Biodiversity MAG

The Media Plateform ot The International Conservation & Biodiversity Team (ICBT)

An International Exchange Space to preserve our Planet

Humans, Animals & Biodiversity
The impact of the Russian Ecocide on

UKRAINE

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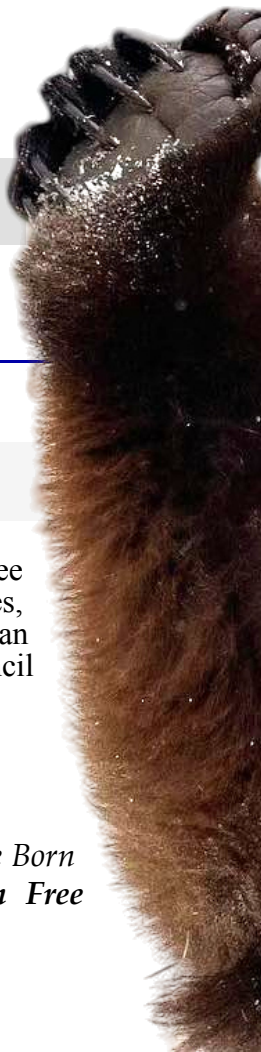

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❖ **Yuliia Ovchynnykova**, Member of the Ukrainian Parliament, Chairman of the Committee on Environmental Policy and Nature Management, Head of the Subcommittee on Forest Resources, Biodiversity, Natural Landscapes, Nature Reserve Fund Objects and Adaptation of Ukrainian Legislation to EU Law. Member of the delegation to the Parliamentary Assembly of the Council of Europe.

❖ **Dr Jaco Cilliers**, Representative UNDP in Ukraine.

Photo of cover: *Tsar the lion rescued with his brother from war-torn Ukraine on arrival at the Born Free Foundation's sanctuary at Shamwari Private Game Reserve, South Africa* © ***Born Free Foundation/Lyndon Brandt — All rights reserved.***

❖ **Jojo Mehta**, co-founder and Executive Director of Stop Ecocide International.

❖ **Drs Yegor Yakovlev & Maryina Shkvyria**, zoologists, Save Wild & White Rock Bear Shelter, Kyiv, Ukraine.

❖ **Dr Pavel Gol'din**, Full Professor and Leading Researcher at Institute of Zoology NAS of Ukraine.

❖ **Dr Bohdan Vykhor**, Executive Director WWF Ukraine, Kyiv, Ukraine.

❖ **Dr Oleksandr Zinenko**, Senior Researcher at V. N. Karazin Kharkiv National University, Ukraine.

❖ **Dr Oleksii Marushchak**, researcher at I.I. Schmalhausen Institute of Zoology of National Academy of Sciences of Ukraine.

❖ **Dr Roman Svitin**, research scientist, Institute of Zoology NAS of Ukraine, expert on amphibians and estuaries, Kyiv, Ukraine.

❖ **Olga Chevganiuk**, head of the international department of UAnimals, Kyiv, Ukraine.

❖ **Anton Ptushkin**, documentary filmmaker, « Us, our pets and the war », Kyiv, Ukraine.

❖ **Joshua Zeman**, film director, « Checkpoint Zoo », New York, USA.

Above: A protester in New York City on 27 February 2022, holding a sign that reads "Glory to Ukraine! Glory to the heroes!". Credit Rgm38/Wikipedia — Transport cage used during the transfer of 5 lions abroad in June 2023, organised by Natalia Popova's Wildlife Rescue Center and UAnimals with the support of IFAW *On the left: Popeye the bear in the White Rock Bear Shelter near Kyiv, a few days before the full-scale invasion of Ukraine by the Russian troops — a brief moment of laughter and insouciance before years of fear, suffering and grief*

Dr Laurent Dingli, French writer, Historian, environmentalist and animal rights activist, chairs an NGO dedicated to the protection of the coastline and its biodiversity in Brittany. He founded The International Conservation & Biodiversity Team in 2021 and the Biodiversity MAG in 2022. He's also one of the International Advisors of the China Biodiversity Conservation & Green Development Foundation (CBCGDF).

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EDITO

THE RUSSIAN ECOCIDE IN UKRAINE

By Laurent Dingli

Photo credit: ministry of Defense of Ukraine

A CRIMINAL STATE

They have caused the death of a million Afghans, wiped out a quarter of the population of Chechnya, razed towns to the ground, deliberately and systematically bombed hospitals in Syria, sown death and desolation in Ukraine. ‘They’ meaning the leaders of the Soviet Union and then the Russian Federation and their accomplices.

For generations, the Russian people have been bathed in violence: journalists murdered, opponents poisoned, young recruits to their army hazed, beaten, humiliated, sometimes raped and killed. What can we expect from a country that kills its own citizens without batting an eyelid when they are taken hostage, as in the Beslan tragedy? What humanity can we expect from a government that abandons to certain death those who chose to defend their country and ensure its safety, like the crew of the Kursk submarine? What can we expect from a government that has pushed its criminal cynicism to the point of using the lists of Syrian hospitals provided by the UN, not to spare them, as was the international organisation's objective, but to target them more effectively?

We all remember the terrible images of Bucha, Borodyanka, Mariupil and, more recently, the children's hospital in Kyiv hit by a Russian strike.

Faced with this criminal regime and its army, a courageous and free people are standing up: the Ukrainians. Since the beginning of the massive invasion of their country by the Russian aggressor, they have shown the whole world that, even in circumstances of war, it is possible to behave humanely, to respect prisoners and civilian populations, not to engage in a struggle for extermination based on delusional propaganda, as is the case with their enemy, but to fight in self-defence.

Let us be clear, in writing this, we have no intention of idealising the Ukrainian people or embellishing reality. Like all countries, Ukraine has its shortcomings and flaws. Corruption, among other things, is recurrent and the country is the scene of trafficking of all kinds, particularly of wild animals. In addition, intensive livestock farming, sometimes in its most disrespectful forms for animals, is still practised on a large scale. As everywhere else, there are individuals and lobbies more concerned with doing business than preserving the country's natural heritage.

Nevertheless, many of us are impressed by the collective attitude of the Ukrainian people in the face of the tragedy that is unfolding, and by the spirit of solidarity and self-sacrifice they have shown despite the refusal of some of their young people to join the army. How many of them risked their lives and lost them, or returned broken in body and spirit to defend freedom? Yes, Ukrainians have faults like all human beings, but what has always impressed me about an individual or a community is not so much its qualities as its ability to overcome its limitations and faults. And in this area, Ukraine offers us a wonderful example. As I have said several times in these interviews, I am convinced that Ukraine will one day — and I hope as soon as possible — become one of the spearheads of the European Union. Our community of states needs its resilience, its dynamism and its incredible ability to adapt.

AKNOWLEDGE THE ECOCIDE

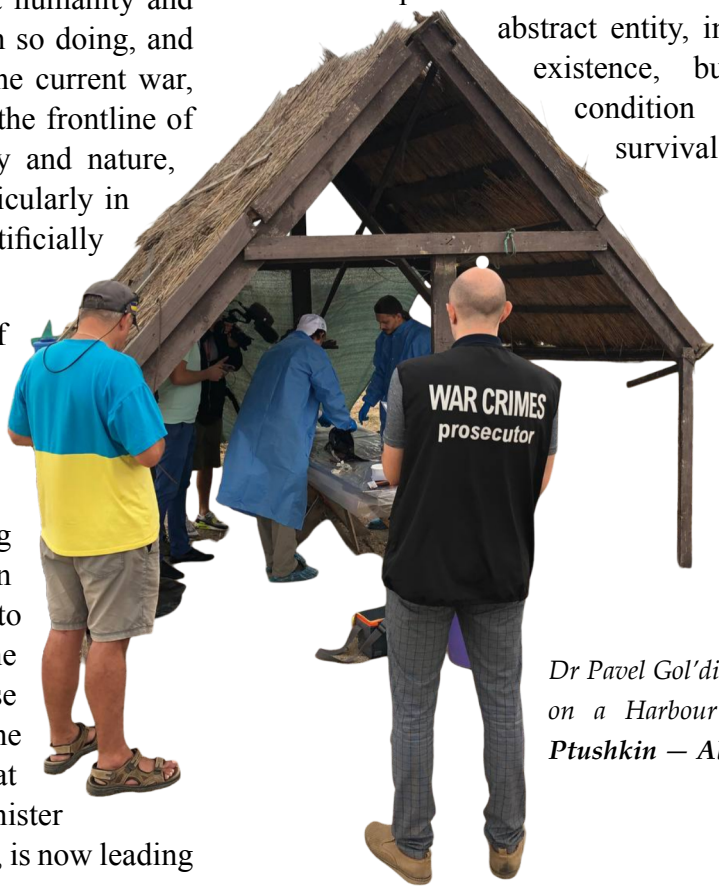
One of the pillars of the country's current struggle is justice. The aim is to recognise the crimes of the Russian aggressor so that one day it can be held to account before an international court, just as there were the Nuremberg trials in the past and just as there should have been a trial to judge Stalin's monstrous crimes.

But where Ukraine is revolutionising our approach in this field is in its firm determination to take account not only of crimes against humanity but also of crimes against nature. To put it more accurately, this nation at war is reminding us that crimes against humanity and crimes against nature are intertwined. In so doing, and even beyond the appalling context of the current war, Ukraine is deliberately placing itself in the frontline of the struggle to finally reunite humanity and nature, which certain visions of the world, particularly in the West, have arbitrarily and very artificially separated.

Of course, the notion and the reality of ecocide are not new, but when the French and then the United States air forces burnt down Vietnamese forests with napalm in the 50s and the 60s, with the utmost contempt for all the living beings that might inhabit them, human and non-human alike, no one seemed to really care. The famous Swedish Prime Minister Olof Palme was the first to use the term and defend the concept in the early 1970s. It is no coincidence that Margot Wallström, a Swede, former Minister of Foreign Affairs and UN representative, is now leading this fight with members of the Ukrainian government. One of the major steps in this process of taking account of ecocide was President Volodymyr Zelenskyy's ten-point peace plan of November 2022.

The environmental disaster wrought by the Russian aggressor over the last two and a half years is gigantic, and the devastating destruction of the Kakhovka dam is only the tip of the iceberg. As stated by the ***Commission on Security in Europe***, Ukraine estimates that, in ten years of war, Russia has inflicted some $60 billion in damages to Ukraine's natural and man-made environments and pushed the country to the brink of ecological collapse. 'Vast swaths of Ukraine are contaminated with landmines, toxic chemicals, and heavy metals. Hundreds of thousands of square miles of agricultural lands are decimated, groundwater contaminated, and nature reserves consumed by fire.'

And yet, despite this catastrophic record, there are still reasons for hope. The whole world has seen the way in which so many Ukrainians have behaved towards both their domestic and wild animals. Here again, they are giving us a lesson in inclusion. No one is left by the wayside. The Ukrainians want to defend all the inhabitants of their territory just as they want to preserve their natural, human and cultural heritage from the will to annihilate of the Russian criminal who sits in the Kremlin. I may be too old to believe in a change in human nature and its propensity for destruction, but Ukraine and all those who support it are giving us real reason to hope that nature will no longer be seen as an abstract entity, independent of our existence, but as the very condition of our own survival.



Dr Pavel Gol'din performs a necropsy on a Harbour porpoise © ***Anton Ptushkin — All rights reserved.***

Dr Oleksii Marushchak is a junio researcher at the Department of Anima monitoring and conservation, I. I Schmalhausen institute of Zoology NAS o Ukraine focused on the study of variou representatives of herpetofauna; co-founder o NGO “Ukrainian Nature Conservation Group (UNCG). In 2023 he obtained PhD degree afte successful defending of PhD thesis ‘Curren state of amphibians of Rightcoastal Polissia’ Author of more than 180 scientific work (including, collective monographs, thesis proceedings, abstracts, 8 articles in Ukrainia scientific journals that are included in the ‘Lis of professional scientific publishers of Ukraine and 30 articles published in international peer reviewed journals indexed in Scopus and WoS Oleksii is an official participant of EMYS-R project aimed on socio-ecological evaluation o wetlands restoration in favor of the Europea pond turtle Emys orbicularis reintroduction an associated biodiversity with a pan-Europea approach. At the same time Oleksii is a Head o Research and Development department o international breeding facility ‘BION Terrarium Center’ and Coordinator a international project ‘Responsibl Herpetoculture Foundation’. During th wartime, Oleksii is actively organizing th process of collecting, digitalizing an publishing of raw data of records o biodiversity in Ukraine. Main aim of thi activity is to document and publish biodiversity records (fungi, plants and animals) for th global scientific community in the form o databases available with free access on GBI network. Such studies, being relatively simple allow to monitor the meetings of rare species and therefore to analyze the state o populations within certain geographical unit in a timely manner, due to the war may b irretrievably lost. Oleksii and his colleagues d everything they can to save this valuable dat and use it after the war ends to assess its impac on wildlife.

Oleksii Marushchak

Laurent Dingli. — Can you talk to me first about your passion for animals and wildlife?

Oleksii Marushchak. — My passion for animals began when I was very young. I think I was six years old when, in our country house, I suddenly spotted a large group of green caterpillars on an apple tree. I was absolutely stunned by this phenomenon, because I'd never seen anything like it before. I was very young and my grandparents weren't as amazed as I was, because the caterpillars were going to eat the apples and damage the apple tree. Of course, they tried to get rid of all the caterpillars and I was against that because I already knew that, over time, caterpillars turn into butterflies. So, I saved a few and managed to make them grow into butterflies. After that, I realised that I wanted to link my future with nature and especially with animals that, let's face it, a lot of people don't like — frogs, snakes, lizards. I want to be the person who loves them.

At that time, we used to have the TV series filmed by ***Steve Irvin***, crocodile hunter; it was my favorite TV show and I imagined myself roaming somewhere in the bushes in Australia, Africa, wherever, finding snakes, finding lizards, catching them, telling people about them and mostly my dream came true.

L. D. — Can you tell us a bit more about your studies. When did you decide to focus on a specific subject related to wildlife?

O. M. — At the end of school, we take what are known as general exams; in each of them, we get a certain number of points that are needed to get into a specific university. I was one of the few graduates to get the absolute maximum in maths, 200 points out of 200, so all the maths faculties were open to me, but I wanted to study frogs! (laughs). My first scientific work was devoted to the study of morphological anomalies in frog populations, which could be indicators of environmental pollution and various unstable phenomena occurring in the population, such as the fragmentation of natural areas, pollution by various pollutants, climate change and parasites.

L. D. — Did you also study the combined effect of all these threats on toads, frogs and snakes?

O. M. — It's very difficult to divide up all these components, so I've mainly studied their combined effect. For example, when I sample a hundred frogs, 20 of them show different anomalies, some for obvious reasons, such as parasites that grow extra limbs to make the frog slower in order to increase the chances of it being eaten by a bird, which is the parasite's final host. But above all we studied the combined effect and the distribution, i.e. where these events occurred.

L. D. — Before we talk about the impact of the war what can you tell us about the consequences of the other main threats such as pollution or climate change on the species you are studying?

O. M. — Frog anomalies can be classified into three main types. In some cases, the reason for the anomalies was obvious. For example, 100% of the frogs became females in the pond near a factory producing hormone drugs for women. This factory had pipes with chemical waste in the water and most of the frogs appeared to be female. This was the finding of a study conducted in the United States. The main question was whether there is statistical evidence that morphological abnormalities are somehow linked to human impact, because in nature, even within a healthy population, a certain number of individuals are abnormal. This is due to spontaneous mutations. Even within the healthiest population, there will be individuals whose mutations will not help them and who will die. One malformed frog, or two malformed frogs, says nothing, but 100 malformed frogs says something.

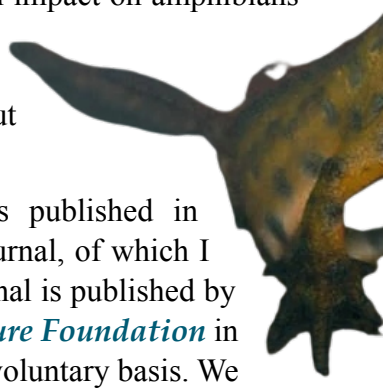
Fire salamander [Salamandra salamandra], Etang de la Maourine, Toulouse, France. Credit: Didier Descouens/Wikipedia.

We published the results of our scientific research in 2021 in a journal called ***Herpetology Notes*** where we gathered together all the information on frog anomalies in Ukraine and showed the average but reliable correlation between the appearance of anomalies and an integrated index that includes everything from human population density to light, physical and noise pollution, and many other parameters.

L. D. — Have the results of this scientific research been taken into account in Ukrainian regulations and legislation, or have they influenced them in any way?

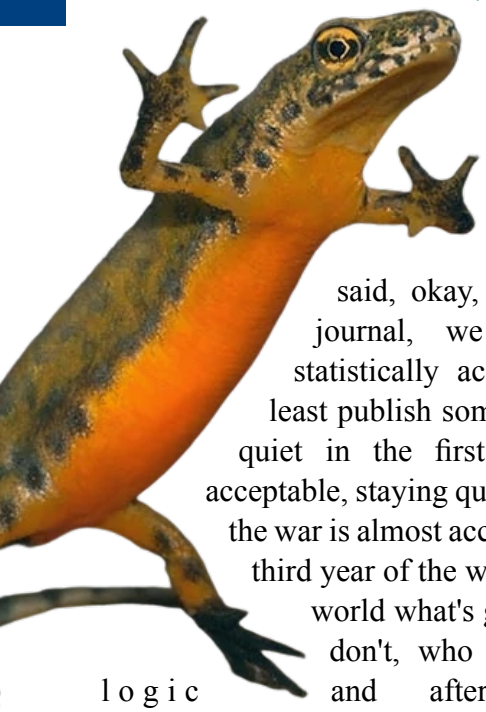
O. M. — So far, no. Unfortunately, the research of frogs and lizards hasn't had a direct or significant impact on the legislative sphere in Ukraine but since I'm also environmentalist, and within the NGO I have co-founded — ***Ukrainian Nature Conservation Group***, UNCG —, We work a lot on nature conservation issues and one of the main thrusts of our work is to bring Ukrainian nature conservation legislation closer to European standards. Europe has ***Natura 2000***; we have ***Emerald Network*** which is the equivalent of Natura 2000 for the Eastern European Partnership countries, and we are creating promising new objects — not me personally, but our team is involved in the designation of Emerald Network legislation in the future adaptation of Natura 2000 legislation. Some of the objects we create, design and propose are also intended for the conservation of amphibians and reptiles, as they preserve their habitats for egg-laying, wintering, reproduction, etc. The second direction of our work is the collection, digitalisation and preservation of raw data on the distribution of flora and fauna in Ukraine. We have a profile as a legal data publisher at GBIF (***Global Biodiversity Information Facility***) —, and, so far, our organisation has managed to digitise and upload to the GBIF database 491,000 records — almost half a million — from Ukrainian grey literature, the personal observations of many scientists and environmentalists in Ukraine, particularly people who became war refugees because most of them had their notes in written form, in the form of field notebooks. These notebooks can be destroyed in a second by a fire, a missile or a bombing. We are asking people to collect their notes, digitalise them and publish them online. So, this data is open to Ukraine, open to assessing the impact of the war, because we won't be able to assess the impact if we don't know the starting point, what the situation was before the war, and this data is available to all the scientists in the world.

L. D. — With regard to the impact of war, I read the very impressive and interesting article you recently co-wrote, ***Herpetofauna at the frontline: so many ways to die***. It's impressive because you detail all the ways in which war can have an impact on amphibians and reptiles, but also, of course, on many other species. Can you tell us a bit more about this work?



O. M. — This study was published in Responsible Herpetoculture Journal, of which I am one of the editors. The journal is published by the ***Responsible Herpetoculture Foundation*** in which I am also involved on a voluntary basis. We came up with the idea that, in one way or another, the impact of war should be highlighted at least in the popular scientific literature. Why should this be done? It's very difficult for a scientist to publish a really serious scientific article; it's a lot of work and it has to be statistically reliable; it has to contain a lot of information; it has to be well structured and so on. That's not a problem when it comes to carrying out an experiment or collecting data in nature in peacetime, but when it comes to the consequences of war, it's almost impossible, because the subject is important, it's topical, it's interesting, it's thought-provoking, but unfortunately it's impossible today to collect data — I mean from a biological point of view —, because we have geologists and biochemists who study, for example, the holes caused by bombing. As far as biology is concerned, it is quite difficult to collect data that is, let's say, 'accessible', because we are not on the front line and collecting such data on the front line can end very quickly with the death of the person collecting it. So, when journalists ask me about the consequences of the war, as a scientist I unfortunately have to reply that I can't say anything because I'm not there and I can only speculate, imagine and extrapolate.

L. D. — Yes, but you're giving many very interesting and concrete examples in this article. You talk in particular about the consequences of the Kakhovka dam's explosion and you have seen the corpses of frogs. So, even though you don't have statistics, certain things are visible; there is already evidence.



Montandon's newt © Jan Van der Voort [jansnaturepix.be]— All

O. M. — When the director of the journal said, okay, we're rather a sci-pop journal, we don't have to be statistically accurate, we have to at least publish something because staying quiet in the first year of the war is acceptable, staying quiet in the second year of the war is almost acceptable, but now it's the third year of the war, we have to show the world what's going on because, if we don't, who will? That's the basic logic and after that I started communicating with all my colleagues, mainly herpetologists, and we quickly agreed on the main theme which was: let's just tell people what's happening with herpetofauna; the same things are happening with avifauna, fish, insects and so on, but I'm a herpetologist so I'm going to talk about that. It appeared that each of us possessed a small amount of this knowledge, derived from personal observations, observations of friends or colleagues who are on the front line. Taken together, this information gives a more or less comprehensible picture of the impact of the war. And this is important because we have not found an equivalent work on the subject. International agreements, nature conservation directives and environmental management plans generally provide indications of the impact that hydroelectric power stations, nuclear radiation and wind turbines can have on flora and fauna. However, we found nothing on the impact that war can have on herpetofauna.

Our first objective was therefore to show the international community, in a single document, the impact of war. Secondly, we wanted to help the scientific community and the environmental protection community to think about compensation and mitigation measures, about how we can prevent or compensate for such impacts.

L. D. — There are some very interesting examples and I've learnt a lot. There are in particular consequences of war that we don't necessarily think about at first. For example, before leaving their homes, refugees release exotic pets into the wild, where they become invasive species such as the red-eared slider. Of course, war considerably accentuates peacetime threats, but there are also new and specific types of impact. The combination of all these threats makes the situation truly catastrophic. For example, you mention road kills, a peacetime threat that takes on new proportions during wartime for species with very slow locomotion and movement. These animals are crushed by tanks and military machines that invade fields and protected areas.

NCG participants at the meeting in October 2021. Credit Oleksiy Vasilyuk/Wikipedia. Oleksiy Maruschak is at the center (with a headscarf).

O. M. — Exactly, even in peacetime, I can name the nearest road to my house where there's a frog spawning ground and generally the frogs cross the road and die, crushed by vehicles. In wartime, the traffic is generally lower because there are fewer people, most of them fleeing the combat zones for their lives, but if we have really massive columns of military vehicles and machinery and the road is mined, as it often is, these vehicles will just go everywhere except the road, and of course the tanks won't stop for the frogs; they'll just destroy the spawning grounds and everything else. In spring, when the ground starts to dry out a little — usually in April or late March — this is also the busiest time for frogs to reproduce, as they migrate to the spawning pond, river or canal. At the same time, military action becomes more intense, because in early spring, the whole battlefield turns into one big mud puddle and even a tank has trouble getting around, but in April, when the ground dries out, the movement of military vehicles becomes more intensive and, unfortunately, takes place at the same time as the frogs migrate to and from the spawning pond. At that point it's just a mixture of frog flesh and soil. One of my colleagues sent me a video filmed at night from a Ukrainian army military vehicle which shows, thanks to its headlights, that they are going through the green toad migration and that the road is simply covered with a monolayer of killed toads. If this video was filmed at least once, you can imagine how many similar cases have not been.

Here I need to make an important note which was also written in the article: ***'Although some of the examples below may apply to both sides of a military conflict, the authors emphasise that such things would never have happened if Russia had not launched a full-scale war against an independent sovereign country in the centre of Europe in the 21st century.'***

L. D. — You might imagine that in times of war, people have other priorities than looking after animals and that they have to think about saving their own lives. But that's not quite true, because this war has also revealed the very interesting relationship, the special bond that Ukrainians — of course not all of them, let's not be naive — have not only with pets, but with animals in general. Did you feel this?

O. M. — Well, I'm not sure. I think that this special attitude towards animals had always been around. We have a special saying in Ukraine that I don't know how to translate into English: something like 'war exposes and reveals everything that's inside.'

L. D. — Yes, I understand what you mean.

O. M. — People who didn't care about wildlife continue not to care; people who have always cared will care more and more. Some people have continued to rescue abandoned pets; we have the ***Kyiv Animal Rescue Group***; they are real heroes — they were in Kherson when the Kakhovka dam was destroyed; they were in Bucha; they were in Irpin; they were in Bakhmut, Sievierodonetsk, Avdiivka; they rescued cats, dogs, cows, parrots, whatever they could find. Many ordinary people did the same.

A lake frog (Pelophylax ridibundus) in the Blue Lake (Kamianske). Credit: Volodymyr Tertyshnyk/Wikipedia.

You'll remember the photo of a girl evacuating Bucha with seven or eight dogs. I wouldn't say that the Ukrainian nation is more concerned about wildlife than, for example, the French or the Germans, but that this phenomenon has become more visible because we have taken an interest in it. I'm sure that if something - God forbid - but if something like this happens in any country, we'll have the same examples of behaviour from ordinary citizens who really love animals as we have in Ukraine, because good people still exist, fortunately.

L. D. — Yes, every everywhere, even in Russia.

O. M. — Well…

L. D. — It was ironic on my part, because we all remember, for example, how the Russian army forbade local people to bring food and water to the dogs that were caged in a shelter, and many of them died of starvation. It is horrifying and very shocking that these creatures were condemned to long agony and a painful death. But why? There was absolutely no reason for such cruelty.

O. M. — Trying to find logic in the Russians is a road that leads nowhere. Allow me to clarify things. I believe that there are people in Russia who will save a dog or a cat, or several of them. But, unfortunately, there are not enough people, even among those who will save a dog, who can get together and stop the war. They can save a dog, but they can't save human beings. Sorry, this is a very sensitive subject…

L. D. — I totally understand.

O. M. — To my deepest regret, I have far relatives in Russia, in Rostov region. None of them even asked how we feel or say: 'okay, guys we are so sorry; what the f… Putin is doing is madness.' No, they were silent; they didn't say a word. Sorry…

L. D. — Don't worry, I understand perfectly how you feel. But what do you think of the millions of Russians, mainly young people, who have fled the country since the war began? Do you think it's because they don't agree with the war, or that they're fleeing simply because they're afraid? Of course, it's impossible to know their true motives, but they have left their country all the same.

O. M. — As a scientist, I can't draw any meaningful conclusions because I haven't worked on this subject and I can't know what's in their minds. But, OK, let's forget about emotions. Those 4 million people could have come together and cooperated inside Russia instead of fleeing outside the country. There aren't enough prisons to imprison them all, there aren't even enough prisons to imprison 500,000 of them.

L. D. — You mean, they should have resisted inside the country?

O. M. — Yes, and this is what I was hoping during the first two weeks. I believe that there are normal people there. I believe that in a country with 142 million people or something like that there will be at least four million or even 1 million people who are against the biggest war since the Second World War. I'm not even talking about Ukraine or Russia, not talking about the goals of this war, but just about people who are standing against the war, just to put an end to it. There were a couple of people who went to the squares, threw some plastic glasses to the police and that was all. Some say that there are good people there, they're just scared, they are just nervous about the situation, they're frightened. Okay, maybe this is true. I don't know. So, what? What next? They are scared? I am scared too! And who is on whose land?

L. D. — Yes, and Russia is functioning now like a kind of cult, a death cult. I mean millions of people are following the propaganda without questioning what they hear on television. Well, it's unfortunately a long tradition in Russia.

So, to go back to wildlife, if you had to list a few priorities what should be done in the short term to preserve the fauna, particularly the species you are studying?

O. M. — Opinions differ on this. For example, I am against the reconstruction of the Kakhovka dam because a magnificent willow forest is now growing at the site of the reservoir and many of my botanical colleagues study these forests; many people have predicted that there would be nothing left but a desert or that invasive plant species would occupy the whole area. Instead, a magnificent willow forest, probably the largest willow forest in Europe, is developing. I don't think Kakhovka should be rebuilt, but some of my colleagues, whose opinions I respect, think it should be. Some have said that it was a disaster for nature. Yes, indeed, it was a temporary disaster for nature, but nature will recover fairly quickly; life will always find a way out. It was a disaster especially for humans, as many houses were destroyed and many areas were flooded. My favourite example is the Chornobyl restriction zone. If you get the chance in the future, I recommend you go there as a tourist. I went there once during my PhD; it was part of my study area in Ukraine and I was amazed by the number of animals I saw during those two days: elks, deer, eagles of different species, wild boars. I saw photos of bears and lynx taken by camera traps. Of course, Chornobyl was a disaster for humans, but for nature it was probably the best gift we could have given her. The Chornobyl Biosphere Reserve was created just twenty years ago.

So what will happen in the near future? Ukraine has a lot of arable land. It is an agricultural country. Unfortunately, around 30% of this arable land will not be accessible for many years, 10, 50 years or even more, because it is so full of mines and various artillery bombs that it will be impossible to use this land in the short term. We still find bombs from the Second World War.

L. D. — And even from the World War I in France.

O. M. — Yes, absolutely, and when I see that a small country like Serbia has still not demined a large number of territories after 30 years, I can't imagine how many resources are needed to demine a large country like Ukraine after a large-scale war. At the same time, there is a second threat: we are a large agricultural country and most of our major industrial facilities, a large number of factories like ***Azovstal*** , are in ruins or seriously damaged. So, it's very likely that we will be heavily dependent on agriculture in the near future and will need land to compensate for these losses. I'd like to be wrong, but I'm afraid that this land will be taken from natural areas where wildlife lives.

L. D. — There will of course be constant pressure because of the post-war context and I think you're quite right to be, not pessimistic, but realistic. However, the positive note in all this is that there are people like you, like Bohdan Vykhor, like Yuliia Ovchynnykova, like Margot Walström, who are preparing for the future, not only to comply with European rules, but also to prevent, offset or reduce the pressure from agricultural and industrial lobbies. It is obviously vital to anticipate and think about these threats now, in order to prevent them and reduce the risks. Even within the European Union, which is not directly at war, environmentalists have to contend with constant pressure from agricultural and industrial lobbies, which always want to sell more intensively farmed products while destroying the environment, and always have good reasons for doing so. I understand your fears.

O. M. — To finish answering your last question briefly, I think that the creation of nature reserves, including on the front line, in areas that are not accessible or to which access will be restricted in the future for humans, is the absolute priority, because if we leave Mother Nature to herself and stop harming her, she will recover faster than we think.

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June 18, 2023 © Earth Observatory NASA gov.

Left page: a member of the Main Direc
Emergency Service of Ukraine in Odesa Obl
April 2024. Above: While dealing wi
consequences of a rocket attack in Odesa r
hundreds of pelicans flying through th
Directorate of the State Emergency Service
Oblast [Головне управління ДСНС Ук
області] — All rights reserved . Below:
shelling in Mykolaiv Oblast, 9 Augu
dsns.gov.ua/Wikipedia.