

## Analysis of numbers and origin of wisent herds in Ukraine

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**Abstract:** The study presents the current location and numbers of existing wisent subpopulations in Ukraine. Data collected by the authors were compared with official national statistics. Analysed was the origin of particular herds that may influence their heterozygosity. Authors present their concept of optimization of species' conservation and management in Ukraine.

**Key words:** wisent, Ukraine, subpopulation, inbreeding

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In the mid 90th the last century the numbers of European bison in Ukraine represented about a third of the total world population, and counted from 664 to 685 individuals (Gerus, Krizanowskij 2005; Boreiko, Sesin 2007). Since then, in last 20 years the numbers of this species in Ukraine decreased by three times (Fig. 1).

Being a result of longtime political and economical crisis: unpunished poaching, degradation of environment and improper game management, were the main reasons for the decline of wisent numbers in Ukraine. Now all wisent

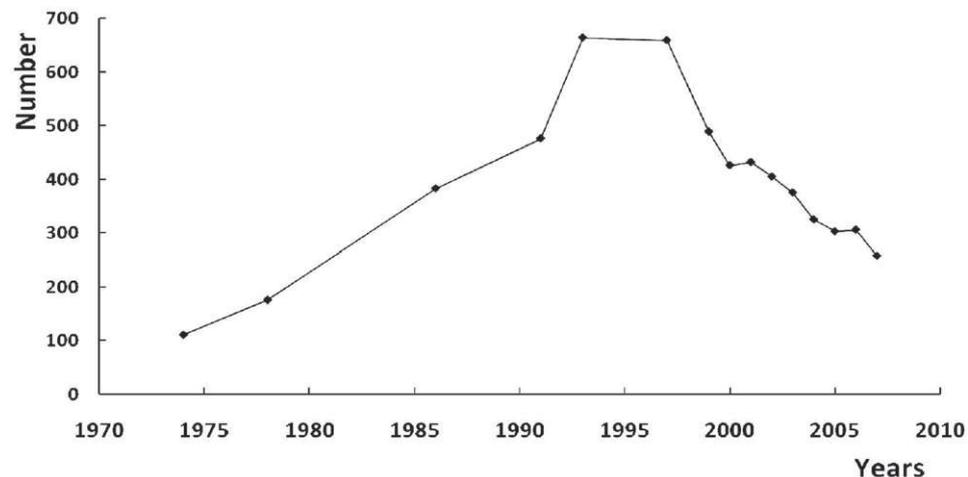


Figure 1. Dynamics of wisent numbers in Ukraine



Figure 2. Distribution of wisent's subpopulations in Ukraine.

populations in the west of Ukraine (Lviv, Tchernivtsi, Volyn areas) undergo a deep depression and are doomed to die out unless proper conservation measures will be applied in near future. Such situation already took place in Rivne, Ivano-Frankovsk and Tchernigiv, where wisents disappeared during the last decade (Fig. 2). Herds situated on the left bank of Dniپر river (Kyiv and Sumy areas) are stable regarding their numbers. Population dynamics of the herd in Vinnitsa region maintains a tendency for an increase of numbers and home range.

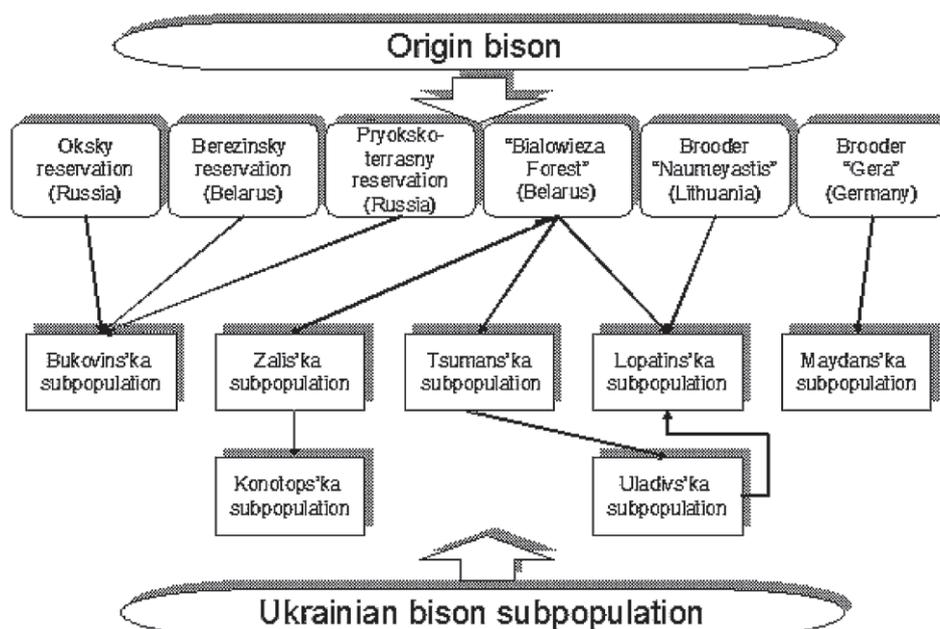
At the moment the national program "Certification of subpopulations and the development of wisent resettling plan in Ukraine" based on the estimation of current situation of food availability, condition of subpopulations, and their optimal density, as well as development and implementation of actions towards the preservation of these subpopulations, is being implemented under the guidance of Ministry of Environment and Natural Resources of Ukraine. During 2009–2010 within the framework of above mentioned project specialists of Schmalhausen Institute of Zoology of NAS of Ukraine, and National University of Life and Environmental Sciences of Ukraine conducted an inventory of Ukrainian wisents comparing this data with official statistics. This comparison shows either the carelessness of some land users or their attempt to conceal real data (Tabl. 1).

**Table 1.** The numbers of wisent subpopulations in Ukraine – year 2009

The name of subpopulation (locality)	Land user	Own information	Official data
Tcumanska (Volyn area)	Hunting Enterprise «Zvirivske»	15	24
Maydanska (Lviv area)	Natural park «Skolivski Beskydy»	6	6
Lopatinska (Lviv area)	Hunting Enterprise «Styr»	24	24
Bukovinska (Tchernivtsi area)	Forestry and Hunting Enterprise «Beregometske»; Forestry Enterprise «Storozhinecke»	28	67
Uladivska (Vinnitsa area)	Forestry Enterprise «Khmilnytske»	91	89
Zaliska (Kiev area)	State Residence «Zalissyia»	22	20
Konotopska (Sumy area)	Forestry Enterprise «Konotopske»	41	41
Total		227	271

The analysis of origins of Ukrainian wisent herds allows to divide them into *polyphyletic* (originating from various breeding centers) (1<sup>st</sup> group), and *monophyletic* (originating from only one breeding center) (2<sup>nd</sup> group) (Fig. 3).

In contemporary wisent herds in Ukraine, initial groups originated as follows:

**Figure 3.** Origins of contemporary wisent subpopulations in Ukraine.

**1<sup>st</sup> group**

– **Bukovinska** subpopulation (Tchernivtsi area) – from Berezinski Nature Reserve (Belarus), Oksky Nature Reserve (Russian Federation) and Prioksko-Terrasny Nature Reserve (Russian Federation);

– **Lopatinska** subpopulation (Lviv area) – from specialized breeding center “Naujamestis” (Lithuania), and the group of animals from Vinnitsa region.

Heterogeneous of above mentioned herds is beyond any doubt, so their management in the future should be focused on an increase of numbers.

**2<sup>nd</sup> group**

- **Tcumanska** subpopulation (Volyn area),
- **Uladvivska** subpopulation (Vinnitsa area),
- **Zaliska** subpopulation (Kiev area),
- **Konotopska** subpopulation (Sumy area),
- **Maydanska** subpopulation (Lviv area).

First 4 herds origin from National Park “Belovieza Forest” (Belarus). Wisent herd in Vinnitsa area was created on the basis of animals from Volyn herd. Similar are relations between the Konotopska and Zaliska subpopulations. Therefore, the exchange of animals between those subpopulations would be meaningless for the maintenance of heterozygosity.

The wisent herd in National Park “Skolivski Beskydy” (Maydanska subpopulation) which was at the verge of extinction was supplemented with an assistance of the European Bison Friends Society (Poland) and Large Herbivore Foundation (Netherlands) in 2009, with 6 animals from breeding center in Gera (Germany). However all those animals originate from one bull Orion (No 7041), and two calves are the progeny of Orion and his daughter – Thyria (No 9773). Therefore this herd is highly inbred at its initial stage of forming.

According to our opinion the second delivery of wisents planned to National Park “Skolivski Beskydy” should be directed to Hunting Enterprise “Zvirivske” (Tcumanska subpopulation) where in the enclosure of about 45 ha, maintained are several animals originating from Belovieza. On the other hand, the animals from Uladvivska subpopulation could be used to supplement the herd at National Park “Skolivski Beskydy”.

In general we feel that there is an inconsistency among regional programs. so we see a necessity of consolidation of separate regional projects under the guidance of Ministry of Environment and Natural Resources of Ukraine.

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