

The impact of Russian military aggression on Ukrainian subpopulations of the European bison

Vitalii Smagol^{1,2}, Ostap Reshetylo^{3,4}, Viktoria Smagol^{2,5}

¹Schmalhausen Institute of Zoology, Kyiv, Ukraine

²National Nature Park “Zalissia”, Kyiv region, Ukraine

³Ivan Franko National University of Lviv, Lviv, Ukraine

⁴WWF-Ukraine, Kyiv, Ukraine

⁵National Museum of Natural History, Kyiv, Ukraine

Abstract: The impact of Russian occupation on some European bison sites in Ukraine is analyzed. It was found that active military operations in the north of the Kyiv region in March 2022 led to a critical decline in the number of animals in the Zalisianska European bison subpopulation in Zalissia National Nature Park to 14 animals from 21 in 2021; moreover, there are no males left in this herd. The reasons for this decline are both the effects of mines and explosive devices and stressors (explosion sounds and flashes, low-flying aircraft, machinery movements, etc.). The location of the Konotopska bison subpopulation on the territory of the Konotop State Forestry (Sumy region), which was occupied during the same period, wasn't affected as much because no large-scale military actions took place there. The movements of Russian military machines along the forest trails resulted only in a temporary abandonment of the European bison's common feeding habitats and led to the absence of offspring in 2022 due to stress. The war in general and the occupation of the Chornobyl exclusion zone by Russian troops in particular had a negative impact on the realization of the ambitious European bison reintroduction project EBFS-WWF, which therefore had to be postponed.

Keywords: European bison, Ukraine, Russian aggression, Zalissia, Konotop, Chornobyl

Introduction

February 24, 2022 will forever be a black chapter in the history of Ukraine, Europe, and the twenty-first century as a whole. The Russian invasion led to the occupation of about 20% of Ukrainian territory. In the first weeks of the war, Russian troops almost captured the capital city of Kyiv, entering northern Ukraine from Belarus as well as from Russia's Bryansk, Kursk, and Belgorod regions. By the end of March 2022, parts of the Kyiv, Chernihiv, Sumy,

and Kharkiv regions were occupied. The home ranges of two Ukrainian subpopulations of European bison (Konotopska and Zalisianska) were affected by the occupation (Fig. 1). A preliminary analysis of the status of European bison populations shortly after the de-occupation of the northern regions of Ukraine revealed the presence of about 15 individuals in the Zalisianska subpopulation and about 50 individuals in the Konotopska (Perzanowski, Smagol, 2022).



Figure 1. Locations of existing E. bison subpopulations in Ukraine

- – Subpopulations of the European bison in Ukraine: 1 – Skolivska, 2 – Lopatynska, 3 – Tsumanska, 4 – Bukovynska, 5 – Uladvivska, 6 – Zalisianska, 7 – Konotopska □ – European bison enclosure in the Chornobyl Exclusion Zone

Results and Discussion

Targeted surveys conducted in 2022 made it possible to determine the current population of European bison, identify changes in the sex and age structure of herds, and determine the main factors affecting the status of this species. The following data show the development of Ukrainian subpopulations of European bison in recent years (Table 1).

Table 1. Changes the number of E. bison in Ukrainian subpopulations in years 2021–2022

Subpopulation / Responsibility	2021	2022
Skolivska / National Nature Park “Skolivski Beskydy” (Lviv region)	39	42
Lopatynska / Forest State Unit “Brodivske” (Lviv region)	98	112
Tsumanska / Forest State Unit “Kivertsivske” (Volyn region)	21	22
Bukovynska / Forest and Hunting Unit “Beregometske” and Forest State Unit “Chernivetske” (Chernivtsi region)	49	54
Uladvivska / Forest State Unit “Vinnytske” (Vinnytsia region)	110	117
Zalissianska / National Nature Park “Zalissia” (Kyiv region)	21	14
Konotopska / Forest State Unit “Konotopske” (Sumy region)	64	64
Total	402	425

According to the collected data, the total population of European bison in Ukraine increased, but the subpopulations Konotopska and Zalissianska, affected by the Russian occupation, did not increase during the war year.

The European bison was first reintroduced in 1967 in the NNP “Zalissia” (then Zalissia Forest and Hunting Unit) as part of the program to restore the species in the USSR. Eight European bison (4 males and 4 females) were introduced from Belovezhskaya Pushcha (Belarus) and became the founders of this subpopulation (Kaminetskyi *et al.* 2011). Some 14.8 thousand hectares of the Zalissia NNP area are now fenced. This area provides good conditions for semi-free living of wild animals, where they meet their main trophic needs through natural foraging, but cannot move freely outside the fenced area.

From the mid-1970s, the number of European bison in Zalissia gradually increased. When it reached 27 animals in 1985, 14 of them were transferred to Konotop Forestry. This measure stopped the positive growth dynamics and eventually led to a decrease in numbers: in the early 1990s there were only 6 European bison left in the area. After that, the herd started to grow again, but very slowly: the birth rate was almost equal to the natural mortality rate. The probable reason for the slow reproduction of the species was the consequence of prolonged inbreeding, but nevertheless the number of European bison in the Zalissia NNP reached 21 individuals in early 2022 (Fig. 2).

The southern quarters of Zalissia NNP and the surrounding villages became the scene of fighting for three weeks (March 8–29, 2022). The Zalissia area was under heavy shelling and mortar fire; the fence, buildings, and forest were destroyed and damaged; military units, machinery, and equipment were

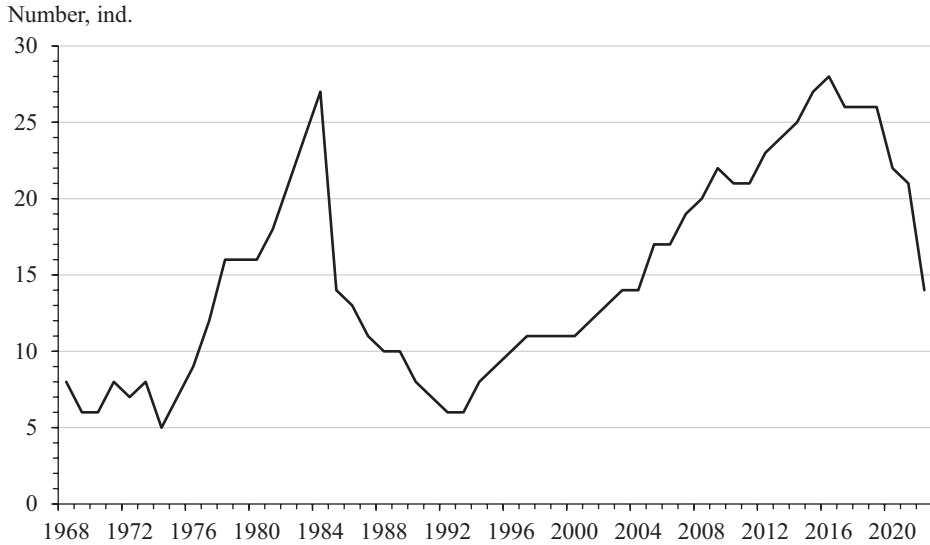


Figure 2. Number of animals in Zalissianska European bison subpopulation between 1968–2022

moved along forest roads, etc. In addition, large areas in the southern quarters of the park were heavily mined, which is still a major problem there.

An animal census conducted in early 2023 showed a decline in all ungulate species and especially the European bison, whose numbers declined by one-third (from 21 animals in 2021 to 14 animals in 2022). The reasons for this decline are both the effects of mines and explosive devices and stressors (explosion sounds and flashes, low-flying aircraft, machinery movements, etc.) – the small herd, decimated by inbreeding depression, was not ready for that (Figs. 3, 4). These arguments are supported by necropsy reports from earlier years in which several European bison died of heart attacks caused by certain stressors, such as entanglement in deer traps, transport, immobilization, etc. Damage to the fence by military machinery could also cause the animals to escape from the fenced area into an uncontrolled area where they could become easy targets for poachers.

Additionally, we revealed another problem: there are no males left in the herd now and all the females will remain infertile for the second year in a row. Therefore, in the absence of immediate effective measures (in particular, the translocation of at least one bull), the European bison subpopulation in Zalissia is doomed to extinct.

As mentioned above, in 1985, 14 European bison from Zalissia were moved to Konotop Forestry. The growth of European bison herd was rather slow there, reaching about 40 individuals in the early 2010s (Fig. 5).



Figure 3. The corpse of a male European bison found in Zalissia NNP in December, 2022



Figure 4. The remnants of the carcass of a female European bison found in Zalissia NNP in January, 2023

The home range of European bison herd in Konotop, which covered up to 20 thousand hectares, was not sufficiently protected: the animals traveled long distances, visited agricultural lands, and were victims of poachers (Smagol, Gavris, 2013). In the mid-2010s, the Sumy State Regional Administration

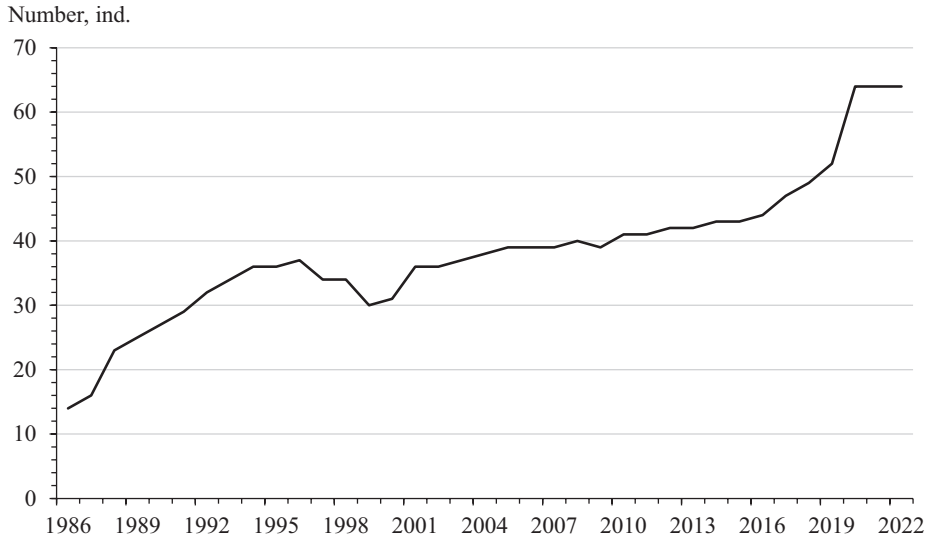


Figure 5. Number of animals in Konotopska European bison subpopulation between 1985–2022

took care of this European bison herd and provided annual financial support for their supplementary feeding from the regional budget. As a result, the state forestry department was able to provide the European bison with juicy and concentrated feed throughout the year. This was important attraction for European bison and allowed the herd's territory to be confined to a relatively small area and kept under control. The further dynamics of this subpopulation was characterized by a gradual but steady increase, reaching 64 individuals in early 2022.

Russian troops occupied the northern districts of Sumy region very quickly and almost without any resistance, so there was no active fighting in the area of Konotop Forestry. Throughout the occupation (February 24-April 3, 2022), the Russians did not penetrate deep into the forest, but actively patrolled the forest roads and mined the surrounding area. The roar and noise of the military machines undoubtedly became a nuisance for the animals, including European bison, which moved deeper into the forest and left their usual habitats.

In late 2022, the European bison returned to their permanent feeding grounds. This allowed for their census to be conducted. However, it turned out that there were no calves of the current year in the herd, which could be due to the stress effect (premature births, abortions, embryo resorptions, lactation disorders, etc.).



Figure 6, 7. Construction process of European bison enclosure in the Chernobyl Exclusion Zone

The failure of a promising project for the reintroduction of European bison in the Chernobyl EXCLUSION ZONE, developed by Stowarzyszenie Miłośników Żubrów (European Bison Friends Society) and financially supported by the World Wide Fund for Nature (WWF), requires separate consideration. The idea of the action plan was to reintroduce nine European bison of the lowland line from breeding centers (Białowieża, Poland) into the zone. Extensive preliminary work was done to prepare documentation and logistics, and a number of agreements were reached with the State Agency of

Ukraine for the Management of the Exclusion Zone, the Ukrainian Ministry of Environmental Protection, the Chernobyl Biosphere Reserve, the Ministry of Food Safety and Veterinary Medicine, and the State Customs and Border Guard Services of Ukraine. In addition, a brand new enclosure (4 hectares) for European bison was built to adapt the animals before their release into the wild (Figs. 6, 7).

The goal of the project was to establish a free-roaming transboundary population of the species, based on European bison subpopulations in the adjacent territory of Belarus (Slivinska, Smagol, 2022). Finally, when the transport phase of the project was thoroughly planned and almost ready, war broke out and the project was put on hold...

Despite the occupation of the Chernobyl EXCLUSION ZONE by the Russians for more than a month (February 24 – March 31, 2022), the European bison enclosure remained untouched – it is still in perfect condition. Therefore, we believe that the final stage of the European bison reintroduction project could be resumed after the victory of Ukraine and the complete demining of the zone.

The further fate of the European bison population in Ukraine is unpredictable, everything depends on the final results of the war. However, the destruction of a number of habitats and, most importantly, the threat of landmines will have long-lasting negative effects on all Ukrainian wildlife, including the European bison.

References

- Kaminetskyi V. K., Babich O. G., Smagol V. M. 2011. Ecological and economic aspects of semi-free breeding of wild ungulates (on the example of specialized enterprises of the State Administration of the President of Ukraine). Monograph. Close joint stock company «Myronivska Drukarnia» [in Ukrainian].
- Perzanowski K., Smagol V. 2022. European bison in Ukraine threatened by Russian invasion. *European Bison Conservation Newsletter*, 14: 23–28.
- Slivinska K., Smagol V. 2022. Prospects for the reintroduction of the European bison (aurochs) in the Chernobyl exclusion zone of Ukraine. *Chernobyl Scientific Hub (scientific and practical journal) in the Chernobyl Exclusion Zone of Ukraine*. September, 4: 40–43 [in Ukrainian].
- Smagol V. N., Gavris G. G. 2013. Current state and ways of optimizing the wisent group-ing (*Bison bonasus* L.) in the territory of the Sumy region (Ukraine). In: *Materials of the meeting «Prospects for the creation of a free population of bison in European Russia»*. Desiatochka, Bryansk, Russia: 105–114. [in Russian].

Wpływ wojskowej agresji rosyjskiej na ukraińskie subpopulacje żubrów

Streszczenie: Przeanalizowano wpływ okupacji rosyjskiej na niektóre subpopulacje żubrów na Ukrainie. Stwierdzono, że aktywne akcje wojskowe na północy obwodu kijowskiego w marcu 2022 r. doprowadziły do krytycznego spadku liczby zwierząt w Zalisiańskiej subpopulacji żubrów. W Parku Narodowym „Zalissia” pozostało tylko 14 zwierząt z 21 obserwowanych w 2021 r.; ponadto w stadzie nie pozostał żaden samiec. Przyczyny takiego spadku są spowodowane zarówno skutkami min i ładunków wybuchowych, jak i czynnikami stresowymi (odgłosy i błyski eksplozji, nisko latające samoloty wojskowe, ruch maszyn itp.). Areal Konotopskiej subpopulacji żubra na terenie Konotopskiego Nadleśnictwa Państwowego (obwód Sumski), które też było okupowane w tym samym okresie, nie był pod takim dużym wpływem – nie miały tu miejsca żadne działania wojskowe na dużą skalę. Ruch rosyjskich maszyn wojskowych wzdłuż leśnych dróg doprowadził jedynie do tymczasowego opuszczenia zwykłych polan pokarmowych żubrów i spowodował całkowity brak potomstwa w 2022 r. z powodu stresu. Wojna w ogóle i okupacja Czarnobylskiej Strefy Wykluczenia przez wojska rosyjskie w szczególności, negatywnie wpłynęły na realizację ambitnego projektu reintrodukcji żubrów w tym rejonie, w ramach wsparcia ze strony Stowarzyszenia Miłośników Żubrów i WWF. Projekt został odłożony w czasie.
