

# Formation of free ranging population of *Bison bonasus* L. in the Central Russia region, based on the National Park “Orlovskoe Polesie”

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**Abstract:** At the territory of National Park “Orlovskoe Polesie” and neighboring territories, efforts towards the reintroduction of *Bison bonasus* L. are conducted since 1996. Initially 85 animals were delivered to this region, now their population number reaches 285 individuals in 3 groups. A behavior typical for this species is observed. The population is monitored with the use of radio collars.

**Key words:** *Bison bonasus*, introduction, conservation, monitoring, Russia.

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## Introduction

Creation of a large free ranging population of European bison (*Bison bonasus* L.) at the territories of Oryol, Kaluga and Bryansk regions of Russia has been initiated in 1996 in the National Park “Orlovskoe Polesie”.

Within the park, 58% of its area still remains in commercial management, which creates a number of problems for the development of E. bison population due to frequent interactions with people (Mizin *et al.* 2005). Movements of animals outside of protected area and extension of their home range generates conflict situations. Therefore the existence of this population outside of the national park is impossible. Hence, the creation of a population counting 500–1000 individuals, necessary for the preservation of this species, is possible only in combined territories of the Oryol, Bryansk and Kaluga regions.

## Study area

The National Park “Orlovskoe Polesie” is located in the northwest of the Oryol region. The forests of the national park are the eastern part of large Bryansk forest area. The total area of the national park is 77,745 hectares, including 33,032 hectares of forested area. Coexistence of large stretches of the forest and small meadows in this region is very important regarding the general deficiency of habitats suitable for *Bison bonasus* L.

## **Materials and methods**

Creation of free ranging population of E. bison at this territory, has started with the delivery of 65 animals from various breeding stations, during the period from 1996 to 2001. The northern group was created on the basis of animals delivered in 2000–2001 in several groups from Germany, Switzerland, Holland and Russia. One more smaller group of animals born in breeding center in the Oksky reserve and transferred from the European zoos, has joined this group immediately after its release to the wild. The central group was created with animals delivered from enclosures of Oksky and Prioksko-Terrasny reserves. The southern group was formed with the animals, brought in 1996 from an enclosure of the Prioksko-Terrasny reserve. A considerable part of this delivery (4 out of 8 animals) was however lost (Pererva 2001).

Additionally, 9 E. bison, which joined already existing Southern group, were delivered in May 2006 to the Karachevsky district of the Bryansk region. Another 10 animals from the nursery of the Prioksko-Terrasny reserve, were released at the Kalugskie Zaseki reserve in 2008 and they became a part of the northern group.

In 2011 the national park began the use of telemetric collars, made at the Severtsov Institute of Ecology and Evolution of the Russian Academy of Sciences. In 2011, one radiocollar had operated for 2 months. In 2012 telemetric collars worked at two animals (one in the southern and one in the central group). In 2013 radio collars worked at three bison. These are a new design collar, which allow for obtaining data of animals' location at the real time by the internet.

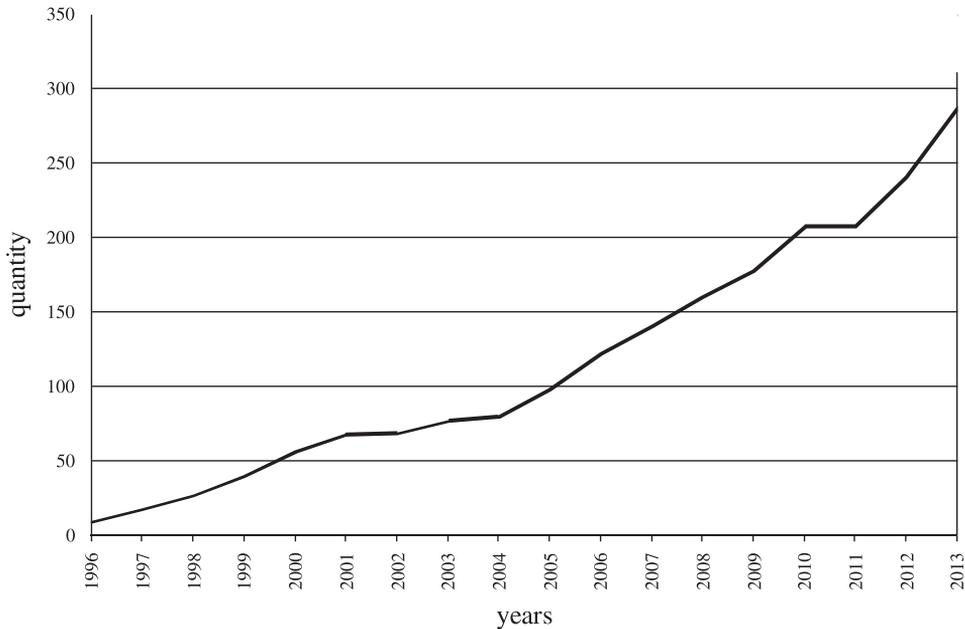
Remote monitoring with telemetry are used for determination patterns of herds' movements in spring and summer.

## **Results**

Now there are three independent groups of E. bison. One of them – northern, remains for the most of the time at the territory of the Kaluga region, and two others – central and southern, inhabit forests of the national park and adjacent forests of Bryansk and Kaluga areas.

For a number of years in this population a positive trend in population dynamics was observed except of 2011, when there was no increment of population numbers (Fig. 1).

The reason may be both a natural process of maturing bulls migration, and the illegal hunting, which takes place in adjacent territories, which animals visit in the spring and summer. However, considering that during annual inventory a majority of adult bulls both in the territory of national park, and in the territory of adjacent farms can be spotted, it is most probable, that the main reason for a lack of the population growth in 2011, was poaching.



**Figure 1.** Population dynamics of *E. bison* in the Oryol, Bryansk and Kaluga regions

According to inventory performed after enhanced security actions at the adjacent territories of the National Park "Orlovskoe Polesie" in March 2012, the number of calves was estimated for 39 and no losses of adults were recorded. Results of following inventory in March, 2013 gave in the Central group – 108 individuals (plus another 5 according to other evidence), 11 in Northern, and in the Southern group – 77 individuals, among them 32 calves (Tab. 1).

Another 84 *E. bison* were reported from the reserve "Kaluskie Zaseki" in 2013. These groups have a possibility for a contact among themselves so they may be treated as one population. Thus, there are 285 bison living presently at the territory of neighboring three regions.

**Table 1.** Numbers of *Bison bonasus* L. at the territory of National Park "Orlovskoe Polesie", March 5, 2013

Group	Visually defined		Another evidence	Total
	In total	Including calves		
Southern	77	13		77
Central	108	19	5	113
Northern	11			11
Total				201

## Discussion

A study on the development of *Bison bonasus* L. groups, living in natural habitats, indicate certain tendencies, characteristic for developed populations of this species:

- with the growth of the number of animals, division of existing herds and formation of new groups, led by young females leaders, is observed;
- the proportion of single males, migrating into new territories increases;
- observed is an extension of a home range and movements of animals outside of protected zones;
- formed groups, retain possibilities for a contact, which is important for the maintenance of genetic variability.

A comparison of home ranges occupied by E. bison in 2003–2004 (Mizin 2006), and the data, obtained by means of telemetry in 2011–2012, shows that Northern and Central groups remain within earlier inhabited area, while in the Southern group observed are movements outside the original home range and its seasonal extension up to the western border of the Karachevsky Wildlife Area.

Because herds of E. bison, use to cross the boundary of the Oryol region during the spring, the management of National Park "Orlovskoe Polesie" is interested in cooperation with adjacent farms.

Contracts for cooperation including data exchange and necessary security measures with "Chavgun V. M." (Kaluga region), the hunting ground "Reseta" Agrokompleks "Hvastovichsky" (Kaluga region), "Reserve-Agro" (Bryansk region) are signed at present time, whose farms adjoin national park and where E. bison wander in spring and summer period. However, to the north of national park, the hunting ground "Krone" (Kaluga region) and in the south – the wildlife area of regional Karachevsky value (Bryansk region), remain without appropriate control. Therefore the expansion of a zone of cooperation needs to be continued.

Thus, free ranging population of E. bison in the Oryol-Bryansk-Kaluga region, at the present moment is the largest among pure blood E. bison in Russia, and has real prospects for further growth. According to annual censuses, animals in this population are in a good shape, the birth rate by 3–4 times exceeds mortality there. Movements of animals and penetration of suitable habitats are observed. However, recently there is no evidence for a considerable expansion of this population home range.

Nevertheless, because of a general tendency towards the growth of this population, creation of a uniform system of nature reserves, national parks, wildlife areas with a joint buffer zone within the territories of the Oryol, Bryansk, and Kaluga regions, as well as coordinated efforts of existing there organizations for nature conservation, are extremely important for the future of E. bison population in this area.

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### **Tworzenie wolnej populacji żubra w Centralnej Rosji na przykładzie Parku Narodowego "Orłowskie Polesie"**

**Streszczenie:** Na terytorium narodowego parku "Orłowskie Polesie" i sąsiednich obwodów od 1996 roku prowadzi się reintrodukcję żubra *Bison bonasus* L. Początkowo do tego regionu zawieziono 85 zwierząt a obecnie liczebność populacji osiągnęła poziom 285 osobników podzielonych na 3 grupy. Obserwuje się charakterystyczne dla żubra zachowania. Obserwacje przemieszczania się zwierząt prowadzone są metodą monitoringu na dystans przy pomocy obroży telemetrycznych.

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