

Ewa CZERNIAWSKA-PIĄTKOWSKA, Weronika GAJDKA

## WISENT PROTECTION, AND ITS EXISTENCE IN THE HUMAN WORLD

## OCHRONA ŻUBRA I JEGO EGZYSTENCJA W ŚWIECIE CZŁOWIEKA

Department of Ruminant Science, West Pomeranian University of Technology, Szczecin, Poland

**Streszczenie.** Żubr to gatunek, którego istnienie wiązało się z prawdopodobieństwem całkowitego wyginięcia. Egzystencja żubra nierozdzielnie związana jest z jego życiem w bezpośrednim sąsiedztwie człowieka. W wyniku działań, polegających na krzyżowaniu odpowiednich osobników, przy jednoczesnym kontrolowaniu odpowiedniej wartości zmienności genetycznej, udało się zdecydowanie zwiększyć liczbę osobników tego gatunku, co pozwoliło na założenie stad wolnościowych. W niniejszej pracy przedstawiono funkcjonowanie stad żubrów na terenie Pomorza Zachodniego, Puszczy Białowieskiej oraz na terenie Bieszczad, a także ich ochronę i wielkość szkód powodowanych przez te zwierzęta. Ta praca przeglądowa ukazuje, jak ważne są żubry dla polskich ziem, wskazując na możliwość ich koegzystencji z człowiekiem.

**Key words:** *Bison bonasus*, conservation of the species, restoration, wisent.

**Słowa kluczowe:** *Bison bonasus*, ochrona gatunku, restytucja, żubr.

## INTRODUCTION

Wisent *Bison bonasus* is a species whose fate, not only in Poland but also in Europe, was very uncertain, since this species was on the verge of extinction. It is one of the oldest living species on earth. These are massive animals, herbivores and do not have natural predators. The only threat to these animals is a man whose actions led to the disappearance in 1919 of all free-living animals of this species, only a few remaining pieces have lived in captivity (Dackiewicz 2009, Ławreszuk 2010a). Fortunately, in Poland and other European countries there were groups of people for whom the fate of the wisent was very important, and thanks to their actions the species was restored to the environment and its population increased gradually. Wisents are classified as high priority species and are protected by law, and its activities aimed at the protection of individuals in detention centers and protect animals in the wild, as well as monitoring of stocks and their habitats. Monitoring allows tracking wisent's vital signs, designation of the area of their existence, also provides basic information about threats to these animals and the damage they can cause, that is, obtaining current information on the state of natural environment.

In this paper, the functioning of the wisents herds in West Pomerania, the Białowieża Forest, and in the Bieszczady mountains as well as their protection and the amount of damage caused by these animals was presented.

## **WISENTS IN THE WEST POMERANIA**

Wisent on the grounds of West Pomerania back in 1980, when four bulls and four cows were brought to the areas of Wałcz Forestry. These animals came from a herd living in Puszcza Białowieska. Acclimation period for the animals lasted 5 months and after that time they were released into the wild (Janicka et al. 2008). Initially, these animals functioned without human intervention settling Mirosławiec Forestry areas, and only a few individuals occupied territories of Tychowo Forests Inspectorates, Czaplinek, Bogdaniec and Świerczyna. By 1990, these animals have colonized fields areas in greater proportion than the forests, resulting relatively minor damage to farmers. Wisent foraging in cultivated fields of maize, which probably led to their attachment to the land, and increased farmers' discontent at the same time (Tracz and Tracz 2010). Vehicle accidents, and several cases of poaching has also become a problem. Unfortunately, since 2003, the stock began to decline with increasing average age of the individuals and lower levels of genetic reproduction of the herd (Janicka et al. 2008, Tracz et al. 2008). Thanks to – "Program ochrony żubrów w województwie zachodniopomorskim", which was based on a two-stage operation, the herd was enlarged with eight individuals. All individuals came from a free herd: 4 cows from the Białowieża Forest, 2 bulls from Superintendence Kobiór and 2 bulls from Wolin National Park. Generous infusion of blood caused a slight improvement recorded which resulted in halting growth of population, but unfortunately the dynamics of reproduction still remained low (Tracz et al. 2008). In addition, in the first stage of this program regular feeding of animals was implemented due to minimize the feeding of crop fields and thus reduce the amount of compensation paid, road markings, which are located in the area of living herds, in order to reduce the number of road traffic collisions and dissemination of knowledge about wisent locals to raise awareness about the important role of the public in wisent restitution (Janicka et al. 2008). The second phase assumed the increase of the existing population of the herd to about 100 individuals. As a result of this program six satellite herds were to be established and further enrichment of the gene pool to prevent inbred (Tracz et al. 2008). It is also important to create new stocks by increasing the size of existing stocks which will contribute to the initiation of natural divisions in home herd, because it is preferable to the presence of more and less numerous herds, which would include larger areas (Tracz and Tracz 2010). In 2008, it was second free-living herd was created in this region from junction of two groups from Łobez district and Dobrzany. These animals took military training areas located in the Drawsko Forestry. GPS telemetry collars put on the oldest individuals in the herd provide information about the particular area and confirm sporadic formation of one large group of the wisents, which usually move in 3-4 groups of varying composition and abundance (Kaliciuk et al. 2009, Tracz and Tracz 2010). Actions taken have improved the situation of free-living wisents, increasing herd size and increasing the genetic diversity of the population, but unfortunately the problem is still too high density of these animals on the occupied area (Tracz and Tracz 2010). Status of wisent in 2008 in West Pomerania is 56 individuals 30 of which are bulls and 26 cows (Janicka et al. 2008).

## WISENTS IN THE BIALOWIEZA FOREST

Białowieża Forest is among the few, if not the only forest complex, which fully meets the needs of the wisents. The first reports on the number of its population living in these areas are dated: 1802 when 200 individuals had been counted, 1845 with 1025 units, 1857 with the highest number of these animals – 1898 until 1914, when the number of animals was significantly lower – 727 of these animals. Population decline was caused by a disease, and overcrowding (Dackiewicz 2009, Krasinski et al. 2011). The sharp decline in the number of wisent at Białowieża Forest areas was caused by the actions of World War I, in April 1919 the last carcass had been found. Restitution species of *Bison bonasus* had been initiated in 1923, and six years later, the zoo in the Białowieża Forest was established, which became the center of wisents conservation and breeding. The imports in 1929 of purebred subspecies of wisent with a touch of pure Caucasian blood and purebred wisent cow is considered the beginning of breeding. The first cub was born in the zoo a year later. The aim of Białowieża breeding kennel was to get purebred *Bison bonasus*. In 1939 16 pieces lived in reserve, 7 of which from individuals lowland lines and 9 individuals from lowland-Caucasian line. The development of a closed herd after World War II enabled, the creation of the first free-living culture. The first cub was born in the wild in 1957. State of the free-living wisent in 2008 was 456 individuals of lowland line in the Polish part of the forest (Dackiewicz 2009). 364 pieces of these animals lived in the Belarusian part of the forest (Krasinski et al. 2011). Today, protection of wisents in the Białowieża Forest is an idea of a very high priority, and activities implemented for this purpose are supported by institutions such as the National Foundation for Environmental Protection and Water Management, EkoFundusz, Provincial Foundation for Environmental Protection and Water Management in Białystok, Frankfurt Zoological Society, the Polish Bank Pekao SA, as well as other foundations and NGOs.

In 2006–2010 LIFE project was "The Land of Bison- bison protection in the Białowieża Forest", and its aim was to improve the situation of wisent species in the Podlasie region and the provision of adequate and long-term protection and improvement of living conditions by creating new feeding sites and water holes. This project also increased public awareness, and farmers gentler approach to wisent (Ławreszuk 2010b). The main goal is the protection of a closed breeding genomic resources lines with the ability to control lowland origin and appropriate pairing. Livestock can also carry out such research, and educational programs (Krasinski et al. 2011). The first step was to increase the closed breeding population of wisents. Then culture is focused on raising wisents on known pedigrees and appropriate matching of individuals in order to maintain genetic diversity.

Today, in the Białowieża National Park it is possible to keep the two closed groups and one group in reserve show, but it should be remembered that the number of wisent in the closed breeding should not exceed 35 individuals (Dackiewicz and Olech 2006). In the free-living culture in the Białowieża Forest it is also important to regulate the number of herds but it is essential to take several factors into account. The most important factor is the size of the area occupied by wisents, and as the Białowieża Forest is a separate area from other forests, and the existing ecological corridors are blocked, this makes high density of individuals in the same area. It should strive to improve the state of ecological corridors, so

wisent could take a new, neighboring territories. Another important factor is the degree of the impact of wisent on the environment, and above all stands as excessive grazing can harm the thickets of the forest renewal. An important aspect is also the winter feeding of wisent, which is a centuries-old tradition. Many feeding sites can not only survive cold winters of large groups of animals, but also leads to survive a lonely life bulls. Białowieża wisent as well as others need to be fed, because it is an endangered species, negligence of which can lead to a drastic decrease in the number of individuals and wisent needs a very large amount of food, impossible to be found during the harsh winters and is not suitable for long-term starvation. Another important factor to be considered is the population of wisent.

Unfortunately, the level of reproduction of these animals has been reduced in recent years, resulting in increase of the average age of the population. Clearly it can be concluded that the population is growing more slowly. Low death rate of these animals as evidenced by the correctness of selection for the killing of animals as a result of serious illness or serious injury is satisfactory. Also reducing number of injuries caused by road traffic collisions which provides animals with appropriate monitoring and providing them with adequate spatial barriers is possible. Additional individuals can be successfully exported from the area of the Białowieża Forest, both in Poland and abroad, where they can help to strengthen the genetic diversity of individuals (Krasinski et al. 2011).

## **WISENTS IN THE BIESZCZADY**

Breeding wisent from Lowland-Caucasian line began in 1963. Then in 1976 in the Komańcza Forestry another herd was brought in to create another subpopulation. The first freedom herd was established in 1964 and since then a gradual growth of the population and its spread to more and more extensive territory was seen. As a result of population growth, the herd split into two parts: the eastern and western (Perzanowski and Paszkiewicz 2000). Bieszczady is an attractive natural area because of its rich and diverse vegetation, relatively low mountains and landscape mosaic and it is why it has become a desirable place for Lowland-Caucasian line. The problem is only the difficulty of access to food, which is caused by high snow and wisent tend to migrate in search for food. Wisent migrate from high areas to the low-lying valleys. Availability of food and migration of the animals cause their spontaneous distribution and thinning of the population. The problem, however, is the difficulty in finding partners, and hence a low rate of reproduction, leading to low genetic variation. As a result, wisent, are more susceptible to disease and have less capacity to adapt to changes in the environment (Paszkiewicz and Januszczak 2011). Researches on the damage caused by the eastern and western subpopulation were also conducted. As a result of these studies it was found that the damage is several times lower in the case of space inhabited by the eastern subpopulation. Damage primarily concerned thickets and stampede trees (Paszkiewicz and Januszczak 2010). Damage to old-growth forests are rare and most often gnawing the bark of the root collar and bark biting the trees. Other damages include hanging trampling and grazing seedlings and shoot apex. However, a detailed analysis of damage made by a herd clearly indicates that the damage is economically bearable. The intensity of the damage varies from time to time, due to the lack of winter food or too high

density of animals in the same area. Moreover, the main species that form the Bieszczady forrest, the fir and beech, are characterized by high regeneration ability, and only repeated and frequent damage to these trees leads to a reduction in growth rate, distortion arrows and greater susceptibility to fungal diseases. In order to prevent the animals provide food for their feeding places and use telemetry monitoring allows expulsion of wisents from critical places in the woods.

## CONCLUSIONS

Wisent as one of the largest and oldest currently living mammals are a very important object of protection, not only in Poland but also in Europe. Projects relating to the restitution of these animals are carried out for many years, and chaired the Polish honorable actions.

An important aspect in the protection of this species is to educate children and young people and to raise public awareness about the hardships of wisents restoration of the environment, as well as the acquisition of new funding opportunities for research projects and conservation programs.

Wisent is a beautiful species whose presence in our country should fill with. This species has gone a long way since its time luminosity, to almost total extinction, to the slow restoration of wisents population. Seeing the effort and any action taken to protect this species and a gradual increase in population, as well as slowly increasing genetic diversity can certainly bring optimism about the fate of not only the native wisent, but also those in Europe.

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**Abstract.** Wisent is a species whose existence was in doubt. Its fate was heavy and bordered with a probability of its extinction. The existence of a wisent is inextricably linked with its life in close vicinity of man. As a result of activities involving the crossing of the respective individuals while controlling the corresponding value of genetic variation could definitely increase the number of individuals of this species, which enabled establish free stocks. This paper shows the functioning of the wisent herds in West Pomerania, the Białowieża Forest, and the Bieszczady mountains as well as their protection and the amount of damage caused by these animals. This review paper shows the importance of wisents in Poland and points out the possibility of living these animals near humans.