CANADIAN INSTITUTE OF
UKRAINIAN STUDIES

The Lower Dnipro Basin: CIUS-sponsored environmental disaster study

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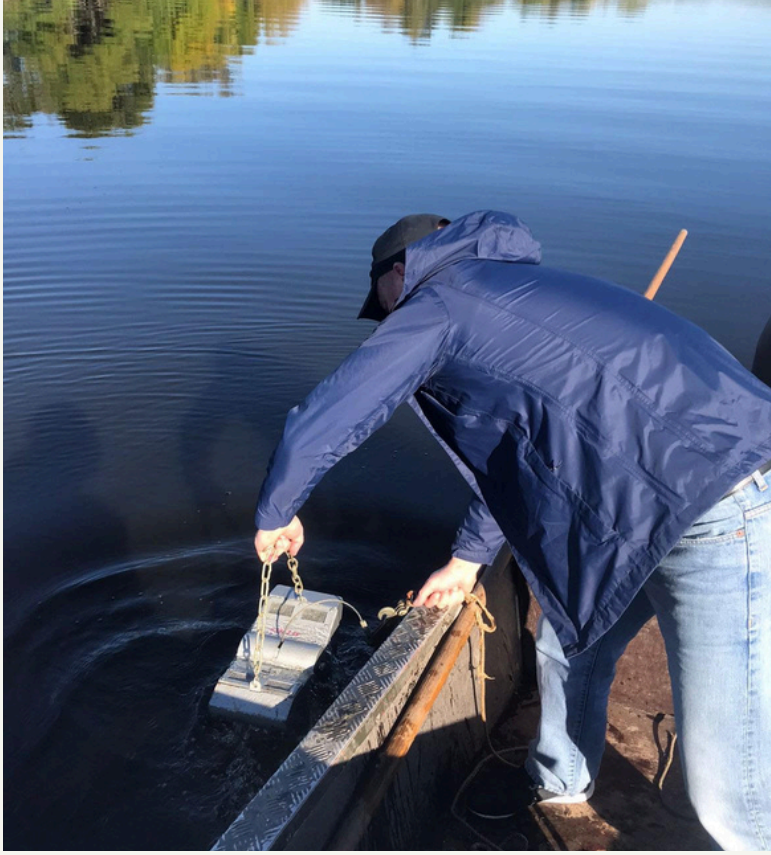
THE LOWER DNIPRO BASIN: CIUS-SPONSORED ENVIRONMENTAL DISASTER STUDY COMPLETED



On 6 June 2023 Russia destroyed the Kakhovka Reservoir on the Dnipro River in Ukraine, causing an environmental disaster and a humanitarian crisis. The detonation of the dam and flooding of the Lower Dnipro Basin led to the loss of 30% of Ukraine's freshwater reserves, leaving 6 million people without drinking water. The ecological consequences are also severe: fertile soils have been lost, landscapes disrupted, and rare species of flora and fauna have disappeared.

With support from CIUS through the Ihor Roman Bukowsky Sustainable Development Endowment Fund at the University of Alberta, a comprehensive study of the environmental impact was undertaken by Dr. Vitalii Pichura of the Kherson State Agricultural University, along with colleagues Larisa Potravka and Pavlo Kutishchev and in collaboration with Oleksandr Baginskyi of the Nova Kakhovka Military Administration. Their meticulous research, conducted using Sentinel satellites, Maxar drones, and rigorous field and laboratory methods, documents the unfolding environmental disaster.

The team's findings are staggering. Contamination has struck the once-lush Dnipro-Buh estuary system and vast waters of the Black Sea, encompassing over 6,800 sq. km. The hydrological balance of the Lower Dnipro has deteriorated sharply, with stagnation, severe degradation of water quality, and an 8–12-metre loss in groundwater levels.

The impact has rippled through the surrounding landscape. Microclimates have been altered, adjacent land mass temperatures rose by 1.0 °C, and evaporation accelerated by 50%, leaving 78.6% of the Khortytsia

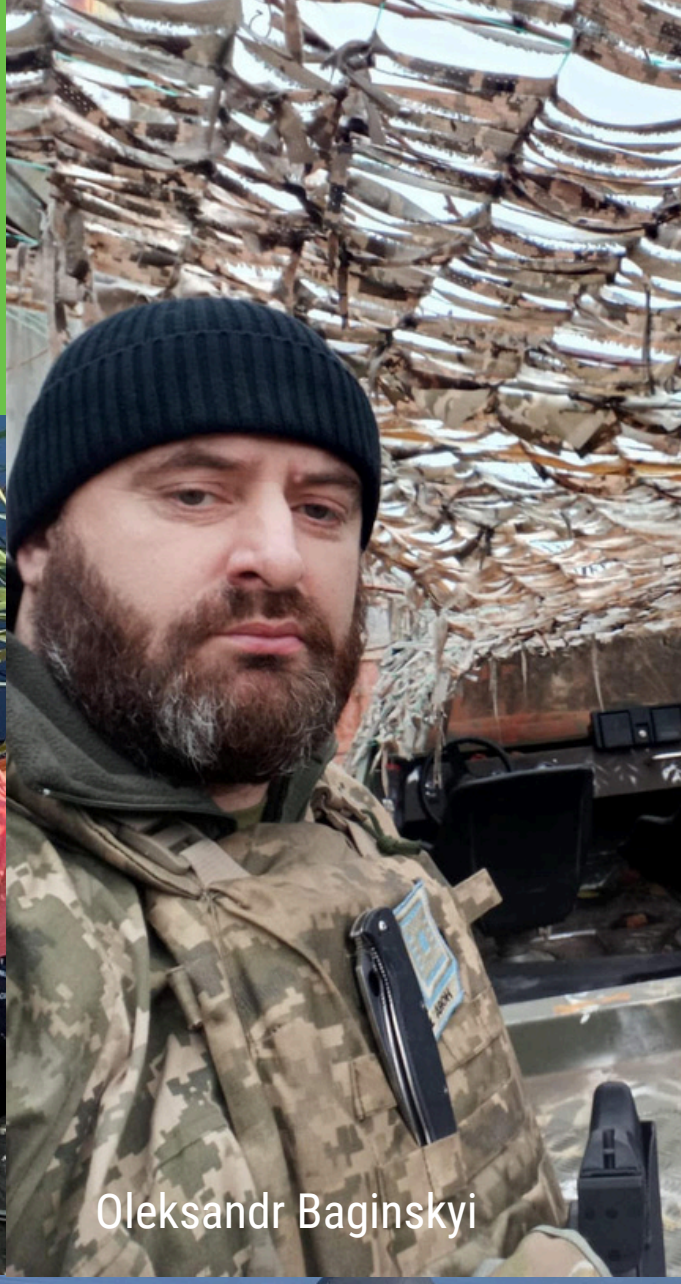
2.5

million hectares of soil degradation due to the destruction of irrigation systems

4

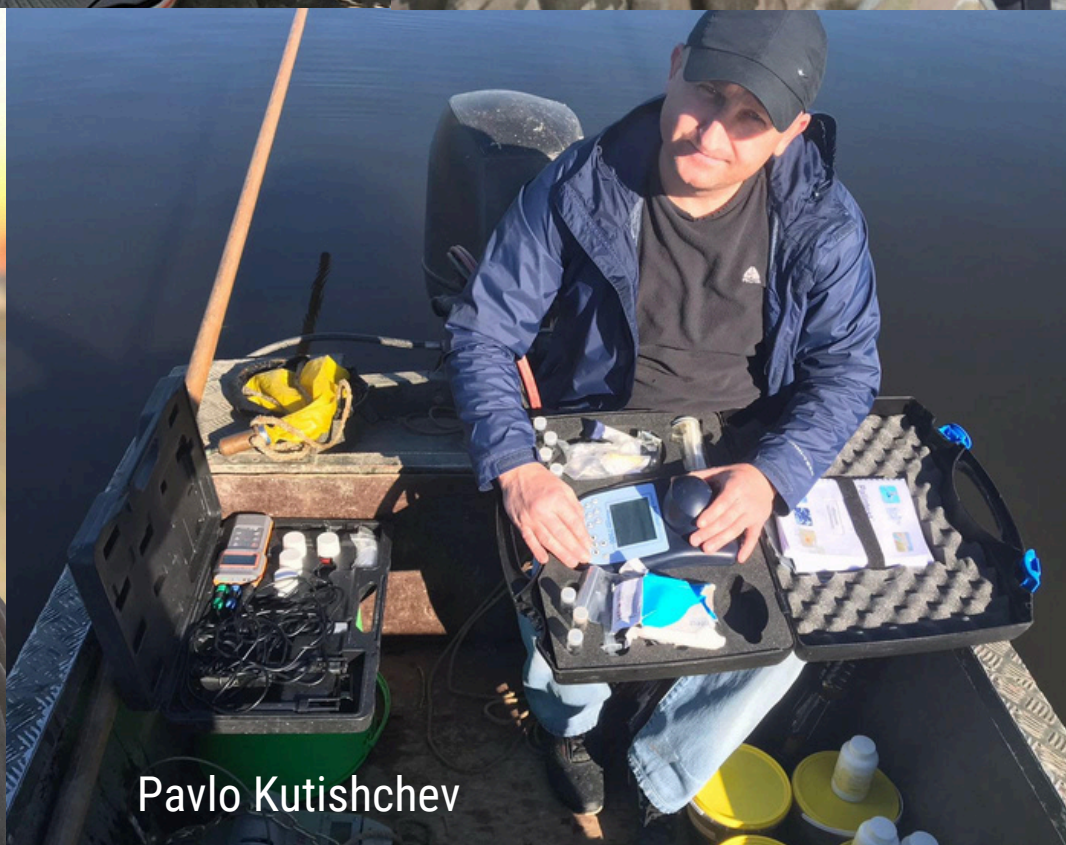
million hectares of research territory

Dr. Vitalii Pichura



Oleksandr Baginskyi

Larisa Potravka



Pavlo Kutishchev

National Reserve's floodplains degraded. Farmland has suffered as well, with 2.5 million hectares of soil left vulnerable to erosion and degradation—a dire consequence for Ukraine's agricultural heartland.

These results underscore an environmental disaster with far-reaching repercussions. Restoring the affected areas and enabling the return of displaced populations will require extensive scientific and socio-economic strategies and resources. The resilience of Ukrainians will be crucial in developing sustainable solutions for the future. They must demand justice and international support for Ukraine's recovery.

The study findings have been shared via social networks, conferences, media interviews, and publications. The world must recognize the dire situation and support efforts to rehabilitate this critical region as they continue their work.

A Short Update from Vitalii:
New challenges such as hot weather creates a plague of thousands of tons of fish, water "blooms", large volumes of dirt enter the reservoirs, vegetation burns, and a catastrophic water shortage continues.

Together with Larisa Potravka and Oleksandr Baginskyi, the team has recorded the impact of the destruction of the dam and have begun extensive work on substantiating the scenarios for the restoration of the Kakhovka Reservoir. Possible scenarios include:

1 - restoration and filling of the Reservoir,
2 - creation of a natural and plant ecosystem (restoration of the Great Meadow),
3 - creation of an artificial and natural system of the Reservoir (partial filling with water + creation of a quasi-natural meadow ecosystem).

They continue to monitor the state of the Lower Dnipro, the Dnipro-Buzka estuary system, and the Black Sea.