

U W

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**Ukraine War
Environmental
Consequences
Work Group**

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Dear Friends!

Some of the environmental consequences of Russia's military intervention in Ukraine are talked about often and loudly. Others go unnoticed, but in the long run, those can be much more dangerous, for example, the introduction of invasive species in occupied territories. Taking advantage of ecosystems destroyed and disturbed by shelling and combat and with no natural enemies, the "aliens" species quickly capture territories, creating springboards for their further spread. Thus, the war is not only military in nature, but also biological. Read about this invasion in an article by Natalia Pashkevich, PhD in Biology and senior researcher at the Department of Geobotany and Ecology at the Institute of Botany (National Academy of Sciences of Ukraine).

• **Invasive species and Russia's full-scale invasion of Ukraine**

Today, data has already begun to be collected on the environmental impacts of the military invasion. Unfortunately, significant territories of Ukraine are still under occupation. The first expeditions to study these impacts specifically on protected areas occurred September-December last year. Katerina Polyanska of the NGO "Environment. People. Law" participated in several such expeditions and shared her observations of the aftermath of retreating Russian troops on national parks with UWEC Work Group.

• **Impact of Military Action on Ukraine's Wild Nature**

In November, media published the shocking news of the Russian soldiers stringing up hamsters. Small mammals are at particular risk during the invasion, and a number of these species are listed in Ukraine's Red Book for at-risk species. At the same time, most of the hostilities are occurring in eastern Ukraine, on steppe landscapes, a unique and important biotope home to numerous rare rodent species. Mikhail Rusin, a researcher at the Kyiv Zoo and the Schmalhausen Institute of Zoology, writes about what is happening to small mammals in Ukraine today and the threats posed by the large-scale invasion.

• **Threats of Russian invasion for protected small mammals in Ukraine**

With numerous recent deaths, Caspian seals are also being called victims of the war. In November 2022 more than 2,000 individual seals were found dead on the shorelines of Russia, Kazakhstan, Azerbaijan, and Turkmenistan in the Black and Azov Seas. Our expert Eugene Simonov assembled the most common explanations and concluded that, if not directly, then at least indirectly, the war is decreasing chances of survival of these unique marine mammals. As with many other environmental processes in Russia, environmental



conservation activities in the northern Caspian Sea have been put on hold due to the invasion.

• **Seals: Victims of war, greenhouse gasses, or asphyxiation caused by commercial fishing?**

Another rare species endangered by Russia's militaristic ambitions is the polar bear. Opening protected area to military exercises on Wrangel Island are threatening to destroy critical habitat for this species. The island serves as the world's largest natural nursery for young polar bears. Eugene Simonov examines this situation more closely.

• **Polar Bear vs. Military Monsters**

The environmental consequences of the invasion of Ukraine are being discussed around the world, including at the recent World Economic Forum in Davos, Switzerland. Although the war has yet to become a key issue at such events, it is clear that leaders are keeping it in mind when discussing economics. We live in times of interconnected global crises, including climate change. Guest writer Vera Kuzmina writes about how both military conflicts and direct lobbying for fossil fuels only create additional problems for the planet and humanity.

• **Results of Davos: Arms and Climate**



We continue to track the war's environmental consequences on our [website](#) and on our social media ([Twitter](#) and [Facebook](#)). Join the conversation!

Wishing you strength and peace!

Aleksei Ovchinnikov

Editor, UWEC Work Group



Invasive species threat resulting from Russia's full- scale invasion of Ukraine

By Nataliia Pashkevich, Candidate of Biological Sciences, Senior Researcher, Geobotany and Ecology Department, Botany Institute, National Academy of Sciences-Ukraine

Translated by Jennifer Castner

Russia's invasion of Ukraine is dangerous not only for its obvious environmental consequences, but also for hidden ones as well. Specifically, the war is accompanied by invading alien species that enter the country on military equipment and threaten local biodiversity.

Role of invasive species in damaging biodiversity

The full-scale Russian invasion not only dealt a catastrophic blow to the Ukrainian economy, but also caused significant environmental damage. Significant funding is needed to address that damage, as well as decades-long



work to restore and maintain ecological balance in natural and urbanized ecosystems.

Attacks on and seizure of the Chornobil and Zaporizhiya nuclear power plants, use of phosphorus munitions, shelling of oil depots and gas pipelines, cities and villages, fields, forests, and water bodies in many Ukrainian regions pose an environmental threat not only to Ukraine's landscapes, but also to other European countries. Intense hostilities result in the direct destruction of the natural environment: destruction of forests, steppes, and meadows, erosion of river banks, etc.

The country's south is home to unique steppe vegetation; we owe its existence to Ukraine's fertile soils (*chernozem*). Today, most of these territories are in the war zone. The rivers Dnipro and Siverskyi Donets and dozens of other smaller ones became battle lines. As a result, the water bodies' inhabitants have suffered, and the fragile balance of water and related meadow and forest ecosystems is being destroyed. Military actions damage the environment, destroying rare species and hundreds of hectares of natural biotopes.

However, another threat is the introduction and spread of "outsiders" on such lands, arriving on Ukrainian soil on the boots and tank treads of the Russian army. Thus, one of the war's delayed consequences could be an outbreak of these alien species –

dangerous invasive flora and fauna, the spread of which must be controlled.

Examples of invasives resulting from military conflicts

Unfortunately, as already evidenced by the consequences that followed large-scale hostilities during WWI and WWII, along with the direct physical destruction of ecosystems, significant transformations are also occurring through the influence of invasive species. Today, invasive species are one of the main factors in biodiversity loss, and developing methods and approaches for their management are [key priorities](#) for preserving the planet's biodiversity.

The study of wars shows that some types of adventitious (Lat., *adventicius*, alien, random) plants, also known as "siege flora," accompany armies and their introduction and further distribution are directly related to troop and equipment movements and the location of various military infrastructure.

So, for example, sweet flag (*Acorus calamus*) and rough cocklebur (*Xanthium strumarium*) spread from their natural distribution range to new regions during the Mongol-Tatar invasion centuries earlier. During World War II, quarantined species of curvy-cup gumweed (*Grindelia squarrosa*) and common ragweed (*Ambrosia artemisiifolia*) were introduced through Ukraine's port cities in livestock fodder.



Among such invasives, various taxa of adventitious plants introduced from areas adjacent to Ukraine pose the greatest threat as they are especially likely to hybridize. The geography of the areas from which Russian military units are deployed into Ukraine is quite extensive: Bashkiria, Tatarstan, Caucasus, and the Far East. An uncontrolled mass of seeds arriving together with equipment and soldiers is destructive for European ecosystems of Ukraine.

Among the most aggressive invasive species to appear in recent years in Ukraine are Sosnowsky's hogweed (*Heracleum sosnowskyi*) and Giant hogweed (*H. mantegazzianum*) from the Caucasus, now found in occupied Polissya and the Carpathian Mountains. Sakhalin hogweed (*Rynoutria sachalinensis*) and Japanese knotweed (*R. japonica*) have taken hold in central Ukraine and Transcarpathia.

Both world wars contributed to the rapid spread of North America's Devil's Beggartick (*Bidens frondosa*) across Europe from Germany (its first "flight" into nature was recorded in Potsdam in 1896). Over the past 50 years, this species' range in Ukraine has not only expanded, but also almost completely replaced two related local species – three-lobed beggartick (*B. tripartita*) and drooping beggartick (*B. cernua*) – forming many hybrids..

The influence of aquatic invasive species accidentally introduced through

vessel ballast water has already played and continues to play a significant negative role in reducing the number of commercial fish in the Black and Azov Seas. These invaders compete with commercial pelagic fish species (for example, comb jelly (*Mnemiopsis leidyi*)) and also destroy important marine biotopes (as does, for example, the Rapa whelk (*Rapana venosa*)).

There is another and perhaps the most dangerous group of invaders – microorganisms (fungi, algae). They are difficult to track due to their small size, but they cause no less harm. Most of them are causative agents of plant and animal diseases. Upon entering a new environment, they multiply on a massive scale, lacking natural enemies to slow their growth.

War-damaged areas become springboards for the distribution of invasive species

Vegetation is significantly damaged in the war zone, and tanks and powerful military equipment disturb the integrity and structure of the soil cover, leading to increased water and wind erosion. In a ravaged landscape, these alien plants serve as a band-aid for healing wounds. Taking root in craters and burned areas, they create conditions over time for the restoration of natural vegetation.

However, such sites are a springboard for dangerous invasive species, amassing



their potential and later actively settling in adjacent areas and from there into neighboring states. As invasives spread, they transform the environment to their own advantage, changing key factors (humidity, lighting condition, soil chemistry, etc.). Biological invasions recognize no borders.

The [first results](#) of research by Ukrainian scientists in this area are already available. A new species of adventitious plant – *Sporobolus cryptandrus* (Torr.) A. Gray – appeared in 2014 on Trokhizbensky Steppe in Luhansk Nature Reserve. Its closest known locations to Ukraine are in sandy valleys along the Siversky Donets, Derkul, and Kalitva Rivers in [Kamensky and Tarasovsky districts](#) in Rostov Oblast. Most likely, the plants arrived in Luhansk on military equipment traveling from that area, a distance of no more than 150 km.

In addition, [studies of the consequences of hostilities](#) in eastern Ukraine in 2017 showed that invasive species are actively spreading in cratered areas (Canadian horseweed *Erigeron canadensis*, common ragweed *Ambrosia artemisiifolia*, greater burdock *Arctium lappa*, etc.).

International regulation of invasives resulting from military conflicts

A number of international agreements recognize the value of natural

ecosystems and seek to prevent the negative impact of hostilities on their existence. These include the Convention on the Prohibition of the Military or Any Other Hostile Use of Environmental Modification Techniques ([ENMOD](#)) in 1976, and [Protocol I](#) of amendments to the Geneva Conventions in 1977. However, Russia's aggression in Ukraine demonstrates the ineffectiveness of these agreements.

In particular, according to Art. 35 of this Protocol, it is forbidden to use methods or means of warfare that are intended to cause widespread, long-term, and severe damage to the environment. At the same time, Article 55 of the same protocol, titled "Protection of the natural environment," states that "In the conduct of hostilities, care shall be taken to protect the natural environment from widespread, long-term and severe damage."

Solving the issue – monitoring and creating an accountability program

In EU countries, the annual damage caused by invasive species is estimated at approximately 12 billion Euros. The fight against invasive species has been [recognized](#) as a priority goal for the EU through 2030. However, given the duration, intensity, and scale of the war in Ukraine, an assessment of the actual effects of the war on biodiversity remains to be done.



One solution to the issue of the environmental impact of invasive species is developing a program for the post-war restoration of Ukraine's ecosystems, a program that pools financial, institutional, and intellectual resources at the state and global level. During the first phase, a list of "new" and "old" invasive species settling in war-damaged areas must be developed, followed by a system for assessing the

ways and means of their introduction and their impact on local biota. This facilitates an assessment of the extent of the damage to nature, economy, and human health, while calculating the time and cost of their restoration. The results of such monitoring must be further integrated into the State Monitoring Program and later into the European program. •

Main image credit: Naturespot.org.uk



Impact of Military Action on Ukraine's Wild Nature

*By Kateryna Polyanska
Translated by Jennifer Castner*

A thorough analysis of the impacts of the military invasion on Ukraine's protected natural areas will only be possible after the war's end and demining operations are complete. However, it is already possible to gather some information. In her report, Kateryna Polyanska wrote about the impacts that we can already document.

The war impacts all aspects of nature. Dangerous emissions from numerous explosions and fires at civil and industrial infrastructure sites enter the air. Ground and surface waters are polluted following damage to purification systems, fuel and lubricant spills, equipment sinking in water bodies, and explosions in the waters of rivers, lakes, and seas. Toxic substances

from explosive mixtures of bombs and rockets, poisonous components of rocket fuel and phosphorus ammunition enter soils where munitions land. Flora and fauna experience powerful negative impacts due to forest fires, destruction of habitats, noise pollution; animals die in explosions.

What is the current status of some of Ukraine's most valuable landscapes?



Image 1. City of Irpin. Source: Kateryna Polyanska.

Kateryna Polyanska was able to visit several national parks in fall 2022 and conduct an initial analysis of the impacts.

Holosiivskyi National Natural Park (NNP)

In September, Kateryna Polyanska, an environmental scientist at the International Charitable Organization Environment-People-Law (EPL), joined with staff of Holosiivskyi NNP and the local forestry service to survey several areas in Sviatoshynsky Forest, adjacent to the city of Irpin, which suffered in hostilities in spring 2022.

Several craters from shell explosions and broken trees were noted in a small part of the forest cleared by sappers in the national park. The team found treebark damaged by debris from

explosions on some trees, a condition which can weaken and result in dieback (depending on the degree of damage, tree age, and growing conditions). Fragments of shells fired from Grad multiple rocket launcher systems were found.

At another site, the team counted 37 pine trees missing their crowns, broken during mortar attacks. Local residents told foresters that these trees saved their homes when they blocked flying projectiles. All these trees will decline; there is no way to restore them. Nearby is another site with 11 damaged trees.

The team also documented damage to tree root systems due to fortified trench construction. Additional study is needed to determine whether the trees will decline.



Image 2. Pines damaged by military conflict in Holosiivskyi NNP. Source: Kateryna Polyanska.

It was not possible to examine the entire forested area at the time of the team's visit due to extensive landmine coverage and the presence of unexploded munitions.

Sviati Hory National Nature Park

Sviati Hory NNP stretches across parts of Bakhmut and Kramatorsk Districts in

Donetsk Oblast. It experienced extensive damage resulting from military combat and occupation. It was only possible to move around the park on asphalted roads for the time being.

Through car windows, the team observed Uragan rockets and Grad fragments sticking out of the ground, mortar mines deployed by sappers along the road, and numerous



craters from explosions. In the fields and hillsides, “white tubes” are visible. They do not indicate buried communication cables, but rather are 9M27K transport containers fired from unguided rockets (MLRS

Uragan). Some roads are lined with burned military equipment and civilian vehicles.

The park’s forests have suffered significantly from fires. Some of the fires were in the forest understory, meaning



Image 3. 9M27K transport container. Source: Kateryna Polyanska.



Image 4. Results of a forest fire caused by the invasion in Sviati Hory NNP. Source: Kateryna Polyanska.

that only the underbrush burned, but other areas burned completely.

The entire territory of the park is contaminated with explosive munitions, requiring examination by sappers and subsequent demining. Such pollution poses a threat to both humans and animals. Wild animals are also blown up by mines, killed, traumatized, and wounded by explosions.

Today, it is clear that demining work will require many years. Moreover, these explosive objects are found not just on land but also underwater, which will require specialized divers and measures for underwater demining. Some water species are known to have been killed by explosions in the park's rivers and lakes.

The NNP's soil cover was damaged by shelling, construction of fortifications, and pollution by fuels and lubricants. Unique in biodiversity terms, chalk soil slopes were also harmed. During the expedition, the team collected soil samples in shell craters where possible and in accordance with safety regulations. Samples were also taken from craters where air-to-ground bombs fell.

Structures in the park also suffered damage. The occupiers lived in the park administration building, while the science wing and the parking lot were completely destroyed by shelling. Infrastructure has been mutilated, even street lights powered by solar panels are broken, and the panels themselves have been stolen.



Image 5. Munitions found along a road by sappers. Source: Kateryna Polyanska.



Image 6. Unexploded munition on a tree, image taken from the road. Source: Kateryna Polyanska.



Image 7. Air-ground missile landing site. Source: Kateryna Polyanska.



Image 8. Crater caused by small-caliber munition along the forest edge. Source: Kateryna Polyanska.



Image 9. Park scientific department following occupation. Source: Kateryna Polyanska.

Park employees are not yet able to fully resume their work. Some of them fled the occupied territory and have yet to return. Two park employees were killed.

There are completely destroyed settlements near the park in which not a single inhabitant remains, nor an intact house. Today these villages are inhabited only by feral cats and dogs.

Kamyanska Sich National Nature Park

This park is located in occupied territory in Kherson Oblast on the right bank of the Dnipro River. Today, one can see the captured left bank of Dnipro

from this location. Shell explosions are heard from time to time.

During its occupation, Russian military positions were located in the park. This resulted in damage to natural ecosystems, polluted areas, abandoned ammunition, construction of fortifications, and heavy equipment movements damaging the soil cover.

Surveying indicates that the park's lands are polluted by explosives and demining work is needed. In the basement of one structure, the expedition team spotted a vibration-sensitive mine. There are fewer white tubes from Uragan rocket launchers, but tank shells scattered everywhere are visible from the slope.



Image 10. Katerina Polyanska collects soil samples within Sviati Hory NPP. Source: Kateryna Polyanska.



Image 11. Grad missile munition. Source: Kateryna Polyanska.



Image 12. Broken Russian military equipment. Source: Kateryna Polyanska.



Image 13. Trenches built by invaders within a park. Source: Kateryna Polyanska.



Image 14. Form Russian troop positions within a park. Source: Kateryna Polyanska.



Image 15. Abandoned munitions within a park. Source: Kateryna Polyanska.

The team traveled to the park jointly with NNP director Sergei Skorik, employees of the scientific department Ivan Moysienko and Oleksandr Khodosovtsev, employees of the park's security service, and environmental specialist Anastasia Drapaliuk.

The group surveyed and collected soil samples from craters made by explosions of C-300 rockets, Grad rockets, and three craters made by other munitions.

Expedition members noted that explosions damaged a limestone slope, habitat for a feathergrass species (*Stipa capillata*) and Lessing's feathergrass (*S. lessingiana*), both listed in Ukraine's Red Book.

During hostilities, 34 fires occurred in the park and administration buildings

were damaged. The frontline still passes through Kamenska Sich NNP, in particular along the Dnipro River.

Nyzhnodniprovskyy National Nature Park

Today, this park is located on the front line. During the expedition, the team examined an extremely small area on the banks of the Dnipro River but was unable to meet with NNP administration or park staff.

The park includes the Dnipro River between Nova Kakhovka and the Southern Bug River's confluence with the Dnipro. According to preliminary data, the most negative impact of the invasion here relates to sunken military equipment and possible fuel and



lubricant spills, as well as explosions in the water area and land contamination by munitions.

Oleshky Sands National Nature Park

The park is located in an occupied area in Kherson Oblast. As part of the expedition, the team met with the NNP's deputy director. Although it is not yet possible to visit the National Natural Park, it is known that forest fires and pollution due to munitions explosions occurred. Some cases of equipment theft are known.

Today, significant territories of Ukraine remain occupied, valuable environmental sites that represent the nature heritage of both Ukraine and the whole world: biosphere reserves, nature reserves, national nature parks, wetlands of international importance, Emerald Network territories, and important bird migration areas. War claims the lives and health of people and destroys our nature. In accordance with Ukraine's current Criminal Code, such complex, long-term, and large-scale negative impacts on wildlife fall under the definition of ecocide (Article 441).

Currently, environmental scientists are prioritizing studies of the impact of military operations on the environment and identifying and preventing threats to the life and health of citizens, as well as damage to natural ecosystems. They

are also collecting data on environmental crimes in partnership with lawyers: documenting violations, collecting evidence, cataloging losses, and studying practices for the restoration of natural ecosystems.

In total, during the expedition, Polyanska made 13 trips around Kyiv, Chernihiv, Kharkiv, Donetsk, Mykolaiv, and Kherson. During that time, teams collected information on the state of natural complexes, gathered 60 samples from shell craters, photographed damage, and collected munitions fragments.

The NGO Environment-Law-People has been studying the impacts of military hostilities on Ukraine's environment since 2014. Analyses, manuals, and other information can be found on the [organization's website](#). •



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Threats of Russian invasion for protected small mammals in Ukraine

By Mikhail Rusin

In this article, the zoologist Mikhail Rusin describes the war's direct threats (combat, bombing, earthworks, uncontrolled fires, mining, etc.) to endangered small mammals and assesses how these threats influence their survival.

The Russian war against Ukraine started in 2014 with Crimea's annexation and support of separatists in Donetsk and Luhansk regions, at the heart of Ukraine's steppe grasslands. The new phase began with Russia's open, large-scale invasion on 24 February 2022. Although the primary goal of the invasion was to capture Kyiv, the

invaders had fled northern Ukraine by April. Consequently, the majority of combat has occurred in Ukraine's steppe zone: Mykolaiv, Kherson, Zaporizhzhia, Luhansk, Donetsk, and Kharkiv Oblasts. The war does not differentiate between protected areas and croplands, nor does it worry about threatened species.



Image 1. Nordmann's birch mouse at the Lower Dnipro Sands in Kherson Oblast, pre-war. Source: Mikhail Rusin.

Small mammals at risk

Small mammals, in particular rodents, are often seen as something usual, common, and even negligible when it comes to nature conservation. While people often treat them as pests, zoologists and ecologists emphasize the huge role these tiny beasts play in ecosystems. (Further reading: <https://bit.ly/rodents-defence>). In European grasslands (often called steppes) rodents could be the only visible mammalian wildlife species. Some argue that Eurasian steppes are the most transformed ecosystems on the planet (Carbut et al. 2017; Hoekstra et al. 2005), yet it remains the least protected biome.

Is it unsurprising that rodents – the dominant mammal residents of steppes – faced significant population declines and

became threatened with extinction. For example, in the latest list of protected species in Ukraine (often referred to as the National Red Book), 25 species of rodents are identified as threatened. And 18 species out of those 25 represent species strongly associated with Eurasian grasslands (Table 1). It is no surprise that besides the obvious humanitarian crisis, the war can have a tremendous impact on steppe ecosystems, especially on protected species.

Some of the species protected in Ukraine have a wide distribution, with Ukraine being the western limit. Such species are not recognized on the global level as threatened. There are some species endemic to Ukrainian grasslands, however, and those could easily go extinct if something goes wrong.



N	Species	Red Book of Ukraine (2021)	IUCN Red List of threatened species (2022)
1	<i>Marmota bobak</i> // Steppe marmot	EN	LC
2	<i>Spermophilus pygmaeus</i> // Pygmy ground squirrel	EN	LC
3	<i>Spermophilus citellus</i> // European ground squirrel	EN	EN
4	<i>Spermophilus suslicus</i> // Speckled ground squirrel	EN	NT
5	<i>Spermophilus odessanus</i>	EN	n/a
6	<i>Sicista lorigera</i> // Nordmann's birch mouse	EN	VU
7	<i>Sicista cimlanica</i> // Tsimla birch mouse	VU	n/a
8	<i>Sicista strandi</i> // Strand's birch mouse	VU	LC
9	<i>Allactaga major</i> // Great jerboa	EN	LC
10	<i>Stylodipus telum</i> // Thick-tailed three-toed jerboa	VU	LC
11	<i>Spalax arenarius</i> // Sande mole rat	VU	EN
12	<i>Spalax zemni</i> // Podolian mole rat	VU	VU
13	<i>Spalax graecus</i> // Bukovina mole rat	VU	VU
14	<i>Nannospalax leucodon</i> // Lesser mole rat	VU	DD
15	<i>Cricetus cricetus</i> // European hamster	VU	CR
16	<i>Nothocricetulus migratorius</i> // Grey hamster	VU	LC
17	<i>Ellobius talpinus</i> // Northern mole vole	EN	LC
18	<i>Lagurus lagurus</i> // Steppe lemming	EN	LC

Table 1. Conservation status of grassland rodents in Ukraine. Source: Ukrainian Red Book.

Impact of the war on small mammals

Firstly, species not directly impacted by the war are omitted in this overview: European ground squirrel, lesser mole rat, and Bukovina mole rat. Their distribution area lies at a distance from the conflict zone, where

only occasional rocket explosions may occur.

The steppe marmot is a story on its own. Prior to the war, the marmot population declined slowly (Tokarskiy, 2004), and despite some effective species reintroductions the core wild populations in Kharkiv and Luhansk



Image 2: Speckled ground squirrel, Ochakiv airfield, Mykolaiv Oblast, pre-war. Source: Mikhail Rusin.

experienced continuous degradation. Following the first invasion in 2014, hunting was banned throughout Luhansk and Donetsk Oblasts (controlled by the Ukrainian government). A recent survey using satellite imagery showed a large number of populations of marmots in northern Luhansk Oblast (Vasyliuk, 2022), potentially indicating population growth (compared to Tokarskiy's 2004 data). This increase surprisingly coincides with the ban on hunting.

Russia's invasion in 2022 captured all of Luhansk and eastern Kharkiv Oblast. The Ukrainian counteroffensive in September liberated all of Kharkiv and even some small parts of Luhansk Oblast. Potential threats to marmots in that area include building fortifications in marmot colonies, intensive artillery barrages, and mining.

While direct killing of marmots by combatants is quite possible, it would not be expected to see a restoration of hunting under Russian rule: occupation forces would not permit armed locals to roam the area. Hunting with snares may happen, but that was the case under Ukrainian rule as well (all snare hunting in Ukraine is illegal). All in all, the situation with marmots remains controversial. Some populations could be extirpated due to direct destruction by the military (or locals), while some may benefit from the reduction in hunting.

Two species of ground squirrel are affected by the war's activities. There are several speckled ground squirrel colonies close to sites that experienced severe artillery and aerial shelling between February and September 2022.



At least two colonies were located near airfields in Mykolaiv and Ochakiv. These colonies were so small that a single FAB500 bomb could easily destroy a whole colony. Russian forces tried to capture the Mykolaiv airfield, and fierce fighting occurred there.

The author examined available Sentinel satellite imagery while writing this article and found no visible signs of these colonies' destruction. Russia's recent withdrawal of troops from Kherson reduces the risks of direct destruction of these colonies. Another threat lies in potential habitat degradation. Both colonies prospered thanks to grazing by livestock. Grazing activity on rangelands is critical for ground squirrels: they require short-grass pastures, and abandonment of grazing leads to tall-grass rangeland unsuitable for ground squirrels. It is possible that grazing was impossible or not allowed in 2022. Verifying the presence of that activity is not currently possible, in part because both sites are too close to military objects.

The pygmy ground squirrel is now present only in occupied areas of Ukraine. A few colonies were known to live in Crimea (iNaturalist observations data). Most of the colonies known in

2009 in Kherson, Zaporizhzhia, and Donetsk Oblasts, later appeared to be abandoned. The fate of colonies now located on lands controlled by the DPR and LPR is unknown.

All surviving colonies of ground squirrels are very small and fragmented, easily destroyed by any activity, particularly building fortifications and bombing. Mining in and of itself does not threaten ground squirrels, but may result in the absence of livestock grazing activity and thus quickly degrade habitats.

The great jerboa faces more or less the same situation. This species also requires grazing, although usually over a more dispersed area, so it is expected that they will be less affected by active combat. One of the most important areas for this species is the dry steppe habitat near Lake Syvash. No active fighting has occurred there to date, so at the moment, they should still be safe. The fate of colonies located on lands captured by DPR and LPR in 2014-2015 is unknown.

Similar to colonies of ground squirrels in Mykolaiv, military combat occurred in areas where Podolian blind mole rats were present, namely in southeastern Mykolaiv Oblast and western Kherson Oblast. The consequences of these battles are unknown, but hopefully the mole rats survive. The author received several reports of sightings near Ukrainian positions in Summer 2022.

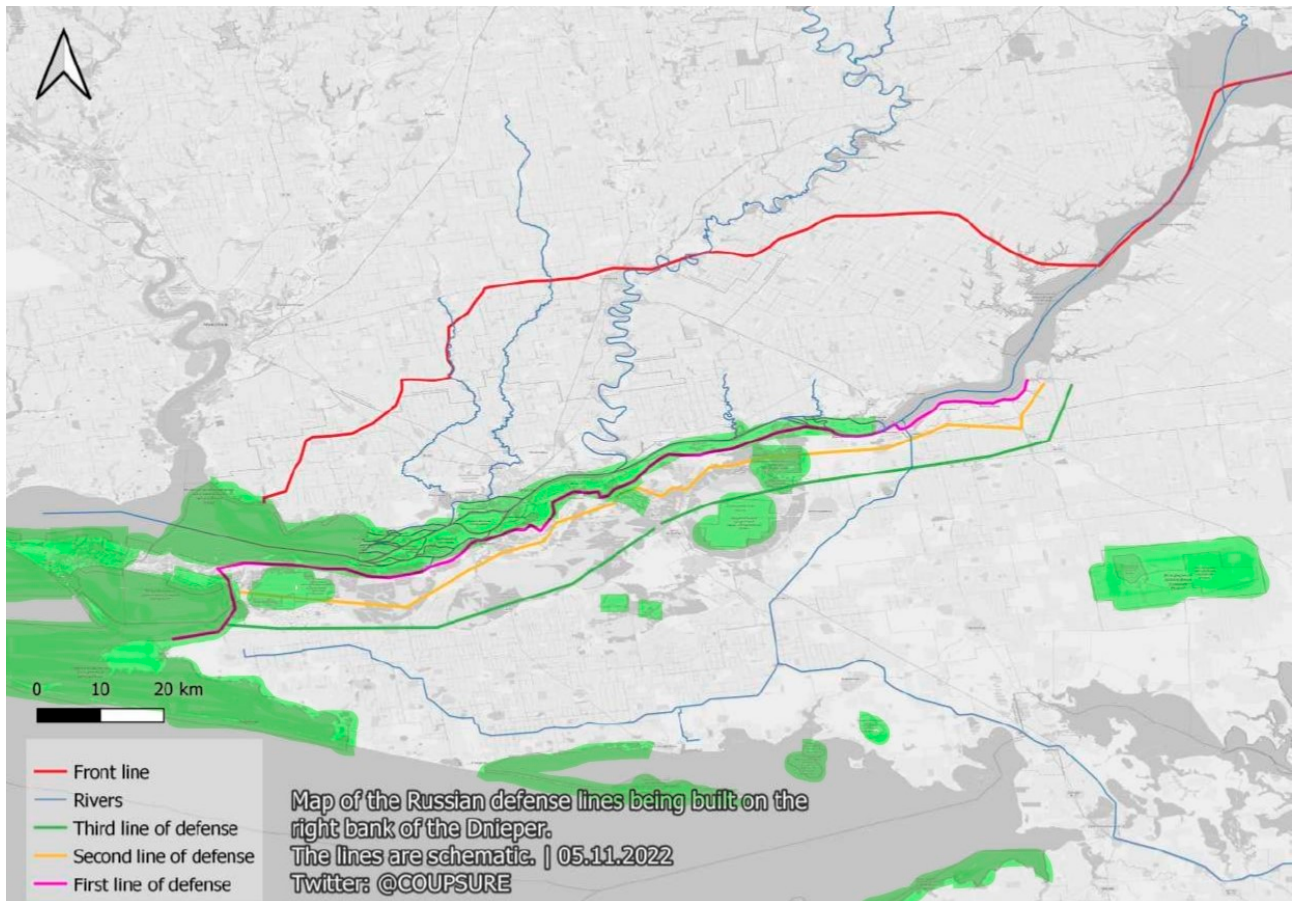


Image 3. Podolian mole rat, Mykolaiv airfield pre-war. Source: Mikhail Rusin.

Several species can be grouped together based not on their taxonomy, but geographically. The Sands of the Lower Dnipro River are a really interesting place, hosting several endemic species of plants and animals. Among small mammal species, the sandy mole rat's entire range falls within this area. The three-toed jerboa has an isolated subspecies *S. telum falzfeini* that may only be found here. And finally, by the author's estimates, approximately 60-70% of the entire known (global) population of Nordmann's birch mouse are found on the Lower Dnipro Sands. The recent withdrawal of Russian forces from the city of Kherson and all regions west of the Dnipro River resulted in intensified fortification of several defense lines. Although it is hard to validate the exact form of these

lines of defense, one can imagine a long network of trenches and concrete fortifications, inter-connected by a huge number of unpaved roads. Some experts provided maps of these lines and show them crossing several protected areas, including the Black Sea Biosphere Reserve, Oleshki Sands National Park, Sahi Refuge and several more, all very important for protected small mammal species.

Digging in sand is easy, making it equally easy to destroy this habitat. The new road network, created using heavy vehicles (both construction and military equipment), results in desert-like landscapes. Construction of these defense lines alone may have disastrous effects for protected species, and continuous shelling and fires are additional threats.



Map 1. Three lines of defense hypothetically under construction by Russians after their withdrawal from the city of Kherson. Source: Benjamin Pittet, [@Coupsure](#) on Twitter.





Images 4 and 5. Sandy steppes are extremely fragile habitats and easily destroyed by human activities, especially war. Both images are from Oleshkivski Pisky National Park, representing natural vegetation and human-made 'desert'. Source: Mikhail Rusin.



Image 6. Endemic Falz-Fein's thick-tailed jerboa, Lower Dnipro Sands, Sahi Refuge, pre-war. Source: Mikhail Rusin.



The European hamster is the only species with a global Critically Endangered status in the region. It is affected only subtly, with most of its active populations outside of war-torn regions. The largest population of European hamsters in Ukraine was in Crimea. After the peninsula's annexation, the hamster lost its protected status, as the Russia-controlled government does not recognize the Ukrainian Red Book. That said, no real conservation happened there under Ukrainian control either. Some small populations are known to exist near Mykolaiv and Kharkiv, so some losses could occur due to the war, but to what extent is impossible to say.

In contrast, a significant portion of Ukrainian distribution of the dwarf hamster falls within war-torn areas, from Mykolaiv to Kherson, Zaporizhzhia, and Luhansk. Some dwarf hamsters could be directly killed during large-scale artillery barrages. The other threat is the huge number of trenches in the area. Trenches create pitfall traps for small mammals, affecting every species mentioned in this article. The presence of dwarf hamsters was recorded at least twice in trenches. In one case, Ukrainian soldiers removed a hamster from their trench. In another case, a Russian soldier killed and hanged the dead body of a dwarf hamster. Such poor behavior could pose a threat to other species as well.



Image 7. Small mammals killed at an abandoned Russian position in Kherson Oblast, Autumn 2022. The dwarf hamster is suspended second from left. Source: Anonymous



The mole vole is protected in Ukraine, with approximately 90% of its population located in Crimea, 5% in Kherson and Zaporizhzhia, and another 5% in Luhansk. In spring and summer 2022, 99% of all populations were located in occupied areas, with the only population outside occupied areas located near Nikopol in Dnipro Oblast. Later, the counteroffensive liberated all mole vole populations west of the Dnipro River. Numerous fierce battles occurred in places where mole voles were previously known. All of these colonies were small and thus at risk from explosions and construction of fortifications. Of all the species discussed here, the status of these populations

would be the easiest to verify in the near future.

Before the war, the Strand's birch mouse was recorded in just two localities, both in eastern Luhansk Oblast within Luhansk Nature Reserve. In Provalskyi Steppe (located in the southern part of the region and held by LPR since 2014) birch mouse was most recently documented in 2009 and then seen again in Striltsivskyi Steppe (a northern area that remained free until 2022) in 2018. Strand's birch mouse lives in bushy steppes. Thanks to occasional reports from locals, the habitat in Provalskyi Steppe is known to have survived intact, so we hope that the species will survive the turmoils of war.



Image 8. Strand's birch mouse from Striltsivskyi Steppe, Luhansk Oblast, 2018. Source: Mikhail Rusin.



Image 9. Near Dovhenke, Kharkiv Oblast, an intensive artillery barrage is often more concentrated than the burrow density of such protected species as European and dwarf hamsters. Source: [Maxar Technologies](#), 2022.

Lastly, the steppe lemming has probably been extirpated in Ukraine. The most recent reports of its presence came from Luhansk and Kharkiv long before the war began. Some of its areas of known habitation lie in areas of current or former battlegrounds, and this further reduces their potential survival in Ukraine.

The war has a terrible impact on nature conservation efforts. Many protected small mammal species have fragmented distribution, occupying small and isolated colonies. The smaller the colony, the higher the chances are for

its destruction during the war. Larger shells and rockets could easily destroy an entire colony of some species with a single blast. Trenches pose threats to almost every species of protected small mammal. The presence of many armed people living under extreme stress may result in many animals being killed for no reason. Degradation of habitats is an ongoing threat. Time will tell, and monitoring continues. •

Mikhail Rusin works as a researcher at Kyiv Zoo, Kyiv, Ukraine and at Schmalhausen Institute of Zoology, Kyiv, Ukraine.



Seals: Victims of war, greenhouse gasses, or asphyxiation caused by commercial fishing?

By [Eugene Simonov](#)

Translated by Jennifer Castner

The population of the endangered (IUCN Red List) [Caspian seal](#) is declining precipitously. The mysterious November 2022 deaths of 2,500 seals has prompted many hypotheses, including those related to the war in Ukraine. Whatever the cause of the die-off, geopolitical tensions due to the war may decrease chances of the species' survival in the long term, while its preservation requires immediate international conservation measures.

Biodiversity's role in the war

Biodiversity has become a powerful informational weapon in the war. From the war's first days, shelling of Ukrainian cities has been justified by

the need to “destroy American military biological laboratories” and [“proof of biological weapons development”](#) emerging from temporarily occupied areas. Evidence included, for example,



visual aids on the spread of [bird flu](#) by ducks.

In the fall, the Russian Federation convened a consultative meeting through the Biological Weapons Convention to showcase photographs of an allegedly captured drone with compartments for transporting and spraying mosquitoes and a [US patent](#) on a similar device. Most Convention member nations were not convinced by Russian arguments.

On the other hand, photographs of domesticated and wild animals that allegedly died during military action in occupied zones are actively published in the world press, and volunteers who risk their lives to save these animals become modern heroes.

Military propaganda exploits both a terror of pathogenic organisms and pity for wildlife. Because it is currently not possible to independently fact-check events in the conflict zone, the veracity of many reports cannot be confirmed or denied. A recent tragedy in the Caspian Sea clearly demonstrates this challenge. In early December, approximately 2,500 decaying bodies of Caspian seals washed up on the coastline. The Caspian seal is an endemic species which, despite opposition by the commercial fishing lobby, was [recently listed](#) as at-risk in the Russian Federation Red Book.

The sea had just begun to throw half-decomposed seal bodies onto the beaches of Makhachkala (Dagestan), when Russian Duma member and

[member](#) of the Duma Committee on Security and Anti-Corruption Abdulkhakim Gadzhiev had [already](#) claimed that the deaths were likely the result of activities by US biological laboratories sited in the Caspian Sea countries. It is more suspicious that such die-offs of seals have been observed repeatedly in recent years.

Indeed, this is not the first such die-off. The bodies of several hundred to several thousand dead seals are documented on northern Caspian shores at least once every three years (and usually without a clear explanation). It can be confirmed that in most cases, the die-off occurs between October and December, when Caspian seals migrate from the southern Caspian Sea to northeastern waters. There, ice fields form, creating optimal conditions for seal reproduction. The same seasonal mass mortality during migration is also characteristic for the Baikal seal, but die-offs there occur less frequently and fewer animals die.

Poisoning by rocket fuel and large-scale gas emissions: “Can’t be disproven”

Russian journalist Yulia Latynina offered a hypothesis to explain the seal die-off in her [Twitter account](#) on 5 December. She [suggested](#) that the seals were poisoned by rocket fuel during recent shelling of Ukraine:

Tu-95 aircraft were assembled (at the airfield) in Engels. They take off, fly over



the Caspian Sea, and launch their (cruise) missiles at Ukraine. Why over the Caspian? Because missiles, especially the X-55, are ancient junk. And when the antiques fall from the plane, their engines do not always fire up. "Every second X-55 that is deployed [fails to reach its target]," says (military blogger, former pilot) [Roman Svitan](#). Can you imagine what will happen if they are launched over Saratov? So that's why they launched over the Caspian, where, by the way, 2,500 dead seals were recently found on the shore. Let me remind you that the fuel of these rockets is deadly poisonous.

For all its exoticism, the rocket version is difficult to refute. The X-55's rocket fuel is a toxic "decylene" (also known as T-10, chemical formula C₁₀H₁₆). The fuel's exact composition has been classified since Soviet times, but Issue 10 of [Innovative Science](#) in 2021 published an article entitled "Chemical Accident Prevention by Indication of Decylene-M Rocket Fuel Vapors in the Air," where it is reported that "decylene-M fuel consists of limited polycyclic hydrocarbons. Polycyclic hydrocarbons have enhanced central nervous system depressant properties."

In the United States, the [toxicological data sheet](#) of the analog JP-10 fuel indicates that the substance is not dangerous for aquatic organisms in water, but swallowing or inhaling its vapors can be deadly poisonous, causing pulmonary edema and asphyxia. So, if light and highly-volatile decylene

formed a spot on the water's surface and began to evaporate, then seals surfacing for a breath of air could potentially be poisoned. In this case, fish and other animals breathing under water would not be affected.

In 2004, journalists [put forward](#) an explanation about missile testing causing seal poisoning. They wrote about it during a die-off and beaching of seal corpses near Severodvinsk on the White Sea. However, UWEC has been unable to find other references connecting rockets and seals. Again, mass mortality of seals has been observed in previous years in the Caspian Sea. 2022 saw, however, the first large-scale launch of obsolete missiles over the Caspian.

The fact that many seals died while the potential number of missiles lost in the Caspian Sea during the entire course of the war likely totals just a few dozen undermines the missile fuel argument. (In total, according to Ukraine's Ministry, the Russian Federation fired 150 Kh-555 missiles between February 24 and November 22.) One rocket contains one to two metric tons of fuel, so even if hundreds of rockets fall into the sea, it is assumed that just 100-200 metric tons of fuel pollution could have occurred, while hydrocarbon spills at sea with known serious negative consequences were hundreds of times larger.

Latynina and Svitan's version of events acquired a new dimension when media in Kazakhstan and [Azerbaijan](#)



began to discuss seal corpses discovered in a “military-political context”. Those journalists conclude this reason to be the confirmed cause of death, given that Russian planes [began to drop](#) faulty missiles not into the Caspian, but over Volgograd Oblast while shelling Ukraine in mid-December.

This does not ultimately validate the “rocket” explanation, but it may indicate that Russian leadership has stopped launches over the Caspian Sea to avoid provoking international friction with neighbors who are unenthusiastic in their perception of the expansion of “military operations” to the Caspian region. Additionally, the Ukrainian Armed Forces reported that, as of 14 January, Russia has resumed use of TU-95 airplanes to fire on Ukraine while overflying the Caspian Sea.

Chair of the Dagestan branch of the Russian Geographical Society Eldar Eldarov proposed that military exercises could cause seal mortality. However, he immediately expressed his reservation that it is more likely the cause of the die-off in 2020 rather than in 2022. [Military exercises](#) in 2020 involved warships and aircraft and were accompanied by the launch of cruise missiles.

Long before the results of studies of the dead seals were available in Russia, a semi-official version of events arose and took hold: the seals died of asphyxiation – oxygen starvation.

The reasoning suggested that seals surfaced and drowned in a cloud of methane released naturally from the seafloor as a result of seismic activity. The regional government in Dagestan and Russia’s [head of Rosprirodnadzor](#) (Russia’s environmental watchdog), Svetlana Radionova share this opinion. Radionova also serves on the board of trustees of the Compass Foundation, an [organization that had earlier stated](#) that the release of methane from the explosion of the Nord Stream gas pipeline could harm seals in the Baltic Sea. UWEC has not been able to confirm this version of events.

The methane emission theory in the Caspian is convenient in that there is no one to blame and that it is also very difficult to prove or disprove. This same idea was proposed by a number of specialists and geologists to explain the death of seals in Lake Baikal, but was never deemed to be the leading cause.

A large team of scientists commissioned by commercial fisheries institutes prepared a justification of the methane hypothesis for the Caspian Sea in an assessment entitled [“On the death of Caspian seals on the Dagestan coast of the Caspian Sea in autumn 2020 and its possible causes”](#) and published in the “Russian Federation Research Institute of Fishery and Oceanography Proceedings.” The result of that assessment is clearly stated:



During the course of research, 12 sites totaling 49.2 km [of coastline] were surveyed. 313 bodies were documented in that area. The total number of dead seals in December 2020 was estimated to be 2515 ± 443 animals. The dead animals mainly consisted of adult females, the majority of which were pregnant. The bodies showed no signs of infectious disease or starvation, and judging by their appearance, the animals' deaths occurred in the first twenty days of December at some distance from the shore.

Analysis of the collected data makes it possible to exclude infectious diseases, parasites, toxic substances, entanglements with fishing gear, and the impact of an underwater shockwave from among the possible causes of the seals' death. The most likely cause of death was declared to be acute asphyxia stemming from nearby release of natural gas, which formed a gassed lens of air unsuitable for breathing above the sea surface.

Scientists have resorted to proof by process of elimination. There is no direct evidence for methane as a cause of death,

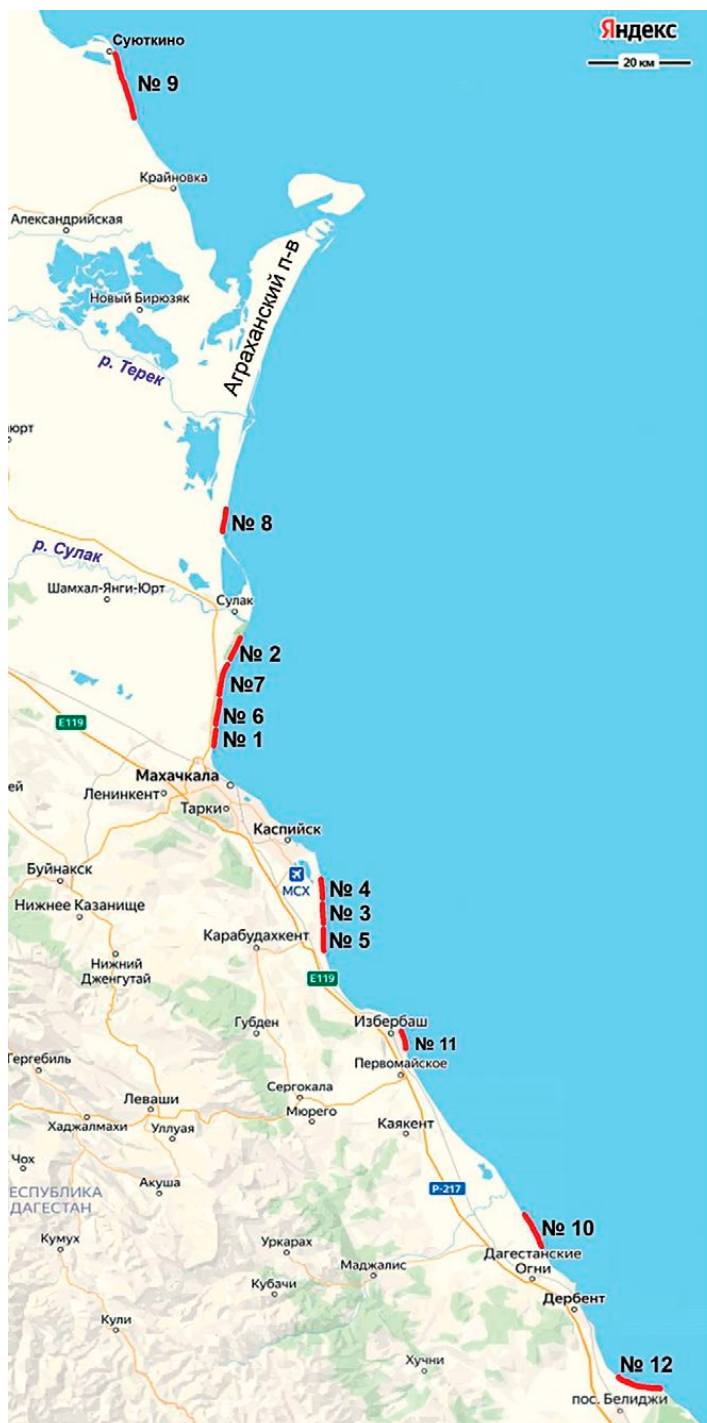


Figure 1. Map showing the locations of dead seals in Dagestan in 2020. Source: Rozhnov et al., 2022.

while three small earthquakes that could possibly trigger methane emissions occurred at the time of the animals' death. Meanwhile, methane emissions are easily detected using satellite remote-sensing methods. Given that methane



is a powerful greenhouse gas, several specialized agencies monitor its natural and anthropogenic emissions, including emissions stemming from the oil and gas industry in the Caspian region. Why the scholars did not attempt to use that monitoring data to support their version is a mystery.

The majority of specialists UWEC surveyed outright refused to consider methane emissions as the seals' cause of death, calling it extremely unlikely and unprovable.

Methane and rocket fuel poisoning as triggers share a similar deus ex machina aspect, a manifestation of supernatural forces that harken back to endings in ancient tragedies.

Other down-to-earth explanations on causes of seal death

Aside from military and exotic causes of death, there are other hypotheses for the die-off of pinnipeds in the Caspian Sea.

• Infectious disease

Greenpeace program manager Vladimir Chuprov [told Kedr-Media](#) that, when studying past seal die-offs, data collected by that NGO indicate that animal death is likely associated with reduced immunity and disease. However, they were unable to determine the exact cause.

According to the [Biodiversity Conservation Center data](#), in May and June 2000 approximately 30,000 dead seals were found on the coasts of Azerbaijan, Kazakhstan, Russia, and Turkmenistan. The die-off occurred mainly in the northern Caspian Sea in springtime. At the time, most scientists found canine distemper as the main cause of death in seals.

Thus, the largest one-time seal die-off in history is believed to have been epizootic in nature, and other environmental factors may have contributed.

• “Peaceful” pollutants toxicity

Oilfields in the Caspian not only emit methane, but also numerous other pollutants hazardous to ecosystem health. Thus, the decline in the number of seals from one million to just 70,000 over the past century is correlated with the oil industry's development. This is especially evident in Kazakhstan, where most of the seals now reproduce. Thousands of settlements also dump untreated wastewater directly into the Caspian Sea.

[Toxicological research](#) on seals along the Iranian coastline of the Caspian Sea have shown extreme levels of mercury and DDT, toxicants that can adversely affect the health and reproduction of animals.

Pollutants can also result in chronic weakening of populations, but it is

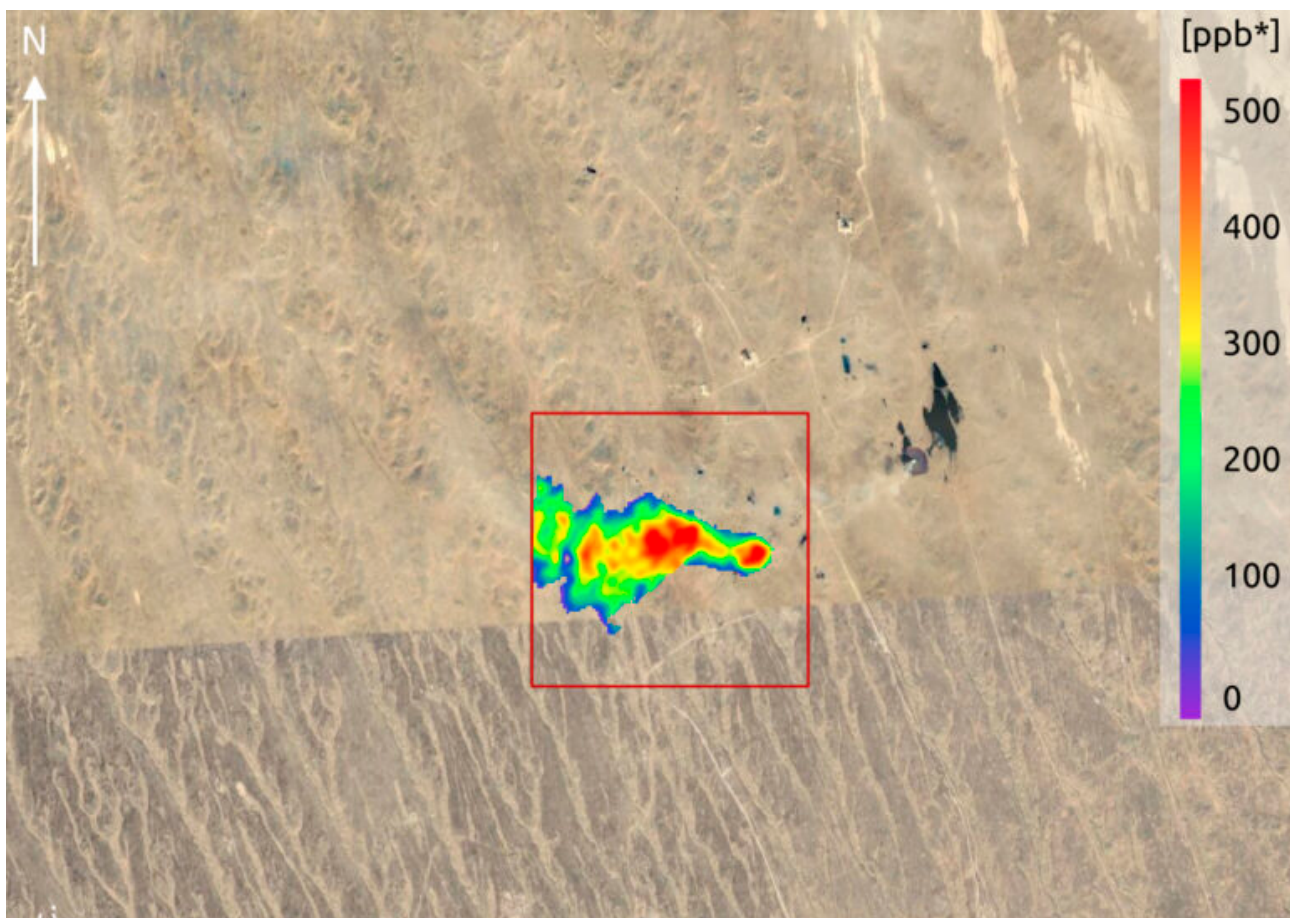
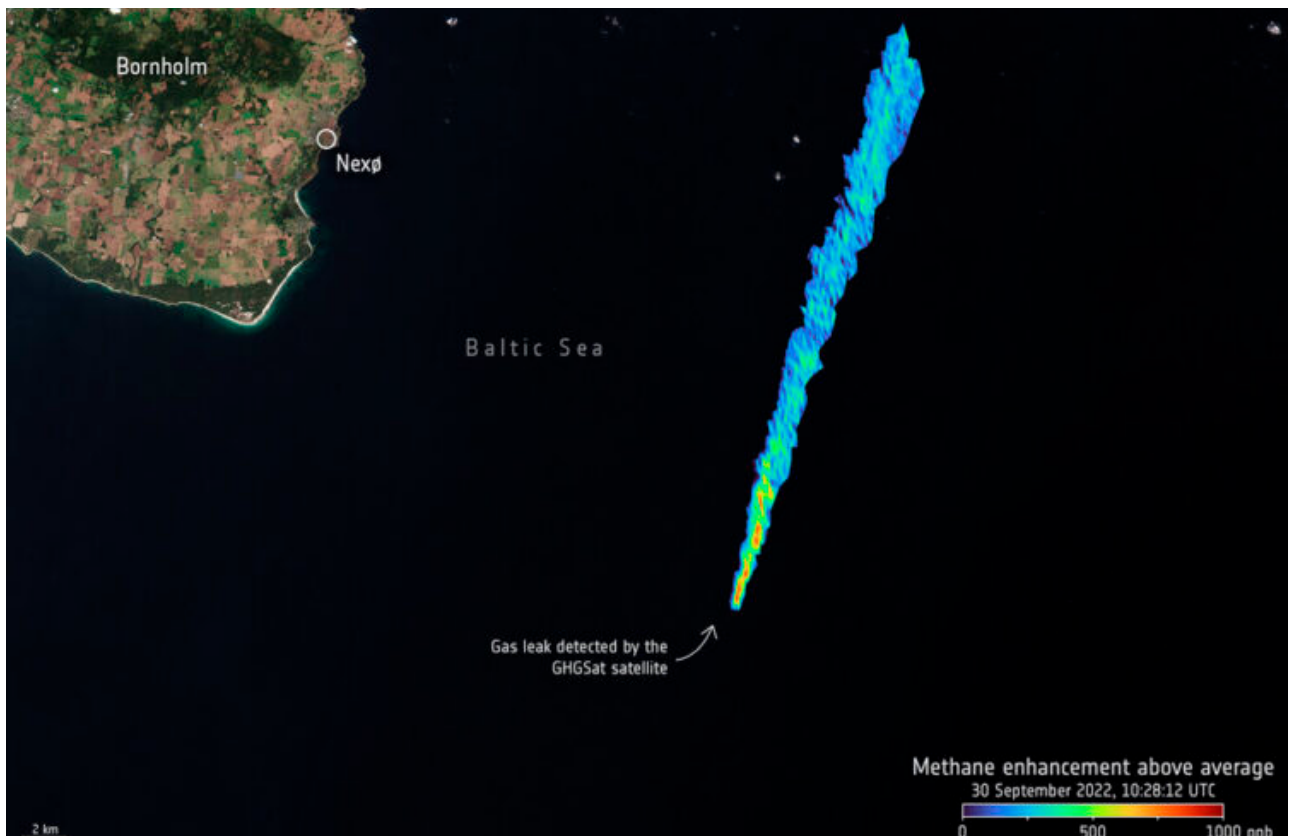


Figure 2. Methane emissions from the Nord Stream gas pipeline rupture in 2022 (first) and methane plume from oil and gas industry infrastructure in the Caspian region in 2020. Source: European Space Agency.



difficult to assign them blame for a single die-off event.

• **Death by fishing: legal or illegal fishing**

The last two centuries have seen excessive seal hunting, quite legally until 2006. In 1935, a record number of [228,000 Caspian seals](#) were harvested. The chronically poor population of the Caspian region, for example, in Dagestan, has long engaged in illegal poaching of these animals on a very large scale. However, a single die-off is unrelated to seal poaching.

In an interview with UWEC, Vladimir Burkanov, member of the Board of the [Council for Marine Mammals](#) executive team and International Union for Conservation of Nature Pinnipeds Expert Group member, said that seal bycatch during poaching and legal fishing may turn out to be the leading hypothesis for the cause of the die-off. After a ten-year hiatus, trawler fishing for anchovies resumed in the Caspian Sea in 2019, timing that coincides with increased seal deaths during the fishing season (October-December). Seals often suffocate and drown in trawls and other fishing gear. [Burkanov believes](#) that this is the most likely cause of the 2020 seal die-off.

However, the academicians who developed the methane hypothesis deny this version, referring to the fact that three dozen of the corpses

they autopsied in 2020 did not have anchovies in their stomachs, and the fish species they found typically prefer shallower habitats. Burkanov noted the incomplete overlap in areas where the seals washed up and where anchovy fishing took place. Moreover, data collected by the authors of the methane hypothesis indicates no evidence of net entanglement was found on the corpses they examined (Rozhnov et al. 2022).

However, other witnesses, including Zaur Gazipov, general director of the Caspian Environmental Center, [told reporters](#) that in the 2020 event some of the dead animals exhibited traces of net entanglements on their bodies. On the other hand, animals suffocated in small-mesh anchovy trawl nets should not show the scarring and wounds that are characteristically found on corpses removed from the large-mesh sturgeon nets used by poachers.

In his interview, Burkanov summarized his “ranking” of possible causes as follows:

Of all the possibilities, I would categorize two of them as most likely – death in fishing gear (a cause evaluated very superficially and unconvincingly in the article cited above) and death caused by biotoxins appearing during harmful microscopic algae blooms. I am quite surprised that the latter cause was never even mentioned, given that it



could have been a cause of seal death in the past. In recent years, poisoning cases and the death of a number of marine mammal species from biotoxins have been noted in different regions of the globe, including Alaska and Kamchatka. To the best of my knowledge, no one has done any analysis of biotoxins in dead seals or the presence of microalgae species capable of producing such toxins in the Caspian. I cannot completely eliminate a military cause. But toxic fuel is indiscriminate and in that event we would not only see dead seals, but also birds and other animals.

What next for the seals?

The simultaneous death of more than 2,500 animals, mostly pregnant females, is a severe blow to a rapidly declining species, the population of which, according to the IUCN, has fallen to 70,000 animals. In the long term, however, the Caspian seal's extinction could be caused by complex, chronic causes. [Kazakh experts name](#) such factors as reduction in food supply due to intensive fishing and the interception of nutrients trapped in Volga River hydropower reservoirs, chronic pollution and disturbance, poaching and bycatch in fisheries, epizootic diseases, habitat loss as a result of the shallowing of the Caspian Sea, and the development of oil fields. Most of these factors are exacerbated by climate change, to which

cold-water loving and ice-dependent seals are extremely sensitive.

Regardless of the accuracy of the Latynina-Svitan hypothesis, Russian aggression against Ukraine is hardly a decisive factor in the fate of the Caspian seal as a species. The war does, however, exacerbate problems. Planning for species conservation is also hindered by a lack of monitoring and international coordination, and the war further undermines its establishment and financing.

After the recent die-off, a number of bureaucrats promised decisive conservation measures for the seals:

- Expanding and deepening cooperation with neighbors, a challenging task given the new geopolitical realities;
- Monitoring of seal bodies that wash up along shorelines, including timely analysis of the causes of death; this work is already underway in Kazakhstan and Azerbaijan, but not in Russia;
- Establishing rehabilitation centers for sick and injured animals, something that is unlikely to solve any significant problem other than disbursement of funds.

Creating an international protected area to protect marine ecosystems, including seals, aligns with [recommendations made by IUCN](#) and researchers from neighboring countries.

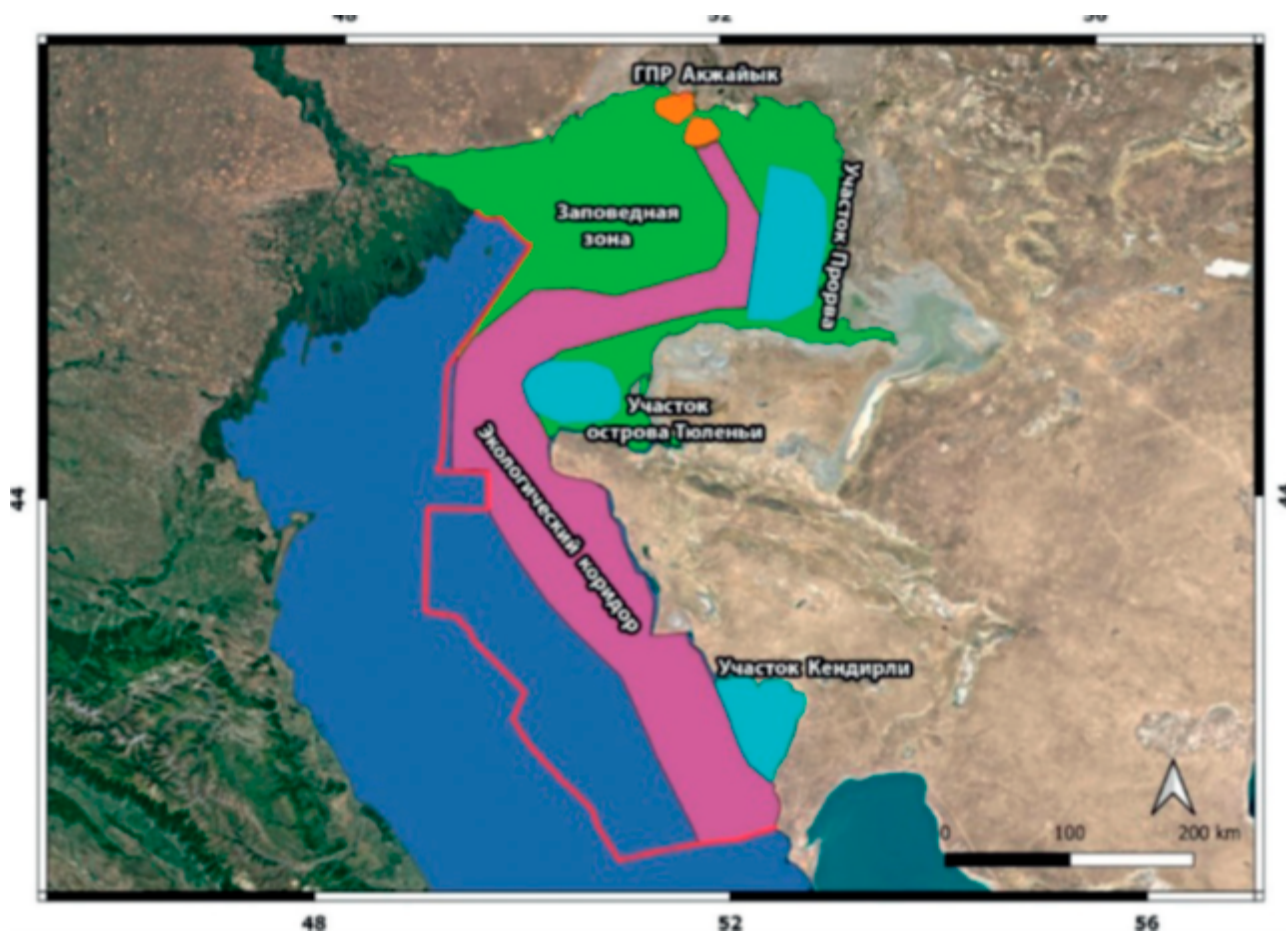


Figure 3. Map of the recommended state nature reserve for protection of the Caspian seal population in the Kazakh part of the Caspian sea. Source: Baimukanov, M.T., Ryskulov, S.E., Baimukanova, A.M. *"On the need to approve a National Plan of Action for protecting the Caspian seal (*Pusa caspica*)"*. *Ekosfera Information and Analytical Journal*. 2022. №9, pp. 31-34.

The protection of key seal habitats is an important undertaking, one that has been promoted for many years by [Kazakh scientists](#) who have created maps of areas requiring priority protection. Undoubtedly, a network of marine protected areas is also needed in the Russian sector of the Caspian Sea, including what was once also home to the richest commercial seal haulout – [Tyuleniy Island](#). The IUCN Commission on Marine Mammals has identified areas important for [breeding](#), [molting and resting](#), [feeding and migration](#) of

Caspian seals as a focus for international coordination. Properly organized, the creation of protected areas has the potential to help to save the species. Any protection regime must account for and prevent a variety of potential negative impacts on seals, including those that are less likely or not yet obvious. It is clear that the precautionary principle is most important for nature conservation. The management regime of a future protected area should include a ban on the flight of military aircraft over its water area. •

Main image credit: kaspika.org



Polar Bear vs. Military Monsters

By [Eugene Simonov](#)

The World Heritage Convention has been experiencing multiple adverse impacts from the ongoing war in Ukraine. Russia was de-facto stripped of its presidency over the World Heritage Committee, when 46 UNESCO members threatened to boycott its 2022 session in Kazan, resulting in its cancellation. Given that war threatens the very values UNESCO represents, it is an understandable decision. On November 24, the Russian Ambassador to UNESCO finally resigned as a Chairman of the World Heritage Committee, thus ending a 9-month impasse. However, this

conflict has already resulted in a year-long delay for decision-making crucial to safeguarding several dozen World Heritage properties, the conservation status of which should have been reviewed by the Committee in 2022. For example, [UWEC Work Group](#) recently reported about the war's secondary effects on [Lake Baikal](#), including weakening conservation requirements, increased resource extraction, and domestic tourism development.

Although much international [cooperation in the Arctic](#) has been disrupted by the war in Ukraine, it



may seem an irrelevant issue for Russia's [Wrangel Island World Heritage](#) property, located high in the Russian Arctic in Chukotka Autonomous Region and widely known as the world's largest nursery for young polar bears. Bears and musk oxen there grossly outnumber human residents.

The few humans are employed either at Wrangel Island Strict Nature Reserve or at a small [military base](#) built at the abandoned Ushakovskoye settlement in 2014 to underscore Russia's military presence to its "hostile Arctic neighbors." This construction constituted a violation of the World Heritage Convention in that Russia did not submit advance notice to UNESCO of construction accompanied by proof that new activity will not harm the values for which the area was inscribed on the World Heritage List. In 2017, the World Heritage Committee [warned](#) Russia of the possible transfer of the Wrangel Island site to the "List of Heritage in Danger," a move that demanded urgent remedial action. Defending its decision, Russia [emphasized](#) that the military facility occupies less than 0.001% of the total area of Wrangel Island Reserve.

In late October 2022, the Russian Ministry of Natural Resources and Environment posted a draft "[Ministerial Order](#) on Approval of the Charter of Wrangel Island State Strict Nature Reserve" for public consultation. Among other flaws, it fails to acknowledge

the reserve's World Heritage status and oddly prohibits all logging in this naturally treeless Arctic ecosystem.

The document describes Wrangel Island protections by listing 34 restricted activities and then exempting nine of those development bans "in the interest of national defense and security." Exempted activities include:

- Bearing firearms on the reserve's territory;
- Groundwater extraction, changing the hydrological regime;
- Construction of permanent structures; and
- Transportation using off-road vehicles, boats, and aircraft without permission from the nature reserve authority.

The new charter provides for "land plots designated for defense purposes," but does not list such plots or indicate their size and location. For comparison, "land plots for educational visitation/tourism" and some other types of activities are specified.

Given growing political tensions and Russia's inclination to demonstrate military capability using large scale maneuvers, such freedoms may result in significant harm to critical habitats of endangered wildlife (polar bears, walruses, whales, etc.) unless defense activities are limited to specific areas far from key wildlife habitats. Even in



the recent past, coastal passage of boats and especially military aircraft has frightened Arctic marine mammals. For example, on nearby Chukotka Peninsula significant walrus deaths occurred due to [stampedes](#) triggered by planes passing overhead. Opening the entire island to such activities may lead to a swift deterioration of the outstanding natural features for which it was inscribed on the World Heritage List.

The Russian chapter of [Greenpeace](#) put forward a limited request to develop a finite list of places designated for “defense” in its critique of the draft Charter. Other activists [started a petition](#) on social media to protect the “bear nursery.”

The Ministry of Natural Resources and Environment responded to the critique, albeit very broadly: “The islands are intrinsically linked to the glorious history of our army and navy,” and “land plots designated for defense do not overlap with critical habitats of Arctic wildlife.” It can be taken as a sign of progress today that the state agency even responds to conservationists’ arguments, instead of calling on the Ministry of Justice to designate them as “foreign agents.”

There are many politicians and businesses in Russia that eagerly await Greenpeace and other remaining international conservation groups being forced out of Russia as “foreign enemies.” Those same stakeholders

should have been very excited when, on November 4, the Wall Street Journal published an [opinion](#) piece by Thomas Dans that placed security priorities and political revisionism far higher than nature conservation and sustainable development objectives.

In 2020, former President Trump appointed Dans, an Arctic investor (including in the Russian Arctic) to the United States Arctic Research Commission, and then, to Dans’ disappointment, President Biden removed him from the role in 2021. In his commentary, Dans sympathetically pats Russian ecologists on the shoulder, writing “[they] were no doubt courageous but missed a bigger problem.”

In his opinion, the real pressing issue is that “*the island, eight time zones east of Moscow and home to some of Earth’s greatest natural wonders, belongs to the U.S.*” Dans is unmoved by the fact that the US signed and ratified a border treaty with USSR/Russia in 1991, leaving the island [on the Russian side](#) of the dividing meridian. He mentions unique natural wonders, but the investor in him hints that “Wrangel could be no less valuable, including potentially large quantities of oil, gas and other minerals.” His main concern is that “the islands are home to a state-of-the-art Russian military base, from which Mr. Putin can threaten American sovereignty”. Ten days later Dans [told Newsweek](#) that “The



return of American land would be a very productive step....” The *Newsweek* article also reasons that the Northern Sea Route is becoming a thoroughfare for U.S. exports of liquefied natural gas and Russian control over Wrangel and the De Long Islands may present an obstacle on that trade route.

Due respect for freedom of speech aside, WSJ and *Newsweek* editors could have calculated some of the immediate consequences prior to publishing this imprudent commentary. The very next day after Dans’ opinion appeared in the WSJ, Russia’s propaganda machine built on Dans’ success in revealing “the real malicious intentions of the US in the Arctic.” As a result, geopolitical rivalry and military threats have now completely overshadowed the original environmental concerns and practical suggestions of how to alleviate them.

Equally, if not more worrying, even [conservation-friendly media](#) covering the topic are now discussing a nonexistent causal linkage between the intent of conservation groups questioning the new draft of Wrangel Island Reserve Charter and the alleged desire of the United States to revise its Arctic borders. Dans’ opinion piece single-handedly disabled and endangered the environmental campaign confronting militarization of Wrangel Island and its participants. For instance, Russian State Duma Member Nikolay Nikolayev used this incident to renew his old [proposal](#)

to list Greenpeace as an “undesirable organization” in Russia. He could soon be joined by Mr. Dans’ partners in the Russian oil and gas sector that will be happy to take revenge over Greenpeace and other “green enemies.”

Some effective conservation work has already fallen victim to these geopolitical tensions. WWF, an international conservation group that has been protecting Arctic wildlife for over 20 years, [had to discontinue](#) its cooperation agreement with the Chukotka Autonomous Region government this summer. This happened after the Chukotka legislature and Russia’s United Peoples’ Front in March 2022 publicly accused the conservation group of supporting development of protected areas at the expense of national security and the economic interests of local communities, stating that it is particularly unacceptable given that WWF funding comes from “enemy countries” supporting Ukraine.

At a more philosophical level this story illustrates the readiness of both Russian and US politicians to sacrifice the natural environment to achieve their geopolitical goals. Despite controlling over half the maritime Arctic and with no shortage of rough terrain for training maneuvers, Putin is prepared to sacrifice Russia’s sole maritime World Heritage site in order to demonstrate Russia’s military capability to the US.



Dans' perspective is not a completely isolated event. [The US Arctic Strategy](#) published in 2022 declares "Security in the Arctic" as the first strategic objective, while "Climate Change and Environment" are shifted to second place, despite a recognition clearly articulated in the same Strategy that the

latter is the main challenge facing the Arctic region.

As long as geopolitical priorities place security before the environment, polar bears have no chance of survival on Wrangel Island or elsewhere. Humanity's own chances are very slim as well. •

Main image credit: [Eugene Simonov](#)



Results of Davos: Arms and Climate

*By Vera Kuzmina
Translated by Nick Müller*

The issues of climate change and its impact on the socio-economic development of countries of the world were among the main issues at the World Economic Forum (WEF) in Davos, Switzerland in January. The war in Ukraine was also discussed, including in terms of its impact on the economy, future of business, and the state of the environment.

Davos' slogan this year was "Cooperation in a fragmented world," a phrase which points primarily to the war in Ukraine and the resulting disunity and disruption of traditional economic ties. The question of where globalization is heading as a result of the invasion of Ukraine raised [questions](#) at Davos about the potential for global peace.

Roughly 2,700 delegates attended Davos, 70% of which represented Europe and North America. Of G7 leaders, only Olaf Scholz appeared at the WEF, and there were no representatives from Russia.

Guterres sets the tone

United Nations Secretary General **António Guterres** tried to bring together



issues of climate and military risks, as well as evoking principles of sustainable development.

Among the issues requiring immediate attention, the UN Secretary-General listed the global economic crisis, consequences and lessons of the pandemic, and the threat of a climate catastrophe, as well as conflicts. Among these, he highlighted the situation in Ukraine in connection with the war's "profound global implications".

According to the Secretary General, the war has affected food and energy prices, supply chains, and nuclear safety. It also shook the foundations of international law and the UN Charter. He noted that humanity is "flirting with climate disaster." Greenhouse gas emissions are on the rise, and the planet could experience warming of 2.8 degrees Celsius. The consequences of such a scenario would be devastating.

The Secretary General also appealed to business, calling for corporate responsibility for misinformation and the concealment of data. [Guterres](#) noted the Exxonmobil scandal that erupted before Davos – the moment when journalists learned that the oil giant knew about the destructive consequences of greenhouse gas emissions back in the 70s, but hid its findings from the public while supporting the spread of false information.

"All of these problems are interlinked. They are piling up like cars in a chain

reaction crash. There are no perfect solutions in a storm," the UN head emphasized. "But, we can work to control the damage and seize opportunities," [he continued](#).

Without Russian Coil

German Chancellor **Olaf Scholz** [declared](#) that Europe's largest economy has survived the rejection of Russian gas and was prepared for winter. Russia stopped supplying coal to the EU in retaliation for sanctions after the start of its invasion of Ukraine.

In his speech, Scholz acknowledged that the German economy was geared towards innovative manufacturing rather than energy generation. The loss of one of its main energy suppliers has led to a disruption in the economy. The chancellor is also confident that there are no problems with new gas fields in the world, so the "blue fuel" deficit can be offset without harming developing countries.

Prior to the WEF, there had been criticism that rich countries pay more and divert gas destined for developing countries. Germany also intends to develop hydrogen and renewable energy projects in order to avoid energy lockdowns such as occurred last year.

Ukrainian grain for the world

The Russian military invasion of Ukraine disrupted grain supplies



to other countries. Ukraine's export capacity has been reduced and is at high risk.

"We need to make sure that NATO creates a safe corridor from Odesa and other ports so that grain from Ukraine continues to be delivered to countries that need it. Global food security is at stake. We must support Ukraine, otherwise people around the world will have nothing to eat," [declared](#) **José Andrés**, director of the international food organization World Central Kitchen, at an event at the Ukrainian House in Davos.

According to World Food Program (WFP) estimates, [Ukraine is](#) one of the world's largest donors to the WFP, a UN agency that provides food assistance to countries in crisis. According to its executive director David Beasley, Ukraine provides 40% of the world's food aid.

Climate economy

Davos participants actively discussed the United States Inflation Reduction Act (IRA), signed into law in August 2022, part of Biden's green economy plan. Economists estimate that incentives for green businesses will amount to about \$370 billion to support clean energy projects in the US.

Martin Lundstedt, chief executive of Swedish truck manufacturer Volvo, says the US is "creating the conditions for a transition from a fossil fuel-based, brown economic platform to a

"green one", and Europe needs to draw inspiration from that. The head of the European Commission, Ursula von der Leyen, pledged that a law similar to the American one will soon appear in the EU.

Another economic topic discussed was the rejection of Gross Domestic Product (GDP) as the only criterion for evaluating the effectiveness of investments. Special Presidential Envoy for Climate of the President of the United States **John Kerry** [announced](#) the creation of a national statistical program that will consider environmental costs when planning economic projects. Modeled in part on a Chinese system for assessing environmental damage, the program launched in six cities. Both systems aim to adjust the use of GDP as the sole measure of project performance. Kerry hopes that statistically-driven assessments of environmental services will enable better climate and environmental decisions.

WEF organizers also [announced](#) the launch of the Giving to Amplify Earth Action (GAEA) program to fund \$3 trillion per year of zero-carbon initiatives. More than 45 partners from the philanthropic, public, and private sectors will join GAEA. Initially, the program will support international consulting company McKinsey's Sustainability division, as well as BMW's and IKEA's charitable foundations, the United Nations Foundation, and other organizations and institutions.



Activists at Davos

During the business forum, environmental and climate activists conducted several actions. Renowned climate activist **Greta Thunberg** traveled to the Forum to express her dissatisfaction with the actions of big business. Thunberg arrived in Davos after being detained during protests against coal mining in Germany. While detained, the activist [stated](#) that climate activism was “not a crime”.

Thunberg ridiculed the appointment of [oil company ADNOC executive](#) Sultan Al Jaber (UAE) to the role of President of COP 28, to be held in the UAE. “Lobbyists have been influencing these conferences since forever, and this just puts a very clear face to it. It’s completely ridiculous,” the activist said. Also, Greta [published](#) her “Cease and Desist” appeal to business and politicians, collecting over 850,000 signatures. The petition calls on energy companies “to immediately stop opening any new oil, gas, or coal extraction sites and stop

blocking the clean energy transition we all so urgently need.”

Against the dramatic background of the military conflict between Russia and Ukraine, the long-term agenda in Davos closely touched on the topic of climate. Thus, it can be said that oil, coal, and gas trading was further enabled by Russia’s military invasion, and energy blackmail by the world’s largest economies. Today, business elites seek to overcome contradictions between economic growth and environmental conservation, between profit and sustainable development goals. The main focus of the summit was not on a return to mainstream traditional energy, but on a rapid transition to renewable energy sources and “green” innovations that will help the world become more equitable. In this regard, Greta Thunberg’s participation at Davos and engagement with forum participants demonstrated that the decisions made here are important not only for CEOs, but for humanity as a whole. •

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Ukraine War
Environmental
Consequences
Work Group