zdecydowanie największa na świecie populacja tego gatunku.

W sąsiedztwie naszych granic państwowych wolnościowe populacje żubra znajdują się w białoruskiej części Puszczy Białowieskiej (około 480 osobników), na Ukrainie – w Narodowym Parku Beskid Skoliwski – 33 żubry, i na Słowacji – w Narodowym Parku Połoniny – 27 osobników.

Planowane jest utworzenie kolejnych populacji transgranicznych w Parku Krajobrazowym Dolnej Odry, w Puszczy Rominckiej i Puszczy Augustowskiej. W wielu miejscach, gdzie istnieją obecnie lub są planowane transgraniczne populacje żubra, ich potencjalne wspólne areale są podzielone barierami pochodzenia antropogenicznego – ogrodzenia (Ukraina, Białoruś) albo naturalnymi – rzeka Odra (Niemcy). Podstawowym więc problemem w utworzeniu funkcjonalnych populacji będzie eliminacja tych barier lub stworzenie połączeń umożliwiających przemieszczanie się zwierząt.

Korzyściami z tworzenia populacji transgranicznych są: większa powierzchnia dostępnych arealów, możliwość utrzymania populacji o większej liczebności, możliwość złagodzenia izolacji poszczególnych stad.

Natomiast możliwe problemy związane z funkcjonowaniem populacji transgranicznych to: utrudnione zarządzanie populacją wynikające z różnego statusu żubra w poszczególnych państwach, skomplikowane rozliczanie kosztów opieki nad stadem, jego utrzymania i kompensacji ewentualnych szkód, możliwość transmisji chorób zakaźnych niewystępujących na terytorium jednego z sąsiadujących państw.

Dlatego tworzenie transgranicznych populacji żubra jest bardzo pożądane w kontekście możliwości poszerzenia jego arealu występowania i zwiększania efektywnej liczebności gatunku. Efektywność tych inicjatyw będzie uzależniona od możliwości trwałych porozumień międzypaństwowych i zapewnienia rutynowej współpracy. Bardzo ważne jest doprowadzenie do ustanowienia jednolitego statusu gatunku w Europie, a przynajmniej w krajach członkowskich EU.

**Słowa kluczowe:** żubr, zasięg występowania, zarządzanie populacją, współpraca transgraniczna, bariery