

Creation of a free-roaming population of European bison in the Bryansk Region (Russia)

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Abstract: Initial results of efforts to create a free-roaming population of European bison at the territory of the Bryansk Region are presented. In 2011–2012 more than 20 animals were re-introduced there. Presented are details of the animals’ adaptation to conditions in the wild, and described results of a successful use of GPS collars for tracking movements of the bison herd.

Key words: European bison; free-ranging group; telemetry; GPS collars.

Introduction

The program to reintroduce the European bison to the southwestern part of European Russia has been carried out since 1996. Three regions participate in the program: Kaluga, Oryol and Bryansk. The most successful in the program are the Oryol and Kaluga regions. Currently, the population of E. bison there counts 290 animals (Sipko *et al.* 2013).

In the Bryansk Region where the program has been initiated in the same time, in the first four years, 11 E. bison were re-introduced (6 ♀♀ and 5 ♂♂; Tabl. 1). For different reasons, during the same time period, 8 animals died (5 ♀♀ and 3 ♂♂). In 2002, the remaining 3 animals (♀ and 2 ♂♂) were transferred to the bison breeding center in Prioksky-Terrasny Reserve and to the Muromsky Sanctuary in the Vladimir Region (Tabl. 1).

The main failures of the initial effort to create a population of E. bison at the territory of the Bryansk Forest Nature Reserve were: too small groups of animals were brought there in too long time intervals; the location of the temporary holding pen was not optimal which caused a necessity to move it during the time of the project; failure to provide regular supplemental feeding, especially in winter. Additionally, another significant factor was that all of the re-introduced animals were about the same age (1.5–2 years), and as a result for several years the herd did not have a clear leader. Efforts to re-introduce E. bison from European breeding centers (German and Netherlands) were also unsuccessful. These animals were completely unprepared for life in the wild and as a result joined a herd of domestic cattle.

In 2010 the decision was made to renew the program to create a free-roaming population at the territory of the nature reserve.

Table 1. List of European bison reintroduced from 1997–2000 to Bryansk Region

No	Sex	Name	Pedigree No	Date of:				Remarks: e.g.: born dead aborted, arrived from... sent to.....etc.
				Birth	Arrived	Death	Sent from	
1.	F	MEDIORA	7859	26.05.93	13.03.97	06.02.01		Pregnant, hit by train
2.	F	MEFLORA	8161	03.05.94	13.03.97	25.05.99		Drowned in the Nerussa River
3.	M	MEKAR	8163	13.06.94	13.03.97	20.08.99		Shot by poachers
4.	M	NL-19	8867	13.05.97	24.09.99		Prioksko-Terrasny res. 08.07.02	
5.	F	NL-18	8866	06.05.97	24.09.99		Prioksko-Terrasny res. 08.07.02	
6.	F	NL-21	8869	14.07.97	24.09.99	19.06.01		Died from fasciolosis
7.	M	NL-25	9068	14.06.98	24.09.99	01.04.01		Wounded by poachers and later died
8.	M	MEFINN	9045	28.10.98	02.03.00			Unknown fate, most likely dead
9.	F	DIRT 97/2	8774	19.05.97	02.03.00			Unknown fate, most likely dead
10.	F	ORVITA	8770	22.11.97	02.03.00			Unknown fate, most likely dead
11.	M	ORIGON	9040	26.08.98	02.03.00		Prioksko-Terrasny res. 08.07.02	

Study area

The Bryansk Region is situated in the East European plain (51°40'–54°05'N, 31°10'–35°20'E). Its territory is comparable in size to a small European country, measuring 270 km from north to south and covering 34,900 square kilometers. The main part of the region belongs to the subzone of mixed broadleaved-coniferous forests. The southwestern foothills of the Central Russian Highlands meet the Poles'ye plain at the territory of the Bryansk Region forming a diversity of landscapes.

The southern part of region is partially covered by the Nerusso-Desnyanskoe Poles'ye – a large forested area situated in the Desna River valley (with its tributaries) and continuing southward into the territory of Ukraine. The main territory for bison re-introduction was the Bryansk Forest Biosphere Nature Reserve (120 km²) situated in this area.

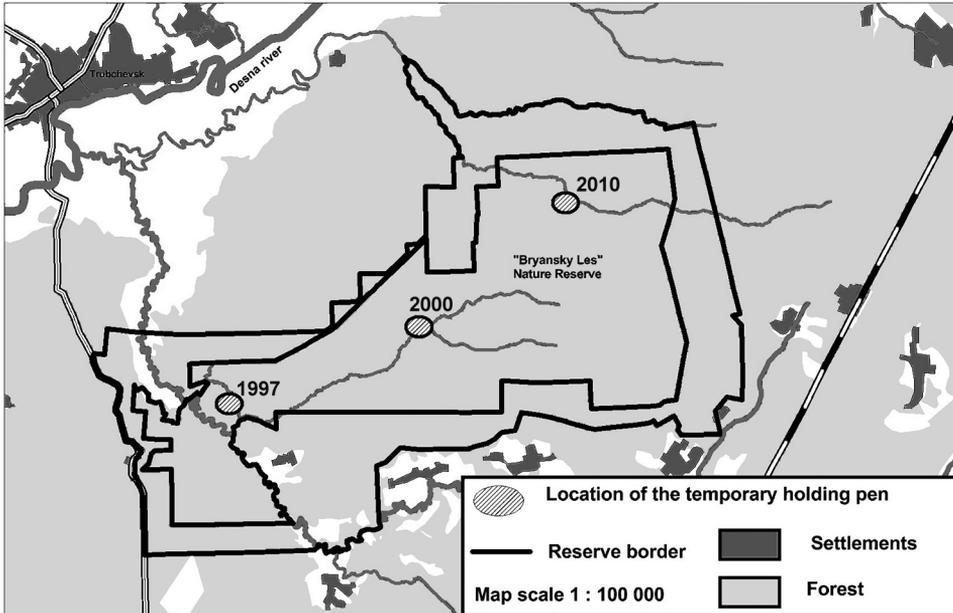


Figure 1. Location of the temporary holding pen for *E. bison* on the territory of the nature reserve

Results and discussion

A new location for the temporary holding pen was chosen in the northern part of the territory of the nature reserve, far from human settlements (Figure 1). The pen covers more than five sq. kilometers and is furnished with feeding troughs. In October 2011, the first 10 *E. bison* were brought in (Table 2). The animals were kept in the holding pen for almost 4 months. The animals were held this long because of two main factors: plans to fit the animals with GPS collars in order to track their movements, as well as the birth of a calf to one of the females. While in the holding pen, the bison were fed with root vegetables, grain, and hay according to the diet prescribed for them.

In January 2012, two of the adult females (FEISHA and MUZAVRA) were fitted with GPS collars. The collars were set up to transmit for three hours and then turn off for three hours. Furthermore, while one female's collar was transmitting, the other's was on standby. This allowed us to conserve the battery while at the same time having a continuous track of the herd, under the condition that the females remained together. The animals remained in the pen for a while longer. This period allowed to test performance of the collars.

In early February 2012, the holding pen was opened and animals were released. For about 10 days, they stayed near the pen, taking food from the troughs. Then the entire herd moved to the north, crossing the border of the nature reserve into the buffer zone. The presence of two strong females in the

Table 2. List of European bison introduced from 1997–2000 to Bryansk Region

No	Sex	Name	Pedigree No	Date of:				Remarks: e.g.: Arrived from
				Birth	Arrived	Death	Sending	
1.	F	MUZAVRA	8622	25.04.96	18.10.11	30.07.12		Prioksko-Terrasny res.
2.	F	FEISHA	9002	27.04.98	12.10.11			Okskij res.
3.	F	MUZANNA	9028	17.09.98	18.10.11			Okskij zapovednik
4.	F	MUNTANA	11833	08.09.10	26.10.11			Prioksko-Terrasny res.
5.	F	MURKUAZA	11545	30.10.09	26.10.11			Prioksko-Terrasny res.
6.	M	MEGAY	11261	23.04.08	12.10.11			Okskij res.
7.	M	MEKAR	11464	28.09.09	12.10.11			Okskij res.
8.	M	MESTKOM	11465	08.11.09	12.10.11	19.09.12		Okskij res.
9.	M	MUSTON	11831	23.07.10	18.10.11			Prioksko-Terrasny res.
10.	M	MUNATEP	11832	07.08.10	26.10.11			Prioksko-Terrasny res.
11.	M	MEFODIY		10.11.11				Res. "Bryanskiy Les"

herd apparently provoked a conflict. After moving about three kilometers from the pen, the animals split into two herds. One herd of four bison, led by the female MUZAVRA, returned to the pen on the same day. The second herd, led by the female FEISHA, continued to move north. The first herd consisted of two adult females and two males, one of which was the largest and oldest; the second herd consisted of one adult female (FEISHA), her four-month-old calf, two young females, and three young males. Since leaders of both herds were fitted with GPS-collars, their movements could be tracked daily.

FEISHA'S herd moved more than 15 kilometers directly to the north during the first night, after which, for about 10 days, animals remained at a small plot near the Navlya River belonging to the state game farm. They regularly approached the food provided by the reserve. During this time the staff of the nature reserve attempted to turn the herd back toward the nature reserve, but without success (Fig. 2). Several times FEISHA tried to cross the river over the ice and, when she succeeded, the herd moved again to the north. Over several days the bison covered 17 kilometers making stops along the way. Finally they came out of the dense forest into a densely populated area. Apparently, the open space and presence of people forced the bison to turn back. Making a 30-km circle, the herd returned to the Navlya River further upstream. The

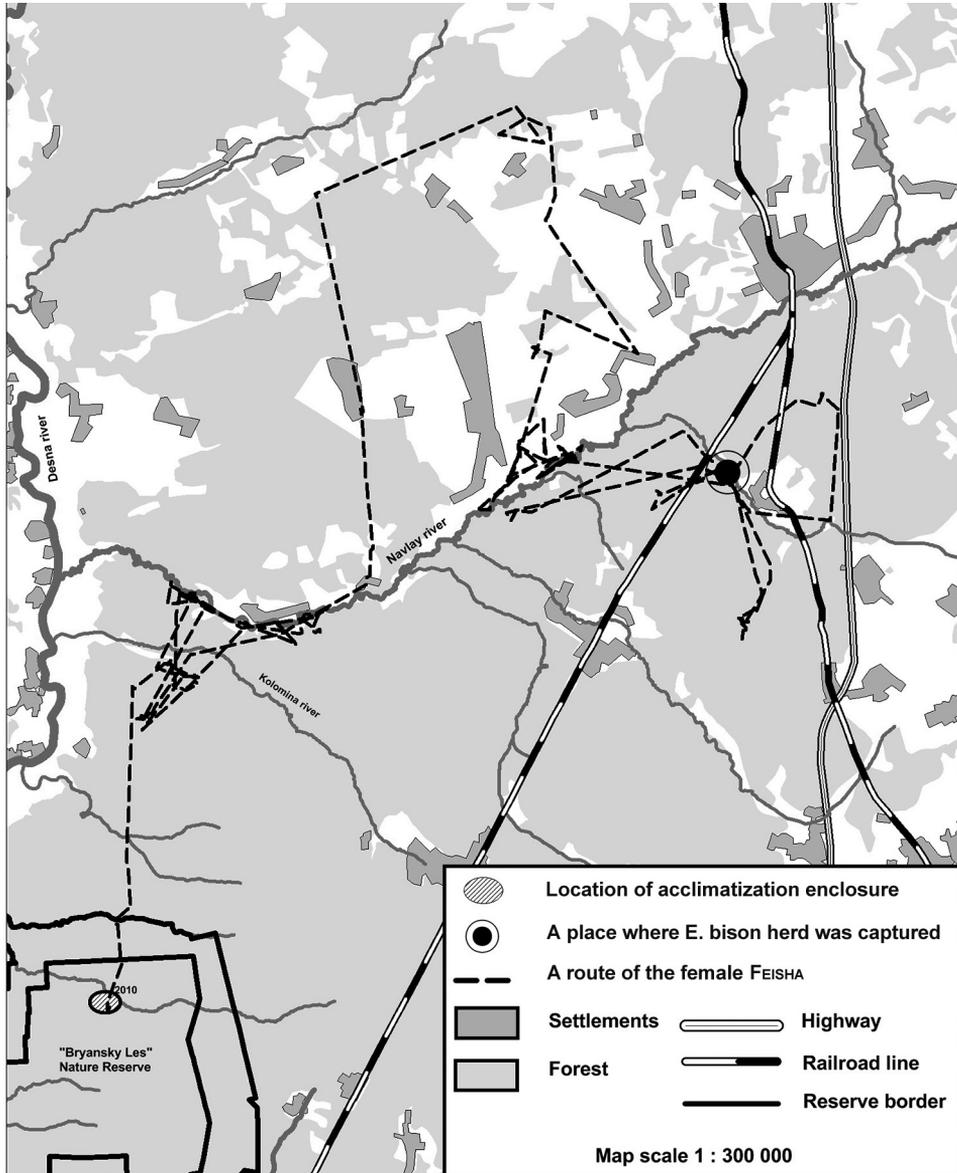


Figure 2. Movements of the female Feisha and herd of E. bison.

animals lived here for almost a week. The nature reserve staff monitored them and provided the food. The bison found themselves trapped here: to the south was the river, which they were afraid to cross, to the north were open farmlands, and to the west was a large town stretching more than nine kilometers. In the beginning of March, FEISHA, crossing the river after all, moved in an eastern direction, crossing two large railroad tracks and

approaching the «Ukraine» highway (Moscow-Kiev). The animals walked for about five kilometers along the highway, trying to cross it, after which they turned back, again crossing the railroad tracks. For a time, the bison lived between the two tracks, often crossing a road. The animals posed enormous danger for oncoming trains, as well as put their own lives at risk. The nature reserve management decided to try to turn the herd away from the railroad tracks. The bison were chased for 10 kilometers into the forest in the floodplain of the Navlya River. After a day's rest, however, they returned to their former location. For a time, the herd lived near a large town, raising concerns of the local residents. Surprisingly and luckily, one day the bison entered a large fenced-in recreational property at the edge of the town (Fig. 2). The female behaved very aggressively, wounding the guard dog and attacking the guard. A small plot of the forest on the property was fenced-in and a ramp was constructed to herd the animals into transport cages. Permission was obtained to (if necessary) immobilize the bison. Over the course of a few days, the animals were caught and brought back to the territory of the nature reserve to the temporary holding pen.

As a result, in over a month, this herd made a circle of more than 100 km, and the overall length of their track was about 300 km. All animals lost a lot of weight. The female FEISHA, who was nursing a calf, and as was later determined, was pregnant, was very thin. Two weeks later all the animals, except FEISHA and her calf, were released from the pen. The properly functioning GPS collars, which operated under the ARGOS «Pulsar» system, played an enormous and invaluable role in this whole situation. Virtually all of the female FEISHA'S movements, and subsequently, those of the herd, were followed online.

In the course of this month, while one herd got acquainted with the surrounding region, the second herd of four bison lived near the holding pen. When the «runaways» came back, they joined MUZAVRA'S herd. For the rest of the spring and summer, the animals stayed near the enclosure, getting familiar with the territory in a radius of 2–3 km (Fig. 3). Apparently, the fact that FEISHA and her calf lived in the enclosure played an important role in keeping the herd nearby. All the bison communicated with her through the fence and regularly slept near her.

Additionally, in June 2012, one of the females (MUZANNA) gave birth to a calf (♀), which died before the age of one month. The cause of death was severe weakness and dehydration, possibly a result of termination of the lactation in the female due to the abundance of blood-sucking insects.

In the beginning of July 2012, more bison were brought in from breeding centers (Table 3). The first group consisted of 3 animals from Prioksky-Terrasny Nature Reserve (2♂ and 1♀). At the end of July, not far from the holding pen a female bison was found dead (the herd leader, MUZAVRA, born 1996). Her remains were located by tracking a signal from the GPS collar. The cause of death could not be determined, since the bison was completely devoured by wild boar in a short amount of time.

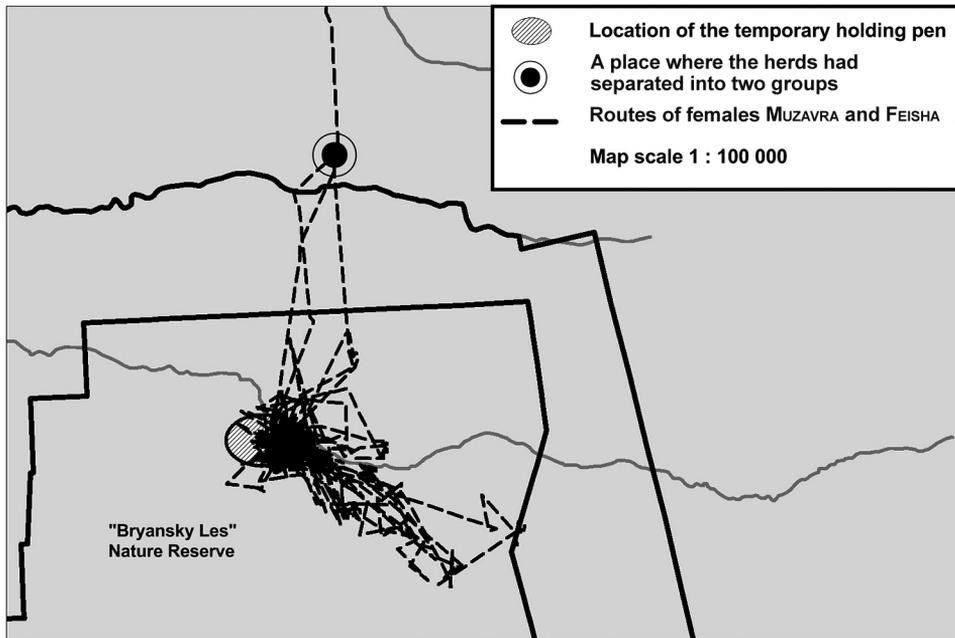


Figure 3. Movements of the females MUZAVRA and FEISHA and their herds from February to July 2012.

In August, a second group of *E. bison* consisting of 3 animals (2♂ and 1♀) was brought to the reserve. During the transport of these animals, the truck was illegally held by the traffic police. The bison remained in the transport cages for more than 24 hours in the rain. When the animals were released in the nature reserve, it was observed that they all had tremors in their front and hind legs, and two of the animals had diarrhea. The young animals were severely stressed, having been on the road for more than 24 hours, instead of the anticipated 7–8 hours. A week after their arrival, one young male from this group separated from the herd. After being examined by the veterinarian, it was determined that the bull continued to have diarrhea and was getting emaciated. He died the next day. The cause of death was heart failure due to dehydration and severe weakness as a result of stress. Even though after the bull died all the animals were given probiotic supplements and vitamins with their food as a preventative measure, in mid September a female from this group also died. The young female was diagnosed with the same symptoms. The cow was captured and held in a separate enclosure. She was treated intensively for more than a week: injections were given subcutaneously, intravenously, and in the stomach, medication to improve the state of her intestines was added to her food and water. But the treatment did not help. The autopsy showed signs of severe damage to the intestines, liver, and kidneys.

Table 3. List of European bison and their offspring brought from breeding centers in 2012.

No	Sex	Name	Pedigree No	Date of:				Remarks: e.g.: Arrived from
				Birth	Arrived	Death	Sending	
1.	F	MUSKARI	11823	02.05.10	26.07.12			Prioksko-Terrasny res.
2.	F	MURISYA	12051	26.04.11	14.08.12	18.09.12		Prioksko-Terrasny res.
3.	F	METROSHKA	8763	07.09.97	24.10.12			Okskiy res.
4.	F	MELIANA	12004	20.08.11	24.10.12			Okskiy res.
5.	F	MESALINA	11999	10.06.11	12.11.12			Okskiy res.
6.	F	MELISSA		14.06.12		30.06.12		Res. "Bryanskiy Les"
7.	F	ME..FEYA		28.09.12				Res. "Bryanskiy Les"
8.	F	MERAL'DA	12000	10.06.11	12.11.12			Okskiy res.
9.	M	MUBILEY	11828	18.06.10	26.07.12			Prioksko-Terrasny res.
10.	M	MUBYASH	11825	24.05.10	26.07.12			Prioksko-Terrasny ers.
11.	M	MUROVEC	12054	01.05.11	14.08.12			Prioksko-Terrasny res.
12.	M	MUKSTOR	12050	24.04.11	14.08.12	31.08.12		Prioksko-Terrasny res.
13.	M	MELIKAN	11754	23.06.10	12.11.12			Okskiy res.
14.	M	METOP		16.11.12		01.12.12		Res. "Bryanskiy Les"

Almost at the same time, the mating season began. Some of the animals, mostly the males, left the territory of the nature reserve. They could be followed only by their tracks, as none animals in this group had a GPS collar. Unfortunately, the fact that they left the reserve and entered the adjacent game farm ended in tragedy. One of the large males was killed by a poacher. Apparently, the hunters didn't realize at what animal they were shooting as it was a nighttime, and they abandoned the untouched carcass right on the road. The bull was killed with a rifle almost point blank, and all vital organs were damaged – the heart, lungs, and liver. After this, the remaining animals returned to the holding pen and remained nearby until the winter.

In September FEISHA gave birth to another calf, which helped her to strengthen her leadership status. Despite the fact that the female was in the enclosure, she remained the clear herd leader. The other adult female MUZANNA occupied the second position in the herd.

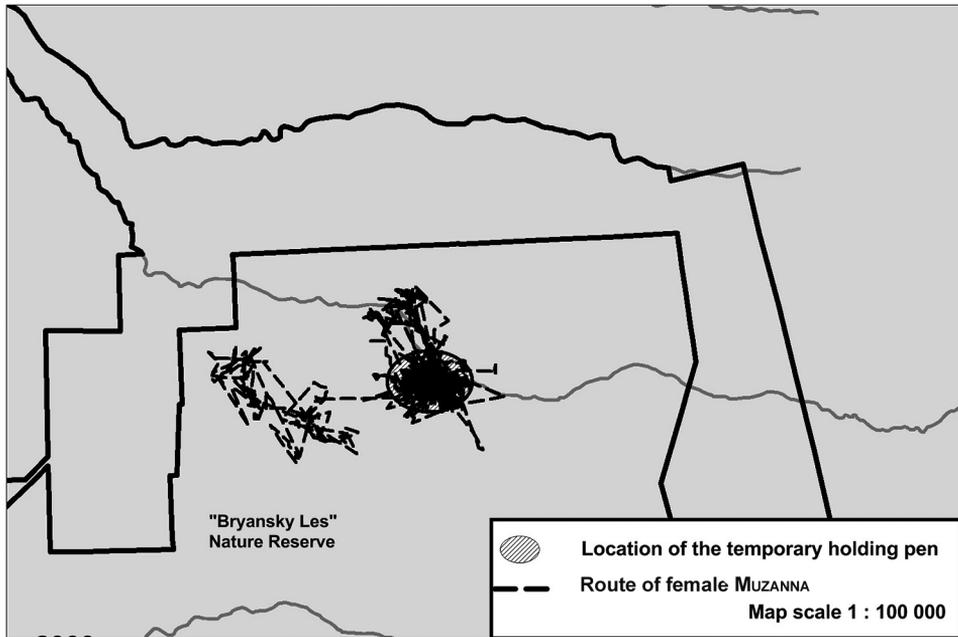


Figure 4. Movements of the female MUZANNA from November 2012 to May 2013

In October and November five more *E. bison* were brought in. Over the summer a new enclosure was built, where the newly arrived animals were released. Almost immediately after their arrival, one of the females gave birth. The calf was very weak, and survived only for a week. During this time, two females – the adult MUZANNA and the three-year-old MURKUAZA – were fitted with GPS collars. In the end of November, all the bison were released from the enclosure into the wild.

The bison spent the winter of 2012–2013 near the enclosure. Supplemental feed was provided daily. Only in the beginning of April, when the first green grass appeared, the bison left the feeding area. The animals penetrate the area around the enclosure in a radius of 2–3 km. Every two or three weeks they return to the place of release (Fig. 4, 5).

Conclusions

In forming a free-roaming population of animals raised in breeding centers, it is very important to monitor their behavioral aspects. Young animals, when released into the wild, quickly develop natural defense and protective reactions. Older animals do not develop a healthy fear of humans. The animals clearly differentiate among the people who are feeding them and strangers. In the forest, away from the feeding area, the bison try to avoid encounters with people.

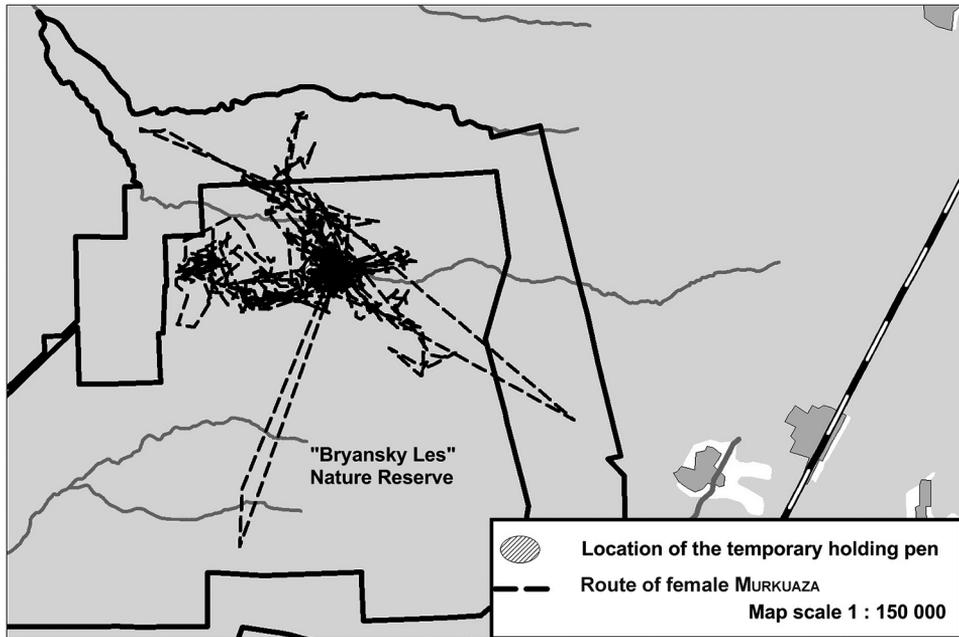


Figure 5. Movements of the female MURKUAZA from November 2012 to May 2013.

GPS collars, fitted to the herd leaders, make following the bison's behavior much easier. In densely populated areas, if the animals leave the nature reserve, the collars provide the opportunity to avert conflicts.

Unfortunately, there are only two European bison breeding centers in Russia. The low number of animals, the majority of which are males, doesn't allow for the formation of new populations of this species with their natural sex and age ratios. The key to success, however, is to include in the herd one older female capable of occupying a leading position in the herd. The presence of two or more potential leaders will lead inevitably to division of the herd. However in early stages of creating a free-roaming population, it is undesirable to have the herd divided into smaller groups.

The success of the new phase of creating a free-roaming herd of bison at the territory of the Bryansk Region was a result of several factors:

1. Using for introduction the European bison from Russian breeding centers, where animals are more adaptable to conditions in the wild.
2. Selecting an optimal location for the acclimatisation of introduced animals.
3. Re-introducing the animals over a short time period.
4. Bringing in large groups each time (not less than 8–10 animals).
5. Formation of the herd from animals of different age.
6. Regular supplemental feeding, especially in fall-winter period.

7. Fitting the animals with a system (e.g. GPS collars) allowing for tracking their movements.

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Tworzenie wolno-żyjącej populacji żubra w Regionie Briańskim (Rosja)

Streszczenie: Przedstawione są wstępne wyniki tworzenia wolnej populacji żubra na terytorium Regionu Briańskiego. W latach 2011–2012 ponad 20 zwierząt zostało reintrodukowanych w tym regionie. Przedstawione są szczegółowe wyniki adaptacji żubrów do warunków życia na swobodzie oraz opisane są wyniki zastosowania z sukcesem obroży GPS dla śledzenia przemieszczania się stada żubrów.
