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# A complex project for the conservation of European bison in Poland by State Forests (2017–2020)

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**Abstract** To this time in Poland many projects were carried out towards conservation of captive population and improvement of habitat conditions in forest complexes inhabited by the E. bison. Thanks to realized projects the situation and welfare of this species was visibly improved. The species requires continuation of conservation activities. The new project aim to ensure the stability of the perspectives for the development of European bison population. The project include: (a) conservation of the existing E. bison population (*ex situ* and *in situ*) and their monitoring, (b) dispersion of the E. bison within Poland and outside for meta-population creation, (c) creation of professional Gene Bank of E. bison, (d) promotion of the idea of European bison conservation and promotion of State Forests. The project is conducted in the partnership of State Forests, Białowieża National Park, Warsaw University of Life Sciences and European Bison Friends Society. It allows for conduction of coordinated activities involving almost the entire population of E. bison in Poland both free ranging and in captivity.

**Key words:** European bison, project, conservation, State Forests, Poland

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## Introduction

The success of E. bison population development is mainly an effect of conservation projects carried out already for many years, and close cooperation both international and within involved countries (Olech 2008; Olech and Perzanowski 2014). Only in north-eastern Poland five large projects oriented towards E. bison conservation have been implemented during last 12 years, mainly thanks to European Funds. The project “*Ex situ* conservation of European bison *Bison bonasus* in Poland” (founded under the framework of Programme Infrastructure and Environment, and co-founded by National Fund for Environmental Protection and Water Management-Poland, duration: 2010–2014) was supposed to maintain existing and create new captive herds, support an exchange between breeding centers, animal health monitoring and improvement of living conditions for E. bison in captivity. Under this project, the Wisent Gene Bank collecting and preserving a biological material was established. Other four projects were oriented towards conservation



actions for the free living population: “European bison conservation in north-eastern Poland” (founded by EcoFund, Poland, duration: 2005–2007), “Bison-Land – European Bison conservation in the Białowieska Forest” (LIFE project, duration: 2006–2010), “In situ conservation of European bison in Poland – north-eastern part” (project founded by the Programme Infrastructure and Environment and cofounded by National Fund for Environmental Protection and Water Management-Poland, duration: 2010–2014), “The development of the European bison meta-population in north-eastern Poland” (founded by The EEA and Norway Grants, duration: 2014–2017). These projects included activities for improving natural food resources and habitat conditions in forest complexes inhabited by the species, which also allowed for the management of E. bison herds’ spatial distribution (i.e. mainly: maintenance of meadows, construction of watering places, introduction of tree species preferred by E. bison, winter feeding), but also protection of forest plantations and construction of small infrastructure. The projects also included spatial, genetic and veterinary monitoring of the population and educational activities. There were also undertaken actions aimed at the future development of population in places where E. bison does not occur yet – preparation of proper habitats in the Augustowska Forest and social attitude assessment in the Augustowska and Romincka Forests.

All actions undertaken within all projects have improved situation and welfare of E. bison in Poland (e.g. Bielecki *et al.* 2014). Animals were carefully selected for the reintroduction and exchange between herds to prevent genetic diversity loss. The habitat conditions has been improved and numbers of all concerned subpopulations have significantly increased (Ławreszuk *et al.* 2011; Olech and Perzanowski 2016; Olech and Suchecka 2011; Strucka *et al.* 2014; Żoch *et al.* 2012). One of the most distinct impact of these projects were benefits for local societies in form of contracts for meadows maintenance and other possibilities of employment in the projects’ activities and reduction of damage to crops caused by E. bison (e.g. Sobczuk and Olech 2016).

The current situation of E. bison requires continuation of conservation activities basing on best practices (Olech and Perzanowski 2014). It is also necessary to extend the scope of activities, which will allow to ensure the protection of this species in the future. For this reason a new project being currently launched, is founded and coordinated by State Forests under the framework of the Forest Found (Poland). The new project is a continuation of a majority of the activities undertaken so far, but it covers the entire population of E. bison in Poland being supervised by State Forests (*ex situ* and *in situ*) and introduces new activities oriented on the conservation of this species.

## The aims of the project and beneficiaries

The aim of the new project is to ensure the stability of the perspectives for the development of European bison population through the achievement of partial objectives:

1. Conservation of the existing E. bison population and its monitoring,
  - Improvement of natural conditions and management practices for free living populations in the Białowieża, Knyszyńska, Borecka Forests and the Bieszczady Mountains.
  - Conservation of E. bison *ex situ* population – maintenance of herds in four breeding centers and creation of two new exposition enclosures for educational purposes
2. Monitoring of the population
3. Dispersion of the E. bison within Poland and outside for meta-population creation and decrease of disease related risks.
4. Creation of professional Gene Bank of E. bison.
5. Promotion of the idea of European bison conservation and promotion of State Forests role and involvement.

The project is conducted in the partnership of State Forests, Białowieża National Park (both responsible for the E. bison management and conservation), Warsaw University of Life Sciences (as a scientific institution), and European Bison Friends Society (as nongovernment organization involved in the E. bison conservation). The project engages 22 State Forests' Districts and 2 breeding enclosures of six Regional Directorates: Białystok, Olsztyn, Krosno, Kraków, Katowice and Wrocław (Table 1).

The project with its range will cover the whole eastern population of European bison in Poland and captive population maintained in enclosures in other regions (Fig.1). All five forest complexes of the Regional Directorate in Białystok will be covered by the project, and additionally the Bieszczady Mountains. The project will run for 4 years, from 2017 to 2020.

## How the objectives of the project will be achieved

The objectives are consistent with each other and will jointly lead to the achievement of the main goal of the project. There are elaborated ways in forms of carefully selected actions for the achievement of each of the objectives. Most of the actions are the continuation of the activities undertaken so far, and are described in the “best practice” manual by Olech and Perzanowski (2014). Inclusion of new activities will allow to increase the effectiveness of the project in long-term perspective.

Table 1. State Forests Districts involved in the project.

| Regional Directorate | Forest District | Forest Complex | Current numbers of E. bison*** | <i>in situ</i> | <i>ex situ</i> |
|----------------------|-----------------|----------------|--------------------------------|----------------|----------------|
| Białystok            | Białowieża      | Białowieska    | <b>596</b>                     | ×              |                |
|                      | Bielsk          | Białowieska    |                                | ×              |                |
|                      | Browsk          | Białowieska    |                                | ×              |                |
|                      | Hajnówka        | Białowieska    |                                | ×              |                |
|                      | Krynki          | Knyszyńska     | <b>144</b>                     | ×              |                |
|                      | Supraśl         | Knyszyńska     |                                | ×              | ×              |
|                      | Waliły          | Knyszyńska     |                                | ×              |                |
|                      | Żednia          | Knyszyńska     |                                | ×              |                |
|                      | Borki           | Borecka        | <b>108</b>                     | ×              |                |
|                      | Czerwony Dwór   | Borecka        |                                | ×              |                |
|                      | Augustów        | Augustowska    | 0                              | ×              |                |
|                      | Płaska          | Augustowska    |                                | ×              |                |
|                      | Gołdap          | Romincka       | 0                              | ×              |                |
| Olsztyn              | Lidzbark        | –              | 0                              |                | ×              |
| Krosno               | Stuposiany      | Bieszczady     | <b>402</b>                     | ×              |                |
|                      | Cisna           | Bieszczady     |                                | ×              |                |
|                      | Baligród        | Bieszczady     |                                | ×              |                |
|                      | Lesko           | Bieszczady     |                                | ×              |                |
|                      | Komańcza        | Bieszczady     |                                | ×              |                |
|                      | Lutowiska       | Bieszczady     |                                | ×              |                |
| Kraków               | Niepołomice     | –              | 26                             |                | ×              |
| Katowice             | Kobiór          | –              | 50                             |                | ×              |
| Wrocław              | LBG Kostrzyca*  | –              | –                              |                |                |
| Not assigned**       | OKL Gołuchów    | –              | 12                             |                | ×              |

\* Forest Gene Bank.

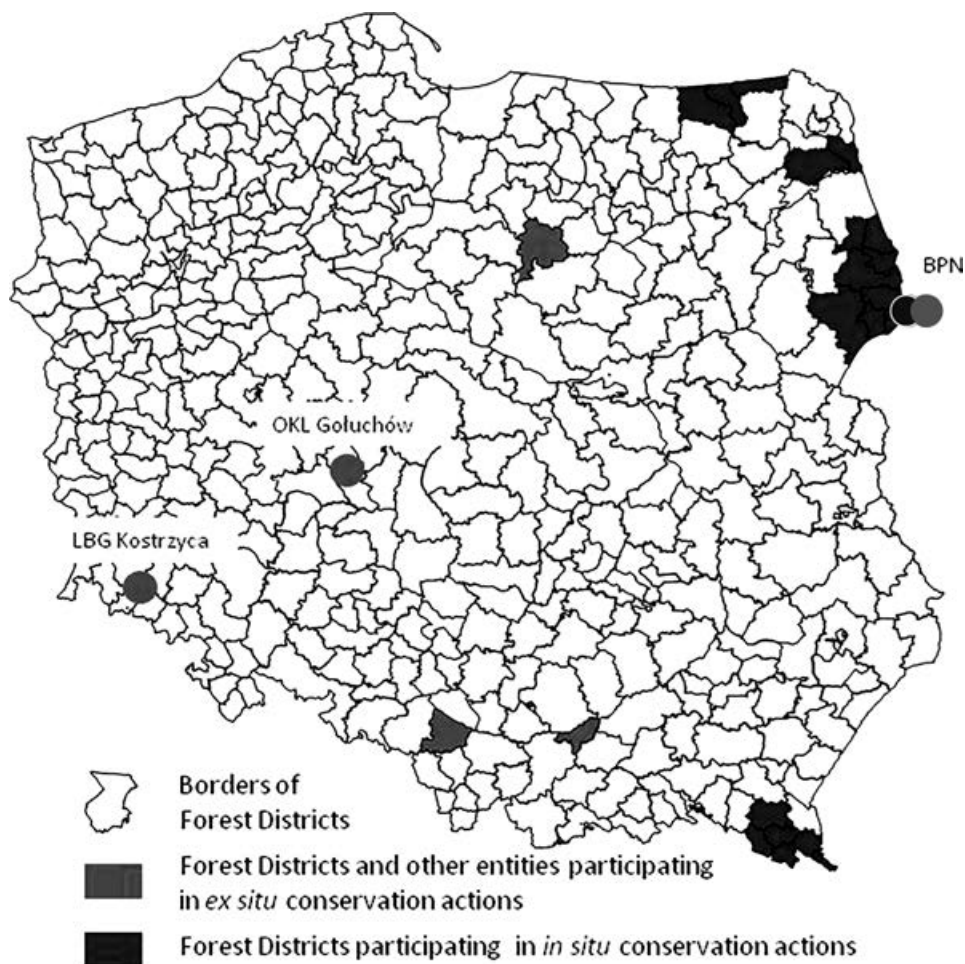
\*\* Center of Forest Culture, directly subject to the General Directorate of State Forests.

\*\*\* data from European Bison Pedigree Book 2016 (Raczyński 2017), bold numbers indicate free living populations in the whole forest complex.

### ***Improvement of natural conditions and management practices for free living populations***

This objective will be achieved by activities, that in general were undertaken in previous projects, and oriented to:

- enrichment of natural food resources and improvement of habitats by: creation and maintenance of meadows, construction of watering places, introduction of tree species preferred by E. bison,



**Figure.1.** Situation map of the Forest States entities involved in the project and Białowieża National Park.

- winter feeding: construction of feeders, purchase of feed and equipment (e.g. tractor, mower) for long term use,
- protection of crops and forest plantations with fences and meadow rental.

These activities will allow to mitigate the damage to crops, not only by fencing and feeding, but also by control of the spatial distribution of herds with proper arrangement of meadows, watering places and feeders inside the forest complexes.

### ***Conservation of E. bison population ex situ***

Four breeding centers will be able to purchase proper feed, but also modernize the infrastructure and equipment for long-term use in the future. The project also includes construction of two new exhibition – educational enclosures (in Lidzbark

Forest District and Supraśl Forest District) with infrastructure, which will allow to perform modern environmental education and allow local communities to extend their knowledge about the E. bison biology and observe individuals of this species in safe conditions. The availability of new enclosures will also increase touristic value of north-eastern Poland.

### ***Monitoring of the population***

The monitoring of the population covers four types of the monitoring, of which three are the continuation of the previous projects:

- Veterinary monitoring will allow for the development of mechanisms for reaction to emergencies and identifying factors affecting the degree of parasitic invasions and infectious diseases. It will be mainly based upon feces analysis and autopsy of dead individuals similarly to previous projects.
- Genetic monitoring will provide information on current situation and trends in the genetic diversity of each subpopulation; it will verify the effectiveness of previous activities in population management. The DNA will be isolated and a polymorphism will be assessed (microsatellite panel and MHC genes) as a routine panel adopted in previous projects. Also the SNP markers will be used to check the genetic relationship between animals and population.
- Spatial monitoring will provide a practical information about the effectiveness of spatial distribution management and the group size of each sub-population; it will also provide a current information on animals' locations and movements to each Forest District staff for management purposes; this monitoring will be conducted with telemetry.
- Ecological monitoring will allow for the evaluation of the ecological role of E. bison in the ecosystems; an analysis of impact of this species on rare and protected plants, invertebrates, amphibians and small mammals will be conducted with standard methods for these systematic groups.

### ***Dispersion of the E. bison and creation of meta-population***

The increase of the range of this species is one of the most important conservation activities for the future development of the population. Three main activities will allow to achieve this objective:

- Creation of 3 new subpopulations in north-eastern and south-eastern Poland (Augustowska Forest, Romincka Forest and Bieszczady Mountains); transportation of selected individuals (after pedigree analysis and veterinary checking) and creation of small initial herds (up to 8 individuals) fitted with GPS collars,
- Export of E. bison to proven breeding centers in Europe; this will increase the security of the whole population by reduction of animals' density in forest complexes presently inhabited by E. bison, and providing individuals for the creation of new subpopulations.

- An analysis of the potentials for the reintroduction of E. bison in new locations within Poland (Regional Directories of State Forest in Olsztyn and Lublin); the action for the future development of the population.

### ***Creation of professional Gene Bank of E. bison.***

Collection of the DNA of tissues and germ cells by Warsaw University of Life Sciences and LBG Kostrzyca, The bank will secure the existence of this species and provide possibility for the use of its genetic resources in future.

### ***Promotion of the idea of European bison conservation and promotion of State Forests***

This objective will be achieved by various actions like: website, design and distribution of promotional materials, public information campaign, workshops with local societies, scientific conferences, etc. The promotion commonly with the conservation activities like meadow rental or winter feeding will help in improving local attitudes to the European bison.

## **Conclusions**

The project described above brings together a number of institutions and involves a large number of people, which makes it the largest conservation project for E. bison in history. It allows for conduction of coordinated activities involving almost the entire population of E. bison in Poland both free ranging and in captivity. Such holistic approach is necessary, considering growing population of this species, intensification of human related conflicts and appearance of new threats (diseases) that may pose a threat for the existence of this species in the future. In this context, very important is an involvement of State Forests, which supervise the majority of present and potential habitats of this species in the country. The project will be first on so complex level. Not only activities dedicated the ecosystem and herds of European bison will be undertaken but also will spread information about the species to improve the attitudes to the species.

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### Kompleksowy projekt ochrony żubra przez Lasy Państwowe (2017–2020)

**Streszczenie** Sukces rozwoju populacji żubra jest głównie efektem projektów ochrony gatunku prowadzonych przez wiele lat oraz ściślej współpracy międzynarodowej i w poszczególnych krajach. Tylko w północno-wschodniej Polsce zrealizowano pięć dużych projektów, wspieranych głównie ze środków europejskich. Projekty te miały na celu ochronę zarówno stad w zagrodach jak i w populacji wolnościowych. Istnieje konieczność kontynuowania działań o charakterze najlepszych praktyk. Celem nowego projektu jest zapewnienie perspektyw stabilnego rozwoju populacji tego gatunku. Osiągnięcie założonego celu wymaga wprowadzenia działań, zarówno będących kontynuacją dotychczasowych jak i nowych, nie prowadzonych do tej pory. Cel główny zostanie osiągnięty poprzez cele cząstkowe:

- Poprawa naturalnej bazy pokarmowej oraz warunków gospodarowania populacją wolnościową – tworzenie łąk i wodopojów, wprowadzanie preferowanych gatunków drzew, dokarmianie zimowe, ochrona upraw.



- Ochrona populacji *ex situ* – zakup karmy, sprzętu, modernizacja infrastruktury oraz budowa dwóch nowych zagród pokazowo-edukacyjnych.
- Monitoring populacji – weterynaryjny, genetyczny, przestrzenny i ekologiczny (nowy element oceny wpływu żubrów na rośliny rzadkie i chronione, bezkręgowce, płazy i drobne ssaki).
- Rozprzestrzenienie osobników i utworzenie meta populacji – utworzenie 3 nowych stad (Puszcza Augustowska, Puszcza Romincka, Bieszczady), eksport żubrów do sprawdzonych ośrodków zagranicznych, analiza możliwości wsiedlenia w nowych lokalizacjach w Polsce.
- Utworzenie profesjonalnego Banku Genów żubra (we współpracy z LBG Kostrzyca),
- Promocja idei ochrony żubra oraz Lasów Państwowych (materiały promocyjne, warsztaty itp.).

Projekt jest wynikiem szerokiej współpracy Lasów Państwowych, Białowieskiego Parku Narodowego, Szkoły Głównej Gospodarstwa Wiejskiego w Warszawie oraz Stowarzyszenia Miłośników Żubrów. Zaangażowanie dużej liczby osób z powyższych instytucji pozwoli na przeprowadzenie skoordynowanych działań, które obejmą niemal całą populację żubra w Polsce. Takie podejście jest konieczne w obliczu rosnącej liczebności populacji, narastających konfliktów społecznych oraz pojawiania się nowych chorób, które mogą stanowić zagrożenie dla tego gatunku w przyszłości.

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