



WATER

ISSUES



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AND A DESPERATE FIGHT FOR WATER

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SPRING WEATHER SAYINGS - IS IT REALLY
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EUROPEAN GREEN DEAL – THE EUROPEAN
COMMISSION UPDATES THE ASSUMPTIONS

NIK HAS AUDITED THE FLOOD CONTROL ACTIVITIES OF THE POLISH WATER AUTHORITY IN ZULAWY. BEAVERS ALSO GUILTY

Posted on 11 April 2024 by Agnieszka Hobot



Today, the NIK presented the results of an audit of the Polish Water Authority's flood control activities in Żuławy. According to the Supreme Audit Office, although the activities of the Polish Water Authority have contributed to increasing the efficiency of the flood protection system, the level of its effectiveness is still insufficient. According to the Chamber's assessment, there is a lack of adequate investment, which increases the risk of a disaster in the Zulawy and Gdansk metropolitan area. Beavers are also a problem. Why?

Categories: [Issue 7/2024](#), [News](#), [Onet](#)

Tags: [beavers](#), [flood](#), [NIK](#), [risk](#)



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Zulawy Wislane

Żuławy Wiślane is part of the Gdańsk Coast and occupies the delta area of the Vistula River, located between the Vistula Spit to the north, the Elbląg Hills to the east, and the Kashubian and Ilawa Lake Districts to the west and south. Administratively, the Zulawy area is located within the Pomeranian and Warmian-Masurian provinces. The Vistula Delta, together with Zulawy, occupies less than 1 percent. country's surface area. So why is it important to protect them from flooding? The uniqueness of the area is evidenced by its depressed and depressional location and heavily altered, among other things. Through the construction of embankments and a series of pumping stations, the hydrographic network. Discontinuing the drainage of the Zulawy threatens to flood parts of the area and cause huge economic losses. In addition, high water on the Vistula is a cyclic, natural condition, resulting in a flood alert at least once a year.

Threat from Russia

Today's NIK press conference addressed the issue of Zulawy's security due to its location near the Russian border and the need to protect the area's critical infrastructure. It's not hard to imagine a repeat of [the Novaya Kakhovka dam disaster in Ukraine](#). It should be emphasized that key industrial plants for the Lower Vistula region operate in Zulawy - including the following. PKN Orlen Group's Gdansk refinery, Grupa Azoty Fosfory Sp. z o.o. or Alstom Power plants. Zulawy is also a region heavily used for agriculture (due to its fertile soils) and tourism: The Teutonic Castle in Malbork, the Main and Lower Town in Gdansk, the Old Town and Granary Island in Elbląg attract numerous visitors.

Why, according to the NIK, are beavers interfering with the region's flood protection?

[The population of the European beaver](#) in Poland has increased more than fivefold since 2020. and counts about 150,000. individuals (2023). The local and even regional impact of these animals on changes in water relations is increasing. [Beaver dams block and slow the movement of water](#), contributing to the formation of reservoirs and floodplains with increased retention of water, sediment and nutrients. In doing so, they slow down the flow and regulate hydrological conditions, storing resources during periods of high levels and releasing them during drought. These beneficial wildlife, trying to cope with a heavily flooded area, are committing *devastation*.

According to the NIK report, the growing population of this species, which is destroying the flood control infrastructure in the Zulawy, remains an important problem to be solved. A total of nearly PLN 9 million was spent on the removal of burrows in floodwalls and dams built by these animals during the period under review. At the time, 17 orders and decisions of the Regional Directorate of Environmental Protection from Elbląg and Gdansk were in force, which allowed certain activities in relation to the European beaver in Żuławy, consisting of, among other things. on intentionally frightening or disturbing individuals of the species, the complete destruction or removal of burrows created by its existence, and the destruction of habitats or refuges that are areas of breeding, rearing of young, resting, migration and foraging.

Conclusions of the NIK audit

The **NIK** concluded that improvements in the effectiveness of flood protection in Zulawy have been achieved through the implementation of key investments. As a result, the icebreaker fleet on the Lower Vistula has been reinforced with four new units, increasing winter protection against flash floods. Protection against storm flooding in the Vistula Lagoon area, including in Nowy Dwór Gdański, has also been improved through the installation of new storm gates and the reconstruction of 19 spurs on the Vistula. Despite these investments, flood risks remain, especially in the context of the lack of funding for 89 of the 95 flood protection projects totaling more than PLN 1 billion.

Failure to implement these measures, including the restoration of spurs, could exacerbate flood risks. In addition, it was found that the Catchment Boards effectively managed the maintenance of water infrastructure, ensuring its good technical condition. The Supreme Audit Institution has criticized, among other things, lack of inspection of the technical condition of the spurs in the Zulawy and the operation of pump stations without the appropriate permits. Waterways has taken steps to ensure flood protection in Zulawy, taking into account favorable climatic conditions that have lowered the need for icebreaker intervention. The tasks of the Regional Water Management Board in shaping the spatial development of areas of special flood risk were carried out properly.

Marian Banaś, President of the NIK, sums up the audit this way:

Flood protection for the Vistula Zulawy is being carried out on an increasing scale, but the region is still not safe. A number of key investments are pending, and they are being held up due to a lack of funding. Granted limits result in taking those activities for which there is enough money, rather than those that are most urgent. Meanwhile, the lack of investment increases the risk of disaster in the Zulawy and the Gdansk metropolitan area. A separate problem is the growing habitat of European beavers, which are under species protection in the area and destroy flood control infrastructure. The chamber requests that efforts be stepped up to eliminate current and future damage while maintaining the protective status of these animals.

NIK recommendations

The Supreme Audit Institution requests the Minister of Infrastructure to:

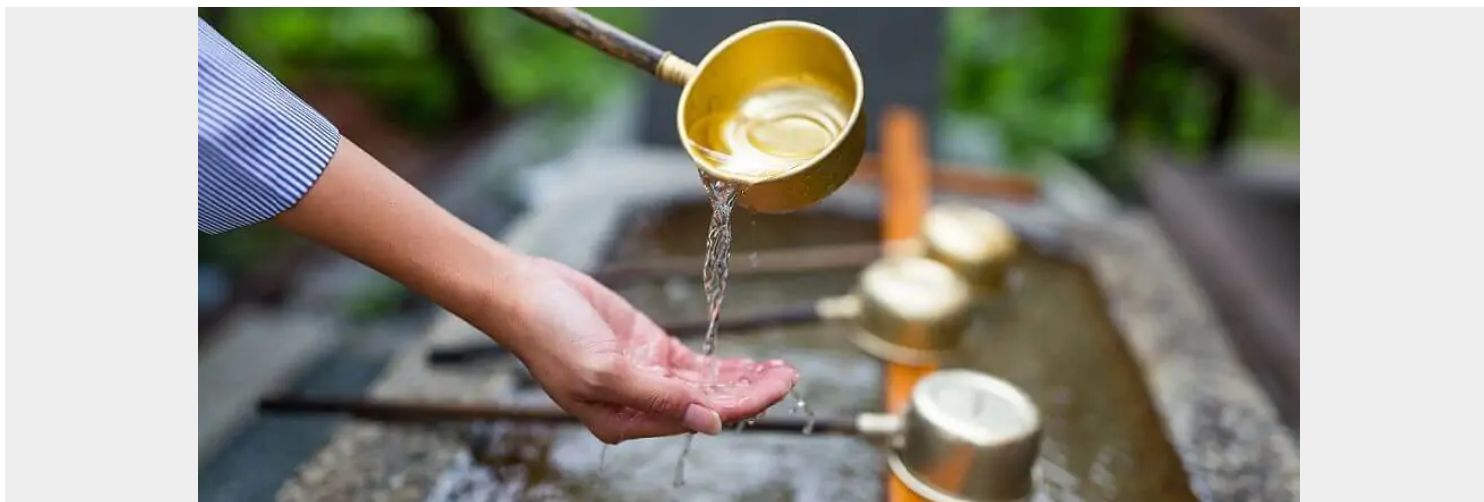
1. Take effective measures to reduce flood risks in the Zulawy, including. By providing Polish Water with funding for the most essential tasks;
2. Implement effective solutions in cooperation with the Minister of Climate and Environment to reduce the extent of damage caused by European beavers to the flood control infrastructure of the Zulawy, with conservation of the species;

while to the Polish Water Authority for:

1. Continue efforts to promptly submit applications to the relevant governors for the adoption of water maintenance plans covering the Zulawy area;
2. Strengthening oversight of the activities of field organizational units of the Polish Waters, which are directly responsible for flood protection of the Żuławy River, in terms of the requirement to have current water permits for specific water use.

SMALL WATER SUPPLY SYSTEMS – WHO STRESSES THEIR IMPORTANT ROLE WITH PUBLICATION OF NEW GUIDELINES

Posted on 10 April 2024 by Jolanta Bielecka



The World Health Organization (WHO), in response to the growing challenges of ensuring a safe and reliable supply of drinking water, has published new guidelines and tools to improve the performance of small water intakes and systems. The latest publication focuses on improving water quality, combating increases in disease in communities vulnerable to water shortages and building a more resilient supply system.

Categories: [Issue 7/2024](#), [News](#), [Onet](#)

Tags: [supply systems](#), [water](#), [WHO](#)



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These guidelines, tailored to small water supply systems, are based on the WHO's more than 60 years of experience in striving to provide consumers with good-quality, safe drinking water. Key aspects include establishing regulations and quality standards based on health risk assessments and context-specific, proactive risk management through systems safety planning, health inspections, and conducting independent oversight. These guidelines are primarily aimed at decision-makers at the national and subnational levels responsible for developing the regulatory framework and support programs related to these activities.

Ensuring access to safe and adequate quality drinking water is one of the most important and effective means of promoting health and reducing the extent of poverty. Water for much of the world's population comes from small intakes, from individual domestic wells to local pipelines serving entire communities. More than 40 percent of the world's people live in rural areas that are commonly served by small drinking water intakes. The situation is very similar if we are talking about the population living in small cities and suburban areas, and sometimes even larger clusters.

Do small drinking water intakes generate challenges?

It turns out that it does. Small drinking water intakes are at greater risk of various safety-related deficiencies that can result in [disease transmission](#) and adverse social and economic impacts. Improving safety and performance management in such cases is an important aspect of public health and welfare concerns, helping to eliminate social inequalities and improve living conditions for the general population. The World Health Organization (WHO) has estimated that in 2019, more than 500,000 could have been prevented deaths if access to safe drinking water was provided in systems of all sizes. Those most affected by the consumption of drinking water of insufficient quality are the marginalized and often economically disadvantaged.

Small drinking water intakes usually require operational, management and mainly technical challenges that affect their safety and reliability. Water supply needs and opportunities therefore require detailed regulatory consideration. The WHO guidelines are designed to be practical and accessible. They offer clear guidance leading to incremental improvement based on a comprehensive review of facts and best practices. In addition, the WHO gives examples of countries and places around the world where small drinking water intakes are models for implementing and putting into practice the aforementioned guidelines.

Dr. Maria Neira, Director of the Department of Environment, Climate Change and Health at WHO, stresses the importance of investing in small water supply systems as a dual strategy: effectively reducing the incidence of water-borne diseases and lowering the overall expenses associated with their prevention and treatment. Small water supply systems are highly vulnerable to the effects of climate change, both in terms of quantity and quality. This underscores the need for urgent action to ensure safe drinking water for all.

<https://wodnesprawy.pl/eksperci-onz-ostzegaja-zla-jakosc-wody-jest-przycz/>

The WHO's main recommendations in its guidelines

The WHO guideline summary details the six recommendations and related implementation actions, with additional details made available in the executive summary. The summary is about evaluating the environment of small drinking water intakes. It also outlines its regulations,

which reflect the priority risks in the local context. The recommendations provide guidance on how to professionally manage small intakes and implement independent supervision and sanitary inspections. WHO also recommends strengthening the effectiveness and relevance of systems for using data for decision-making and improvement activities.

WHO guidelines in the interest of everyone

The right to water is a basic need and an elementary human right. It entitles any person to receive a safe and sufficient amount at an affordable price. This right should be an integral part of policies, programs and strategies concerning water and its use. The updated WHO guidelines include a number of technological principles and sanitary requirements to ensure that any water supply system for the public meets the necessary standards.

PARIS OLYMPICS KICKS OFF ERA OF BUILDING GREEN SPORTS FACILITIES

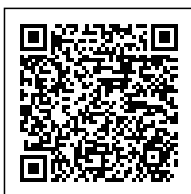
Posted on 9 April 2024 by Iwona Szyprowska-Głodzik



The Paris Olympics are less than four months away, so all preparations are entering a decisive phase. The Saint-Denis Olympic Pool was officially inaugurated on Thursday, April 4, with the participation of French President Emmanuel Macron and Tony Estanguet, chairman of the Olympic organizing committee. The facility is much more than just a place to compete. Its importance goes beyond the sporting aspects, becoming an affirmation of the commitment to environmental protection and sustainable development. This innovative project incorporates advanced environmentally friendly technologies while demonstrating how much of a role modern sports facilities can play in protecting the environment, becoming an example for future investments. How was the Olympic Aquatic Center in Paris designed to be a precursor?

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A few words about the facility

The Olympic Aquatic Center(CAO) was built in the city of Saint-Denis as the only sports infrastructure built to host the Olympic and Paralympic Games. The unique design of this facility was created for a variety of uses. Olympic competitions will include water ball, diving and synchronized swimming. It will then function as a training center during the Paralympic Games, and afterwards will be transformed into a venue for sports and recreational events for the local community.

The facility features a 70-meter swimming pool with multiple configurations, additional pools including diving, a 5,000-ft. seating and a temporary 50-meter-long outdoor swimming pool. The huge space on the second level has been flexibly designed to serve as a venue for additional sports activities, while retaining the ability to easily install temporary seating during important competitions. The CAO will be able to hold not only the 20 competitions planned for each year, but also presentations, business workshops, local and supra-local events and training camps. In addition, an annual Sports Olympics will be held for students in June.

Architecture based on ecology

The Olympic Aquatic Center has become a symbol of innovation and commitment to environmental protection since its announcement. In designing this facility, ecological solutions played a key role, aiming to minimize its environmental impact and promote sustainable development.

Wooden construction

As a renewable material, wood is the building block of the building's main structure, including an impressive suspended roof that reduces the height of the structure. This reduced the volume of air needed to air condition it for the next 50 years.

Energy efficiency and solar roofs

Energy consumption is a key challenge for swimming pool facilities, mainly due to the water treatment process and high temperature requirements. The Aquatic Center was designed with energy efficiency in mind - 90 percent. needs in this regard will be covered by renewable or reclaimed sources. The rooftop photovoltaic panels are one of the largest installations of their kind in France, supplying 25 percent of the country's electricity. energy needed. This quantitatively equates to the annual electricity consumption of 200 households.

Water savings

Saving water is another key aspect of the project. Thanks to an effective management system, the facility will significantly reduce its fresh water consumption, reuse 50 percent. used and will provide enough clean for all other needs.

Upcycling and use of recycled materials

Upcycling and the use of recycled materials are an integral part of the project. The furniture in the restaurants, bars and other accessible spaces was made from wood waste from construction and demolition sites, while the chairs in the stands were made from 100 percent of the wood. From recycled plastic collected, among other things. In schools in Saint-Denis. This approach not only reduces waste, but also promotes a culture of recycling among the local community.

Green landscape

The greenery surrounding the Paris Aquatic Center plays a key role not only in terms of aesthetics and integration into the urban landscape, but more importantly in terms of sustainability and creating better ecological conditions for the local community. Vegetation acts as a green lung, improving air quality and helping to reduce the urban heat island effect. The green areas around the building are designed to create recreational spaces for residents and visitors, promoting healthy lifestyles and outdoor activities.

Paris Olympics combines passion for sports with concern for the planet

Built specifically for the Paris Olympics, the Aquatic Center is an example of how sustainable design and architectural innovation can work together to create not only a world-class sports facility, but also a foundation for community development and environmental responsibility. The project not only raises the bar for future Games organizers, but also becomes a symbol of the possibility of global sports events and environmental protection coexisting.

GIANT FLOODING IN RUSSIA – BROKEN DAM ON THE URAL RIVER

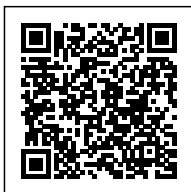
Posted on 8 April 2024 by Agata Pavlinec



On the evening of April 5 this year. In Orsk, there was a dam break in Russia, on the Ural River. A huge flood wave has inundated the Orenburg region, where a state of emergency has already been declared. A dangerous situation also prevails in neighboring Kazakhstan. According to the independent newspaper The Moscow Times, more than 6,500 homes were flooded, and more than 4,500 residents were evacuated. Authorities warn that floods could soon affect more regions.

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Why was the dam in Russia destroyed?

In recent days, intense snowmelt in the Siberian region has caused the Urals, the third longest river in Europe, to surge. According to the Russian news agency Tass, the water level reached [9.27](#) meters, exceeding the alert level by 2 meters. The first breach of the Orsk dam took place on Friday, April 5, at 8:30 pm Moscow time. More structural violations occurred at night and in the morning. As a result, the water level has risen by up to 4 meters in the Orenburg region. According to the Kremlin, such a rate has not been observed for more than 100 years.

Unfortunately, a damaged dam in Russia is causing constant water surges in the Orenburg region. It's already slowing down - a [28 cm](#) increase was reported on Sunday - but it's not expected to culminate until tomorrow. Authorities predict that the situation will stabilize after April 20, when the water subsides.

The destroyed dam on the Ural River was built in 2014. Moscow authorities have already opened an investigation into possible negligence and violations of construction safety rules. Recall that the 2,428-kilometer-long Ural River has its source in the Ural mountains and flows through Magnitogorsk, Orsk and Orenburg, where it joins the Sakmara and then, crossing the territory of Kazakhstan, flows into the [Caspian Sea](#).

Dramatic situation in the Orenburg region

Meanwhile, the fight against the effects of the elements continues throughout the region. Orsk, a city with a population of nearly 240,000, is flooded. And Orenburg, located 276 km further east, with 570,000 citizens. [Forty-seven](#) bridges and 106 stretches of road have been closed, making it difficult for affected people to communicate. There are more than [1,100](#) rescuers working throughout the Orenburg region using amphibious vehicles capable of carrying up to 50 people at a time. In Orsk, an oil refinery has been closed due to flooding, there is no electricity in 12 settlements, and water pressure in the water supply has been reduced.

More than 80,000 are being prepared in temporary shelters for evacuees. places that will be needed in case a black scenario develops. A total of about [11,000](#) citizens have been placed in the flood zone for the time being. No fatalities have been reported so far, but for sanitary reasons, authorities recommend drinking only bottled water. According to the Tass Agency, six adults and three children have already been hospitalized in Orsk. In Orenburg, water levels continue to rise threatening further residential areas. The city's mayor, Sergei Salmin, is appealing to residents to move to safe zones, while announcing that he will order forced evacuations if necessary. City authorities estimate that the financial damage already amounts to about [21 billion](#) rubles.

The dam disaster in Russia also has dramatic implications for Kazakhstan, located in the Ural River basin. The country's President Kassym-Jomart Tokayev said Saturday that the current floods are the country's biggest natural disaster in 80 years. According to the BBC, [12,000](#) people and 60,000 livestock have been evacuated. Even before the dam in Russia was damaged, floods in northern, central and eastern Kazakhstan flooded several villages, killed thousands of cattle and forced more than [19,000](#) people from their homes. At least four people were declared missing. And all because of an exceptional rise in temperature, which has dramatically accelerated the melting of the snow cover. In the city of Oral, 4,000 had already been evacuated before April 4. people, including 2,000 children.

More floods are forecast

The Ural dam disaster is not the only cause of the spring floods. Snow cover melting at an unprecedented rate is also threatening the northern Kurgan and Tyumen regions. The 310,000-strong city of Kurgan has already ordered the evacuation of zones located directly on the Tobol River, a tributary of the Irtysh. According to experts, flooding in these areas is inevitable, and the Russian Minister of Emergency Situations has already traveled to the site.

WHY IS IT NECESSARY TO SPEND \$35 MILLION. FOR ENVIRONMENTAL JUSTICE PROJECTS IN THE GREAT LAKES?

Posted on 7 April 2024 by Izabela Luba



The U.S. Environmental Protection Agency (EPA) has announced that 4 organizations will receive a total of \$35 million. support for its activities. This will enable them to carry out environmental justice projects (understood as equal treatment of all people, regardless of race, color, origin or income) in the Great Lakes on the development, implementation and enforcement of environmental laws. The effort is part of the Great Lakes Restoration Initiative (GLRI), which represents the most extensive investment in this area of the US in two decades. Their goal is to restore and protect the environment at the site of the largest freshwater resources in the United States, which are of significant economic and social importance to the country.

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Why is it important to protect the North American Great Lakes?

The Great Lakes are a group of 5 reservoirs located in the central and eastern parts of North America. They account for 20 percent. of global freshwater and 81 percent of fresh resources of the North American continent. These include Lake Upper, Lake Huron, Lake Michigan, Lake Erie and Lake Ontario.

Together they are one of the main sources of drinking water in the US, and have a significant impact on the country's economy, as well as the functioning of local communities and indigenous peoples. According to data released by the U.S. [Environmental Protection Agency](#) (EPA), nearly 25 percent of the Canadian, and 7 percent. US agricultural production comes specifically from the Great Lakes areas. The areas around them are inhabited by 30 million people, accounting for 10 percent. US population and 30 percent of the Canada's population.

That's why the Great Lakes Restoration Initiative was established in the United States to focus on 5 key issues that are the biggest threat to the region's ecosystem. These include. toxic substances, the presence of invasive species, or the impact of [pollution](#) on the health of the population living near the lakes.

New EPA grant program will help implement local environmental justice projects in the Great Lakes region

One of the activities under the Great Lakes Restoration Initiative is the EPA's newly established grant program to facilitate access to federal funds. It was created under President Joe Biden's Infrastructure Act and is designed to accelerate the restoration of the Great Lakes ecosystems and aid environmental protection in the area.

Through the program, local communities, represented by cities, tribes and nonprofit organizations, will be given the opportunity to apply for federal funds that they previously had no access to due to a lack of resources to apply for them and ways to oversee activities funded with them. Thus, they will carry out environmental justice projects in the Great Lakes that will not only improve their quality of life, but also make a positive contribution to the goals of the GLRI.

What environmental justice projects in the Great Lakes have received White House support?

The amount of \$35 million. donated by the White House for the EPA's new grant program has been divided among four applicants that will help local communities implement environmental justice projects in the Great Lakes. These will mainly concern measures to improve water quality, repair improperly constructed stormwater runoff systems, and clean up recreational and commercial waterways.

Applicants who will receive support from the EPA are:

- Restore America's Estuaries, an organization that implements efforts to protect and restore natural ecosystems in bays and estuaries. It will receive nearly \$19.9 million. to develop and implement its own grant program, the beneficiaries of which will be local partners implementing river basin projects in the area;
- Buffalo Niagara Waterkeeper Inc, an organization working to protect the Great Lakes, which will receive \$5.6 million. to support environmental justice projects in the Great Lakes located in western New York. They are primarily concerned with enhancing the potential of communities living in the Lake Erie and Niagara River catchment area, as well as restoring the Great Lakes ecosystem;
- Ohio's Lake Erie Commission, which will receive \$5.8 million. for the development and subsequent implementation of an environmental justice grant program in the Lake Erie area, including measures to facilitate community access to its catchment area in Ohio;
- The Southeast Michigan Council of Governments (SEMCOG), which deals with, among other things. Improving water quality in the region. It will receive \$4.2 million. for the implementation of a grant program that will implement environmental justice projects in the Great Lakes, including measures aimed primarily at reducing the volume of stormwater runoff and building and connecting green infrastructure in the southeastern area of the state of Michigan.

MANATEES DEPENDENT ON POWER PLANTS. THREAT HIDDEN IN WARM WATERS

Posted on 6 April 2024 by Iwona Szyprowska-Głodzik



More than seven decades ago, manatees living in Florida realized that the warm water flowing from local power plants was the perfect place to take refuge from the winter chill, and thus found themselves at the center of an unexpected conflict between nature and technological advances. This phenomenon, while seemingly beneficial at first glance, may harbor much deeper implications for the future of these animals and their natural habitat, quickly turning into a trap of addiction. Beginning form

Categories: [Issue 7/2024](#), [News](#), [Onet](#)

Tags: [ecosystem](#), [manatees](#), [power plants](#), [threat](#)



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The comfort trap

The manatees' unusual adaptation to living in the heat generated by the power plants quickly turned into a trap. Unfortunately, the constant presence of these giants near power plants is not without impact on their natural behavior and migrations. Manatees, abandoning their traditional migration to naturally warm sources, are increasingly opting for heat generated by power plants. This change affects their natural instincts and migratory paths, moving them away from their natural habitats in search of the convenience offered by human infrastructure.

Manatees and their impact on the ecosystem

Such changes in migratory behavior not only move manatees away from their natural habitats, but also affect their ability to adapt to a rapidly changing climate. Dependence on constant human sources of heat makes animals less resilient to natural temperature changes and less able to seek shelter in increasingly unstable climatic conditions. This, in turn, raises the question of the species' chances of survival.

Areas of warm water from power plants do not provide access to seagrasses, the staple of their diet, which do not survive in a polluted environment. From 2011 to 2019, as many as 47,000 acres (about 19,000 hectares) of seagrass in the Indian River lagoon have died out, representing a loss of as much as 58 percent. The main reason was an excessive influx of nutrients and other pollutants.

In contrast, the nonprofit organization [Save the Manatee](#), which monitors [manatee](#) populations and calls for more effective protection, estimates that this seagrass reduction has reached nearly 90 percent. As a result, due to the scarcity of food, manatees living in the warm lagoon were at risk of dying of starvation. The deaths of 1,900 individuals were reported in 2021 and 2022, and incidents in the Indian River lagoon are not isolated cases.

What's more, this growing reliance on power plants as a heat source carries further environmental implications. Manatees, by limiting their natural migrations, can affect the ecosystems through which they traditionally flowed. Their presence and foraging behavior are crucial to the health and balance of aquatic ecosystems, including marine vegetation that depends on manatees as natural seed vectors. Reducing the mobility of these mammals can lead to the disruption of natural ecological processes, with far-reaching consequences not only for themselves, but also for many other species.

Future of manatees at risk

Years of environmental transformation by humans have forced manatees to adapt to new conditions. They will face further adaptations in the near future. Currently, the lives of more than half the population of these marine mammals in the state of Florida depend on the heat generated by power plants. Paradoxically, human action to protect the environment and combat climate change will see these fossil fuel-based power plants converted to greener energy sources that no longer produce hot water as waste. It is estimated that this transformation will affect all key manatee habitats over the next thirty years.

Scientists to the rescue

The problem has not escaped the attention of scientists and conservationists, who have taken steps to wean manatees from the heat of power plants. A key solution is to improve and restore access to naturally warm places by limiting human recreation in some of them. Another of the proposed solutions is to create artificial heat sources in natural habitats to mimic the conditions generated by power plants without causing dependence on human infrastructure. However, it should not be forgotten that such sources will affect the entire ecosystem and transform it in a direction that is difficult to predict.

Developing a *stepping stone* system is another proposal to solve the problem. The vision includes a network of hot water sites that would serve as stops for manatees traveling long distances to their destinations and allow them to warm up and rest, and facilitate access to food. Some sites must be established before the end of the power plant's operations so that manatees have a chance to learn where they should seek refuge. In addition, [advanced AI technologies](#) are ushering in a new era in the protection of these marine giants, enabling precise monitoring of their populations and behavior in the wild, opening the door to more effective conservation strategies.

UN EXPERTS WARN: POOR WATER QUALITY CAUSES GENDER DISCRIMINATION

Posted on 5 April 2024 by Agata Pavlinec



Exposing the invisible - that's the title of an alarming new report prepared by the United Nations University's Institute for Water, Environment and Health (UNU INWEH). The study shows that poor water quality and deficiencies in hygiene and sanitation, typical of developing countries, particularly affect women and girls. And the health risks from them are enormous and include, among others. Malaria and infertility.

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Tags: [discrimination](#), [report](#), [UN](#), [water quality](#)



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A few words about the report itself

[The UN report](#) is based on research conducted in the Nigerian city of Abeokuta. Nigeria is 32nd. the world's largest country, and its population occupies 5. position in terms of numbers among countries with low and medium GDP. At the same time, the problems of clean water supply, resulting from both climate change and pollution from industry, agriculture and uncontrolled urbanization, are very evident here. Up to 60 million people do not have access to drinking water, and 167 million are beyond the reach of sanitation infrastructure.

For researchers, Nigeria has become an example to analyze the impact that poor water quality has on the health of the population, especially women. Water samples were taken for testing from hand dug wells, boreholes, surface water and sachets distributed to the public. Risks associated with pathogens and selected chemicals were assessed in the context of gender and socioeconomic status. The results are alarming.

Poor water quality and health risks

There are four different ways in which poor water quality can harm a person. The first is pathogens consumed directly – these include typhoid bacilli. Further concern the water used for washing and diseases caused by microorganisms residing in the water environment, such as schistosomiasis. A fourth type of threat is vectors that develop over bodies of water, including mosquitoes that carry malaria, for example.

Water samples taken in Nigeria found, among other things. bacteria that cause cholera, salmonella, shigellosis and various types of diarrhea. The overall hardness of the water was also noted, which negatively affects the condition of the skin and promotes the development of infections. In summary, poor water quality and water-related vectors were responsible for more than 66 percent of the water. diseases affecting local society. However, the phenomenon was not evenly distributed, with 69 percent of malaria cases identified during the 15 months of the study. involved women, and in 31 percent. men. In the case of diarrhea, the disparity was 82 to 18 percent!

It is women who carry the burden

UN analysis shows that even in these harsh conditions, women are more likely than men to wash their hands and take better care of their personal hygiene. So why this increased health risk? The authors of the report suggest that it is a consequence of inequality in access to sanitation facilities and the burden of responsibilities associated with... water donation. It is [women and girls who are involved in carrying buckets and bottles](#), exposing themselves to direct contact with pathogens and the mosquitoes that spread them. The situation is exacerbated by extreme physical exhaustion, lack of time for other activities, and the risk of attacks and rape they experience on their way to the source. But the bad news doesn't end there – it is women who are entrusted with the task of washing and disinfecting makeshift toilets, exposing them to the harmful effects of chemical volatile compounds.

Menstruation increases health risks

The biggest *injustice* associated with water restrictions is, of course, menstruation. UN research has shown that access to clean hygiene

products, the ability to change them frequently and to wash safely are major problems in countries like Nigeria. Out of 100 women, 6 change their sanitary pads only once a day, while 47 percent. 2 times a day.

Waterlogging with water from boreholes and hand-dug wells during menstruation is associated with a number of health risks. These primarily include genitourinary infections, skin infections, and hepatitis B. In the long run, these hygienic risks translate into problems conceiving a child and pregnancy complications.

In the report's conclusions, there was a pressing need for a system of control over local sources. Poor water quality in developing countries is a serious problem that requires educational efforts and incentives to implement protocols aimed at reducing health risks, with special attention to the needs of girls and women.

LOWER ODER VALLEY NATIONAL PARK IN QUESTIONS AND ANSWERS

Posted on 4 April 2024 by Adam Kapler



In Water Matters we wrote about plans to establish another national park: The Lower Oder Valley - Międzyodrze. It's time to answer the most frequently asked questions about the operation of this newly established protected area.

Categories: [Issue 7/2024](#), [News](#), [Onet](#)

Tags: [Międzyodrze](#), [national park](#), [Oder](#)



In Water Matters we wrote about plans to establish another national park: The Lower Oder Valley – [Międzyodrze](#). It's time to answer the most frequently asked questions about the operation of this newly established protected area.

Who will finance the creation and then maintenance of the Lower Oder Valley Park?

Funding for the Inter-Oceanic National Park will be done in the same way as for the other national parks, i.e. from:

- central state budget (33-36 percent of national park revenues);
- External funds (EU, Norwegian, NFOŚ, WFOŚ, FL; 35proc.);
- own sources of income (business, tolls, leases, subsidies; 33-36 percent).

Does the establishment of a national park mean an end to shipping on the Oder River?

The national park is to encompass the area of today's Lower Oder Valley Landscape Park, excluding the Regalica and Western Oder streams. Navigation on the two arms of the Oder River will continue under the current rules.

Will motorboats be allowed on the Interspace?

Defenders of Nature is not calling for stricter regulations on the movement of boats with internal combustion engines. It will still be allowed to sail them after:

- Western Oder;
- Eastern Oder (Regalica);
- Old Regalica between the arms of the Oder River.

What will be the future fate of the hydro infrastructure?

It is possible to reconcile active and passive protection of the Lower Oder River NSA with water maintenance activities and the preservation of German hydrotechnical monuments. It is worth restoring the circulation of the waters of the Międzyodrze River by making at least some of the flooded canals accessible. Improved oxygenation is an increase in the welfare of gilled animals. This will allow more efficient restoration of the Oder River's ecosystems after the golden algae bloom. They may arise, among other things, refugia for scaphopod clams and snails. Revitalization of the locks will allow flooding of selected areas during snowmelt, floods or invasion by hostile armies. In turn, the restoration of former flows in canals will intensify self-purification processes. The examples of the Warta Mouth National Park and Germany's Lower Oder River National Park show that flood and drought protection complement each other well with bird and fish protection.

What will the local community gain?

Tourism development is an opportunity for areas devoid of industry, commerce and larger military units. The advantage of benefits over losses can be perfectly seen in the Warta Mouth National Park and the Białowieża and Biebrza National Parks.

Will the Międzyodrze remain accessible to tourists and local people?

As in any national park, certain areas will become inaccessible. Tourism will take place on designated waterways, hiking trails, perhaps horseback riding. Camping sites, marinas, footbridges and observation towers will be built. The accessibility of waters and wetlands for ordinary and qualified tourism, especially for ornithologists and anglers, will be improved.

Will admission be ticketed?

Residents of municipalities within and bordering the park are exempt from paying fees. The price of admission tickets, parking and camping fees must not exceed PLN 8. And let's not forget the numerous exemptions and concessions.

What's next for fishing on the Intracoastal?

The Law on Nature Protection allows fishing for fish and other aquatic organisms in places designated by a plan of conservation tasks (PZO) or a plan of protection (PO). Fishing remained legal in both Poland's Warta Mouth National Park and Germany's Lower Oder National Park. However, a number of additional restrictions have been introduced there, such as: a ban on fishing after dark and stricter bait limits.

Will fishery management in the PN of the Inter-oceanic be banned?

Don't. It was the fishermen who, along with anglers, firefighters and environmental activists, were a group particularly deserving during the Oder disaster. The principles of pro-environmental fishery management will be further specified in the conservation plan or plan of protective tasks.

Will legal hunting and poaching in the park stop completely?

Hunting of birds, deer, black game and small game will be banned in the Intermountain. Nevertheless, the Law on Nature Protection, the Hunting Law, and the regulations on invasive alien species permit some pro-environmental activities of a hunting nature.

What will happen to filming and nature photography in the park?

It will be free to film and take photos without disturbing or frightening the animals. Let's remember that bans on photographing certain species, e.g.: terns and plovers, and even approaching their nests have been in effect for years throughout Poland.

What's in store for drone operators?

It will be possible to obtain permission from the park's director to fly a drone over the Interspace as an R zone (restricted area, restricted flight). The most magnificent valleys of the lower Oder River are made from outside the boundaries of the area anyway, so the restrictions should not be onerous.

What conservation goals will be pursued in the park?

The most important tasks of the PN of the Intracoastal are:

- Protection against suffocation, including the elimination of stagnation and flooding;
- Restoration of a mosaic of habitats: riparian forests, hay meadows and pastures, oxbow *lakes*, large-scale floodplains, underwater meadows of trichinella, duckweed, etc., and *water lily* meadows;
- bird habitat protection;
- The formation of refugia/gene banks of fish and macroinvertebrates.

In time, it will be possible to move on to other, equally ambitious goals, such as: the reintroduction of European mink.

In the article, I used, among other things. z:

<https://pnddo.pl/faq/> (accessed 2.04.2024)

<https://www.facebook.com/ParkNarodowyDolinyDolnejOdry/> (accessed 2.04.2024)

<https://www.nationalpark-unteress-odertal.eu/obszar/fakty-a-z/> (accessed 2.04.2024)

DONALD TRUMP AND CLIMATE CHANGE: PERSPECTIVES AND IMPLICATIONS FOR U.S. POLICY AND THE REST OF THE WORLD

Posted on 3 April 2024, by Łukasz Machalica



Global warming is getting worse, and the damage it causes is getting worse and more costly. In this regard, what is the climate policy of one of the largest and most developed countries in the world – the USA? What will it look like in the near future? If Donald Trump becomes president, will current regulations remain in place?

Categories: [Issue 7/2024](#), [News](#), [Onet](#)

Tags: [climate change](#), [Donald Trump](#), [elections](#), [policy](#)



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Climate crisis and the Paris Agreement

Scientists who compiled the latest IPCC report warn that this is the last moment to counter global warming. In the document, they confirm that humans are mainly responsible for the increase in the Earth's temperature. When the first report was written, this was not presented in such a firm and unarguable way. Now, however, it is an undeniable phenomenon and is confirmed in many scientific circles. The AR6 document also reports that already, with a 1.1°C increase in global temperature, the world is undergoing its biggest change in centuries. These include rising sea and ocean levels, increasingly extreme weather events or rapidly disappearing ice caps. The direct impact of the ongoing changes on society was also highlighted, citing water shortages, the spread of infectious diseases, deterioration of agricultural productivity or forced population displacement.

In order to halt ongoing global warming, the Paris Agreement was concluded in 2015, which a total of 195 countries ratified. They have pledged to meet the imposed requirement, that is, to stop the increase in average global air temperature well below 2°C from pre-industrial levels, and to make every effort not to exceed 1.5°C. For this to be possible, greenhouse gas emissions must be reduced in the first place. This is a key element, as it is the one that has the greatest impact on global warming. As scientists point out, the Earth's average air temperature higher by even a fraction of a degree can contribute to the intensification of atmospheric hazards.

Donald Trump and his response to global warming

In the United States in 2021, there has been a change in the position of the country's president, and this has involved modifications in the country's climate policy. An individual who contributed significantly to the decline in interest in environmental quality was Donald Trump, who served as president from 2017 to 2021. He has already made his position on the Paris pact clear in his first year in office: *Starting today, the U.S. is completely halting the implementation of the non-binding Paris Agreement and the draconian financial and economic burdens the agreement imposes on our country.*

Experts describe Trump as a climate denier, meaning a person who denies scientific facts. In his statements, he regularly downplays the conclusions put forward by researchers. Often his speeches contain post-truths, and the main emphasis is on the emotional aspect, rather than on substance and scientific evidence. In 2014, he published his own statement online: *It's late July, and we're really cold in New York. Where the hell is GLOBAL ENHANCEMENT? We need some acceleration! This is the current [CLIMATE CHANGE](#).*

Donald Trump's approach to environmental policy represents ethnocentric thought. He sees any necessary changes, including the reduction of greenhouse gases, as a threat to the U.S. economy and its position in the world market. He also repeated several times that global warming was invented by the Chinese to undermine the US economy. During the four years of his tenure, key official positions were filled with climate deniers. In addition, the law ensuring access to clean drinking water was abolished, the Clean Power Plan was also repealed, and regulations on automobile emissions were liberalized. Trump's administration has effectively limited budget opportunities for environmental institutions and organizations. At that time, fossil fuel extraction companies became the beneficiaries of significant funds.

US climate policy and projections

The United States is a significant part of global change. Thanks to their position, they can influence the economy worldwide. Disregarding international agreements does not encourage other leaders to respect their commitments. Another pressing issue is the support of a number of scientific institutions that may lose grant income by spreading conspiracy theories.

Recent years in U.S. climate policy have been more optimistic and offer hope for further green measures. The Joe Biden administration has introduced the revolutionary *Inflation Reduction Act*, which is dedicated to planning investments in renewable energy sources and electric vehicles. A budget of \$369 million has been allocated for this initiative, spread over a 10-year period. It is expected to significantly help achieve the goals of the [Paris Agreement](#).

The first day of April turned out to be the hottest in the past 30 years, further underscoring the need to take action as soon as possible leading to climate improvements. For this, firm action by the US government is essential. President Biden's decisions have given hope for further positive changes, however, the latest polls report a high probability of Trump winning the upcoming US presidential election. Will the U.S. climate policy then face another revolution? Politicizing the issue of global warming and further deviating from the Paris Agreement is very likely.

BIALOWIEZA FOREST WITH CONFLICT IN THE BACKGROUND

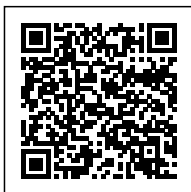
Posted on 2 April 2024, by Łukasz Machalica



Although the meeting of the Climate and Environment Committee took place more than a month ago, it still evokes a lot of extreme emotions. The changes announced during the debate on the conservation of Central Europe's largest and oldest primary forest have increased the activity of local authorities in the wilderness area and contributed to certain actions on their part. The Białowieża Forest has taken center stage. Is everyone driven by concern for its preservation?

Categories: [Onet](#), [Issue 7/2024](#), [News](#)

Tags: [Białowieża Forest](#), [environmental protection](#)



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Bialowieza Forest – emergency situations of recent years

Belovezhskaya Pushcha, considered the last natural forest of primary character in lowland Europe, is a unique relic of forest landscapes that date back to Old Glacial times. Stretching on the Polish-Belarusian border, the forest complex with an area of about 1,500 km² has preserved in its oldest fragments the structure of the primeval forest, which is a unique natural heritage not only for Poland, but also for the whole of Europe.

[Bialowieza National Park](#), which covers part of the Bialowieza Forest, provides protection for its rich flora and fauna, including more than 800 species of vascular plants, nearly 200 species of mosses, and more than 8,000 invertebrate species, 120 species of breeding birds and 52 species of mammals. A symbolic image of the restoration of the Bialowieza Forest ecosystem is the success of the restitution of the bison, whose population was destroyed after World War I, and today the number of these majestic animals in the Forest reaches almost 1,000 individuals.

The Bialowieza Forest in recent years has been exposed not only to the adverse effects of external factors, but also internal ones. The biodiversity and natural balance of the forest is threatened by the emigration crisis across our country's eastern border – the construction of a metal dam on the Polish-Belarusian border, but also by government decisions that are serious for the forest in their consequences. In 2017, the then-director of the State Forests issued a decision authorizing massive logging on ^{2/3} of the Bialowieza Forest, not sparing stands more than a century old.

Ministry plans

The current government, including the Ministry of Economic and Monetary Affairs. The Climate and Environment Council seems to know the gravity of the situation. The State Council for Nature Protection has been established, the implementation of conservation projects has been announced, and the recruitment for the position of [director of the Bialowieza National Park](#) has been opened. An expression of concern for the preservation of this pristine area in Poland is brought in 2018. a recommendation from UNESCO, which, in an effort to counter massive deforestation, requested that an integrated management plan be drawn up for the Bialowieza Forest as a world heritage site.

On February 13 of this year, a Senate meeting of the Climate and Environment Committee was held, during which members of the assembly presented proposals for actions that would preserve the Bialowieza Forest's status as a world heritage site. The wilderness has been on the List consistently since 1979. The first and most important step leading to this goal, according to [Senator Stanisław Gawłowski](#), is to ensure a unified management system for the entire area. Currently, the Bialowieza Forest area consists of a 10-hectare National Park and forest districts within the structure of the State Forests.

This meeting of the Senate committee became the driving force for the work in this area at the Ministry of Climate and Environment. The law, called the Constitution, is intended to regulate the management of the Bialowieza Forest. This is what Climate Minister Paulina Hennig-Kłoska said about the new regulations: *She is also associated with this integrated plan. This is an extremely important part of our work in the Environment Department. (...) I believe that in a few weeks we will be able to show some concrete assumptions of the law, which will be the constitution for the Białowieża Forest.*

Another important point to facilitate the protection of the Białowieża Forest is an inspection by experts from the World Heritage Center and the International Union for Conservation of Nature. UNESCO representatives received a working version of the Integrated National Heritage Management Plan.

Voices of discontent

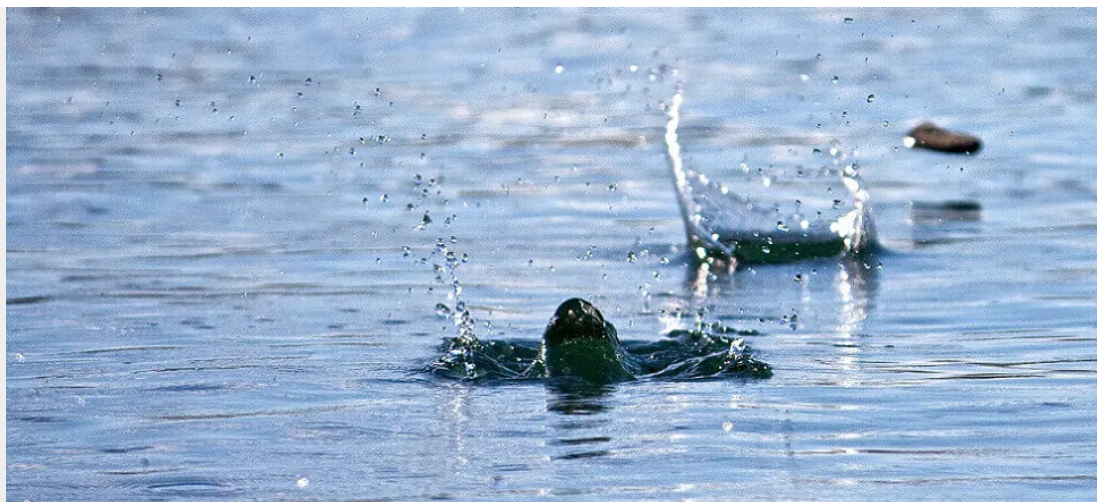
The committee meeting cited the results of a survey by the Ipsos studio, which indicated that 98 percent of Poles advocate that the Białowieża Forest be protected throughout its entire territory. Nonetheless, the first dissenting voices were already raised during the debate. Among others, they reacted negatively. Local government representatives from the Hajnówka district, who accused lawmakers of failing to consult with local communities.

On March 25, the Podlaskie Voivodeship Assembly issued an official statement noting that the pending bill could lead to an increase in unemployment, restrictions on investment opportunities and the free use of inhabited land by local communities. Local government officials stress that the current draft law should be replaced by another version, developed with the participation of all stakeholders. The assembly's position is to go to the ruling authorities and the European Commission.

The dispute seems to be growing with each passing day, despite Minister Paulina Hennig-Kłoska's assurances during a recent meeting of the Parliamentary Committee on Environmental Protection that the National Park enlargement project does not have legislative status. The ministry faces quite a challenge. Continued assurances from its representatives to engage in discussions with local communities give hope that the conflict will be resolved. The minister said recently: *Listening to the voice of the local community, to their needs and demands, will be our guidepost.*

WATER CLEANLINESS WEEK - WHAT DO DUCK RELEASES AND RIVER CLEANUPS HAVE IN COMMON?

Posted on 1 April 2024 by Alicja Bar



April 1 marks the start of Water Cleanliness Week, a reminder that protecting aquatic ecosystems is not an April Fool's joke, but our collective responsibility. The week serves not only to raise public awareness of the dangers facing rivers, lakes and oceans, but also to inspire concrete action to reduce pollution and protect waters from degradation. Will it still be possible to release ducks in clean water?

Categories: [Issue 7/2024](#), [News](#), [Onet](#)

Tags: [pollution](#), [rivers](#), [water](#)



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Water Cleanliness Week – water is a common good

Water Cleanliness Week, which is celebrated from April 1 to 7, pays special attention to the need to protect water resources. During this time, river and lake banks and beaches are being cleaned up across the country, as well as educational campaigns to raise awareness of the consequences of water pollution. [Water](#) is the basis of life and human development, although we do not always realize this. Water Cleanliness Week not only reminds us of its crucial role in our lives, but also emphasizes the importance of being responsible for the state of the resource. And this one still leaves much to be desired.

Improperly treated or untreated industrial and municipal wastewater continues to enter rivers and water bodies. Intensive agriculture is also a problem, especially the overuse of fertilizers and pesticides, but also the dumping of garbage into rivers and bodies of water. The result of these activities is the imbalance of aquatic ecosystems, which negatively affects, among other things, biodiversity.

It is also important to remember that pollution from Polish rivers ends up in the [Baltic Sea](#), worsening its condition and threatening the ecosystem. Mountainous and upland rivers, of which Poland has no shortage, quickly transport pollutants, causing harmful substances to accumulate precisely in the [Baltic Sea](#). As a result, eutrophication, sewage ponding and coastal dumping are a sad reality faced by coastal residents and tourists.

Water Cleanliness Week – how to save water on a daily basis?

In the bathroom:

- turn off the tap while brushing your teeth – you can save up to 15 liters of water;
- Let's fix a leaky faucet – 15 liters of water a day can leak through a small leak;
- choose a shower instead of a bathtub – you will use 10 times less water;
- Install an aerator in faucets – it will aerate the stream of water, reducing its consumption;
- Let's not throw waste into the toilet and sink;
- Let's limit the amount of laundry and cleaning detergents.

In the kitchen:

- Use the dishwasher only after it is completely full;
- collect rainwater for watering plants – this is a natural and ecological way to irrigate the garden;

- don't waste water when cooking – cook covered and use pots of the right size.

In the garden:

- choose a flower meadow instead of a lawn – it requires less watering and serves biodiversity;
- Plant trees and shrubs – they retain water in the soil;
- use mulching – a layer of mulch around the plants reduces evaporation of water from the soil;
- Water the plants in the morning or evening, when the sun is less intense.

Letting go of the ducks – fun with a message

As much as one wants to say: who has never ducked on the water, let him be the first to throw a stone! As it turns out, it is a well-known and eagerly handed down from generation to generation form of fun and spending time with the family. What does letting go of ducks look like? All you have to do is find a flat stone and throw it on the water so that it bounces off the surface several times. This is quite a challenge and may involve striving to break records. For example, the longest distance covered by a *duck* is 120 meters. This record was set in 2010. On the other hand, three years later, the Guinness World Record for the number of bounces of ducks released was broken – they managed to do it 88 times!

The tradition of releasing ducks on the water originated in China, where it was practiced thousands of years ago. It was originally associated with religious rituals and symbolized purification from sin and fertility. Over time, the tradition spread to other countries, including Europe, where it gained new meanings. Americans have gone a step further, holding rubber duck races in rivers and streams. It is not only great fun, but also an opportunity to raise funds for environmental protection activities. The origins of this tradition date back to the 1980s. In the 1970s.

However, in order to have somewhere to let these ducks go, it is necessary to take care of the water level. Let's react if we see wild garbage dumps. They can be reported to the emergency number 112 or to the regional water teams: rzekibezsmieci@wody.gov.pl, giving the exact location of the incident and a brief description. Although April 1 April Fool's Day jokes are flowing widely, Water Cleanliness Week is drawing attention to deadly serious issues. Maybe in a while they will float away like a quacking duck, unfortunately, now, instead of laughing, one must act.

THE ARAL SEA HAS ALMOST DISAPPEARED, BUT THIS IS NOT THE END OF THE DISASTROUS NEWS - WHICH WILL BE NEXT?

Posted on 31 March 2024 by Agata Pavlinec



Back in the first half of the 20th century, it was the fourth largest lake in the world, today it is virtually non-existent. The Aral Sea is a sad example of reckless human activity that not only drastically changes the landscape on Earth, but proves to be a double-edged sword. The environmental catastrophe, dubbed one of the world's biggest by UN Secretary Ban Ki-moon, has been accelerated by advancing climate change. And it could be even worse.

Categories: [Issue 7/2024](#), [News](#), [Onet](#)

Tags: [climate change](#), [Drought](#), [sea](#)



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How man destroyed the Aral Sea

Located between Uzbekistan and Kazakhstan, the Aral Sea was in fact a lake. The misleading name comes from its huge surface area ([68 thousand km²](#)), of which, unfortunately, only 10 percent remains. And it all started with an ambitious project. By the 1960s. Last century, the Aral Sea was fed by two huge rivers: the Amu-darya and the Syr-darya. Flowing down from the high mountains of the Tianshan, Pamir and Hindu Kush, they crossed the Kyzyl-kum desert and merged at the lowest point, where they created a paradise for many species of fish. Soviet planners decided to use the desert areas for the benefit of the Soviet people and diverted the two rivers to them. The result was cotton plantations, farmland and... a serious environmental problem.

The Aral Sea has begun to dry up. First it split into two parts, the northern and southern, and later four smaller lakes were created. In 2009. The southeast basin has disappeared completely, and a narrow band of water remains from the west basin. Satellite images taken by NASA in 2014. revealed that a new desert, named Aral-kum, had been created on the former bottom. In an attempt to save the remains of the lake, local authorities in 2005. built the Kok-Aral dam, which allowed the Northern Aral Sea to partially regenerate. Thanks to this initiative, the water level was raised by [12 meters](#) in 5 years and local fisheries were partially restored.

Tragic consequences of the Aral project

The mere fact that one of the world's largest lakes has disappeared does not capture the full drama associated with the controversial project. The infrastructure that was built turned out to be inefficient and its operation excessive. Subsequent neglect of its maintenance, combined with high emissions, has led to the practical extinction of a region that was once a mecca for tourists and, above all, a center for fishing - the main source of income for the local population.

As a result of evaporation, the salinity of the water that remained in the basin of the former Aral Sea increased tenfold, to [100 g/l](#), so that particular species of fish began to die out. The salinity of groundwater has also increased, exceeding the standards set by the World Health Organization for drinking water. Salt and sand storms began to plague the area, resulting in one of the highest dust deposition rates in the world. If that weren't enough, the dust included fertilizers, pesticides and other chemicals used in crops, as well as heavy metals from the mining industry developed in nearby deserts. As a result, between 1980 and 2000, the former Aral Sea region experienced a decline in fertility, higher infant mortality, developmental delays and kidney disease in children, as well as an increased incidence of cancer.

Will the Caspian Sea be next?

The Aral Sea has been a victim of reckless human engineering, but [climate change](#) has also contributed to its accelerated decline. Rising temperatures increase the rate of water evaporation and lead to desertification of coastal areas. Unfortunately, similar alarming changes are already being observed in the Caspian Sea, which is officially the largest lake in the world.

Thanks to the [MODIS](#) technology used by NASA, it was possible to visualize the changes that took place between 2006 and 2022. They indicate a marked loss of water in the western part of the reservoir while the delta of the Volga, the largest river feeding the Caspian Sea, is drying up.

According to scientists, by the end of this century, the water level in this fairly shallow lake could drop by a further [8-20 meters](#).

In addition, in the catchment area of the rivers feeding the Caspian Sea, [14,000](#) dams have been built over the past 90 years to supply water for irrigation systems, industry and households. Evaporation of water from dams combined with climate change poses a serious threat to the well-being of millions of people, local economies and ecosystems. It is worth noting that the region is home to 130 species of fish, including many endemic ones, and more than 100 species of birds nest in the surrounding wetlands. Their fate is in question today.

WHEN IS THE SUMMER TIME CHANGE? ON THE SAME DAY AS INTERNATIONAL ZERO WASTE DAY AND EARTH HOUR!

Posted on 30 March 2024 by Alicja Bar



This year, the change to daylight saving time coincides with International Zero Waste Day and Earth Hour. On March 30, let's not only remember to stop watches, let's also think about responsible waste management and river conservation.

Categories: [Issue 7/2024](#), [News](#), [Onet](#)

Tags: [Earth Hour](#), [time change](#), [Zero Waste](#)



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Summer time change on the last weekend of March

With the arrival of spring, watches can be switched to daylight saving time. This year the change will take place on the night of Saturday March 30 to Sunday March 31. In doing so, it is important to remember that we move the hands forward one hour, from 2:00 to 3:00.

The change from winter to daylight saving time was primarily intended to bring electricity savings. Its effectiveness is confirmed by studies from New Zealand and the US, which showed a decrease in electricity consumption after the introduction of daylight saving time. However, there is no unanimity on the cost-effectiveness of this change, since energy consumption also depends on, among other things, the weather. According to proponents of switching watches, daylight saving time can also promote greater road safety. However, paradoxically, accident statistics seem to contradict this statement.

Nowadays, switching time twice a year is increasingly seen as a problem, and in many areas of life. Trains have to extend stops, and flights and IT systems require time recalculation. Banks often block access to their services during the sensitive hour.

International Zero Waste Day 2024

On March 30, it is worth remembering not only the change to daylight saving time, but also International Zero Waste Day. Although this is a new holiday - established on December 14, 2022. by decision of the UN General Assembly - is to be celebrated annually. The day pays special attention to the need for global waste management and promotes sustainable production and consumption methods. The key to solving the waste issue, according to the UN, is to treat it as a resource, not just a problem.

The dangers of overconsumption are becoming increasingly apparent. The United Nations indicates that the waste sector has a significant impact on three major crises affecting the planet: [climate change](#), biodiversity loss and pollution. You don't have to look far - [illegal garbage dumps are found along streams and rivers](#), and anglers often fish out plastic bottles instead of fish. What's more, tons of garbage lays at the bottom of rivers, seas or oceans. They pollute the water, posing a deadly threat to the health and life of aquatic animals, and thus to us as well.

As it turns out, we create 2.1 to 2.3 billion tons of waste every year, from packaging to electronics to plastics and [food](#) scraps. As [the UN](#) estimates, if appropriate action is not taken, by 2050. Annual municipal waste generation will reach 3.8 billion tons!

Earth Hour - 17th edition already

Another important initiative that culminates on March 30 is [Earth Hour](#). It's a global environmental movement led by the World Wide Fund for Nature (WWF) that aims to raise awareness about climate change and encourage people to save electricity and take action to protect the environment. The origins of the campaign can be traced back to 2007, when the *lights* were first put out in Sydney, Australia. It was attended by more than 2.2 million people and about 2,000. companies to express their concern about the consequences of climate change. The campaign instantly became popular, with more than 180 countries from around the world now participating.

The very idea of Earth Hour came as early as 2004. as a response to scientific findings indicating the growing threat of climate change effects. It was at this time that the Australian WWF, together with advertising agency Leo Burnett Sydney, worked on ways to increase public

involvement in climate issues. As a result of the cooperation in 2006, came up with the idea for a *lights-out* campaign with the working title *The Big Flick*.

From now on, once a year, on the last Saturday of March, people are encouraged to turn off lights and electrical appliances in homes, offices or public buildings for an hour (from 8:30 to 9:30 p.m.). Organizers of the campaign also encourage people to save water, segregate waste, choose environmentally friendly modes of transportation, reduce plastic consumption or plant trees.

This year, March 30 is not just a symbolic date for the change to daylight saving time. It's also a moment that can inspire environmental action. By joining International Zero Waste Day and Earth Hour, we can draw attention to climate issues and build a more sustainable future for our planet.

SMALL RETENTION IN YOUR GARDEN

Posted on 29 March 2024, by Zuzanna Olander



Only until the end of June 2024. The 3rd edition of the My Water program is underway, under which one can apply for a grant of up to 6,000 PLN for the construction of a domestic rainwater collection system. There are also city and municipal subsidies underway for the creation of household rainwater management and use systems. Such forms of support contribute to the dissemination of knowledge and good practices related to water efficiency. And while small retention, or rather micro retention, may be associated with something of little importance, it has a big impact on our environment.

Categories: [Issue 7/2024](#), [News](#), [Promocja](#)

Tags: [funding](#), [low retention](#), [rainwater](#), [Retention](#)



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What is low retention?

Small-scale retention involves storing water in small reservoirs by retaining or slowing runoff and increasing its availability at a given location. Small-scale retention activities are aimed at offsetting the causes and effects of deterioration of natural water relations. Such measures include slowing water runoff throughout the country, minimizing the effects of drought, preventing flooding, and restoring or preserving existing wetlands.

This task is not particularly difficult, so each of us should take care of micro retention at our place of residence. Examples of effective measures include building ponds and storage ponds. Another way is to place a retention container on the property, into which rainwater will flow. It can then be [successfully used](#) for watering the garden, washing terraces and car driveways, and even for flushing the toilet or washing clothes. Only direct consumption of rainwater - without further treatment - is inadvisable due to the bacteria present in it, as well as its potential heavy metal content.

Why is rainwater retention needed?

Due to climate change, we are increasingly facing prolonged periods of drought. Freshwater resources are shrinking due to rising global air temperatures and melting glaciers, among other factors. It also becomes contaminated with various substances that are difficult to remove to make it usable again.

In Poland, more than 70 percent of precipitation evaporates from the earth's surface. The rest of them gradually run off into the sea or are retained in the ground, ice, snow or living organisms. Storage in the environment occurs spontaneously. Forests and wetlands in particular have a high retention capacity. Thanks to the physical, chemical and biological processes taking place in them, water is not only stored, but also purified and protected from evaporation.

In cities, the situation is complicated by the fact that a large area of land is covered with concrete and there is minimal vegetation. Therefore, any amount of rainwater retained and used where it fell to the ground is important for improving the local microclimate.

Natural and artificial ways to retain water

A natural way to micro retention is to cultivate green areas around your home. But it's not just a short-cut lawn that needs to be watered copiously during the hot summer. Rather, we are talking about flower meadows, shrubs and trees that naturally retain water in the soil.

Artificial ways to collect rainwater include the use of all kinds of small and large tanks. Just set a barrel under the gutter, or even a bucket on the balcony. If there is no space for a reservoir at the house, you can make your own guttering, which will direct the water when it rains straight to the plant pots.

Professional [rainwater tanks](#) are available as decorative containers or large underground and above-ground tanks. The collected water is cleaned of leaves, needles and twigs using filters. In this form, it can be used for economic purposes.



pic. Waterspec

Advantages of rainwater harvesting

Rainwater harvesting helps reduce tap water expenses. Already using it to water plants and for household chores is a big savings. At the same time, we conserve groundwater resources for potable use, not wasting them, for example, for washing a car. Retention also allows water supplies to build up for the dry season, during which water pressure often drops at taps. It protects the greenery from drying out and improves the microclimate. Making water available to wildlife will also help improve local biodiversity. And when it comes to heavy rainfall, low retention will reduce the risk of flooding and soil erosion.

the exact value depends on whether we have a wet or dry year

SOUTH SUDAN: A LANDSCAPE OF CONTRASTS AND A DESPERATE STRUGGLE FOR WATER

Posted on 28 March 2024, by Agnieszka Hobot



As the sun rises over the land of South Sudan, the landscape appears picturesque – fields of grain glimmer in the morning light, and herds of wild animals roam the plains in search of water. But these are just appearances, behind which lies a story of struggle for survival, not so much because of predators, but because of enemies that are much harder to escape from – water shortages, drought and floods.

Categories: [In this issue](#), [Issue 7/2024](#), [Issue topic](#), [Onet](#)

Tags: [Drought](#), [lack of water](#), [South Sudan](#), [water](#), [water shortage](#)



As the sun rises over the land of South Sudan, the landscape appears picturesque – fields of grain glimmer in the morning light, and herds of wild animals roam the plains in search of water. But these are just appearances, behind which lies a story of struggle for survival, not so much because of predators, but because of enemies that are much harder to escape from – water shortages, drought and floods.

South Sudan, a country rich in natural resources and boasting exceptional wildlife, is facing one of the greatest humanitarian disasters of modern times. The region's population, despite being surrounded by an abundance of rivers and streams, is facing an increasingly drastic water shortage. How did it come to pass that a land so generously endowed by nature becomes a place where every drop of water is more valuable than gold? I asked Daria Wrażeń, coordinator of PAH programs in the region, about this.

Agnieszka Hobot: The first question will be about the cause of the crisis. Why are South Sudan's water shortages so severe for the country's population and economy?

Daria Wrażeń: I would start by saying that South Sudan is a country that is relatively rich in water resources, but due to a lack of infrastructure, less than half of the population has access to them. These are mainly underground resources, the extraction of which is either very difficult or even impossible. The trouble is also treatment and distribution, so economic aspects. In summary, the water is there, but the cost of extracting it is very high, and there is a lack of specialized equipment and trained engineers.

Desperate people are drinking surface water. Among other things, the White Nile flows through South Sudan, whose waters need to be treated and distributed. There is no water supply in Juba, the country's capital. Water taken from the river is delivered by tanker trucks to cities. In housing estates, tanks are located near blocks of flats, where it is stored. When it runs out, order a refill by phone. This is a very expensive solution.



pic. PAH

A.H.: Expensive and, I guess, very cumbersome to use on a daily basis. But I wanted to ask a little more about surface water. Is the pollution of the rivers so great that it is unsafe to use their water, yet people take it anyway?

D.W.: In South Sudan, pollutants are discharged directly into waterways without prior treatment. Sometimes people, in an act of desperation, are forced to drink such water. This causes a number of health problems. The most vulnerable, of course, are children.

Polish Humanitarian Action (PAH) not only builds and repairs wells, but also conducts information campaigns. We educate South Sudanese about the dangers of consuming dirty surface water, but in many cases, even having knowledge in this area does not affect how they act. If the residents of a village have the opportunity to go to a deep well, they naturally do so, but this is not always possible. In many cases, this involves not only having to walk miles in the blazing sun, but also being unable to work or study during this time. Providing water is the task of women and girls, who, by doing so, are deprived of the opportunity to develop and strive to improve their plight.

A.H.: Which regions are most affected by the drought?

D.W.: The situation is dynamic. Just last year we had a problem with excess water. South Sudan was hit by record floods in 2021, affecting up to one million people. They took absolutely everything away from the people. This was the result of heavy rainfall, which in turn was caused by elevated temperatures in the Indian Ocean. I say this because it is not only the drought that is causing the problem of access to water.

Flooding destroys water and sanitation infrastructure, inundating wells and latrines, and then contaminated waterlogging crops and water intakes. We encountered such floods in 2021, 2022 and 2023. Everyone was expecting the situation to reoccur, meanwhile, the rainy season is beginning in South Sudan, and the health minister is closing schools due to an extreme heat wave. Their scale is unprecedented. There is beginning to be a shortage of water. Nature is once again showing people its unpredictable face.

A.H.: Then let's go back in time some more. What has the situation been like over the past decade?

D.W.: The violence and unpredictability of phenomena has increased significantly. There have been alternating rainy and dry seasons in South Sudan, and now there can only be talk of droughts and floods. This makes farming no longer profitable, resulting in famine. The problem is getting worse every year. There is no denying that this is the result of climate change, for which the countries of the Global South are hardly responsible. There is virtually no industry in South Sudan, and the road network is almost non-existent. South Sudanese contribute little to greenhouse gas emissions, and pay the highest price.



pic. PAH

A.H.: How is the South Sudanese government responding to this crisis?

D.W.: South Sudan is a very poor and very corrupt country. There is a shortage of resources and educated personnel to independently undertake initiatives that empower the state and its citizens. Also a problem is pervasive crime due to poverty and lack of prospects. Driven by hunger and insecurity, young people join armed groups and fight each other.

In summary, supporting the public at least in issues of access to drinking water is mainly handled by NGOs here. And these can't handle all the problems.

A.H.: Earlier you mentioned the unprofitability of agricultural production under constantly changing and extreme climatic conditions. On the other hand, the basis in agriculture should be to meet the nutritional needs of one's loved ones. Is what South Sudanese subsistence farmers are growing so far insufficient that people are starving?

D.W.: This is a growing problem, and there are many reasons. The truth is that all aspects of life are connected to water: [health](#), education, agriculture. Lack of permanent access to it is one of the main barriers to development, including agriculture. And on the other hand, its excess in the form of flooding destroys crops and reduces the fertility of soils. Before the series of flood waves in recent years, we worked with local communities, teaching them how to grow home gardens for their own consumption, how to sell the surplus produced, and how to get the means to support their families in this way. Now it is impossible. Floods alternating with droughts have caused these people to not really see any crops for years. They feel resigned and discouraged from doing anything.

In addition, there is an armed conflict that is constantly on the move, meaning that even if a drought or flood doesn't come, people have to flee because of violence that threatens their safety. They become refugees in their own country, they don't have a piece of land to feed their

families, they start selling off their possessions to get food. Most often, they also do not have the means to lease a piece of the field. Their situation is becoming increasingly hopeless, with no prospects for improvement.

At the moment, almost all food available in South Sudan is imported from abroad. The armed conflict in Ukraine has left its mark on the international market. Not only is the price of wheat very high, but the cost of transportation and its length have also increased. Conflicts in Gaza and Ukraine have made it necessary for container ships to bypass the Red Sea and the Black Sea and sail around Africa to reach South Sudan, via countries on the continent's coast. The high cost of living is inextricably linked to hyperinflation, which is really high in South Sudan.

In summary, here we have climate change, droughts, floods, the huge cost of transporting food and the very high price of buying it, and the inability to grow crops. This is a ready recipe for disaster on a scale that is difficult to predict.

A.H.: Drawing a simple conclusion from what you said: there are currently no conditions for a normal life in South Sudan, so migration is inevitable. The time may soon come when desperate residents of the Global South, struggling to survive, will move north en masse. What, in your opinion, would avoid such a situation?

D.W.: I think in places where people are experiencing war and famine we are dealing with a very dangerous element that is hard to stop. People are beginning to be driven by frustration and desperation. In my opinion, if we, as Europe, do not start exporting innovations and ways to deal with crises to the countries of the Global South, their citizens will soon have to flee the place they call home to save their health and lives or those of their loved ones.

If the last river dries up, the last source of drinking water, these people will have no choice but to move to areas with access to the necessities of life - water and food. Let's remember that first there are movements within the country itself, then the region, and only then to another continent. For all intents and purposes, this is already happening - migrations will only intensify.

You had the opportunity to speak with my colleague from Madagascar, where there is also a huge water problem, South Sudan is not an isolated case. The only way to stop the catastrophe is to intensify actions leading to the mitigation of the effects of climate change and support the population in the most vulnerable areas.



pic. PAH

A.H.: Which direction should international aid take? What would produce the best results in your opinion?

D.W.: We, as PAH, are mainly involved in life-saving humanitarian aid in South Sudan, here and now, providing, for example, water and food for the needy, putting up toilets, supporting schools or clinics. Such measures are necessary, but they will not solve the situation and will not enable the country to function independently in the future. I think we should start allocating very large funds for development cooperation, for facilitating self-reliance.

I mentioned earlier that South Sudan has access to water and to a huge amount of sunshine, which is the basis for development. Infrastructure would be a way to solve its own problems. There would be an incentive to create a network of schools. It's hard to talk about education, development and self-reliance when children are dying of hunger and thirst. But it is also impossible to separate the two areas, changes must proceed in parallel.

Polish Humanitarian Action has been working in the areas now belonging to South Sudan since 2006. This allows us to compare the place two decades ago and today. We are seeing positive changes. They are very, very slow, but nevertheless give motivation to keep working.

In Poland, we have similar water resources, yet we are able to cope with shortages. The scale is incomparable, because even if we see rivers drying up or vegetation drying up, people are not dying of thirst. If South Sudan had the tools of education and infrastructure, it would certainly be better able to cope with natural disasters.

Let me emphasize again - in order to effectively counteract disasters and efficiently mitigate their effects, it is necessary to invest in education, in development and in health care in parallel. And water connects to each of these aspects. So what if the children go to school, if they get thirsty they won't be able to focus on their studies. Or girls won't be able to graduate from a school with no toilet - regular absences

due to menstruation will prevent them from getting an education and improving their livelihood. We are not directly involved in health care, but we are building wells and latrines in hospitals in cooperation with partners. Without it, they are unable to function - again the theme of access to clean and safe water recurs.

A.H.: What could I wish PAH for the near future in relation to its activities in South Sudan?

D.W.: I would wish us, first of all, financial support from outside, because without this we cannot continue our work, and at the same time we cannot give up our activities. There is no denying that the international situation is difficult and dynamic. South Sudan is not a country that makes headlines in the news. The weaker the interest in a country, the less funds are allocated to humanitarian activities. As recently as five years ago, foreign support met the needs of 60 percent. needy.

Last year it was 35 percent, and this year it is expected to be even less. I dream that this trend will change. Providing access to safe water can be a force for social change and an incentive to eradicate extreme poverty. South Sudan has one of the most underfunded humanitarian crises going on, but at the same time it is a place with potential worth investing in.

In conclusion, let me share with you a reflection that moves me quite a bit. South Sudan is just one of many places in the world where thirst is not just a physical emotion, but a daily reality that determines the fate of entire communities. I wonder how the sense of responsibility of corporate, industrial giants manifests itself in the face of the catastrophe of the Global South. Considerations of corporate social responsibility fill the pages of reports and articles, but do not necessarily manifest themselves in concrete actions. The construction of a single well, although costing only a dozen-odd thousand zlotys, can bring relief to thousands of people, giving more than just water - giving hope for survival and a better tomorrow.

PAH's activities in South Sudan are worth supporting - [here](#).

Source of main photo: PAH

CSDD DIRECTIVE FURTHER PROCESSED

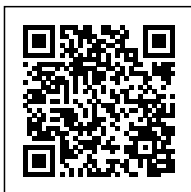
Posted on 28 March 2024, by Karol Kucharski



On March 19, 2024, The European Parliament's Legal Affairs Committee has approved the revised Corporate Sustainability Due Diligence Directive (CSDD), allowing it to move forward and adopt new legislation requiring companies to address their negative impacts on human rights and the environment at the company level and throughout the supply chain. The adoption of due diligence legislation is a necessary element for the EU to achieve climate neutrality and develop a green economy in line with the European Green Deal.

Categories: [From the European Commission](#), [Issue 7/2024](#), [Onet](#)

Tags: [businesses](#), [CSDD Directive](#), [KE](#), [sustainability](#)



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CSDD – scope

To date, voluntary corporate due diligence efforts and regulations on reporting non-financial information have not led to improvements in respect for human rights and implementation of environmental regulations across sectors. The draft [CSDD](#) implies the introduction of mandatory sustainability due diligence for a certain group of companies to counteract the negative effects of their activities.

The draft assumes that the directive will establish a horizontal framework to promote the contribution of companies operating in the single market to respect for human rights and the environment (both in their direct operations and in their supply chains) through:

- Identification of negative impacts of corporate activities, prevention, possible mitigation of these impacts and accountability for counteracting them;
- as well as having appropriate management procedures and management systems in place and implementing them.

The companies covered are both EU and non-EU companies. In the case of companies from Union countries, the directive applies to those that meet certain thresholds of employment and net sales turnover on a global scale. For non-EU companies, the key is to achieve a certain net turnover within the Union.

According to the draft, member states will implement a series of measures to support the directive: dedicated websites, platforms or portals to provide information to companies and their supply chain partners. They will also assist in their efforts to meet their obligations under this Directive.

Changes regarding the draft CSDD

The draft CSDD was originally presented by the European Commission in February 2022, but was eventually amended as a result of lengthy negotiations. On March 15, 2024, the Committee of Permanent Representatives of the Governments of the Member States to the European Union (COREPER) approved the current draft of the CSDD, while the European Parliament's Legal Affairs Committee also took a position on March 19, 2024.

One of the most significant changes is the limitation of the number of companies subject to the new rules by raising the number of their employees to 1,000 (previously 500) and to those with annual revenues exceeding €450 million (previously – €150 million). The new thresholds would reduce the number of companies covered by CSDD by about ^{two-thirds}. The directive will be introduced gradually, starting with the largest companies. Small and medium-sized ones will not be directly affected by the regulations, but they will also be affected by the introduction of the directive. The new legislation, once adopted by the European Parliament's legal committee, will be put to a full vote in the institution's plenary session.

CSDD directive – obligations for enterprises

CSDD:

1. is to help improve corporate governance practices so that risk management processes for respecting human rights and environmental impacts are better integrated into corporate strategies;
2. will avoid fragmentation of due diligence requirements in the single market and provide companies and stakeholders with legal certainty regarding expectations for their behavior and the extent of their liability (responsibility);
3. will increase the accountability of companies for the negative effects of their activities;
4. will improve access to legal remedies for those adversely affected by companies.

The concept of due diligence

The issue of due diligence in the operations of companies with regard to human rights was defined in the 2011 adopted. *UN Guiding Principles on Business and Human Rights*. That same year, the definition of due diligence, understood as a risk-based process incorporated into the principles of responsible business conduct (RBC), was introduced by the OECD in a revision of its Guidelines for Multinational Enterprises.

According to the approach proposed by the UN and the OECD, due diligence is a process that companies should carry out to identify actual and potential negative impacts of their activities, and to mitigate and prevent them as a result of their activities (both in the core and supply chain, as well as in other business relationships).

EUROPEAN GREEN DEAL – EC UPDATES ASSUMPTIONS

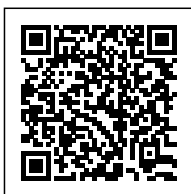
Posted on 28 March 2024 by Monika Zabrzeńska-Chaterera



The European Green Deal (EZ³), or Communication COM(2019)640 of December 11, 2019, introduced a number of policies to transform the EU economy into a more modern, resource-efficient and competitive one. According to the objectives:

Categories: [From the European Commission](#), [Issue 7/2024](#), [Onet](#)

Tags: [CAP](#), [EU](#), [European Green Deal](#), [KE](#)



The European Green Deal (EZ³), or Communication COM(2019)640 of December 11, 2019, introduced a number of policies to transform the EU economy into a more modern, resource-efficient and competitive one. According to the objectives:

- EU in 2050. Will achieve zero net greenhouse gas emissions;
- there will be a decoupling of economic growth from resource consumption;
- No person or region will be left behind compared to others.

The European Green Deal has indicated that the Common Agricultural Policy's Strategic Plans for 2023-2027 (CAP SP 2023-2027) will need to reflect more ambitious goals, including a significant reduction in the use of chemical pesticides and their risks, as well as the use of fertilizers and antibiotics.

As a result of protests by European farmers, the European Commission on March 15, 2024. has published a draft amendment to two regulations related to the implementation of the European Green Deal policies under the CAP SP for 2023-2027. Specifically, the EC is proposing to abolish the 4 percent set-aside. arable land, the choice between diversification and rotation, simplifications in soil cover and changes in conditionality-related sanctions.

Conditionality under the CAP

Conditionality under the 2023-2027 CAP SP is an enhancement of existing cross-compliance and greening. Makes receipt of full support under direct payments conditional on meeting standards and requirements covering areas:

- climate and environment;
- public health;
- plant health;
- animal welfare.

This is also the basis for determining the requirements for additional paid voluntary activities undertaken by the farmer. Conditionality includes Good Agricultural Environmental Condition (GAEC) standards and Stewardship Baseline Requirements (SMRs).

European Green Deal – farms up to 10 hectares of UR will not be subject to sanctions

Announced on March 15, 2024. The proposals indicate that farms with up to 10 hectares of agricultural land will not be subject to sanctions related to the implementation of environmental standards (so-called conditionality), which in practice means that they will be completely exempt from these requirements.

Abolition of fallow 4 percent. Arable land – the so-called. GAEC 8 standard

Farmers as early as 2024. They will not have to [compulsorily set aside](#) 4 percent. arable land. In practice, this means that farmers will be encouraged to maintain non-productive areas, but without the risk of losing income.

Currently, according to GAEC 8, farmers are required to:

1. Preservation of landscape elements (obligation to preserve trees – nature monuments, ponds of up to 100^m2, ditches up to 2 m wide);
2. to observe the prohibition of pruning hedges and trees during the bird breeding season and the period of rearing young (does not apply to fruit trees, willows and short-rotation coppice);
3. To guarantee a minimum share of at least 4 percent. arable land at the farm level, into non-productive areas and elements, including fallow land.

The ability to choose between diversification and alternation – the so-called "diversification". GAEC 7 standard

The Commission proposes that starting as early as 2024. Farmers could have had a choice, i.e. Or:

- Use crop diversification (i.e., different crops). For farms with an area:
 - from 10 to 30 hectares of arable land is enough to have 2 crops, except that the largest crop cannot account for more than 75 percent;
 - over 30 hectares of arable land is enough to have 3 crops, except that the largest crop cannot account for more than 75 percent, and two in total cannot exceed 95 percent;
- Rotation (i.e., a specific succession of plant crops).

Currently, under [GAEC 7](#), farms with more than 10 hectares of arable land (there are exemptions) are required to:

1. cultivation of an area of at least 40 percent. arable land in such a way that each agricultural plot, compared to the previous year, has a different main crop;
2. to grow at least 3 different crops on arable land. The main crop must not occupy more than 65 percent. arable land, and the two main crops combined must not occupy more than 90 percent. arable land.

Changes to the standard for. The obligation to maintain soil cover - the so-called. GAEC 6 standard

The EC, in response to farmers' expectations, has proposed that each member state should be free to decide at what time of the year it will establish soil cover maintenance obligations, making it easier for farmers to carry out certain agrotechnical treatments in a timely manner.

Currently, according to GAEC 6, in an area representing at least 80 percent. arable land, which is part of a farm, must be maintained with a protective soil cover (including but not limited to: crop cover: winter crops, grasses on arable land, winter intercrops; stubble; land covered with crop residues or mulch) from November 1 to February 15.

EUROPEAN COMMISSION PROPOSES SIMPLIFICATIONS FOR FARMERS

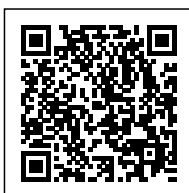
Posted on 28 March 2024 by Karol Kucharski



The European Commission, in the face of growing discontent in the agricultural community and with the aim of reducing the administrative burden on farmers in the EU, has prepared a legislative proposal to revise certain provisions of the Common Agricultural Policy (CAP) and announced the withdrawal of draft legislation restricting the use of plant protection products. The changes, in line with farmers' expectations, remove and greatly simplify components of the Green Deal that have been one of the main reasons for protests in recent times.

Categories: [From the European Commission](#), [Issue 7/2024](#), [Onet](#)

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Common agricultural policy – changes the European Commission wants to make

One of the main simplifications for farmers proposed by the European Commission are changes to certain provisions of the Common Agricultural Policy (CAP). During the first year of implementation of the current CAP (2023–2027), EU farmers faced difficulties in fully complying with certain environmentally and climate-beneficial arrangements, known as Good Agricultural and Environmental Condition of Land (GAEC) standards.

The European Commission's legislative proposal, related to CAP [conditionality](#) and strategic plans, aims to reduce the burden of controls on EU farmers and give them more flexibility in meeting certain environmental conditions.

The prepared document is the European Commission's direct response to hundreds of requests from organizations representing farmers and member states. It strikes a balance between the need to maintain the CAP's role in supporting the transition of European agriculture to a more sustainable one, the expectations of farmers and member states, and the goal of reaching an early agreement between the European Parliament and the European Council.

Withdrawal of draft legislation restricting the use of plant protection products

Another of the changes announced by the European Commission, in response to agricultural protests, is the withdrawal of a draft on regulations restricting the use of plant protection products. A draft regulation of the European Parliament and the Council on the sustainable use of fertilizers has been in the pipeline for more than a year and a half, but it has not been possible to reach final agreement among member states on its content. According to a letter from the European Commission to the European Parliament and the Council, it is to be officially phased out by March 31, 2024.

In the view of the Polish agricultural community, the proposed solutions could have a negative impact on food security and the competitiveness of EU and domestic agriculture, as well as lead to increased dependence of the food system on imports. In doing so, the project did not take into account the challenges of climate change, the effects of which increase the risk of the spread of new plant pests and diseases, or events that disrupt supply chains, such as the COVID-19 pandemic and the war in Ukraine.

According to the Ministry of Agriculture and Rural Development, Poland uses less active substances in plant protection products per unit area than the average value for the European Union (in Poland in 2021 it was 1.86 kg/ha, while the average for the European Union was 2.21 kg/ha). According to the European Commission, the current situation calls for further dialogue and a change of approach in the development of regulations to limit the use of plant protection products.

The European Commission is taking numerous steps to reduce the use of pesticides and strive to make the use of safer pesticides as widespread as possible, one of which is the [publication of a set of good practices in this regard](#), as we wrote about in a previous *Water Matters* article.

EC survey on CAP simplification

On March 7, 2024, The European Commission has launched an online survey on procedures and regulations related to financial support under the Common Agricultural Policy (CAP) and other EU food and agriculture legislation. The survey is aimed at farmers.

The responses obtained will be thoroughly analyzed and will be used to develop solutions to simplify processes related to the use of support from the European Union budget. The survey will help identify sources of administrative burden and inconvenience from CAP regulations, as well as other food and agricultural regulations, both in terms of their national application and related registration and reporting obligations. Preliminary results will be presented as early as mid-April.

The survey questionnaire is available on the [Commission](#) 's website until April 8, 2024.

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EFRAG SEEKS EXPERTS TO CO-DEVELOP ESRS SECTOR STANDARDS FOR MINING

Posted on 28 March 2024 by Izabela Łuba



The European Sustainability Reporting Standards (ESRS) sectoral sustainability reporting standards, to be issued by the European Commission, are still under development. The institution responsible for their development is the European Advisory Group for the Promotion of the Environment. The company is a member of the European Financial Reporting Advisory Group (EFRAG). One of the sectors for which ESRS standards will be prepared first is the mining and quarrying industry. Accordingly, on March 19, 2024, EFRAG has extended an invitation to the working group to related experts.

Categories: [From the European Commission](#), [Issue 7/2024](#), [Onet](#)

Tags: [EFRAG](#), [ESRS](#), [KE](#), [mining](#)



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What are ESRS sector standards?

The work being carried out at the request of the European Commission by the European Advisory Group on the Environment. The European Financial Reporting Advisory Group's (EFRAG) related European Sustainable Reporting Standards (ESRS) are the result of the Corporate Sustainability Reporting Directive ([CSRD](#)) passed by the European Parliament in 2022, replacing the Non-Financial Reporting Directive (NFRD).

The draft standards being prepared are divided into two sets:

- general, to which all reporting entities are subject, adopted by the EC in July 2023, and including 2 cross-cutting standards and 10 thematic standards, divided into environmental, social and business-related areas;
- sectoral (sector-specific) ones, which cover 40 sectors along with their specifics, which are still being worked on.

The ESRS general standards, which we wrote about in the [1/2022 issue of Water Matters](#), are primarily intended to ensure that the reported ESG (Environmental, Social and Governance) information is consistent and reliable, and that it can be compared. The sectoral ESRSs, which are in the process of being developed by EFRAG, are instead intended to be supplementary. Their purpose is to identify information requirements related to impacts, risks and opportunities not covered in the general guidelines.

What is the process for developing ESRS sector standards?

EFRAG's process for developing ESRS industry standards is divided into two stages - preliminary (design) and final. Each is further divided into preparatory phases.

There are 4 phases in the design stage of the creation of industry standards:

- research - to identify priority sustainability issues in the industry and current disclosure practices;
- development - during which, on the basis of the information gathered and input from the sectoral community, a working document is prepared;
- validation - taking the form of a public discussion at the EFRAG SR TEG and EFRAG SRB meeting;
- approval of the project for public consultation.

The final stage of ESRS sector standards development, in turn, is divided into 5 phases, including:

- public consultation;
- Analysis of feedback obtained through public consultations;
- Discussing proposals and comments resulting from public consultations and making changes to the projects based on them;
- Approval of the final version of the draft ESRS,
- final editing of the draft before its publication by EFRAG.

The process associated with the development of ESRS industry standards is carried out each time in accordance with the institution's procedures, which include, among other things, public consultations and discussions with technical experts.

At what stage are the ESRS industry standards for the mining and quarrying sector?

EFRAG is currently implementing industry-specific ESRS for two sectors - Oil and Gas and Mining, Quarrying and Coal. Both of them are at the design stage and have passed the research phase.

Industry [ESRS standards for mining](#) have already been preliminarily developed and are in the early stages of approval, with the related working document published on February 3, 2023. In order for the draft standards prepared to fully comply with EFRAG's adopted due process procedures related to sustainability reporting standard setting, it is necessary to establish a sector community group. It is to be composed of experts in the field. mining and quarrying, who will be able to provide comments on the updated working document.

EFRAG invites experts to collaborate on ESRS standards for the mining and quarrying sector

Accordingly, EFRAG on March 19, 2024. issued an invitation encouraging technical experts with proven experience in the mining and quarrying sector to join the industry community. They were looking for both experts working on a daily basis in corporations operating in the aforementioned sectors, as well as representatives of social organizations or NGOs and researchers, and especially representatives of reporting companies.

The requirements they had to meet to join EFRAG's sector community group were first and foremost established experience in the industry and a willingness to actively participate in project work and share their knowledge.

EFRAG is also expanding its activities by issuing calls for proposals to various thematic groups, demonstrating their commitment to a comprehensive approach to ESRS standards for multiple sectors. Once the work, including the public consultation stage, is completed, the draft ESRS standards are formally adopted by the European Commission in the form of regulations, which gives them binding force. This is a major step toward making sustainability reporting in the European Union more transparent and consistent.

TIME FOR TEA... AND CLIMATE PROTECTION. A CHALLENGE FOR THE WORLD'S PLANTATIONS

Posted on 28 March 2024 by Agata Pavlinec



Black, green and white – tea is the second most popular beverage in the world, with water being the first, of course. The statistical Turk drinks as much as 1,300 a year. cups, and other nations are not far behind. Meanwhile, the high supply of tea is nowhere near as obvious as one might expect. Experts warn that climate change could seriously affect the production of aromatic leaves, and thus the prosperity of related farmers. Can the battle for tea still be won?

Categories: [Business and economics](#), [In this issue](#), [Issue 7/2024](#), [Onet](#)

Tags: [climate change](#), [plantations](#), [prices](#), [production](#), [tea](#)



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Tea in numbers

The black grounds in the cup are actually the processed leaves of the evergreen plant *Camellia sinensis*, originally native to East Asia, Southeast Asia and the Indian Peninsula. However, it is now grown in 58 countries on five continents. Globally, this means production of 6.5 million tons per year with a total value of more than \$17 billion. and an additional \$9.5 billion. generated by trade. China has been the largest producer for years (47 percent of the market), followed by India (more than 20 percent). Over the past decade, global tea consumption has grown by 3.3 percent annually.

Tea plantations employ 13 million people, of whom as many as 9 million are small farmers. A sizable portion of the workforce is made up of women, for whom this work is sometimes the only source of income. In many locations, the leaves are harvested by hand, which guarantees a better quality product and higher plant fertility the following year. This is because tea, unlike wheat or corn, is a long-term investment, with many bushes living to the ripe old age of 50.

The dark side of tea plantations

Unfortunately, as with other agricultural sectors, tea cultivation and processing affect the environment. The main problem is the conversion of vast tracts of vibrant tropical forests into monoculture crops – the loss of biodiversity is difficult to describe. Farmers, in order to guarantee the profitability of their plantations in the long term, use a whole range of herbicides and pesticides, which further decimate the insect population and seriously disrupt the biological balance. The toxic effects of chemicals are also affecting other animal species – in Uganda, tea plantations surrounding Kibale National Park are negatively affecting the health of the great apes that live there.

Of course, plantation workers, usually not equipped with adequate protective equipment, are also exposed to pesticides. Their impact on health, especially for women of childbearing age, can be tragic. A study conducted in 2017 suggests possible DNA damage. Another problem is greenhouse gas emissions during fertilizer production. In China, this activity accounts for 32 percent of total tea-growing emissions.

However, the bad news for the environment does not end there. Crops must be properly dried, and this process involves huge amounts of wood and often coal. Brewing tea is another eco-friendly cost, and in the UK alone, 60,000 are brewed each year. t tea is wasted simply because someone made too much brew or rushed the preparation and it got cold before serving. A report prepared by the Ethical Tea Partnership shows that one innocent cup of black tea a day translates into 25 grams of carbon dioxide emitted into the atmosphere. In comparison, the same amount of CO_2 is generated by covering 37 km with a car!

Divination from grounds, or how climate change will affect tea production

Tea cultivation promotes deforestation, reduces biodiversity, poisons soil, water and organisms, and on top of that generates greenhouse gases. In a closed system such as the Earth, there are also processes of the opposite direction. Human-caused climate change is having a growing impact on crop quality and productivity. As a result, farmers are suffering, and indirectly the broader society, which will soon be threatened by food shortages.

Floods, droughts and heat waves, as well as unexpected hailstorms and frosts, mean serious risks for tea plantations. This is because the shrubs need regular but moderate amounts of rainfall, stable temperatures and long hours of sunlight. Sudden, lashing downpours and dramatic tropical storms, a typical symptom of climate change, do more harm than good, leading to soil erosion and reducing light. In India's famously hilly Darjeeling tea-growing region, heavy rains cause mudslides on plantations. Flooding rivers don't help either - every year the Brahmaputra River overflows its banks and destroys up to [15-20 percent of crops](#).

With rising temperatures, the risk of pest development is also increasing - the Indian province of Assam has already seen severe damage from *Helopeltis theivora* and rust disease for several years. The aforementioned Ethical Tea Partnership report predicts that by 2050 [in Kenya](#), Sri Lanka and China, the area with optimal conditions for tea cultivation will decrease by 26.2 percent, 14 percent and 4.7 percent, respectively.

A closed loop economy can help

The good news is that reducing the negative environmental impact of tea production can be done in parallel with mitigating climate change. Experts call for the implementation of a circular economy on plantations and increasing plant resilience at the same time.

Among others, the following are pointed out as prospective solutions. agroforestry, which is the planting of trees in the plantations that will protect the tea bushes from wind and soil erosion and loss of biodiversity. And more species, especially birds, means less chance for crop-damaging pests to thrive. In Uganda from 2023, a project is underway to use waste from banana and tea production to support the soil health of plantations while introducing selected tree species into growing areas. Replacing a monoculture with a mosaic of species offers a huge opportunity for the environment, but also for the tea industry.

Farmers need to be motivated to switch from chemical fertilizers to natural and organic pesticides, which translate into higher profits - as tea from organic plantations can be sold at correspondingly higher prices. What's more, experience from Yunnan Province in China shows that agroforestry results in an increase in the flavor of dried leaves. Another challenge relates to reducing_{CO2} emissions in tea processing. In addition to drawing solar energy, a promising solution is to use natural wastes, such as macadamia nut shells, rice or coffee husks as fuel. Thus, agricultural waste returns to the farms, and the cycle closes. Such a scenario, combined with regenerative practices, is cause for optimism.

Time for tea... How about drinking less of it?

Green, black and white tea are sources of antioxidants that protect against many serious diseases. [It has already been proven](#) that people who regularly enjoy an infusion of *Camellia sinensis* leaves are at a lower risk of infections, diabetes, heart disease and even cancer. However, what's too much is unhealthy, and excess tea on the daily menu has been associated with reduced iron absorption, increased nervousness, insomnia, nausea, heartburn and headaches. So one less cup can benefit the body, and further reduce the ecological ballast.

Paradoxically, however, in brewing tea responsibly, the most important thing remains... water! It is the preparation of boiling water that is the biggest source of emissions associated with a cup of Earl Grey. A British study shows that boiling more water than needed increases the negative ecological effects of tea consumption by up to [2-3 times](#)!

LUXURY CHOCOLATE HARE. COCOA PRICES BREAK RECORDS

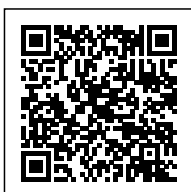
Posted on 28 March 2024, by Agnieszka Hobot



In the past year we have seen an unprecedented increase in the price of cocoa on world markets, which directly affects the price of chocolate and products made from it. This trend is causing concern among both producers and consumers of sweet products. They wonder if the chocolate Easter bunny will soon become a luxury available only to a select few.

Categories: [Business and economics](#), [Issue 7/2024](#), [Onet](#)

Tags: [climate change](#), [cocoa](#), [El Niño](#), [prices](#)



In the past year we have seen an unprecedented increase in the price of cocoa on world markets, which directly affects the price of chocolate and products made from it. This trend is causing concern among both producers and consumers of sweet products. Will cocoa prices soon make the chocolate Easter bunny a luxury available only to a select few?

Major cocoa producers

Cocoa cultivation is mainly concentrated in areas with tropical climates, where natural conditions are favorable for growing cocoa trees. More than 70 percent of world production comes from four West African countries: Ivory Coast, Ghana, Nigeria and Cameroon. The former is the largest producer and accounts for almost $\frac{1}{3}$ of the global harvest. Other major cocoa producers are: Indonesia, Brazil, Ecuador and Colombia.

What influences the cultivation of cocoa trees?

Cocoa is a plant that requires specific conditions for growth, including high humidity, a constant temperature in the range of 18-32°C and protection from direct sunlight, especially when young. These trees grow best in the shade of other, larger plants, such as banana or rubber trees. Cocoa begins to bear fruit in the fifth year after planting and can be economically used for about 25 years. However, only about half a kilogram of beans are obtained per tree per year, making cocoa cultivation a labor-intensive and time-consuming process.

Currently, the intensified [El Niño](#) weather phenomenon is contributing to rising temperatures and intensifying drought around the world, negatively affecting cocoa plantations, especially in South Asia. These difficulties are highlighted by experts, who note that poor weather conditions during the harvest period (September to March) further complicate the situation.

Cocoa prices on world markets?

An analysis of market data over the past few years shows a significant increase in cocoa prices, especially in 2024, when the price per ton reached levels not seen in many years.

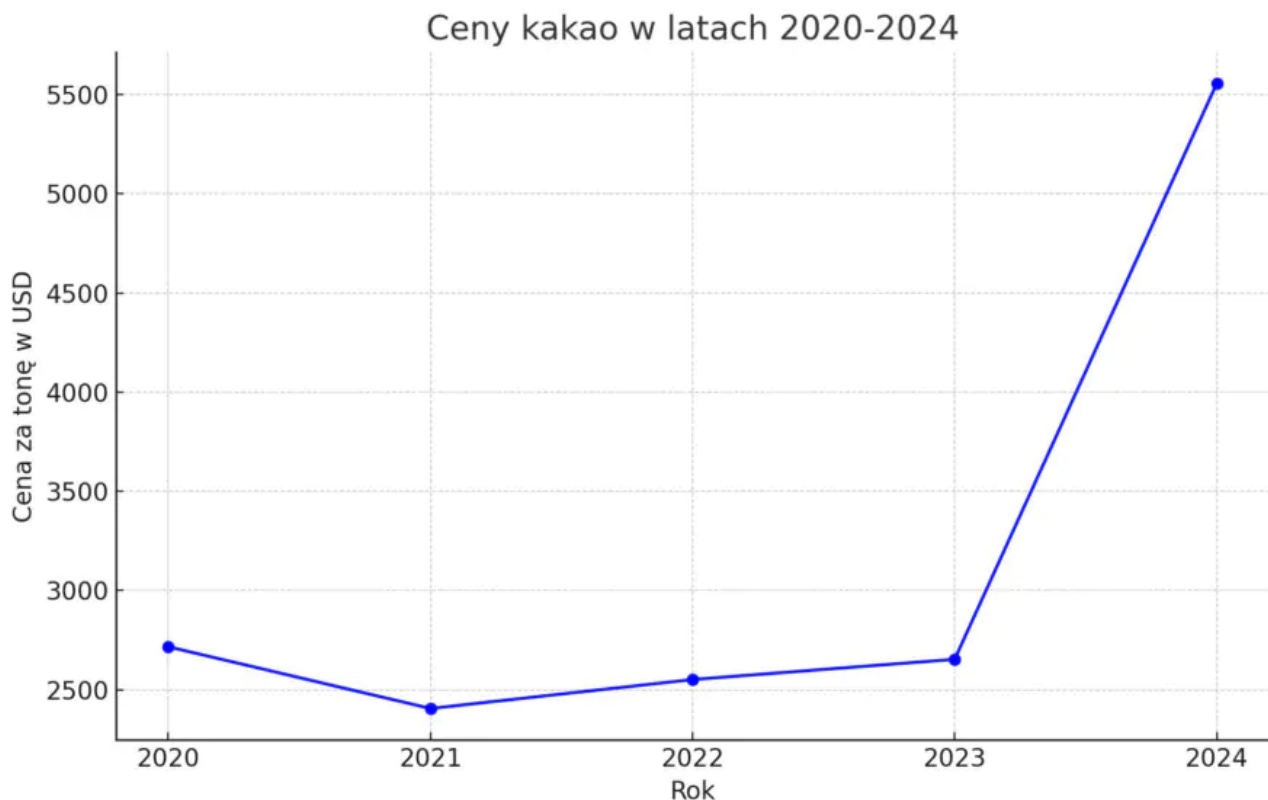


Chart 1: Cocoa prices in 2020-2024, ICCO

According to data published by the International Cocoa Organization (ICCO), global cocoa production in the 2022/23 season was close to 5 million tons, which means that the 2023/24 season is expected to score a 10.9 percent drop in production, to 4.5 million tons. ICCO forecasts an increase in cocoa prices due to less available beans and aging trees producing smaller yields.

Cocoa and global consumer trends

The increase in demand for chocolate and chocolate products, especially in countries with rapidly developing economies, is further intensifying the dynamics between demand and supply in the market. With limited cocoa supply and rising production costs, chocolate makers face the difficult task of balancing retail prices with raw material costs.

An increase in cocoa prices not only affects the production of chocolate and other confectionery products, but can also affect the prices of cosmetics and pharmaceutical products containing the ingredient. A phenomenon known as shrinkflation is also observed in chocolate products. The term refers to the practice of reducing the size of products sold in the market without directly increasing retail prices. It is a response to rising production costs and inflation. The term is a neologism formed from a combination of the English words *shrink* and *inflation*. The question is whether the reduced Easter hare will still be an interesting commodity for us?

The future of the global cocoa market?

Chocolate and cocoa producers are looking for ways to counteract rising commodity prices, including by increasing production efficiencies, seeking alternative cocoa sources and investing in sustainable cocoa farming methods. However, the latter activities are still carried out on too small a scale to talk about the Fair Trade (Fair Trade) trend or environmental progress on plantations.

The outlook for the cocoa market is not clear. On the one hand, ongoing climate change and the limited ability to increase the area under cultivation may keep cocoa prices high. On the other hand, technological innovation, good cultivation practices and adaptation strategies can help increase yields and equalize supply with growing demand. It will be crucial to understand that sustainability in cocoa production will not only help stabilize prices, but also support the future of the sector for future generations of producers and consumers.

The cocoa market is currently facing enormous challenges that require global cooperation, innovation and the involvement of all stakeholders. From farmers to producers to consumers. Everyone has a role to play in creating a sustainable cocoa market - one that is resilient to climate change, preserves biodiversity and ensures fair production conditions.

In the context of the upcoming Easter holiday, the prices of chocolate bunnies can serve as a reminder of the complex value chain behind the production of each treat. Understanding these complex relationships and the challenges facing the cocoa sector can encourage consumers to make more informed purchasing decisions - ones that support sustainable production and contribute to a better future for cocoa producers around the world.

INNOVATIONS IN ENVIRONMENTAL PROTECTION: HOW KRASNYSTAW IS CHANGING THE FACE OF WASTEWATER MANAGEMENT WITH BGK SUPPORT

Posted on 28 March 2024 by Agnieszka Hobot



Poland's most modern catchment station, a symbol of innovation in wastewater management, has been opened in Krasnystaw. The project, supported by Bank Gospodarstwa Krajowego and the Institute of Environmental Education, prioritizes environmental security and cross-sector cooperation, creating the future of wastewater management in Poland.

Categories: [Feedback](#), [Issue 7/2024](#), [Promocja](#)

Tags: [BGK](#), [catchment stations](#), [environmental protection](#), [waste water management](#)



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Sink stations in Poland – considerable investment needed

With increasing environmental awareness and tightening environmental regulations, modernization and development of wastewater management infrastructure, especially catchment stations, is becoming a key challenge. Central Statistics Office data for 2022. They alert that more than 90 percent of wastewater from unsanctioned areas is illegally discharged into the environment. This means that only a fraction of the liquid waste ends up at the catchment stations. An additional problem of the circulation system is the state of the art of the catchment stations.

[Survey](#) conducted in 2023. showed that as much as 45 percent. Containerized catchment stations in Poland do not have adequate equipment for separating solids, and 89.3 percent. of them do not meet the applicable legal requirements under the Regulation of the Minister of Infrastructure on the conditions for introduction of [liquid wastes](#) to the transfer stations. Nearly 90 percent. of these facilities do not keep records of the waste they receive, and some do not even confirm receipt.

Agata Sobolewska of the National Bank commented on the challenge:

Water catchment stations in Poland require a number of investments to bring them into compliance with the requirements imposed by the law. Modern, digitized catchment stations not only mean a sealed system for the circulation of liquid waste, a better state of the environment, but also a huge facilitation of the reporting of inspections of zero-waste tanks, which local governments' environmental departments are required to do. At BGK, we recognize the challenges faced by local governments that want to meet the requirements of the law regarding the circulation of liquid waste, the state of the catchment stations and wastewater treatment plants. Hence our involvement in the study of such facilities in Poland and in the pilot modernization of the Krasnystaw station.

Modern sink station

The modernized water catchment station in Krasnystaw, which was ceremonially opened on March 21 in the presence of the city's mayor and representatives of the Bank Gospodarstwa Krajowego and the company Ścieki Polskie and the Institute of Environmental Education, can be considered an example worthy of emulation. It is the most modern facility of its kind in Poland, equipped with advanced technology that allows, among other things. Authorization and identification of the drivers of the wastewater collection companies; identification of the addresses of the properties from which the wastewater originates; automatic recording of data on each discharge or reporting in real time.



pic. Ścieki Polskie Sp. z o.o.

The commissioned mobile catchment station is very important and necessary for the entire sewerage network and the system we were able to create after the modernization of the wastewater treatment plant. It can be said that just put dot over i. Thanks to the company Ścieki Polskie and Bank Gospodarstwa Krajowego, we can now monitor and analyze wastewater discharges and respond quickly to irregularities. Thus, this is another element that will serve to protect our environment - Krasnystaw Mayor Robert Kościuk stressed. It is also worth mentioning that the modern catchment station allows not only effective control of the amount of supplied wastewater, but also its quality - measuring selected parameters, i.e.: pH, conductivity, temperature, turbidity, density, chemical oxygen demand (COD).

The future of catchment stations

The future of the country's catchment stations lies in further modernization and adaptation to current and future regulatory requirements. The technological innovations used in Krasnystaw point the way forward for similar facilities throughout Poland. According to Wojciech Witowski, president of Ścieki Polskie, the key to effective wastewater management is the constant monitoring and control of incoming wastewater, which makes it possible to identify and quickly respond to potential threats to the treatment plant and sewage network. Implemented solutions, such as at least customized software, enable not only control, but also increase residents' awareness and responsibility for the environment.



pic. Ścieki Polskie Sp. z o.o.

What to look out for

Modernization of catchment stations, as the example of Krasnystaw shows, is crucial for effective wastewater management, especially in rural communities. In the face of existing challenges, such as illegal wastewater discharges and the failure of existing facilities to meet regulatory requirements, further investment and the implementation of modern technologies are needed. Cooperation between local governments, financial institutions and companies specializing in wastewater technologies can bring significant benefits to the entire water and wastewater management system in Poland. The example of Krasnystaw is an example of how advanced solutions can contribute not only to efficiency in wastewater management, but also to the protection of the environment and public health.

Poland's underinvestment and outdated infrastructure of catchment stations pose a major challenge for wastewater management. Only the right investments and use of technological innovations can bring sustainable and effective solutions. The ordering of wastewater management outside agglomerations, in unsanitized areas, will depend on the continuation of activities aimed not only at meeting current standards, but also at ensuring environmental safety, protecting water resources and improving the quality of life of local communities.

SPRING WEATHER PROVERBS - IS IT REALLY APRIL FOOL'S DAY? LET'S CHECK OUT

Posted on 28 March 2024 by Katarzyna Stefaniuk



For centuries, weather proverbs have served as a compass, indicating what to expect from the aura. They carry with them collective wisdom and practical knowledge, firmly rooted in a particular place. These folk maxims, which are a multi-generational legacy, especially during the spring season provided farmers and gardeners with invaluable guidance as to when to begin sowing and planting, when to expect the last frosts, and when the coming rains might harm the crop. Nowadays, when technology and scientific weather forecasts seem to be the primary source of knowledge in this area, the question arises: can these ancient messages still compete with the precision of modern meteorological data? In light of recent research, how does the reliability of traditional predictions compare?

Categories: [Feedback](#), [Issue 7/2024](#), [Onet](#)

Tags: [Easter](#), [proverbs](#), [spring](#), [weather](#)



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Checking this is not an easy task. Proverbs often refer to imprecise dates or weather phenomena that are difficult to quantify. Many of the nearly 2,000. Polish weather proverbs (Dygacz A., 2000; Świrko S., 1990) contain non-meteorological terms such as: *rejoice peasants czechlebin the country*, to which it is impossible to match climatological characteristics. Nevertheless, researchers and enthusiasts have repeatedly attempted to determine the verifiability of proverbs in a specific location (Biniak-Pieróg M., 2011 and <https://zsmedlanc.pl/>) or even across the country (Matczak et al., 2020).

Easter period

The Easter period is particularly rich in proverbs predicting weather and prosperity for the days ahead. Even before Christmas, according to the proverb *When the stork arrives on St. Joseph (March 19), the snow will be gone*, the first storks were on the lookout. In general, the norm for these birds is to arrive in the second half of March or even early April. However, warmer winters have caused them to arrive earlier in recent years - they have been seen as early as March 6-7, and the first individuals even in February. More than once afterwards, birds could be seen standing in the snow-covered meadows. Although these were episodic cases, however, they suggest that the adage does not hold true.

From proverbs, too, we learn that *when the Christmas tree sinks in the water, the egg rolls on the ice*. Although a snowy Christmas is a rarity lately, we tend to associate Easter with warm weather. In the not-too-distant past, the "winter" Resurrection Festival took place in 2013 and 2020. Christmas of 2012 was cold and snowy in the north of Poland and foggy with temperatures around 0 C in the south - so Christmas trees were unlikely to be standing in water.

On the other hand, the end of December 2019. brought weather with weak rain and with temperatures above 0 C, which could suggest Easter frost and ice. It is difficult to find a correlation between a wet Christmas and a frosty Easter, so we can either assume that the proverb holds true or that chance plays a big role here.

From proverbs, we learn that *Good Friday is the sowing of the beginning*. And it is on this day that special attention should be paid to rainfall. When it rains, there is a proverb for both optimists, because *when the rain drops, rejoice peasants*, and *when the rain pours generously down the valleys, that much milk will be, there are some hopes*, and pessimists, because *if it rains at Easter, dryness rules throughout the summer*. It's hard to assess the verifiability of the first two folk truths. One would have to juxtapose fertility and milk production data with Good Friday rainfall. In the third case, looking at data over the past 30 years, *dryness* in summer is increasingly the bane of farmers. However, it is due more to climate change than to the fact that it rained on Good Friday.

On Easter Sunday, proverbs *accurately* predict summer weather and crops. We learn, for example, that *when the weather is on this day, great beauty in the field*, and *when it rains on the Easter bells, dryness rules us all summer*. Rain on Easter Sunday heralded a period of plague and bad weather until Pentecost (this year on May 19) - *if it rained on Easter Sunday, between Easter and Pentecost there would be more fury than weather*.

Spring predictions

After Easter comes the weather predictions for the days commemorating the saints. As researchers have shown (Matczak et al. 2020), the St. Mark (April 25) will not perform well as a synoptician. So when *Mark's sizzle threatens, Bonifacy (May 14) freezes*. Also, *as for Mark the man does not chuckle, in the Gardeners trza sheep skin has little predictive value at the moment*. Interestingly, the low verifiability of these proverbs is rather due to the fact that on St. The brand is unlikely to be sizzling yet, and more often than not we are still chuckling about how warm the cold gardeners are.

Another researched proverb refers to [rainfall](#). Folk wisdom states that *when it's a plague in May, it's a drought in June*. As the researchers showed (Biniak-Pieróg, 2011), the proverb came true by almost 70 percent during the period they studied. years, which should be considered an impressive result. Its predictive power can be attributed to its long forecasting period of up to a month - June is already the start of nice weather and sometimes even droughts.

Last spring frosts

Cold gardeners are known to everyone. The recurring cold weather is a documented phenomenon every year, during the period of remembrance of Saints Pancratius (May 12), Servatius (May 13), Boniface (May 14) and Sophia (May 15). They are associated with an anomaly characteristic of central Europe due to a change in the direction of the inflow of air masses. The first half of May is generally dominated over Poland by a sunny and warm high, followed by a change in atmospheric circulation. Along with the low-lying system, cold air from the polar regions enters our country, bringing nighttime frosts and even fleeting snowfall. Similar terms for cold days in May are also found in other European countries: the German *Eisheiligen* (May 11-15) or the Slovenian *Trije ledeni možje and Poscana Zofka* (May 11-15).

Numerous proverbs have been created based on years of experience. Of these, over the last century, it has proven true that when *Pancracy, Servatius and Boniface ... with the frost they stand, the summer cold they give*. It is also known that *before Pankracy there is no summer, after Boniface the frost eases*. So it's worth holding off on planting flowers and vegetables in the garden or covering plants in the ground with an agro-fiber cloth. It is only *with Saint Sophia that the fields break into ear* and the frost-free period begins.

Do proverbs really fail that much?

It is worth considering why the verifiability of proverbs is rather low. After all, this is the wisdom of the people, passed down from generation to generation. In the old days, people observed nature with more care, and if any of the observations were untrue, the message about them would fade. So several factors may have influenced this. The first that comes to mind is climate change. Proverbs were created decades or even hundreds of years ago. As a result of warming and intensification of weather events, their verifiability will decline over the years.

Another issue is the geographic area in which the proverb originated. Prior to World War II, Poles inhabited areas further east - the current areas of Ukraine, Belarus and Lithuania. Proverbs were formed there, which lost their verifiability after resettlement after the war. The main reason was that the climate was more transitional than continental in its new location. We are currently studying the verifiability of proverbs on data going back at most to the post-war period, so we cannot determine whether its reliability was higher at the time the proverb was written. This thesis is supported by the fact that higher verifiability of proverbs was obtained by analyzing data from stations located in the east: in Minsk, Vilnius or Suwalki (Matczak et al. 2020).

Finally, it is worth looking at the length of time the proverbs predict a phenomenon for. This is generally not a few days, as with the latest weather models, but a period of a month to even a year. Forecasts based on long-term meteorological models can therefore have similarly

low accuracy. For example, the European Center for Medium-Term Forecasting's model, which is one of the most frequently cited seasonal forecast models, was judged to be marginally applicable in most cases in Central Europe. No matter what, one proverb has 100 percent verifiability, because *on Saint Jerome, either the dishtowel is or it is not there, and when Saint Ada comes, either it rains or it does not rain.*

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MYSTERIOUS TRILOBITE KILLER: DIVING INTO THE CAMBRIAN OCEAN AND A CRIME MYSTERY FROM HALF A BILLION YEARS AGO

Posted on 28 March 2024 by Przemysław Trzeźniowski



The largest sea monster from the Cambrian oceans (538.8 ± 0.2 - 485.4 ± 1.9 million years ago) *Anomalocaris canadensis* has so far been considered the apex predator of its ecosystem and the culprit of the armor damage we find on trilobite fossils. However, new analyses of its grasping legs showed that it would not be able to split hard armor. *Anomalocaris canadensis* grew up to a meter, but had to rely more on speed and feed on soft-tissue creatures. The investigation into the killings of Cambrian trilobites has thus begun anew...

Categories: [Feedback](#), [Issue 7/2024](#), [Onet](#)

Tag: [ocean](#)



The largest sea monster from the Cambrian oceans ($538.8 \pm 0.2 - 485.4 \pm 1.9$ million years ago), *Anomalocaris canadensis* has so far been considered an apex predator of its ecosystem and the culprit behind the trilobite armor damage visible in fossils. However, new analyses of its grasping legs showed that it would not have been able to split hard armor. *Anomalocaris canadensis* grew up to a meter and had to rely more on speed and feed on soft-tissue creatures. The investigation into the Cambrian trilobite killings has thus begun in earnest.



pic. Przemysław Trzeźniowski, Adventurephotography

Diving into the ocean depths of the past....

Although the name *Cambrian* comes from the original Welsh Celtic name Cymru (read: Kemri), the richest evidence of life from that period is found in the mountains of today's Western Canada. That's where we will go together to dive deep and backwards in time by some 515 million years. Are you able to imagine diving in the Cambrian oceans? Without the air cylinder taken from our time, you would have lost consciousness even before entering the water, because the oxygen content in the atmosphere at the time was only 13 percent. Carbon dioxide levels, on the other hand, were many times higher than today. Hypoxia and hypercapnia even today take a deadly toll on closed circuit divers.

It was warm - carbon dioxide probably caused the greenhouse effect. Most of the Cambrian landmasses are the bare rocks of Laurentia, Angara, Gondwana and the Baltics. Small patches of rachitic greenery in wetter areas are mostly simple mosses and photosynthesizing bacteria. The sun does not shine very brightly. There are no animals or trees. No ice caps. The Moon, being much closer to Earth than it is now, causes tides whose amplitude reaches as much as 15 m! Almost all of Poland was under water at the time, and our souvenirs from that time are the Vojtosh limestones in the Sudetes and the quartz sandstones in the Swietokrzyskie Mountains, where *Anomalocaris* was found.

So let's go back to the sea, because life, after all, was born in water. We can dive into the oceans of Iapetus, Panthalassa or Prototetida. Let it be the Burgess Shale on the shelf off the coast of Laurentia. This is the place to which Stephen Jay Gould, co-author of the concept of punctualism and tireless popularizer of evolutionary theory (he believed that contingency plans - contingency, taking the lead in drastic changes in the environment, which Richard Dawkins strongly opposed), devoted an entire book. But be warned - we are diving to a hundred meters, and this requires much more than one cylinder or rebreather....



pic. A contemporary vision of diving in the Cambrian ocean (CC BY 4.0 license)

Burgess Shale is one of the richest paleontological sites from the Cambrian period. It lies on the border of the Canadian states of Alberta and British Columbia. It was discovered in 1909. Charles Doolittle Walcott of the Smithsonian Institution, who returned there until his death in 1927, collecting more than 65,000 fossils during that time. Since 1967, they were intensively studied by Cambridge paleontologists Harry Blackmore Whittington, Simon Conway Morris and Derek Ernest Gilmore Briggs. Burgess Shale has been a UNESCO World Heritage Site since 1980. There we find mainly arthropods, but also, and this brings the greatest value to our knowledge of the planet's past, soft-bodied lilliforms, centipedes, worms and unicellular organisms that, having no hard parts, are very poorly preserved in the fossil record elsewhere. In the Burgess Shale, they were unexpectedly covered with silt and deprived of oxygen, resulting in immediate death, and today allows us to study even the remains of viscera or muscles. Many of these wonders can be viewed at the [Yoho National Park](#) or in [museum collections](#).

How unlike today was Cambrian life? Stephen Jay Gould believed that life at that time was much more diverse than it has ever been since, although Simon Conway Morris, favored by him, took a different view. We cross the edge of a shallow plateau and drop down along a vertical cliff. In the water column float the flashing lights of the ribworms and jellyfish, which drag their menacing, armored arms behind them. The wall and later the bottom are overgrown with sponges, existing since the Ediacaran (635 - 538.8 ± 0.2 million years ago), when multicellular life first appeared on Earth.

Today, the cluster of pink-bellied sponges (Demospongiae) includes most of the representatives in the Earth's oceans, and the most spectacular are the magnificent barrel sponge (*Xestospongia testudinaria*), quite common in the dives of the archipelagos of Indonesia or the Philippines, or the golden-green *Aplysina fistularis*, which lives in the Caribbean. An attentive diver will spot brachiopods similar to clams, and still present today as a relic group. You may encounter them contemporarily while snorkeling in the Philippines - look for the nicely colored shells of *Frenulina sanguinolenta*. There are also many other brachiopods in different parts of the Earth. Further on, the echinoderms (Edrioasteroidea, Eocrinoidea and Helicoplacoidea), although they had radial symmetry, were rather unlike today's serpentines, starfish and sea urchins. Further *blooming* anemones and perhaps rare lilacs? From the bottom, small non-mogonites are poking out. Their descendants are also encountered on diving sites today. Then it only gets more exotic....

If only the grotesque hallucigens, marching along the bottom and eating spikes. They are unlike anything living on Earth today. Perhaps that's why their reconstruction took more than a century? The first hallucigeni fossils were still discovered by Walcott, who, however, mistook them for *canadia*. The new species in the fossil was spotted by Conway Morris, but he reconstructed it spiny downward and without legs, which were simply less well preserved. It was only a few years ago that it was possible to determine where these amazing creatures had a back and a front body. Sneaking through the water in the bottom zone, several-centimeter-long *Canadia spinosa* try to deter attackers with their iridescent bristles. The bottom-dwelling vivax have chosen scaly armor - caracenas enriched with spikes. Indeed, the main invention of the time was the exoskeleton - inevitably the soft-tissue creatures' response to the threat. With the emergence of active predators, an arms race between hunters and prey in Earth's oceans must have begun. A race that, after all, continues to this day. Potential Cambrian victims could choose between hiding in the silt or producing armor - the so-called "armor". Verdun Syndrome. The Cambrian oceans are thus ruled by arthropods: the somewhat horsetail-like *Cambroraster*, the armored *Saperion* or the ubiquitous five-eyed *Opabinia*.

We have plunged into the Cambrian explosion of life that took place 538.8 - 515 million years ago, although some believe it lasted 12 million years less. Almost all the types of animals known today evolved then, which Charles Darwin considered quite a challenge to evolution. The question remains, however, was this really an explosion of life, or just the fossil explosion we observe in the fossil record today? The soft-tissue life of the ediacar is much less preserved, so we may not find enough traces of it. Here's how Peter D. Ward - a paleontologist, astrobiologist and diver - imagined such a dive:

"Swimming lazily, a few meters above the vibrant bottom, we see a meter-long Anomalocaris. The fallout. A powerful paddle-like tail and numerous legs cushion the shock. Cutting with large pincers, he begins foraging, catching smaller, diverging arthropods. Suddenly he notices a larger invertebrate, heavily armored. The lobopod's phosphate plates offer some protection, but soon it too succumbs, and Anomalocaris positions itself over the body, beginning to feed with a peculiar mouth apparatus." (author's own translation).

The vision of one of my idols has not stood the test of time. Also wrong earlier was Simon Conway Morris, who described Cambrian diving in what is now western Canada in his book on the Burgess Shale. Indeed, he included an engraving of an anomalocaris hunting a defenseless trilobite.



pic. Model of a trilobite of the order Redlichia, considered the oldest of all orders of trilobites ©Museums Victoria, reg. no. P 315739, excerpted by Tom Davies, photo: Benjamin Healley (CC BY 4.0 license)

Trilobites

Trilobites are some of the most interesting and imagination-provoking Paleozoic fossils. Charles Darwin's generation considered them to be the oldest animals ever to have lived on Earth, and indeed they were the first Cambrian fossils found. They had heavily scaled armor, which can be clearly seen in the fossil record - these are the so-called "scaled armor". guide fossils. Trilobites were a cluster of highly differentiated arthropods (Arthropoda). More than 22,000 are known to science. species! They appeared at the end of the Cambrian explosion (about 521 million years ago) and survived two great extinctions: the Ordovician ~445 million years ago, when 85 percent became extinct. species known to science, and the Devonian ~372-359 million years ago, when half of the known genera became extinct, including 70 percent. Trilobite genera - all orders except Proetida! They were defeated only by the third and largest, at the Permian-Triassic boundary 251.9 million years ago - the Mother of All Extinctions. Thus, they lived on Earth some 270 million years!

There are indications that even in the early Cambrian, trilobites tried to go out on land. As Richard Fortey writes in *Trilobite: Eyewitness to Evolution*, it is hard to deny that the world is there to be seen. Trilobites exceptionally took this idea to heart - their eyes were made up of up to a dozen thousand calcite lenses. They helped them fish or look out for predators. Did they have to beware of *Anomalacaris*?

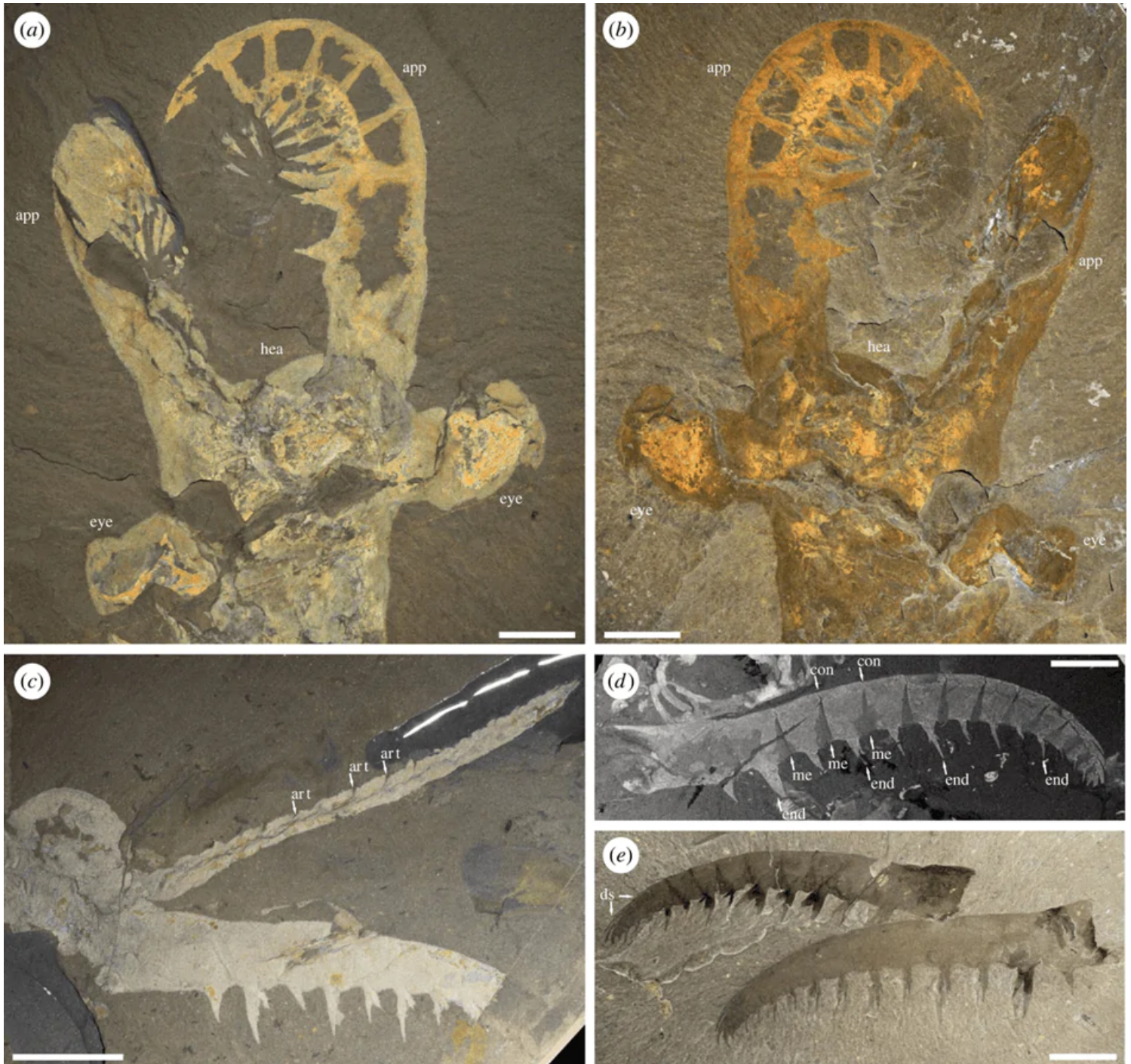
Redfish

Anomalocaris is one of the oldest arthropods (Arthropoda) known to science - a type that appeared on Earth after the Cambrian explosion. It

belonged to the order of radiodonts, which did not survive as long as trilobites. Living in the post-Cambrian Ordovician *Aegirocassis benmoulai* grew up to 2 m! However, we don't find deficient anomalocarids later than the early Devonian, making them about 120 million years old in total. Radiodonts were distinguished by a conically constructed mouth with tooth plates arranged around it. Their first fossils were discovered by Richard G. McConnell in 1886. Another Henri Ami in 1891. There were only fragments – grasping legs resembling shrimp, and the puzzling organism was classified as such. Fossils of other parts of *Anomalocaris*, meanwhile, lived their own lives as... strange jellyfish. After nearly a century, an attempt was made to unravel the paleo puzzle. In 1979, Derek Briggs realized that these were not fossils of giant shrimp, but rather legs of large organisms. The next steps were described by Simon Conway Morris himself:

"The road to understanding what Anomalocaris was turned out to be a kaleidoscope of confusion. What Derek Briggs took to be the legs of a giant centipede-like animal turned out to be a prominent pair of grasping arms located at the front. What Charles Walcott recognized the jellyfish in turned out to be an integral part of the animal, forming an unusual mouth and jaws, probably capable of grasping and piercing struggling prey. What I interpreted as a complex fossil, formed by the accidental combination of sponge and Peytoia, turned out to be a poorly preserved specimen of Anomalocaris." (author's own translation).

In 1981, Harry Blackmore Whittington identified a fossil of a nearly complete *Anomalocaris*, together with Derek Briggs, putting it together finically from elements of four different previously recognized organisms. Stephen Jay Gould called their joint book on anomalocaris a fitting culmination of the most important and outstanding series of monographs in 20th century paleontology. If it weren't for their work, we probably wouldn't have had any idea until today that we were dealing with a predator, an apex predator at that. Its carapace did not have enough mineral salts to preserve itself in the fossil record as well as was the case with trilobites. We could try to translate the Latin name *Anomalocaris canadensis* as Canadian shrimp. However, associating a monster of more than a meter in length with a shrimp may mislead a jury about its involvement in the mass murder of trilobites.



pic. Fossils of the grasping arms of *Anomalocaris*, identified for many years as independent creatures (Russell D. C. Bicknell et al. (2023) Raptorial appendages of the Cambrian apex predator *Anomalocaris canadensis* are built for soft prey and speed. "The Royal Society Publishing.

DOI:10.1098/rspb.2023.0638 - CC-BY 4.0 license)

Non-mitigating circumstances

The redneck was at fault for its potential - its size and the fact that it was present at the scene. When a Christmas tree topples over, usually the cat flops, if not ours, then the neighbor's. It's nothing that, years later, it stopped holding a leg in the stand... In 2006, computer simulation of three-dimensional fluid mechanics showed that the *Anomalocaris* It floated brilliantly with the help of side lobe waving. Similar mechanics are used today by manta rays and perfectly maneuverable cuttlefish and squid. The gradual development of lobes can also be observed in the course of the evolution of anomalacaris.

In 2011. *Anomalocaris* eye fossils were analyzed. They were as small as 2–3 cm in diameter and each consisted of 16,700. ommatidia (lens + receptors) – independent, hexagonal lenses, like those of today's insects. However, the *Anomalocaris* ommatidia were composed of calcite. That is why they have survived for more than half a billion years. The long axes of a pair of *Anomalocaris* eyes diverged at a 45° angle, providing a wide field of view. Even conservative estimates credit it with greater visual acuity than most living arthropods. In 2018. A team of engineers with a paleobiologist took on the mechanics of *Anomalocaris* again. It turned out that the peculiarly built tail enabled it to make sudden turns. Maneuverability is an important trait when hunting fast-moving prey. Guilty?

Verdict

July 2023. A team of paleobiologists led by Russell D. C. Bicknell took a close look at the oldest known parts of *Anomalocaris* – its grasping legs, thought in the past to be bizarre shrimp, and its mouth apparatus, previously mistaken for a jellyfish. The giant whip scorpion (*Mastigoproctus giganteus*) and the whip spider (*Heterophrynus elaphus*) were used as modern arthropods for calibration. However, kinematic and biomechanical analyses showed that this iconic Cambrian species was unable to crush the armored prey. The shrimp didn't have anything to cut or crush, he could only grab fast dodging prey devoid of good armor! Investigators' attention thus turned to other radiodonts, such as *Ramskoeldia* or *Amplectobelua*, and perhaps even *Peytoia*. The investigation reveals the existence of ecological niches among radiodonts, confirming the complexity of Cambrian food webs. This diversity tells us that there was an evolutionary race between the hunters' weaponry and the armor and other defensive strategies of the victims at the time.

Research based on theoretical models is not the same as evidence from the field. As with the battle for supremacy of the heaviest of the cetaceans, will there be an appeal? *Anomalocaris* are the largest creatures known to science so far to have lived on earth in the Cambrian, but we judge this by fossils dating back half a billion years, and these are stop-frames plucked at random from a movie. It is possible to assemble a story from them, by no means necessarily reflecting its content. Perhaps somewhere in the darkness of Earth's history lurks a larger, more dangerous, unknown predator – a serial killer of Cambrian trilobites. Perhaps someone will find new evidence incriminating *Anomalocaris*. We will never fully realize what we do not yet know.

Since the trilobites became extinct

The continent has risen, the mountains have grown,

In the depths new creatures tangle,

And man sits on Neptune's ancient throne.

The human race will become extinct, but the eyes of trilobites will remain,

Enchanted in stone for eternity,

They seem to look around with wild surprise

At changes greater than they have known before.

Timothy Abbott Conrad, 1840

In the article, I used, among other things. From the works:

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DOES THE HARE LAY EGGS? EASTER CUSTOMS FROM DIFFERENT PARTS OF THE WORLD

Posted on 28 March 2024 by Agata Pavlinec



Easter eggs, święconka and śmigus-dyngus are the essence of the Polish Easter, unfortunately increasingly overshadowed by commercial sweets and general munching. However, there are many more ideas in the world for celebrating Christ's resurrection. Some are fun, some are gory, and some require an inhumanly early wake-up call. Learn about the most interesting Easter customs!

Categories: [From the world](#), [Issue 7/2024](#), [Onet](#)

Tags: [Easter](#), [easter customs](#), [funnel](#)



Easter eggs, *święconka* and *śmigus-dyngus* are the essence of the Polish Easter, unfortunately increasingly overshadowed by commercial sweets and general munching. However, there are many more ideas in the world for celebrating Christ's resurrection. Some are fun, some are gory, and some require an inhumanly early wake-up call. Learn about the most interesting [Easter customs!](#)

Water not just from a bucket

Lany Monday sometimes rises to the level of hooliganism. However, water is closely related to the idea of spring holidays and does not have to mean mindless attacks on passersby. The old French tradition of *l'eau de Pâques*, or Easter water, is still practiced today in some corners of the United States and Canada. To make amends to her, one must rise well before dawn on Easter Sunday and go in search of a stream. Drawn before sunrise, the water is supposed to cure diseases, improve eyesight, ward off evil forces and prevent mishaps.

The same Easter custom appears in some regions of Germany in the form of *Osterwasser*, except that unmarried young ladies are responsible for carrying bottles of magical water and, in addition, are not allowed to squeak a word during their journey. In historic Pomerania, entire herds of cattle were even herded into streams before dawn on Easter to keep them healthy.

In Corfu, on Easter Saturday, however, it is practiced to pour water, but in a very specific way – together with the vessel! As a result, large clay jugs are thrown from balconies into the streets, where they break into pieces, splashing water all around. The show attracts such crowds of tourists that it is unbelievable that no one has reportedly been hurt yet. This custom is supposed to bring good luck and ward off evil forces, although it's not entirely clear what the law enforcement agencies think of it.

Eggs in play

In addition to water, the symbol of Easter is, of course, eggs. In addition to painting, they are suitable for a variety of arcade entertainment. In England and Scotland, they are rolled down grassy slopes as a commemoration of the stone pushed away from Jesus' tomb. A similar ritual takes place every year on the White House lawn – the first person to reach the finish line with a whole egg wins.

Tapping each other with eggs until the opponent's shell is broken is also a popular tradition, practiced among others. In Serbia, Romania, Bulgaria and the Netherlands. In addition, in many countries eggs are thrown – at a distance or in such a way that the partner grabs them without harm. The latter custom has its roots in medieval England, where the pastor would personally throw a boiled egg into a crowd of believers, who would then flip it from hand to hand.

And since Easter customs eagerly draw on pagan traditions, *Osterhase*, or egg-laying hare, also appears among them. Well, Eostre, the former Germanic goddess of fertility, was associated with ear rodents that reproduce at an admirable rate. German Protestants, who in the early 18th century came to America, so they started the custom of preparing special hare burrows in which colored eggs were to appear!

Flower and rod

For obvious reasons, Easter customs refer to the symbolism of spring and nature. The white lily is a flower mentioned in the Bible and associated with purity, rebirth and new beginnings. The Easter lily today is already a commercial phenomenon – professional growers plant selected bulbs in greenhouses as early as autumn to await bloom exactly on Easter, taking into account the moving date of the holiday.

A lot of precision, but this time manual, is required to prepare willow vattles, which Czech and Slovak boys and men cut en masse at the end of

the fast. From bundles of eight or sixteen shoots they weave elaborate rods called *pomlasky*, with which they visit ladies of all ages on Monday mornings. Tradition dictates that the woman should put her rear end up and bravely endure the beating combined with the recitation of the rhyme. This ritual is supposed to rejuvenate and beautify, so out of gratitude the hostess must bestow Easter eggs or sweets on the caroler. As you can easily guess, these days the practice of beating the fair sex and expecting a reward for it is very controversial.

Burning Easter customs

The purifying power of spring rebirth in many cultures is guaranteed by fire. Huge bonfires to chase away the winter darkness are being prepared, among other things. In Cyprus, the Balkans, Germany and Scandinavia. It happens that a Judas puppet lands on them. In Florence, just outside the cathedral itself, a cart full of fireworks is set on fire on Easter Sunday, a spectacle known as the

[*Scoppio del Carro*](#)

, is supposed to bring prosperity to the city's residents with its bang and brilliance.

Easter customs also have a depressingly practical dimension. In New Zealand, the combination of the symbolism of the hare and egg hunting has led to the development of the tradition... rabbit chasing. The long-eared rodents are being shot by the thousands and, while it sounds depressing, it makes deeper ecological sense. Indeed, the multiplying rodents are an invasive species in the Antipodes that seriously threatens the biological balance and crops.

It is for this reason that in Australia the symbol of Easter is not considered a hare or a rabbit, but a big-eared rabbit. This friendly long-eared marsupial is unfortunately seen less and less frequently as a result of human activities and artificially introduced species that subjugate ecosystems. So, as part of spreading environmental awareness and support for the endangered marsupial, Australian children are getting chocolate big-eared marsupials for Easter.

Exotic Easter

Since Christians today live on all continents, Easter traditions have had to adapt to local conditions, even the most exotic ones. And so in Bermuda the main role in the celebration is played by... kites. Handmade and elaborately decorated, they are let loose en masse into the sky on Good Friday, emitting a distinctive clatter. If anyone was wondering what the connection between this tradition and the Resurrection holiday is, the explanation is quite simple. Reportedly, one teacher from Bermuda once explained the idea of Ascension to his students, using a kite with the likeness of Jesus to help them!

An exceptional level of artistic mastery is achieved by Easter customs in Guatemala's former capital, the historic city of Antigua. Throughout Maundy Thursday, streets in the historic center are covered with intricate mosaics made of flowers, dyed sawdust, sand and even fruits and vegetables. These colorful carpets, called *alfombras*, are symbolic not only of Christian themes, but also of Guatemalan history and even ancient Mayan culture. The hard work involved in their preparation is considered an Easter sacrifice - as the carpets disappear within an hour when the traditional Good Friday procession passes over them.

The popular Easter custom of decorating gardens and branches with chocolate eggs is impossible in many countries due to high temperatures. So in Papua New Guinea, Christmas trees in front of churches are hung with... tobacco and cigarettes - products valued by local communities more than chocolate. After mass, worshippers with a clear conscience can go... treat themselves to a smoke.

EASTER DUCK AS A SYMBOL OF THE SPRING HOLIDAY

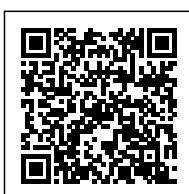
Posted on 28 March 2024 by Iwona Szyprowska-Głodzik



Spring is a time of rebirth, nature awakens to life, and Easter traditions take on color. One of the less obvious but fascinating symbols of Easter is the duck. Although many of us associate this holiday mainly with the lamb or the hare, it also has its place. The origins of this symbol are surprisingly diverse and combine elements of mythology, folk beliefs and traditions from different corners of the world. By analyzing scholarly publications and legends, it is possible to discover how the duck came to be in the signs of the celebration of spring rebirth.

Categories: [From the world](#), [In this issue](#), [Issue 7/2024](#), [Onet](#)

Tags: [duck](#), [tangerine](#), [traditions](#)



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The origins of duck symbolism

The history of the duck as a symbol of Easter dates back to ancient beliefs and mythologies that weave through diverse cultures. Considered animals closely associated with the element of water, ducks have long symbolized fertility, rebirth and the cycle of life, reflecting not only the physical but also the spiritual aspects of renewal.

In ancient Egypt, birds, including ducks, were held in deep reverence, viewed as integral to the natural cycle of life and death. The duck, often seen at the side of the water god [Nun](#), was a symbol of creation and infinity, playing a key role in Egyptian myths as a carrier of life-giving water and fertility. This motif is also found in Greek and Roman mythology, where these birds were associated with Aphrodite and Venus, the patronesses of love, beauty and fertility. Their presence in mythological stories emphasized the connection between water as a source of life and the eternal cycle of nature.

Additionally, in Norse mythology, the duck acted as a symbolic guide between worlds, being a being capable of traveling between earth and other dimensions. In many pagan beliefs, the presence of the duck during rituals and festivals associated with the spring equinox emphasized its role as a messenger of new beginnings and rebirth. Over time, as these ancient beliefs seeped into early Christian traditions, the duck, like other symbols associated with rebirth, found its place in traditional Easter celebrations, and although it is not their central symbol, its presence in Easter decorations and traditions echoes ancient beliefs.

Duck in folk beliefs and legends

In European legends and folk beliefs, the duck holds a special place, being a symbol of happiness, prosperity, as well as a harbinger of the change of seasons and the rebirth of nature. In Slavic traditions, including Poland, the duck is identified with the arrival of spring and the renewal of life. Legends also tell of ducks bringing rain, which is crucial for plant growth and nature's renewal after winter dormancy. In Slavic cultures, spring rain was considered a blessing, essential for fertility and ensuring prosperity in the coming months. As water birds, ducks were naturally associated with water and rain, so they were credited with the power to summon life-giving precipitation.

In Germany, the duck not only symbolizes the coming spring, but is also seen as a messenger of good tidings, bringing news of warmer days and abundance. Similarly, in Scandinavian countries - ducks are harbingers of the long-awaited change of seasons, bringing with them light and warmth after the long, dark months of winter. In some European myths and legends, ducks are considered guardians of secrets and knowledge hidden in the depths of the waters. Their ability to dip in and out symbolizes the transition between worlds, and thus the ability to bring knowledge from the depths of the subconscious to the surface of conscious life. In this way, they are a bridge connecting the material world with deeper, spiritual truths.

Easter duck in modern culture

Modernity has not forgotten the duck as a symbol of Easter and renewal. While it may not be as widespread as the hare, lamb or yellow chickadee it still appears in Easter decorations, artistic motifs and as part of folklore. Many communities around the world still cherish the

traditions associated with the duck, emphasizing its importance as a symbol of fertility, new beginnings and connection to nature.

Ducks are a popular motif on Easter cards, decorations and gifts. Figurines of these birds, often made of porcelain, wood or chocolate, are part of holiday arrangements. Contemporary handicrafts and folk art often draw on the rich symbolism of the duck to create unique items that are both beautiful and full of deeper meaning. The tradition of giving animal figurines at Easter is a way of expressing wishes for health, happiness and prosperity. Ducks as Easter gifts can also symbolize a wish for abundance and prosperity in the coming year.

Live ducks as Easter gifts

In the United States or Canada, some communities maintain the custom of gifting live ducks at Easter. Often the birds are specially dyed in different colors to emphasize the joyful, festive nature of the gifts. However, this habit carries serious consequences for the birds themselves. After the holidays, many of them are abandoned and are unable to survive without proper care. Lack of preparation for life in the wild causes many of them to perish.

Mandarin is also a duck. A colorful representative of holiday traditions

One of the most colorful and delightful ducks that often appears in Easter decorations is the mandarin. This species, with its bright plumage and extraordinary beauty, has become a symbol of beauty and renewal of life. [The mandarin](#), an ornamental duck from the Far East, has found its place in Europe. In Poland, it is considered a secondary natural species, arousing favorable interest among ornithologists and less controversial than other alien species, so it is not seen as invasive.

Warsaw's mandarin population, which has been growing since the early 2000s, is well monitored and shows no signs of invasiveness, despite concerns about potential threats to native fauna. Popular in city parks and also observed in wild habitats, the mandarin is popular with walkers, which may contribute to its continued acceptance and permanent presence in the culture.

Easter duck symbolism eternally alive

The duck as a symbol of Easter and spring rebirth, despite changing times and traditions, remains alive in the minds of many people. Its presence in Easter celebrations is a testament to the persistence of beliefs and practices that have survived the centuries, transforming and adapting to new realities. In this way, the duck connects the past with the present, reminding us of the cyclical nature of life and the unchanging beauty of nature, which awakens to life every year, bringing with it the promise of renewal and hope.

AQUATIC PUBLICATION REVIEW (15)

Posted on 28 March 2024 by Agnieszka Kolada



It would seem that after almost 100 years since the formulation of the concept of water trophy and research on the process of eutrophication, we already know everything about this phenomenon. Nothing could be further from the truth! An article by Polish scientists on the effect of heat waves on the toxicity of cyanobacterial blooms in European lakes provides new information on the subject. The oceans, too, still hold plenty of secrets, for example, in the circulation of elements (such as carbon in the context of fishing pressure) or compounds (such as isoprene, whose balance turns out to be greatly underestimated). We also present papers treating the problem of not taking into account the anthropogenic legacy in water resources management and the benefits to science of access to Big Data.

Categories: [Issue 7/2024](#), [Science](#)

Tags: [Eutrophication](#), [fish](#), [literature review](#), [review](#)



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1. Harmful blooms across a longitudinal gradient in central Europe during heatwave: Cyanobacteria biomass, cyanotoxins, and nutrients

Wilk-Wozniak E., Krztoń W., Budziak M. et al. 2024. Harmful blooms across a longitudinal gradient in central Europe during heatwave: Cyanobacteria biomass, cyanotoxins, and nutrients. *Ecological Indicators*, 160, 111929,

Water eutrophication is a fairly well-recognized process, but it turns out that it still hides many secrets that effectively limit our ability to manage the phenomenon. Especially in this era of climate change, which means our knowledge needs constant updating. A team of dozens of scientists from Poland, Croatia and Lithuania asked whether the heat wave that hit Europe in 2015. affected blue-green algae communities in lakes and whether blooms of these organisms varied between climatic regions in Central Europe. They compared data from 92 lakes located in three regions along a latitudinal gradient (northern cool, northern temperate and northern warm). They analyzed cyanobacterial biomass, dominant species, cyanotoxin concentrations, as well as parameters of climate warming (water temperature) and eutrophication (phosphorus and nitrogen concentrations).

It turned out that the highest average biomass of cyanobacteria (mainly *Aphanizomenon gracile*, *Dolichospermum* spp., *Microcystis* spp. and *Planktothrix agardhii*) and the highest concentrations of cyanotoxins were found in northern cool lakes, where the average epilimnion temperature was lowest, while cyanobacteria were lowest in warm lakes with the highest temperatures. Nutrient concentration correlated significantly with cyanobacterial biomass, cyanotoxin concentration and biomass of some species (mainly *P. agardhii*), regardless of latitude.

These results indicate that the effect of climate change on lakes in different parts of Europe varies. Although biogenes promoted cyanobacteria blooms in all lakes, regardless of their location, heat waves were more conducive to the growth of toxic blooms in cool northern lakes than in those at lower latitudes. As the authors point out, the cyanobacteria species that dominate the blooms can be considered ecological indicators of climate change, especially in the northeastern part of the continent.

2. good fisheries management is good carbon management

Andersen N.F., Cavan E.L., Cheung W.W.L. et al. 2024. Good fisheries management is good carbon management. *npj Ocean Sustain* 3, 17 (2024).

What does fish have to do with carbon sequestration in the ocean? It turns out that a lot more than for the bike. Marine fish are an important link in the circulation and storage of carbon in the ocean through a series of biological and physical processes, such as foraging, exhaling dissolved d_{CO_2} , releasing dissolved organic carbon and inorganic carbon particles (carbonates), and excreting feces. Globally, it is estimated that fish is responsible for an average of 16 percent. organic carbon exports from the euphotic zone, and their feces may be responsible for more than 20 percent. carbon respiration and sequestration in the deep ocean.

These processes are unfortunately being disrupted by overfishing of marine resources. The effects of this pressure include, but are not limited

to, the disappearance of fish stocks, the destruction of seabed habitat, the decline or collapse of fisheries, resulting in adverse socioeconomic effects and the need to implement subsidies. Overfishing and associated habitat degradation make the ocean more vulnerable to climate change and less able to buffer its effects.

In a review article published in *npj Ocean Sustainability*, the researchers examine how overfishing changes the role of marine vertebrates in the ocean's carbon cycle, causing damage to the ocean's carbon-rich seafloor and contributing to increased greenhouse gas emissions. They also discuss how implementing good fisheries management can reduce or offset the effects of overfishing. Managing overfishing is one of the most effective strategies for conserving ocean carbon stocks and can make an important contribution to climate change mitigation and adaptation.

3. dynamic order and many-body correlations in zebrafish show that three is a crowd

Zampetaki A., Yang Y., Löwen H. et al. 2024. Dynamic order and many-body correlations in zebrafish show that three is a crowd. *Nat Commun* 15, 2591.

There is a reason why it is said that three is already a crowd. It turns out that this saying works for the striped danio. This popular aquarium fish often serves as a model organism for vertebrate studies due to its easy reproduction and rapid life cycle. It also makes a grateful subject for laboratory studies of biological systems and herd behavior. As it turns out, it's not just for biologists. A team of physicists treated a group of striped danios as a system of interacting agents and applied methods from the statistical mechanics of many-body systems to investigate spatial correlations between objects as a function of group size. The researchers studied groups of 2, 3, 4 or 50 fish, reconstructing the trajectories of their migrations in 3D using a suitable tracking system.

The smallest group, which exhibited stock-typical behavior, included only three individuals, and these states were stable and similar to those observed in larger groups of fish. While a gradual increase in swarming status over other patterns was found in an ensemble of 50 individuals, this was the only observed effect of group size. Interestingly, when small groups separated from a larger one were analyzed, very little difference in behavior was found compared to isolated groups.

This means that fish mainly interact with their closest neighbors, viewing the rest of the group as a variable background. Therefore, the fish's herding behavior is already evident in groups of as few as three individuals. The work is part of a trend of research into the complex interactions between individuals of fish in schools, through which individuals integrate information about the behavior of their neighbors in the process of coordinating movement and collective decision-making. Interestingly, in understanding the mechanisms that regulate the dynamics of fish schools, scientists see an opportunity to solve the problem of traffic collisions.

4. atmospheric isoprene measurements reveal larger-than-expected Southern Ocean emissions

Ferracci V., Weber J., Bolas C.G. et al. 2024. Atmospheric isoprene measurements reveal larger-than-expected Southern Ocean emissions. *Nat Commun* 15, 2571.

Isoprene is the most common hydrocarbon of plant origin and produced by mammals. It accounts for up to 70 percent. the amount of hydrocarbons in human exhaled air, although its concentration varies widely. The compound is highly reactive and can affect atmospheric composition and climate through its effects on greenhouse gases, ozone and methane, and the formation of secondary organic aerosols. Due to the lack of long-term measurement results, our knowledge of isoprene circulation in the ocean is very limited.

It is believed to be produced mainly by phytoplankton in response to environmental stimuli (e.g. temperature, sunlight). Dissolved in the

surface layer of the ocean, it can be exchanged with the atmosphere, consumed in water processes or carried into the depths. The magnitude of global emissions of isoprene into the sea is highly uncertain due to an incomplete understanding of its circulation. Recent studies suggest, for example, that chemical and biological consumption of isoprene in the surface layer of the ocean may be as effective as its emission into the atmosphere.

Analysis of measurements of atmospheric isoprene concentrations over the Southern Ocean made by the Antarctic Circumnavigation Expedition (ACE) during the four months of the Antarctic summer of 2016–2017 showed very high concentrations (more than 500 ppt) in the area of the marginal ice zone in the Ross and Amundsen seas. The results indicate that the area is a significant source of isoprene at high latitudes.

Using the United Kingdom Earth System Model (UKESM1), the researchers proved that previous estimates of isoprene fluxes between sea and air may be underestimated by a factor of more than 20. The observed diurnal cycles suggest that photochemical production of isoprene at the sea-air interface may contribute significantly to its total budget. The publication points to significant discrepancies in estimates of the amount of exchange of this compound between the sea and the atmosphere, which represents a significant gap in our understanding of its circulation in remote marine environments.

5. [Identifying anthropogenic legacy in freshwater ecosystems](#)

Antonelli M., Laube P., Doering M. et al. 2024. Identifying anthropogenic legacy in freshwater ecosystems. *WIREs Water*, e1729.

The state of today's aquatic ecosystems is the result of a long history of disturbance, which includes both natural phenomena, such as floods, landslides and volcanic eruptions, and anthropogenic impacts, such as pollution and deforestation of catchment areas. The lasting effects of disturbance to the structure and function of ecosystems are referred to as legacies. In environmental science, the term *heritage* or *heritage effect* has appeared since the late 20th century. Although its effects can also be caused by natural phenomena, the term legacy is commonly used to refer to permanent changes in the ecosystem caused by past human activity.

The issue of heritage is often overlooked in environmental research and management, which can lead to biased and erroneous interpretations of current and future ecosystem dynamics. The problem was noted by researchers from several research centers in Switzerland, who conducted a comprehensive review of the issue published in *WIREs Water*.

Synthesizing previous advances in the study of anthropogenic heritage, they present a conceptual framework for the systematic identification of this phenomenon, discuss historical and contemporary sources of information to help identify it (e.g. historical maps and other cartographic materials, Lidar observations, *in situ* studies of deposited contaminants) and provide practical examples of identifying anthropogenic heritage in actual freshwater ecosystems, as well as the consequences of not taking it into account for effective environmental management. As a result of the collaboration of scientists from different fields, this review presents a comprehensive approach to anthropogenic heritage. Its goal is to promote its conscious and systematic consideration in freshwater research and management.

6 [Big data in Earth science: Emerging practice and promise](#)

Vance T.C., Huang T., Butler K.A.. 2024. Big data in Earth science: Emerging practice and promise. *Science* 383, eadh9607.

The increasing number and resolution of ground and satellite sensors, combined with high-resolution models, has resulted in an influx of Earth science data on an unprecedented scale. There are a lot of them, and there will be more and more. What potential lies in Big Data collections? Researchers at the U.S. Integrated Ocean Observing System (IOOS) have answered this question with an extensive survey of the

impact of Big Data advances on the development of our knowledge. The authors analyze how large datasets address today's science challenges - reproducibility and repeatability of results - and present analysis paths from raw data to results. The key to progress is the advent of numerical models that allow modeling of Earth systems in the past, present and future.

In the review, the authors focus primarily on recent applications of big data in three disciplines - hydrology, oceanography and atmospheric sciences. Surface water poses a unique challenge to science due to the dynamics of the resource and its ephemeral nature. Surface water reservoirs can range from a few meters to many kilometers, which can vary on time scales from minutes to decades. Large datasets have enabled more accurate and complete delineation and inventory of surface water, a more detailed understanding of its variability, and the development of models that more accurately quantify the Earth's water balance. The work provides a comprehensive and exhaustive overview of Big Data sources, techniques for acquiring and processing them, and how they can be used to better identify the Earth's water resources.

A NEW MONOGRAPH OF THE LYCOPODIOPHYTES (FORKHEADS) OF POLAND. FORK CLASS UNDER THE MAGNIFYING GLASS OF SCIENTISTS

Posted on 28 March 2024, by Adam Kapler



It will soon be 80 years since all forbs found in Poland were placed under strict species protection. Meanwhile, Easter still remains a dangerous time for these evergreens. Also associated with these holidays are the so-called "Christmas". Resurrection (resurrection) plants, which include some tropical forbs. The monograph Lycopodiophytes of Poland has just been published. Lycopodiales, Selaginellales, Isoëtales edited by prof. Elizabeth Zenkteler, Ph. Edyta M. Gola and Dr. Ewa Szczeńniak. This is a good opportunity to take a look at this sparse in the Polish flora and relatively poorly understood group of plants.

Categories: [Science](#), [Issue 7/2024](#), [Onet](#)

Tags: [climate change](#), [Easter](#), [pitchforks](#)



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Living fossils. Pitchforks and modern climate change

Both pitchforks and forkbeards are included in the so-called "forkbeards". *Lycopodiophytes*, or *Lycopodiopsida* forkheads. It is the oldest of the evolutionary lineages of vascular plants, formerly known as vascular plants, that have survived to this day. They are living fossils, and studies of their modern specimens provide a better understanding of the evolution of land plants, including the colonization of dry areas, the emergence of the first forests and the history of coal seams.

Lycopodiophytes were the dominant group of terrestrial plants in the Carboniferous. Burning their fossilized remains has been the flywheel of the global economy, also contributing to [climate change](#), unfortunately. Burning hard coal is becoming not only an anachronism, but also wasteful. The production of steel and cast iron requires coal, and without them, there will be no tools, machines and buildings necessary to sustain our civilization or its transformation to a closed-loop economy.

The water affairs of forkheads

In all lycopodiophytes (as, incidentally, in the bryophytes confused with them, as well as in the horsetails and ferns formerly combined into a common class with the forbs), sexual reproduction remains water-dependent. Sperm can flow to the egg cells only when the foregut (gametophyte, sexual generation) is covered with water, e.g.: after rain or in thick fog.

Also, the diploid generation (sporophytes) of most lycopodiophytes, better known to us, is sometimes strongly dependent on water. Such, for example, leopards are plants even underwater, in Europe characteristic of the so-called "underwater". lobelia lakes with very clear, nutrient-poor water. From the Latin name of porbines (*Isoëtes* L.) comes the professional name of the entire ecophysiological group of isoetids - plants unrelated to each other, but resembling each other through evolution converging in morphology (shapes), physiology, habitat requirements, and thus extinction mechanisms.

Forkbeards proper are often associated with habitats that are at least periodically moist, such as mist forests, meadows (crowfoot) or post-morph pits (forkbeard). Pitchforks are found in the most diverse environments all over the Earth, except in the ice deserts of Antarctica. Most, however, prefer sub-equatorial rainforests or mist forests.

Better late than never!

The aforementioned forkhead monograph was published as a special issue of the Polish Botanical Society's journal *Monografiae Botanicae* and can be obtained free of charge from the repository of the [Polish Botanical Society](#). This is a work that Polish science and didactics have needed for a long time. We finally got an up-to-date systematics of the *Lycopodiopsida*, as well as the latest information on their ecology and biochemistry. The monograph includes an up-to-date listing of species native to Poland and four more that have established themselves in our neighbors (so very likely to be found here as well).

It is also the original keys to the determination of forkheads and extensive characterizations of lycopodiophytes, covering their entire morphology, distribution worldwide and in Poland (range maps), habitat preferences, ecology, degree of extinction threat, effectiveness of previous forms of protection, and finally an overview of uses in academic and folk medicine. Particularly noteworthy are the beautiful photographs of live and herbarium specimens, as well as their habitats.

Why do we need monographs?

Someone may ask why such a descriptive work, the preparation of which cost a lot of effort and time of the staff of several scientific centers, should be created at all. After all, it will bring fewer points than a couple of articles in reputable scientific journals. Well, the pain of Polish botany, pure and applied, was the lack of modern keys for taxonomic identification. Until now, in order to learn more about spore-bearing vascular plants, including forkheads, one had to reach for the first volume of the *Flora of Poland* compiled by Marian Raciborski and published in 1919.

The keys to *Polish Plants*, edited by Władysław Szafer, Stanisław Kulczyński and Bogumił Pawłowski, which were published a couple of times between 1953 and 1988, were somewhat outdated by the time they were published. This is because they kept describing the flora within the borders of the Second and even the First Republic, leaving out a number of species native to the Western and Northern Territories. Lucjan Rutkowski's more modern *Key to the Identification of Vascular Plants of Lowland Poland*, which is still useful today, published from 1998 to 2022, was limited, as the title indicates, to the lowlands of our country. And yet it is the mountains and highlands that are richest in various species, including lycopodiophytes!

Started in the 1990s. Last century, the era of molecular biology strongly changed our ideas about the evolution of vascular spore plants, including verification of the occurrence and diversity of individual species and their hybrids. Although the Polish and world floras count very few species of lycopodiophytes, this group provides plenty of examples to support the thesis that a new, modernized monograph is needed.

The confluence of several important anniversaries for botany, such as the centennial of the publication of the *Flora of Poland* after independence (2019), the centennial of the publication of the first volume of the *Flora of Poland* on ferns (also 2019), the centennial of the founding of the Polish Botanical Society (2022) and the sixtieth convention of its members planned for April 2025. inspired members of PTB's Pteridology Section to work on more monographs of plants, this time those formerly classified as ferns. What changes will the new work bring? Will the *flowers of ferns* known for their blistering grasslands (carnation and suspicion) make their way to psyllids?

In the article, I used, among other things. From the works:

1. Raciborski M., Szafer W. (eds.) (1919). *Flora Poland. Vascular plants of Poland and neighboring lands. Volume I: Ferns, conifers and monocotyledons*, Cracow: Nakładem Akademii Umiejętności, pp. 427.
2. Rutkowski L. (1998–2022). *Key to the identification of vascular plants of Lowland Poland*. PWN Scientific Publishers, Warsaw.
3. Szafer W., Kulczyński S., Pawłowski B. (1924). *Plants of Poland. Bookstore Atlas*, Lviv, Warsaw.
4. Szafer W., Kulczyński S., Pawłowski B. (1953–1988). *Plants of Poland. T. 1*. PWN, Warsaw.
5. Szczęśniak E. (2008). Endangered, expansive and invasive species in pteridoflora of the Lower Silesia. In E. Szczęśniak, & E. Gola (Eds.), *Club-mosses, horsetails and ferns in Poland - resources and protection* (pp. 213–223). Polish Botanical Society & Institute of Plant Biology,

University of Wrocław, Wrocław.

6. Szczęśniak, E., Gola, E. M., & Szypuła, W. (2023). The genus *Selaginella* P. Beauv. (Selaginellaceae, Lycopodiopsida) in Poland: The occurrence of three species as a result of the historical material verification. *Acta Societatis Botanicorum Poloniae*, 92(1).
<https://doi.org/10.5586/asbp/171688>
7. Szczęśniak, E., Gola, E.M., & Zenkteler, E. (eds.) (2023). Lycopodiophytes of Poland - Lycopodiales, Selaginellales, Isoëtales. *Monographiae Botanicae* 110, Polish Botanical Society, Wrocław-Warsaw.

SPRINGS IN THE LOWLANDS

Posted on 28 March 2024 by Maksym Łaszewski



Springs, or natural, self-contained and concentrated groundwater outflows, are primarily associated with upland and mountainous areas. This is not surprising - the degree of nodulation in the lowlands is several to several times lower than in areas with a higher altitude. The number of springs also goes hand in hand with the diversity of their physical-chemical characteristics - oxalic, ferruginous and radon waters are just selected examples of the types of therapeutic waters that have given rise to well-known spas such as Krynica-Zdrój, Polanica-Zdrój, Ladek-Zdrój and Busko-Zdrój. The springs of upland and mountainous areas, especially in karst areas, furthermore achieve significant yields (the amount of water flowing out of the spring per unit time) and are characterized by great scenic and aesthetic value.

Categories: [Issue 7/2024](#), [Onet](#), [Science](#)

Tags: [Groundwater](#), [lowlands](#), [sources](#), [water](#)



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Studies have shown that lowland Poland is also home to springs, and although they are less numerous, efficient and recognized, some of them were once used for water therapy. Today, however, they are excellent indicators of human pressure on the natural environment. Such was and is the role of the Mazovian springs beating within two escarpments – the Warsaw escarpment, which is the erosion edge of the Vistula valley, and the Pilica escarpment, extending in the vicinity of Nowe Miasto on the Pilica River.

Water a cure for everything

The therapeutic use of water in the form of baths, showers and poultices, as well as direct ingestion, has been known since ancient times. However, the intensive development and spread of this type of physiotherapy is dated only to the late 18th and early 19th centuries, and some of its greatest proponents include Vincenz Priessnitz (1799–1851), Heinrich Friedrich Francke (1805–1848) and Fr. Sebastian Kneipp (1828–1897). It was in the 19th century that specialized spa facilities in Europe flourished the most, becoming very fashionable not only for health reasons, but also for cultural and social reasons.

If we consider that in the first half of the 19th century, traveled exclusively on horseback and long expeditions were cumbersome, to say the least, it is not surprising to see the emergence of such centers in lowland regions seemingly unassociated with spas. Most often they were organized by ambitious doctors enamored of the therapeutic qualities of the local nature, Such is the history of two forgotten spas of the Kingdom of Poland, which are worth looking at in more detail.



pic. An untransformed spring in Łęgonice near Nowe Miasto nad Pilica. The hydrochemical type of the source water is $\text{HCO}_3\text{-Ca}$, Maksym Laszewski

Two spas, a shared history

Wierzbno, now part of Warsaw's Mokotow district and associated with a subway station, used to be one of the numerous summer resorts frequented by Warsaw residents longing to relax in nature. The local springs, beating abundantly at the foot of the escarpment, were also widely known, which Dr. Ludwig Sauvan, a medical graduate from Vilnius, decided to exploit. The Hydropathic Plant was launched in 1842, modeled after the Priessnitz facility in Grafenberg, and treated a variety of conditions with showers, poultices and baths. The qualities of Wierzbno's spring waters were highly valued, and they were also used for drinking.

Dr. Natanson believed that their water "(...) is remarkably pure, the taste on very pleasant, invigorating, because of the considerable amount of air dissolved in it (...)". After Sauvan, the plant was taken over by Matecki, who ran it until the last decades of the 19th century. The expansion of Warsaw (Wierzbno was losing its attractiveness), as well as the outflow of visitors, both to foreign spas and to the New Town on the Pilica River, contributed to its closure.

The history of water therapy in Nowe Miasto nad Pilica began somewhat later than in Wierzbno and was connected with the person of Jan Kapistran Bielinski, a physician who, after studying medicine in Moscow, settled in Nowe Miasto in 1859. He recognized the virtues of this small town, most notably the presence of springs whose water "...contains many limestone parts, and in general is very pure, pleasant to taste and above all cold (...)". The center was opened on May 31, 1874, and was among the most modern in Europe at the time (interestingly, Bielinski was probably familiar with Dr. Sauvan's facility, and also modeled it on the aforementioned Grafenberg).

The therapeutic treatments offered at the center included showers and baths in water from springs at the foot of the escarpment and in the Pilica River, in addition to physical activities, gymnastics and a proper diet. Among the many patients and visitors to the New City facility are Narcissa Żmichowska, Henryk Sienkiewicz, Michał Andriolli and Ignacy Paderewski. The development of a thriving center was interrupted in 1915. After it was occupied by the German army, and it was destroyed as a result of subsequent warfare.

The history of the Plants is almost twinned - both were founded by ambitious doctors, both were inspired by Priessnitz's hydrotherapy, and both used very similar sources in terms of location and type. These outflows, which still exist today, can be characterized as descent outflows (water flows out of them by gravity) and sub-slope outflows, i.e. located at the foot of the slope, at the intersection of the aquifer. They beat from analogous pore-like Quaternary formations - the wierzbens drain layers of water-glacial sands underlain by Pliocene clays, while the Novomiejskies beat from fine- and medium-grained sands, located on clays, silts and loams.

Sources as a litmus test

In addition to the historical significance associated with economic use, the sources mentioned are important in a research and diagnostic context. This is because the study of the chemical composition of spring waters makes it possible to determine the conditions of water circulation in the drained aquifer and to assess the state of the environment and its transformations due to natural and anthropogenic processes, especially when archival comparative data are available.

This is the case with the Willow Springs, which have been studied since the mid-19th century. Here you can see perfectly how human activity within the city leads to the transformation of the physical and chemical characteristics of their waters and the performance regime. Pich and Plochniewski's research, carried out at the Hydrogeology Department of the Geological Institute in 1964-1966, documented that the spring at ul. Piaseczyńska (enclosed, with a constant outflow and location) was characterized by water mineralization of 728-943 mg/l, a maximum chloride ion concentration of 139 mg/l and a capacity of 8-9 l/min.



pic. An encased spring on Piaseczyńska Street in Warsaw's Wierzbno. The hydrochemical type of the source water is Cl-HCO₃-SO₄-Ca-Na, Maksym Laszewski

Measurements conducted by us at the Department of Hydrology of the Faculty of Geography and Regional Studies of the University of Warsaw (unpublished) indicated that over the past year (summer '23 - spring '24) the mineralization of the waters of the spring at Piaseczyńska fluctuated seasonally between 1217 and 1400 mg/l, chloride concentrations ranged from 280 to 349 mg/l, while the yield - approx. 2.8 l/min. Thus, one can see a clear increase in the mineralization and salinity of the spring's waters over the past few decades. Its cause is the anthropogenic supply of ions.

This can be collectively blamed on, among others. winter road maintenance, leachate from water and sewage networks, increased atmospheric deposition of pollutants, as well as ion leaching from debris and building remains. The several-fold decrease in yield, in turn, reflects a change in aquifer recharge conditions, resulting from the sealing (concreting) and channelization of the city's surface (Mokotów is one of the fastest-building districts in Warsaw).

In the case of the springs of the New Town on the Pilica River, the only historical information regarding the quality of their waters is the previously cited reference from the journal *Kłosy* in 1878. Based on it, it can be concluded that since the operation of the Natural Treatment Facility of Dr. The temperature of the water of the springs in St. John Bieliński has increased - it used to not exceed 7.5-8.0°C, while today it is generally 8-11°C, with a maximum of as much as 16.0°C. On the one hand, this reflects the increase in average air temperature since the 19th century. (Global Warming), and on the other - the impact of anthropogenic heat sources. As in the case of Wierzbno, the output of outflows has also decreased.

However, studies of the water chemistry of the springs of New Town on the [Pilica](#) River show other environmental problems. Very high concentrations of nitrate ions from agricultural activities are recorded in sources outside the city. This fact is not surprising, since the Rawska Upland is the orchard basin of Poland, but NO₃ nitrate concentrations, averaging 60-80 mg/l, testify to the persistent and serious contamination of the aquifer. The influence of the city can also be seen as in the mirror - within sources currently located in the built-up area, we recorded elevated concentrations of selected trace elements such as nickel, zinc, arsenic and molybdenum, as well as significantly higher concentrations of chloride, potassium and sodium than outside the city.

However, the impact of the urbanized area in the New Town is considerably less than that of Warsaw's Wierzbno, which can be seen if only by comparing the chemical type of the waters. The natural hydrochemical type (according to the Shchukariyev-Prıklonskiy classification

commonly used in Poland) is the $\text{HCO}_3\text{-Ca}$ (bicarbonate-calcium) type, and this is what is found in Novi Mesto. In the case of Wierzbno, the springs' waters belong to the highly transformed $\text{Cl-HCO}_3\text{-SO}_4\text{-Ca-Na}$ type, i.e. chloride-hydrogen-carbonate-sulfate-calcium-sodium.

Undoubtedly, lowland sources can provide valuable information about the current state of the environment. We should also consider them as valuable objects of educational importance, providing a record of human impacts and pressures on [groundwater](#), which is so important to residents, whether in mountainous and upland areas or lowland areas.

In the article, I used, among other things. From the works:

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4. Pich J., Plochniewski Z. 1968. Chemism of waters from springs occurring in the Warsaw area. *Geological Review* 16(11): 511.
5. A natural health care facility in Nowe Miasto nad Pilica. *1878 Spikes* 724: 311.



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