



# The Future of Munitions-Damaged Ukrainian Lands

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## Ukrainian Nature Conservation Group

Ukrainian organization of professional biologists combining their potential to preserve biodiversity of the protected areas and implement European nature conservation laws in Ukraine.



## Ukraine War Environmental Consequences Work Group

An international group of experts and journalists aimed at collecting, verifying, analyzing, and sharing information about the environmental consequences of the Russian war in Ukraine, preparing solutions that meet the best ecological standards to resolve global humanitarian and environmental crises.

# Military factors affecting the landscape / ecosystems / soils

## 1. Direct Destruction

- Physical impact of munitions
- Movement of military vehicles
- Construction of defensive structures
- Fires on natural and agricultural lands
- Destruction of artificial reservoirs
- Cutting down plantations (forests, parks, shelterbelts)

## 2. Creation of Technogenic Risks

- Damage to hazardous industries
- Nuclear terrorism (creation of a “dirty bomb”)
- Military activities near other objects of technogenic danger
- Destruction of sewage treatment plants and waste storage sites

## 3. Environmental Pollution

- Destruction of environmentally hazardous industries and fuel storages
- Creation of fires at warehouses of materials hazardous during combustion
- Chemical impact of munitions
- Use of prohibited types of weapons, as well as outdated munitions with toxic fuel
- Chemical products of munitions explosions
- Burning destroyed equipment, fuel leaks, and other pollutants entering the environment
- Corpses of soldiers and civilians left in natural areas/ water bodies

# Top military factors affecting the environment #1

## Shell explosions



The concentration of craters from shell explosions in any active combat zone in the south and east of Ukraine is significantly higher than on any official military training ground.

## Top military factors affecting the environment #2

### Destruction & weapons fire at hazardous sites

Weapons fire completely destroyed Ukraine's entire network of large metallurgical and chemical industry facilities, the locations of which were concentrated in the eastern part of country



In the first 4 month of this war, over 60 fuel depots, large fueling stations and airport fuel storage areas where destroyed

All the pollution resulting from the destruction of industries and fuel storages entered the environment, contributing to soil contamination.

## Top military factors affecting the environment #3

### Wildfires



## Case #1

### Destruction of the Kakhov reservoir



**Case #1**

**Destruction of the Kakhov reservoir**



4 місяці відновлення



40 billion trees – a climate-resilient forest.



2 роки відновлення



## Case #2

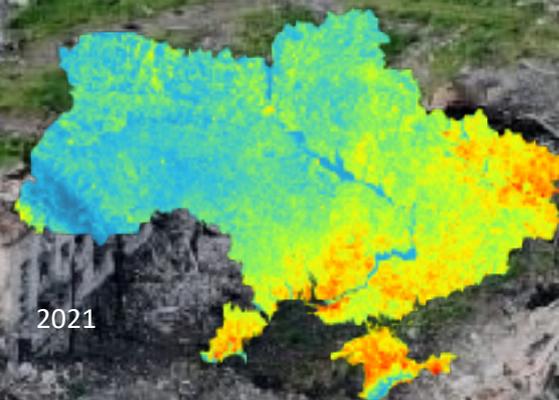
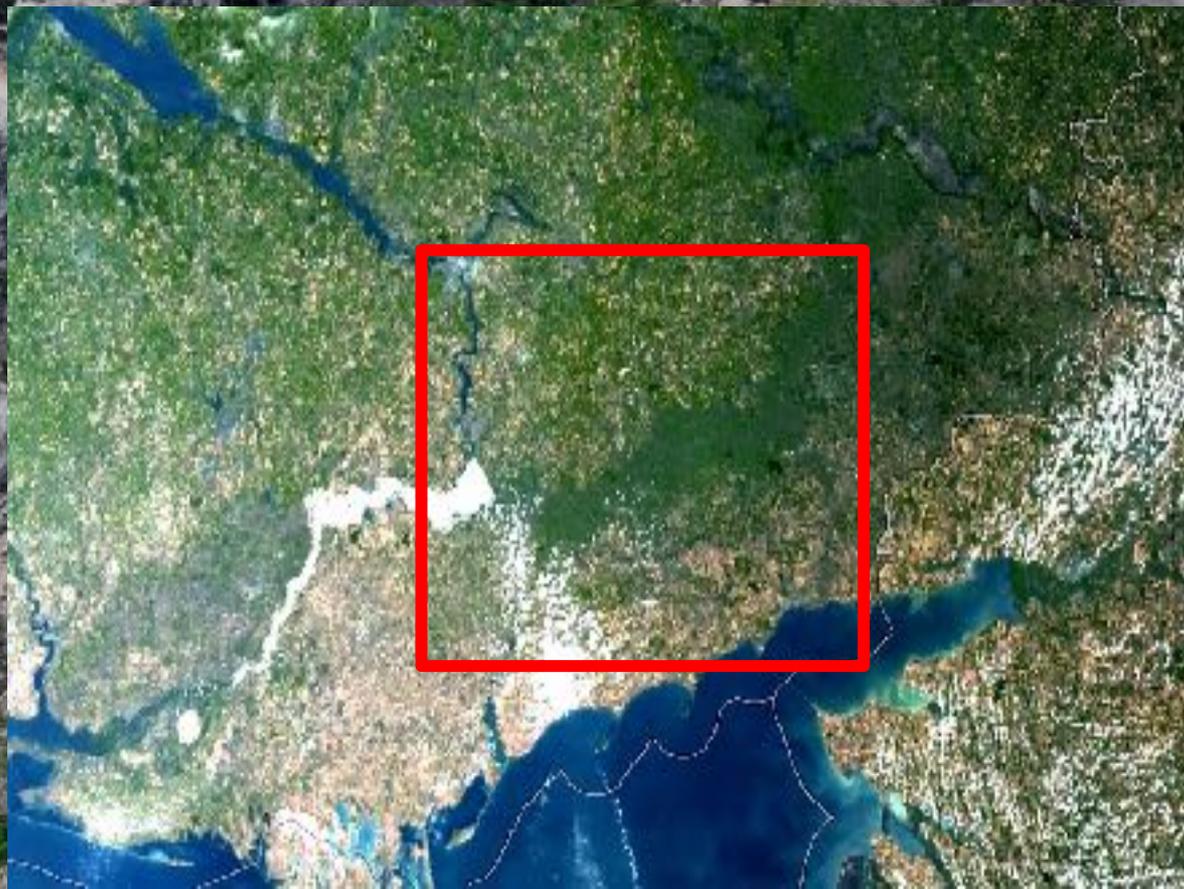
Total destruction in the combat zone



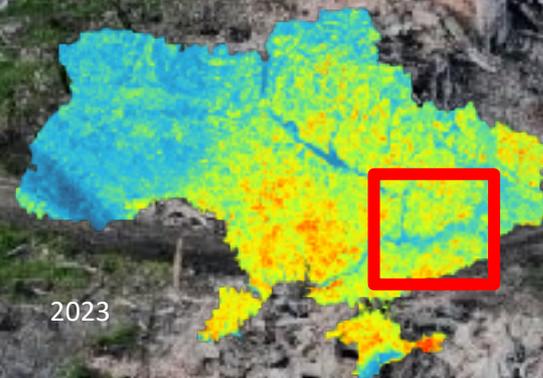
## Case #2

Total destruction in the combat zone

### Green Belt" and Invasive Species



2021



2023

# Rare and endemic species found in the war zone

Photo by: Roman (CC BY 4.0)



*Centaurea protomargaritacea* Klokov – one of [20 endemic plants](#) found only in the war zone

Sandy mole rat (*Spalax arenarius*) – endemic of Southern Ukraine



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Photo by: Svyatoslav Gavrylyk

Marble polecat (*Vormela peregusna*) – endemic of Eastern Europe

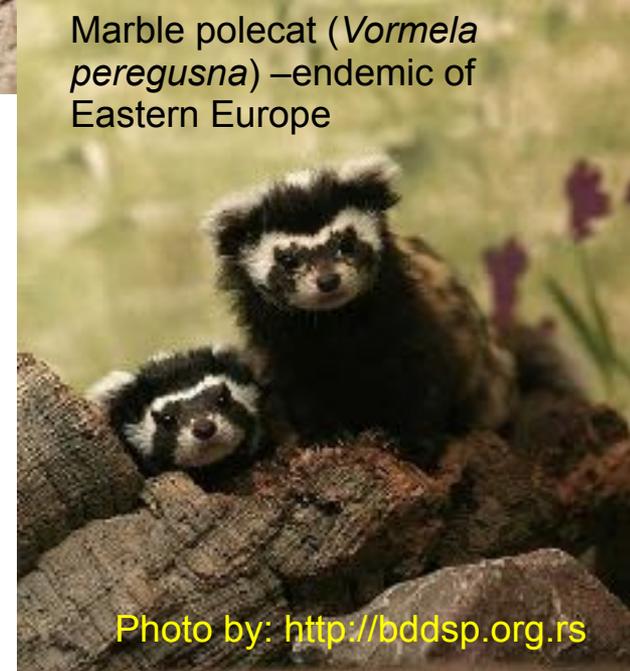


Photo by: <http://bddsp.org.rs>

Sandwich tern (*Thalasseus sandvicensis*) – all known sizeable colonies have been destroyed in warfare



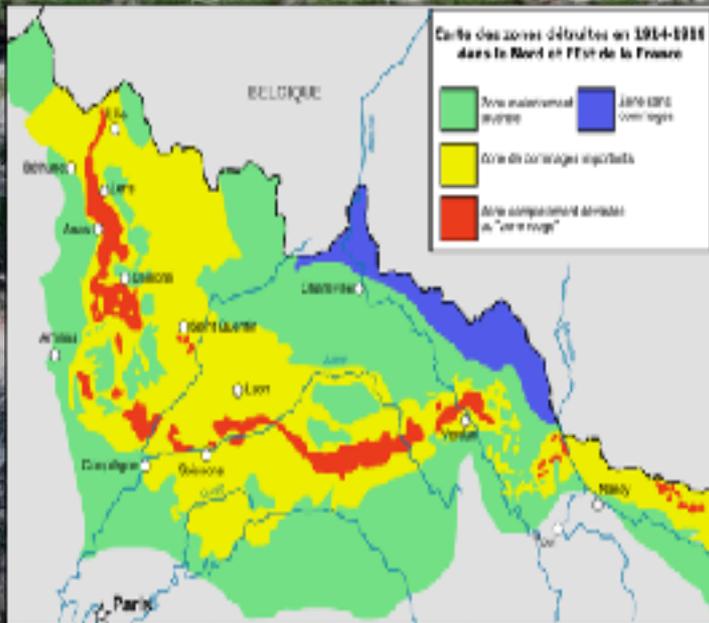
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## Problems of Mined Territories

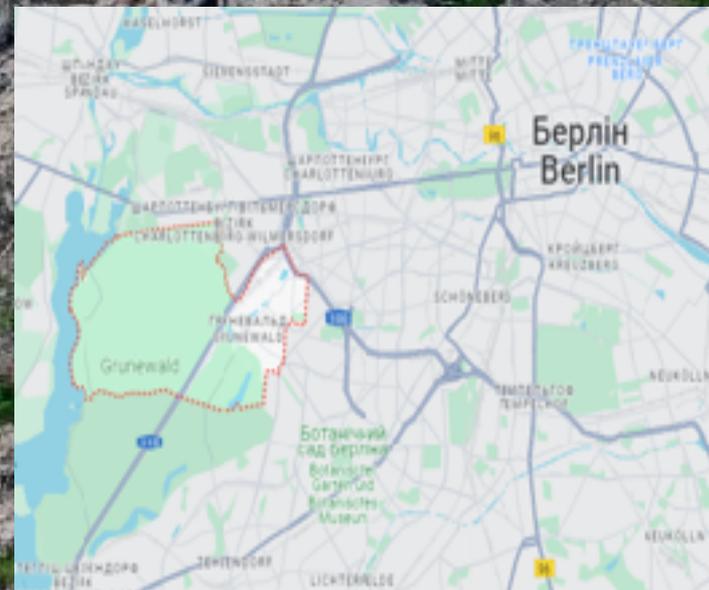
If we assume that any territory where demining has not been conducted is considered conditionally mined, these areas occupy 26% of Ukraine's territory, or 156,000 square kilometers.

The demining process may take up to 750 years.





France's "Red Zone"



Grunewald, Germany

Since 1989, about 15 million hectares of military lands in Europe have been abandoned after the end of the Cold War. Often, the use of large areas became impractical due to chemical pollution and mining. This was one of the reasons for converting military ranges into protected areas. For example, Denmark nominated 45%, the Netherlands 50%, and Belgium 70% of their military range territories to be included in the Natura 2000 network.





In the USA, lands contaminated by substances of military-technogenic origin belong to the Department of Defense (4 million hectares), 15% of which are declared National Parks.

In EU countries, such lands are predominantly government-owned (for example, in Germany - 492,000 hectares, of which 316,000 hectares are Natura 2000 areas).

In Ukraine, there are already protected areas on contaminated lands:

- National Nature Park "Oleshkivski Sands"
- Chornobyl Biosphere Reserve
- Polissia Nature Reserve
- Drevliansky Nature Reserve



Thank you for your attention!

