

Potentials for introduction of the wisent *Bison bonasus* to Western Rodopes, Bulgaria

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Abstract: The paper summarises results of the survey which goal was the evaluation of potential sites for the reintroduction of wisents to Western Rodopes, Bulgaria. Evaluated were there regions: Madzharovo, Byala Reka and Mursalica. First two were disqualified mostly because unfavorable habitat conditions (poor food base and limited water resources). In Mursalica region small population of wisents (up to 20 animals) could be maintained, providing there would be introduced and adequate protection against poaching and measures to prevent possible transmission of diseases from local livestock.

The survey was performed under the framework of European Bison Friends Society.

Key words: Wisent, *Bison bonasus*, Western Rodopes, Bulgaria, introduction, habitat.

Bulgaria remains generally outside of the historical range of wisents however habitat conditions in the mountains of this country are not so much different from the southern tip of the Romanian Carpathians (Pucek 1991, Perzanowski & Deju 2005). At the moment there are only three individuals of this species living in Dobrich Zoo (Raczyński 2010). Western Rodopes were in the past intensively grazed with domestic livestock, but since political/economical changes that took place in Bulgaria some 20 years ago a large part of former pastures and hay meadows there remain abandoned and become gradually overgrown with woody vegetation. The wild fauna of Bulgarian mountains lacks large herbivores able to maintain through grazing – open, grassy communities. Therefore in 2011, from the initiative of ARK Nature from the Netherlands, undertaken was a field survey aimed at the evaluation of sites proposed for the reintroduction of the wisent to Western Rodopes. This paper provides a summary of this survey that was conducted in September 2011.

Study area

The region of western Rodopes is strongly diversified regarding the habitat. Occur there poor, typical for Balkan mountains, grazing areas – as well as fertile high-mountain forests and alpine meadows. Common for the area is range grazing with cattle, horses and sheep. Apart from such uncontrolled grazing, within the potential introduction sites occur also feral cows and



Figure 1. The map of Bulgaria with marked proposed introduction sites.

horses. The whole region is highly heterogeneous regarding the agriculture including typical cultivated fields and areas under secondary, meadow-forest succession. Within the region occur some areas that are poor in water resources, having only seasonal creeks (Madzharovo and Byala Reka areas), but there are also some high-mountain sites (Mursalica) with permanent water resources. Potential sources of water are common water intakes, situated close to springs, and available for both domestic and wild animals, which increases a danger of livestock transmitted diseases.

As the first, surveyed was the Madzharovo region (Fig. 1). The area is dominated by rocky mountains situated to the south of Madzharovo, limited from the north by the river Arda and the lake Ivaylovgrad, and from other three sides by roads: Madzharovo – Senoklas – Gornoseltsi – Chernichino – Madzharovo. Elevations there vary between 300–800 m above sea level. The area is poor in water resources, except main rivers – other watercourses are only seasonal, and in consequence there is also rather poor vegetation cover (Fig. 2). In the region, uncontrolled grazing with cattle and horses occur. Except areas in direct proximity of rivers there is a lack of cultivated fields.

The second to be surveyed was Byala Reka region. The area being also of mountain-rocky character, situated along Byala Reka river, among settlements Meden Buk – Gorni Yurutsi – Chernichevo – Gorsko – Gugutka – Plevin – Meden Buk. From the south, the area is limited by the state border between Bulgaria and Greece with peaks reaching about 1000 m above sea level (Fig. 1).



Figure 2. The landscape of Madzharovo region

Similarly like region of Madzharowo, this area has low level of water resources, with several larger watercourses like Byala Reka, Yuruklerska, Hambardere, Chukurskata, and smaller creeks that are active only seasonally. The area is of agricultural – pastoral character, with many cultivated fields (a potential source of conflicts with introduced wisents). Within the area there is an intensive grazing with cattle – both: farm cattle and uncontrolled one. Along the border zone with Greece, there is possible to encounter feral cattle coming from Greek side of the mountains. Understory in forests, and shrubs in the fields, are poorly developed and of little variety. Richer vegetation and forest understory occurs only along major watercourses. Similarly looks the distribution of cultivated fields. The further from a larger river, the land becomes drier, and vegetation is less diversified (Fig. 3).

Finally, under evaluation was the Mursalica Region, a typical mountainous area with peaks from 1200 m above sea level, up to over 2000 m a.s.l., with a stretching alpine meadow (polonina) Mursalica. The whole region is situated among following settlements: Borino – Grohotno – Nastan – Beden – Shiroka Laka – Gela – Mugla – Triglad – Yagodino – Borino. The area is dominated by rich fir (*Abies alba*) forests with moist soils and high level of humidity in the forest. There is a number of permanent mountain creeks and fertile forest glades and openings (Fig. 1)

Within the area grazed are flocks of sheep but an intensity of grazing has a diminishing tendency. Apart of sheep also feral horses occur there. In



Figure 3. The landscape of Byala Reka region

Mursalica region there is situated a game reserve which may be a source of some conflicts after potential release of wisents to the wild. Like in other parts of Western Rodopes, also an intensive poaching with firearms is a common case. In the region there is a lack of typically agricultural areas. Common are water intakes that are available also for wild animals. The foothills are quite steep and rocky, while in upper parts there is less rocks, and slopes became less steep, gradually changing along ridges into alpine meadows (Fig. 4).

Results and Discussion

In the Madzharovo region, because of poor and rather homogenous vegetation cover, as well as limited water resources this area is not suitable for the reintroduction of wisents. Highly dangerous for wisents that would be introduced there, apart from the insufficient natural food resources and scarcity of water, would be also a constant exposition at cattle transmitted diseases (due to joint food base and access to drinking water). In the region, similarly like within the whole proposed area, an intensive poaching with firearms is common.

Similarly, like in the case of Madzharowo region, also within the area of Byala Reka there is quite high risk of parasites and diseases being transmitted from farm animals to introduced wisents (the same sources of forage and water for wisents and free ranging cattle). A serious problem with introduced wisents may become considerable damages to agriculture, because of low both:



Figure 4. The habitat of Mursalica region

variability and attractiveness of natural forages. It has to be expected, that soon after the release to the wild, wisents would concentrate along the main river i.e. the area with most intensive agriculture. Therefore, the high probability of conflicts with farmers, poor and dry habitat disqualifies this region as a potential introduction site.

The Mursalica Region may be considered as a potential site for reintroduction of wisents into western Rodopes. However, its carrying capacity allows for planning rather an introduction of a small number of animals that could be maintained there – from several to below twenty individuals. Forest habitats of this area belong to a moist type, with rich understory and multispecies' ground flora. Mountain creeks in this area are permanent which assures a continuous access to drinking water. Diversified terrain provides good conditions for planning an introduction there. Some problem may constitute an occurrence of large predators there: the wolf and brown bear. A major threat for introduced wisents may become the poaching with firearms that is quite common in the region.

Therefore, from three proposed sites in Bulgarian Rodopes, only one is potentially suitable for reintroduction of wisents due to its better habitat conditions, in particular much more abundant water resources. Nevertheless, before the decision on reintroduction necessary would be an access to data on diseases potentially transmittable from domestic livestock that may threaten wisents (TB, brucellosis, F&M disease etc.). Another problem would be

precautions against poaching that is fairly frequent in the region and clarification of land ownership and management issues in the site selected for introduction.

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Możliwości reintrodukcji żubra *Bison bonasus* w Zachodnich Rodopach, Bułgaria

Streszczenie: Praca jest podsumowaniem rezultatów terenowej wizji lokalnej, której celem była ocena potencjalnym miejsc reintrodukcji żubra w Zachodnich Rodopach. Ocenie podlegały trzy regiony: Madzharovo, Byala Reka i Mursalica. Dwa pierwsze zostały zdyskwalifikowane, przede wszystkim z uwagi na niesprzyjające warunki siedliskowe (stosunkowo uboga baza pokarmowa i ograniczony dostęp do wody). W regionie Mursalica, mogłaby być utworzona mała (do 20 osobników) populacja żubra przy założeniu wprowadzenia tam odpowiedniej ochrony przed kłusownictwem i zabiegów zapobiegających możliwemu zarażeniu się żubrów chorobami zakaźnymi od zwierząt gospodarskich.
