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WATER ISSUES

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PHOTO MICHAŁ ŻUK

IN POLAND, WE WASTE 5 MILLION TONS OF FOOD ANNUALLY. WHAT CAN YOU CHANGE DURING THE HOLIDAYS?

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ICICLES, SEA FLOWERS, ICE BALLS, AND OTHER WINTER WONDERS OF NATURE

FISHING PERMITS IN 2025.

Posted on 9 January 2025 by Agata Pavlinec

The New Year greeted anglers with an atmosphere of nervousness. News about new rules for granting fishing permits appeared in the media. In fact, as of December 31, 2024, Wody Polskie ended the Our Fisheries program, which allowed amateur fishing on the basis of a single, nationwide fee. What does this really mean for anglers?

Categories: Issue 23/2024, News, Onet
Tags: charges, fishing, new fees

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The end of *Our Fisheries* - rzgw take responsibility

Recall that until the end of last year, amateur anglers were allowed to pay a single fee, which entitled them to fish in 130 fishing districts and two special fisheries administered by the Polish Waters. According to Order No. 71/2024 of the President of the Polish Waters, the program is no longer in effect, and the issuance of angling permits from 2025 is to be handled by regional water management boards (rzgw).

Thus, whoever wants to fish in a particular region must obtain a permit from the relevant government and pay an adequate fee. The latter is determined at the regional level. In connection with a major uproar among anglers, which was also reflected in social media, the Polish Waterways issued a communiqué calling for an end to the dissemination of false information. The communiqué stressed that the change in the rules applies only to fisheries managed by the Polish Waters. Most fisheries in the country, meanwhile, are managed by so-called users (e.g., fish farms or individuals), who set their own pricing policies.

How much will we pay for fishing permits?

In 2024, when the *Our Fisheries* program was still in effect, the cost of a permit for amateur fishing in all 130 national fishing grounds of the Polish Waters was PLN 250. This year, the annual fee for fishing from the shore in individual rivers is:

- RZGW in Bialystok PLN 250 per year, PLN 15 for 1 day, PLN 70 for 7 days;
- RZGW in Bydgoszcz PLN 250 per year, PLN 30 for 1 day, PLN 90 for 7 days;
- RZGW in Gdansk PLN 250 per year, PLN 90 for 7 days, PLN 140 per month;
- RZGW in Krakow operates three fisheries, and in each of them the annual fees are different (from 140 to 260 zlotys), while for a 1-day permit you will pay 40 zlotys;
- RZGW in Lublin PLN 200 per year, PLN 25 for 1 day, PLN 100 for 14 days;
- RZGW in Poznań PLN 300 per year, PLN 30 for 1 day, PLN 120 for 14 days.

The cost of a permit for fishing from a vessel is on average PLN 50 more per year. The fee is paid by bank transfer to the bank account of a given rulgw. Subsequently, confirmation of payment should be sent online (or by traditional mail) to the given régime.

Will it be more expensive and more difficult?

Thus, an angler who limits himself for the whole year to fisheries located in the area managed by the RZGW in Bialystok or Gdansk will not pay more than before. The problem arises when we want to fish in different regions of the country - then the annual costs may increase even

several times. In addition, it will be necessary to obtain separate permits for fishing in the directorate of each selected district. The situation is not made easier by the fact that each region has slightly different rules for calculating fees.

According to Polish Waters, the regulations, including lists of provided fishing circuits and rules for the sale of angling permits, should be searched for on the websites of individual district governments. As of January 9, unfortunately, some of them lacked information on prices and how to pay fees, and an attempt to contact them by phone did not solve the problem.

CANCELLATION OF SOCIAL SECURITY PREMIUMS FOR FLOOD VICTIMS - APPLICATIONS NOW AVAILABLE

Posted on 8 January 2025 by Iwona Szyprowska-Głodzik

Beginning January 6, 2025, entrepreneurs, non-profit organizations and individuals engaged in agricultural activities affected by the September 2024 floods may apply for cancellation of Social Security premiums. The support program covers both paid and overdue premiums for the period from August 1 to December 31, 2024.

Categories: Issue 23/2024, News, Onet
Tags: flood, ZUS

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Who can benefit from redemption?

Aid is available to premium payers operating in disaster areas that show a decrease in revenue of at least 40 percent compared to:

- September 2024 with September 2023,
- October 2024 with October 2023,
- for the start of operations in 2024. - September 2024 with August 2024.

Applications can also be submitted by payers who:

- have paid premiums for the said period,
- have a new premium payment date set for September 15, 2025,
- benefit from installment or deferral of arrears covering contributions for the period from August 1 to December 31, 2024.

pic. Jacek Halicki / Wikipedia

What contributions are subject to remission?

The waiver applies to contributions to:

- social security,
- health insurance,
- Labor Fund,
- Solidarity Fund,
- Guaranteed Employee Benefits Fund,
- Bridging Pension Fund.

The payer, when submitting the application, can independently indicate for which months in the period from August 1 to December 31, 2024, he wants to obtain remission of contributions, which includes all contributions that apply to both the payer and all insured persons he reports, such as employees. It is worth noting that these premiums will not be covered by the state budget, which means that the remission takes place under the terms of the current legislation, without additional financial support from the state.

Where to apply?

Applications should be submitted to the Social Insurance Institution electronically, on paper or via the Platform for Electronic Services (PUE ZUS). The application template and detailed guidelines are available on the Social Security website.

Effects of redemption on the insured

For payers who pay their own insurance premiums, remission can have significant consequences. According to information made available by the Social Security Administration, contributions for the period of remission will not be treated as paid. This means that this time will not be taken into account when calculating future pension or disability benefits. This could affect the amount of those benefits in the future.

The Social Security Administration recommends that before submitting a claim, you carefully analyze the consequences of premium cancellation and, if necessary, consult with a Social Security advisor who will help you assess the impact of this decision on your future insurance rights.

MECCA UNDER WATER – FLOODING IN THE HOLY CITY

Posted on 7 January 2025 by Agata Pavlinec

On Monday, torrential rains with record precipitation swept across the southeastern regions of Saudi Arabia. Within hours, Arab media reported flooding in Mecca, sharing dramatic footage from the holy city of Muslims. Streets are completely submerged, many people have been trapped by the water, and the situation remains dire.

Categories: Issue 23/2024, News
Tags: flood, Mecca, Saudi Arabia

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Mecca and Medina – alarming forecasts

On Saturday, January 4th, the Saudi Press Agency reported an approaching wave of heavy rainfall, citing data from the National Center of Meteorology (NCM). The weather disruption is expected to last until Wednesday, accompanied by hailstorms, thunderstorms, winds of up to 60 km/h, and high waves along the coast.

NCM declared the highest red-level warning for areas within the Mecca and Al-Bahah regions. Continuous heavy rainfall was also reported in the Medina region, particularly around the city of Jeddah, where some flights were canceled yesterday. A record amount of precipitation was recorded on Monday in the Badr governorate, where 49.2 mm/m² of rain fell. People fear a repeat of the 2009 floods in Jeddah, which claimed more than 100 lives.

> *Massive Flooding right now due to torrential rainfall in Jeddah Saudi Arabia ⊠⊠ (Jan 06⊠ 2024)* pic.twitter.com/c5UZDmuVzK
>
> *— Weather monitor (@Weathermonitors)* January 6, 2025

The storm system will also reach the largest Riyadh region today and tomorrow, with the heaviest rains expected north of the capital. Schools have switched to online lessons. Transportation has been disrupted as water cascading down steep desert slopes floods highways.

Flooding in Mecca endangers pilgrims

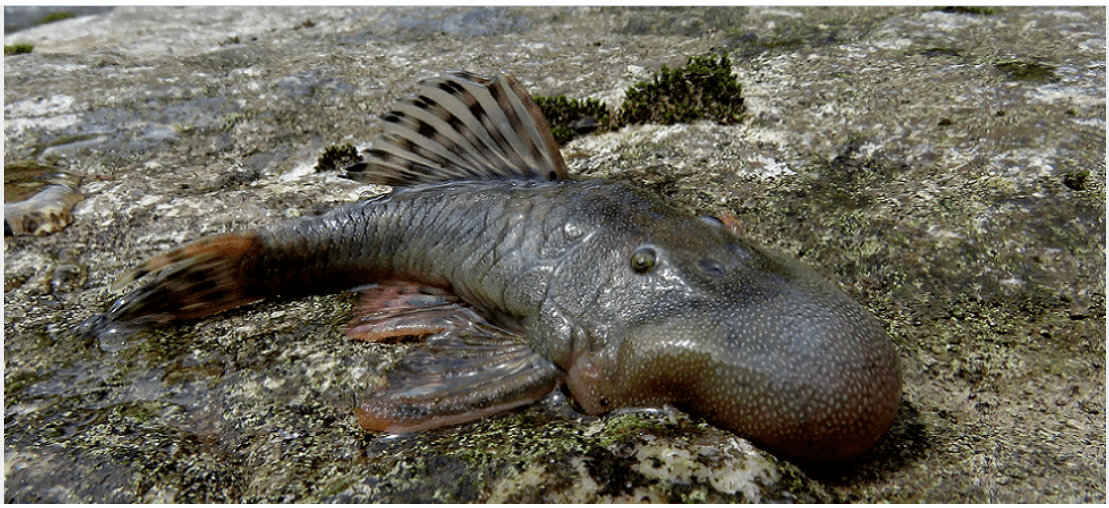
Reports from Mecca, the most important city for Muslim pilgrimages, are dramatic. The flash floods inundated entire streets, forcing people to flee their cars and buses immediately. Torrential waters carry uprooted trees and vast amounts of debris, posing direct threats to lives. In towns southeast of Mecca, people were seen forming human chains to rescue children cut off by the water.

According to the Saudi Press Agency, the flooding in Mecca has put all emergency services on high alert. Over 1,400 personnel and 140 vehicles have been deployed to provide immediate assistance to those affected. Volunteer emergency units have also been established, and doctors and medical technicians throughout the Mecca region are on standby. Authorities urge residents to exercise caution and follow emergency alerts on mobile applications.

Footage from Mecca shows raging rivers of muddy floodwaters that submerge cars up to their roofs in some areas. In the steep, narrow streets of the holy city, the water causes dangerous collisions. So far, media outlets have not reported any casualties in Mecca. However, thousands of pilgrims remain in the city, gathering for prayers despite the relentless rain.

27 NEW SPECIES DISCOVERED IN THE PERUVIAN RAINFOREST

Posted on 6 January 2025 by Iwona Szyprowska-Głodzik



Categories: Issue 23/2024, News
Tags: discovered, new species

Even in a world dominated by humans, nature continues to hide its secrets and surprises us. Recently, scientists discovered 25 new animal species and two plant species in the Alto Mayo region of Peru. This marks a significant step in documenting the biodiversity of areas under heavy pressure from human activity.

Discovery in the Peruvian Rainforest

An expedition to the Alto Mayo rainforest in Peru was organized by Conservation International in collaboration with local institutions. The fieldwork took place in a region that, despite intensive human activity (deforestation and agricultural development), still preserves remarkable biodiversity. Alto Mayo is home to hundreds of animal and plant species, many of which cannot be found anywhere else in the world.

The research focused on mountainous rainforest areas known for their unique climatic conditions and difficult accessibility. During the rapid and intensive 38-day field study, called the Rapid Assessment Program (RAP), which aimed to document organisms in the region, scientists made a remarkable discovery of 27 species previously unknown to science.

What species were discovered?

- Four mammal species
- Eight fish species
- Three amphibian species
- Ten butterfly species
- Two plant species

Each of these plays a crucial role in the local ecosystem. Among the most astonishing discoveries was a semi-aquatic mouse with webbed toes, adapted for life in water. "The group of semi-aquatic rodents to which this mouse belongs is extremely rare," said Trond Larsen, the researcher leading the expedition, adding that they are difficult to find, and little is known about their behavior.

photo: *Ronald Diaz/Conservation International*

Other newly discovered mammals include a spiny mouse, a short-tailed fruit bat, and a dwarf squirrel.

Another surprising find was the blob-headed fish, named after its enlarged, blob-like head. "This fish has an incredibly strange head, resembling a giant, swollen nose," said Larsen. Scientists have never seen anything like it before, and the function of this structure remains a mystery. One possible theory is that it helps the fish detect food, but for now, this remains speculative.

The team also documented seven additional new fish species and a narrow-snouted frog.

Why is this discovery important?

Overall, the expedition recorded 2,000 species, 49 of which are listed on the International Union for Conservation of Nature's Red List, meaning they are endangered. The newly discovered species offer hope that nature can find ways to survive even in landscapes dominated by human influence. But for how long?

"We were surprised to find such a high level of biodiversity in an area under such heavy human impact," Larsen said. "However, unless steps are taken now to secure these places and restore parts of the landscape, there is a high chance they will not endure in the long term," the researcher emphasized.

Main photo: Robinson Olivera / Conservation International

THE BIGGEST NATURAL DISASTERS OF 2024

Posted on 5 January 2025 by Agata Pavlinec

In the scientific community, it is widely believed that climate change is responsible for the increasing intensity of extreme weather events, leading to thousands of deaths and massive economic and ecological losses. The year 2024 was particularly dramatic in this regard—according to preliminary estimates, more than 2,000 people died in the 10 biggest natural disasters, with costs reaching $229 billion.

Categories: Issue 23/2024, News
Tags: disaster, flood, natural disasters

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Deadly avalanches: Papua New Guinea, Ethiopia, and Nepal

The most tragic avalanche-related event of 2024 occurred on May 24 in Papua New Guinea. A rocky-muddy avalanche descended from the limestone peak of Mount Mungalo, destroying six villages and burying at least 670 people under several meters of debris. The exact cause of the disaster remains unknown, but geologists have definitively ruled out an earthquake. According to some experts, heavy rains washed away the rocky substrate, weakening its structure.

There is no doubt, however, that extreme rainfall was the cause of two avalanches that struck Ethiopia earlier in May, claiming at least 249 lives and affecting 15,000 people. Similarly, in late September, monsoon rains in Nepal triggered a series of 143 avalanches, resulting in over 150 fatalities.

Yagi and Helene – tropical storms

Among the tropical cyclones, Typhoon Yagi marked the darkest chapter of 2024. It hit Southeast Asia in early September, with winds reaching up to 245 km/h and torrential rains exceeding 600 liters per square meter in some areas of Vietnam. Over 237,000 homes were destroyed, and rice, grain, and fruit tree crops were severely damaged. Yagi also affected Thailand, Laos, the Philippines, and Myanmar, with a total death toll exceeding 800—most of whom perished in avalanches or were swept away by water.

According to meteorologists, last year's hurricane season in North America was exceptionally intense. Its most tragic event was Hurricane Helene, which struck six U.S. states, claiming 232 lives. It was the second most severe hurricane in the past half-century, causing massive infrastructure damage—estimated at over $200 billion. Thousands of homes were destroyed, highways were severely impacted, and power and communication networks were disrupted. In total, over 300 people died due to hurricanes in the United States and the Caribbean in 2024.

photo: SaNYa00971 / depositphotos

Floods in Europe

Natural disasters also struck Europe. In late October, an isolated meteorological depression known as DANA swept over the southern Iberian Peninsula. Although this phenomenon occurs annually, in 2024 it reached unprecedented proportions. In some areas of Valencia, over 300 liters of water per square meter fell within eight hours, causing riverine flooding and total paralysis of transportation. The death toll reached 219, with total economic losses estimated at over $4 billion.

Even more economically damaging were the floods that hit Central Europe in September due to the activity of the Boris low-pressure system. Total losses in Poland, the Czech Republic, Romania, Austria, Slovakia, and Hungary are estimated at $5.2 billion. According to the BBC, a total of 21 people lost their lives.

photo: castigatio / depositphotos

A difficult start to the year

Unrelated to climate change, Japan experienced the devastating power of nature on January 1, 2024, in the form of a 7.6-magnitude earthquake. The epicenter was located on the Noto Peninsula, and the tremors triggered a tsunami that destroyed 160 hectares of coastline. Hundreds of homes were consumed by fires, and over 60,000 buildings collapsed. The total death toll reached 241, with over 1,000 people injured.

Meanwhile, in January and February, Chile faced wildfires caused by prolonged drought, high temperatures, and strong winds. In the Viña del Mar and Quilpué regions, over 130 people died, and 14,000 homes were destroyed. The World Meteorological Organization (WMO) linked the Chilean disaster to the influence of El Niño, compounded by ongoing climate change.

We can only hope that 2025 will bring some relief to the world.

DO HERRING EAT FISH?

Posted on 4 January 2025 by Iwona Szyprowska-Głodzik

Until now, herring were perceived as typical plankton feeders, playing a key role in marine ecosystems thanks to their diet based on tiny organisms floating in the water. However, the latest research published in Nature Communications shows that reality might not be as straightforward as previously thought. Could these common fish have a slightly more predatory character?

Categories: Issue 23/2024, News
Tags: Baltic, Baltic Sea, fish

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Herring under scrutiny

The latest discovery was made by an international team of scientists from Uppsala University, led by Jake Goodall. The aim of the study was to understand how the Atlantic herring (*Clupea harengus*), one of the most numerous fish species in the world, adapts to local environmental conditions. Scientists were particularly interested in the differences between herring populations living in the Atlantic Ocean and those that settled in the brackish waters of the Baltic Sea around 8,000 years ago.

Researchers used advanced whole-genome sequencing techniques to identify genetic differences between populations. Genome sequencing was supplemented with stable isotope analyses of nitrogen (δ15N) and carbon (δ13C), which provide information about the fish's diet and trophic position in the ecosystem. They also used otolith analysis—ear stones in fish—to understand their migration patterns and preferred habitats.

Data collection also included detailed morphological studies, such as the analysis of gill rakers and body measurements, as well as chemical studies to determine the accumulation of pollutants in fish tissues.

Research findings: a new perspective on herring

The findings were surprising. It turned out that a genetically distinct herring ecotype, locally known as *Slåttersill*, has developed in the Baltic Sea. It differs significantly from its plankton-feeding relatives. These individuals are larger, grow faster, and have a diet based on fish, primarily three-spined sticklebacks (*Gasterosteus aculeatus*).

The analysis of gill rakers revealed that *Slåttersill* is not fully adapted to its new diet. Most individuals showed gill damage, suggesting that the shift to a fish-based diet occurred relatively recently in evolutionary terms.

Genetic analysis indicated that *Slåttersill* belongs to a new ecotype that evolved in response to the lack of competition from other fish-eating species in the young Baltic Sea. Interestingly, these fish have modified genes related to adaptation to low-salinity environments and limited plankton resources.

Ecological and practical significance

Natural processes can be dynamic and surprising. The fish-based diet of predatory herring, focused on sticklebacks, is not only a curiosity but also a significant and realistic chance to restore balance in the Baltic waters. Sticklebacks, whose population has spiraled out of control, consume the larvae of larger predatory fish such as pike and perch, disrupting the natural cycle in the ecosystem. By filling the gap left by

missing predators, herring may help halt this process and rebuild a healthy balance in marine waters.

However, this solution comes with a cost. Predatory herring, though fascinating, represent a small and highly vulnerable population. Overfishing in the Baltic Sea could lead to the loss of this unique group, underscoring the need for a well-thought-out fisheries management policy. Without it, we risk not only the extinction of *Slåttersill* but also the loss of their positive impact on the entire Baltic ecosystem.

Why does the Baltic Sea favor predatory herring?

The shift to a fish-based diet did not occur in Atlantic herring, and the key difference lies in the specific characteristics of the Baltic Sea. This relatively young sea formed after the last glaciation, functioning as an isolated ecosystem for thousands of years. Few species reached its waters, creating a unique void in the role of fish-eating predators.

In such conditions, herring quickly adapted to their new role. While their Atlantic relatives continued feeding on plankton, the lack of competition in the Baltic allowed for an evolutionary dietary shift. This is an excellent example of how nature abhors a vacuum and how quickly species can change when new opportunities arise.

FARMER, YOU CAN STILL APPLY FOR POST-FLOOD SUPPORT – UP TO PLN 300,000

Posted on 3 January 2025 by Agata Pavlinec

An application process for support under the Rural Development Program 2014-2020 is currently underway. The aid is directed at farmers affected by the September flood, who plan investments aimed at restoring the production potential of their farms. What expenses are eligible for reimbursement?

Categories: Issue 23/2024, News
Tags: farmer, flood

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Sub-measure 5.2 - Investments restoring agricultural production potential

On December 27, 2024, the Agency for Restructuring and Modernization of Agriculture decided to extend the application deadline for assistance under the Investments Restoring Agricultural Production Potential program from the original date of December 30, 2024, to January 24, 2025.

The support is exclusively targeted at farmers who suffered losses due to the September 2024 flood in the southwestern part of the country. The funding will come from allocations within the sub-measure of the Rural Development Program 2014-2020: Support for Investments in Restoring Agricultural Land and Production Potential Damaged by Natural Disasters, Adverse Climatic Events, and Catastrophes.

Farmers who experienced losses exceeding 30% of their average annual plant or animal production are eligible for this aid. However, the damage must be assessed by a provincial commission and must include damages to fixed assets. Only fulfilling these conditions qualifies for funding.

Eligible investments under the program include:

- construction or renovation of buildings used exclusively for agricultural production, storage, or preparation for sale, provided they were not subject to mandatory insurance,
- purchase of building equipment,
- demolition and disposal of hazardous materials,
- purchase of machinery and equipment,
- purchase of production, storage, or drying equipment,
- purchase of livestock, provided they belong to the core herd,
- purchase of equipment and software related to agricultural production.

The funding covers 80% of eligible costs but cannot exceed PLN 300,000 throughout the implementation of the Rural Development Program 2014-2020. Any previously granted support will reduce the assistance allocated under the current call for applications.

How and where to apply?

Applicants may include individuals, legal entities, partners in civil partnerships, or partnerships. Applications can be submitted:

- in person (or by an authorized person) at a regional ARiMR office,
- via a district ARiMR office,
- by traditional or electronic mail.

The application form, along with instructions for completion and a list of required attachments, can be found on the ARiMR website.

Information on whether the aid is granted or denied will be provided by ARiMR within four months from the date of application submission. The order of granting support depends on the order in which applications are received.

WATER STAGE BELOW WŁOCŁAWEK – GDOŚ REFUSED TO ISSUE AN ENVIRONMENTAL DECISION

Posted on 2 January 2025 by Agata Pavlinec

On December 30, 2024, the Chief Inspector of Environmental Protection (GDOŚ) issued a statement regarding the refusal to grant an environmental decision for the project "Construction of a water stage on the Vistula River below Włocławek." The refusal was attributed to unreliable and incomplete data submitted by the investor.

Categories: Issue 23/2024, News
Tags: environmental decision, river, Vistula

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Administrative proceedings on the Siarzewo stage

In 2016, the then National Water Management Authority (KZGW) submitted an application for an environmental decision (decision on environmental conditions) for the construction of a new water stage on the Vistula River below Włocławek. On December 29, 2017, the Regional Director for Environmental Protection in Bydgoszcz (RDOŚ), following a series of supplements and clarifications submitted by Wody Polskie, the successor of KZGW, issued an environmental decision. However, the decision was challenged by a social party the following year.

The Ministry of Climate and Environment annulled the RDOŚ decision, which led to an objection by Wody Polskie and an appeal against the ministerial ruling. Consequently, in 2023, the Provincial Administrative Court referred the case to the second instance, namely GDOŚ.

photo: Wody Polskie

GDOŚ statement – Wody Polskie responds

After reviewing the details of the administrative proceedings to date and examining the allegations against the investor regarding the

Siarzewo stage project, GDOŚ issued a statement announcing the annulment of the 2017 RDOŚ decision and refusing to issue an environmental decision. The authority justified its decision by stating that the investor's submitted report did not allow for a reliable assessment of the planned project’s environmental impact on natural areas, including protected zones.

GDOŚ noted that during the proceedings, Wody Polskie was twice called upon to supplement documentation and provide explanations. However, the investor failed to provide comprehensive responses, preventing the determination of measures to mitigate and compensate for the project's environmental impact, which GDOŚ considers potentially significant. Among the identified deficiencies and allegations were:

- lack of a thorough analysis of investment alternatives;
- insufficient assessment of the project's impact on Natura 2000 areas;
- risk of significant adverse effects on priority natural habitats due to the construction of the stage below Włocławek;
- threat to achieving environmental objectives for surface water bodies (JCWP).

In response to the refusal to issue an environmental decision, Wody Polskie announced the commencement of a new analysis to explore flood safety measures for the Lower Vistula region. The in-depth analysis aims to identify optimal methods and tools for flood prevention, including the potential construction of another water stage on the Vistula River. The Ministry of Infrastructure is also expected to be involved in the development of a new plan.

HOW DO FISH AND WATER BIRDS COPE WITH WINTER?

Posted on 1 January 2025 by Agata Pavlinec

Storks fly to warmer countries, bears retreat to their cozy dens, and lynxes grow thick fur. But it's hard not to shiver at the thought of animals forced to spend winter in icy, often frozen water. Fortunately, nature has equipped fish and waterfowl with fascinating adaptive mechanisms.

Categories: Issue 23/2024, News
Tags: birds, fish, water

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Fish in winter – in blissful lethargy

Fish are cold-blooded animals, meaning they cannot maintain a constant body temperature. As the surrounding water cools, so do they. However, instead of developing hypothermia, they gradually slow down their metabolism in response to the cold: movements, heart rate, and respiration decelerate to conserve energy.

When rivers, ponds, and lakes freeze over, fish paradoxically thrive. The ice layer acts as insulation, and near the bottom, where water density is highest, the temperature remains steady at around +4°C. Since ice allows sunlight to penetrate, algae in the water can continue photosynthesis, producing oxygen for the fish. Winter may not be an exciting time of year for fish, but it allows them to peacefully await spring, no matter how harsh the frosts or blizzards on land.

Interestingly, some species of fish living around Antarctica have a special protein in their blood that acts like... antifreeze.

Water birds – warm coats, cool feet

Birds, despite being warm-blooded, have also adapted their metabolism to harsh weather conditions. During severe frosts, they sit passively on the water, avoiding unnecessary exertion. The key to their comfort lies in their winter plumage, which can be compared to Gore-Tex. Close to the skin, they have short, fluffy feathers that create air pockets and provide excellent insulation against the cold. No wonder the best winter jackets are still made with goose down!

Additionally, the outer layer of feathers features micro-hooks that interlock, forming a waterproof cloak. To stay dry, ducks also produce a special oil from glands near their tails, which they spread over their feathers by preening. This oily layer protects the skin from cold water, much like petroleum jelly.

But that's not all! Ducks, geese, gulls, and other water birds have developed a fascinating mechanism called countercurrent heat exchange. This process limits blood flow in such a way that cold blood from the legs doesn't circulate through the entire body but is instead warmed locally by arteries located close to veins. Their feet remain cold but are protected from frostbite, and the overall body retains its precious warmth.

When winter becomes exceptionally harsh, swans tend to move to land, curling up with their legs tucked under their feathered bellies and heads nestled under their wings. This minimizes heat loss. Interestingly, standing on one leg, with the other tucked into their feathers, also helps conserve warmth.

How can you help?

It’s common for people to see ducks on a frozen pond and think, "Poor things," before heading home to grab a bag of stale bread. Later, bundled in warm hats and coats, they proudly watch the birds squabble over crumbs. Unfortunately, this isn’t the best way to help.

Scientists from the Wrocław University of Environmental and Life Sciences confirm that feeding water birds in winter is beneficial, as extra calories help them cope with the cold when natural food sources are scarce. However, birds should not be fed bread, salty or sweet pastries, pretzels, or chips. This diet, rich in salt and bread acids, disrupts their water balance and digestive systems, which can tragically lead to death.

If you want to help birds during winter, bring what they truly need: grains or raw vegetables. It’s best to scatter food on the shore, as it spoils too quickly in water. And never feed birds directly from your hand – taming wild animals is one of the worst things you can do to them!

WINTER ACTIVITIES ON ICE AND IN WATER

Posted on 31 December 2024 by Patrycja Draguć

When winter settles into our homes and the landscape is covered in white snow, the natural temptation is to spend time under a blanket with a favorite series. However, this season offers an excellent opportunity to encourage yourself and your loved ones to engage in activities that have a unique charm during winter. Ice play, water attractions, or snowy adventures provide not only a healthy dose of exercise but also a source of joy and memories for the whole family. Check out which outdoor activities are worth including in your family schedule this winter season.

Categories: Issue 23/2024, News
Tags: ice, winter, winter swimming

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Ice skating – a classic pastime at the rink

Ice skating is one of the most popular winter activities, combining movement with great fun. All you need is comfortable, warm clothing and a positive attitude. Most city ice rinks offer skate rentals, so the lack of equipment is not an issue. For younger children just starting their ice-skating adventure, it's worth considering an instructor to ensure a safe start. For more advanced family members, you can organize competitions such as timed races or a contest for the most beautiful pirouette. Rinks enhanced with music and colorful lighting create a magical atmosphere that further encourages spending time together on the ice.

Ice swimming – a healthy and energetic activity for the brave

Ice swimming, while appearing extreme at first glance, is gaining popularity due to its numerous health benefits. Family ice swimming can become a unique but satisfying form of bonding. Start with a shared warm-up, such as jogging, and then gradually immerse yourselves in icy water. For children, for whom a full bath may be too demanding, dipping their feet can be a good starting point. However, caution is key – ice swimming should be practiced under the guidance of an experienced person, following all safety precautions.

https://wodnesprawy.pl/en/how-does-walrushing-affect-health-an-interview-with-dr-jan-czarnecki/

Winter fun in the snow – snowball fights, sledding, and building igloos

Taking advantage of the winter aura, plan some family outdoor activities. Sleigh rides, snowball fights, or building snowmen are excellent recreational options that bring plenty of laughter and positive emotions. Family snow sculpture or fort-building can also boost creativity, while active play benefits both children and adults.

Water attractions in aquaparks and thermal pools – relaxation in a winter setting

For water activity enthusiasts, a visit to an aquapark or thermal pools is an excellent idea. Aquaparks offer a wide range of attractions, such as wave pools, slides, and recreational zones, ensuring fun for both children and adults. An alternative is thermal pools, where bathing in warm, mineral-rich waters provides relaxation, improves circulation, and strengthens immunity. Particularly charming are outdoor baths, where winter landscapes create a unique setting. Combining water attractions with moments of relaxation is the perfect way to spend time with family.

Winter activities on ice and in water full of joy

Winter doesn’t have to mean sitting under a blanket in front of the TV. Activities like ice skating, ice swimming, water fun in aquaparks, relaxation in thermal pools, or family snow play bring plenty of joy and are an excellent way to bond with loved ones. Dress warmly, grab a thermos of hot drinks, and enjoy the winter scenery!

HELP WILD ANIMALS IN WINTER, BUT DO IT WISELY

Posted on 30 December 2024 by Iwona Szyprowska-Głodzik

Winter is a particularly challenging time for wild animals and waterfowl. Low temperatures, snow, and frozen water bodies limit access to food and water, forcing many species to struggle for survival. Human assistance during this period is invaluable but must be provided thoughtfully. Irresponsible actions, even with good intentions, can cause more harm than good. So how can we help wisely?

Categories: Issue 23/2024, News
Tags: animal, wild animal, winter

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Feeding wild animals

Feeding is one of the most obvious forms of assistance. However, it's important to remember that not all food is suitable for wild animals. Deer, roe deer, and hares benefit from hay, root vegetables like carrots, beets, or parsnips, as well as branches from deciduous trees, especially willow, aspen, or hornbeam. This type of food closely resembles their natural diet and does not cause health problems.

What should be avoided? Bread, which many people offer to wild animals, is harmful to them. White bread, in particular, provides no nutritional value and can lead to severe digestive issues like rumen acidosis, which can be fatal. Salty, seasoned, or processed foods are also unsuitable for wildlife.

The location of feeding is equally important. It should be far from roads and residential areas to minimize stress for the animals and reduce the risk of collisions. Feeding spots should be placed in quiet, sheltered areas where animals can feed safely away from predators.

Feeding waterfowl

Waterfowl such as swans, ducks, and coots suffer particularly during winter due to frozen water bodies and limited food access. To help them, you can provide natural food such as:

- Grains like oats, wheat, or barley;
- Cooked vegetables like carrots, potatoes, or beets;
- Specialized waterfowl feed available in pet stores.

It is crucial not to feed birds with bread. Bread ferments in their stomachs, leading to digestive disorders and, in severe cases, death. When choosing a feeding location, avoid busy areas frequented by people. Feeding should take place on the shores of water bodies, in spots sheltered from the wind.

https://wodnesprawy.pl/en/feeding-birds-in-winter-or-bird-buffets-without-bread/

How to ensure access to water

Water is one of the most vital resources during winter, especially for waterfowl. Frozen water bodies deprive them of drinking and bathing opportunities, which negatively affects their health and condition. To help, you can:

- Maintain ice holes in ponds and lakes using floats or special water pumps to prevent freezing;
- Provide water for forest animals by placing containers in quiet areas and regularly checking that they haven't frozen. Avoid using metal containers, as they can cause frostbite.

Creating natural shelters for animals

In winter, animals need not only food and water but also places where they can shelter from the cold and predators. In forests and gardens, you can create simple shelters to provide protection:

- Piles of branches and heaps of leaves make excellent shelters for hares, hedgehogs, and small mammals;
- Nesting boxes and feeders are especially helpful for birds that winter in Poland, such as tits, sparrows, or blackbirds;
- Avoid pruning trees and shrubs in winter, as dense thickets provide natural shelter for many species.

Help wild animals in winter with organizations

Foresters and environmental organizations have extensive knowledge about the needs of wild animals and birds. It's worth consulting your local forestry office before starting to feed wildlife to ensure your actions align with conservation principles. Many forestry offices organize their own winter campaigns, where you can participate by providing food or helping distribute it.

Collaborating with nature organizations also offers opportunities for financial support. Donations can be used to purchase food, build feeders, or buy equipment to maintain open water bodies.

HOW REINDEER COPE WITH ARCTIC FROSTS

Posted on 29 December 2024 by Patrycja Draguć

Have you ever wondered how reindeer adapt to extreme winter conditions? What biological and physiological mechanisms allow them to withstand the cold and frost? Reindeer, known as caribou in North America, are among the most evolutionarily advanced organisms capable of surviving in harsh climates. Thanks to their remarkable adaptive abilities, they thrive in extremely low temperatures, overcome food shortages, and move efficiently through deep snow.

Categories: Issue 23/2024, News
Tags: animal, Arctic, frost, reindeer

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Physical adaptations of reindeer to Arctic winters

One of the key attributes of reindeer is their thick, double-layered coat. The outer layer consists of hollow, air-filled hairs that not only insulate against the cold but also repel moisture. Beneath this is a dense undercoat that traps heat, providing excellent thermal insulation.

Additionally, reindeer have specialized nostrils that play a crucial role in cold adaptation. Their unique internal nasal structure warms incoming air and minimizes heat loss during exhalation. Interestingly, their noses can appear noticeably red in winter due to increased blood flow in the area.

Another fascinating feature is their ability to alter the structure of their hooves. In summer, the hooves are softer, facilitating movement on the wet tundra. In winter, they harden, improving traction on icy surfaces and aiding in digging for food beneath the snow. These adaptations enable reindeer to live comfortably in a frozen world.

Diet in extreme conditions: what reindeer eat

Limited access to food in winter is a significant challenge for animals, and reindeer are no exception. Their main dietary component during this season is lichen, particularly reindeer moss, which is rich in carbohydrates and provides essential energy for survival. To access it, reindeer use their sturdy hooves to dig through snow layers up to several dozen centimeters thick. Moreover, their unique digestive system efficiently extracts nutrients from the tough lichens. In addition, their metabolism slows down in winter, helping them conserve energy.

Reindeer migrations

Reindeer are known for their long migrations, covering distances of up to 5,000 kilometers annually. During winter, they move to areas with thinner snow layers, making food more accessible. They travel in large herds, which provide protection against predators such as wolves and polar bears. A reindeer herd can range from a few dozen to tens of thousands of individuals. This collective movement not only enhances their defense mechanisms but also helps identify migration routes and feeding grounds.

Fascinating facts about reindeer you may not know

1. Ultraviolet vision: Reindeer can see in the ultraviolet spectrum, allowing them to detect lichens on snow or spot predators like wolves, which contrast with their surroundings in UV light.

2. Eye color change: Reindeer change the color of their irises from golden-brown in summer to deep blue in winter, adapting to prolonged darkness.

3. Heat sharing in herds: During extreme frosts, reindeer huddle closely together to share body heat and shield themselves from the wind.

Challenges posed by climate change

Although reindeer have been perfectly adapted to Arctic conditions for centuries, they now face growing difficulties due to climate change. The decline of lichens, a key component of their winter diet, poses a serious threat to their survival. Rising temperatures lead to more frequent freezing and thawing cycles, creating hard ice layers that hinder access to food. Furthermore, changes in Arctic ecosystems disrupt migration patterns and increase the risk of encounters with predators. More on these challenges and their impact on reindeer can be found in the article: *Santa Claus in the age of climate change*.

WINTER IS ALSO A TIME TO VISIT WATERSIDE PLACES

Posted on 28 December 2024 by Iwona Szyprowska-Głodzik

Winter is a special time that allows us to see familiar places from a completely different perspective. Frozen lakes, quiet riverbanks, and white landscapes have their own unique charm. For those seeking tranquility, contact with nature, or simply a break from everyday hustle, we have prepared a list of the ten best places in Poland to visit in winter for a walk by the water.

Categories: Issue 23/2024, News

Tags: about water, Baltic Sea, MorskieOko, Tatra, winter

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1. Baltic Sea

Visiting the seaside in winter? Why not – a trip to the Baltic Sea during the colder months can be an extraordinary experience. Coastal towns empty out, offering peace and quiet that are hard to find in summer. A walk along the shoreline in winter scenery lets you enjoy crisp, iodine-rich air, which is beneficial for health.
Particularly picturesque are the snow-covered beaches, dusted with fine ice crystals. In places like Władysławowo, Ustka, or Hel, you might spot a grey seal resting on the shore or observe winter migratory birds. The winter Baltic coast also offers the chance to explore local attractions in a calmer atmosphere, such as lighthouses or museums, which are less crowded than during the tourist season.

2. Morskie Oko (Tatra Mountains)

Morskie Oko, one of the most famous lakes in Poland, is just as stunning in winter as in summer. The frozen lake surrounded by the towering peaks of the Tatras creates an incredibly picturesque view. A walk around the lake is an excellent opportunity to admire the majesty of the mountains in their winter attire. For photography enthusiasts, it's a perfect spot to capture unique shots. Don't forget warm clothing and proper footwear, as winter conditions in the mountains can be demanding.

photo: DzmitRock87@gmail.com / envato

3. Lake Śniardwy (Masuria)

Masuria, known as the Land of a Thousand Lakes, takes on a whole new character in winter. Lake Śniardwy, the largest in Poland, becomes a quiet and peaceful place. The snowy landscapes and the frozen lake surface make a walk along the shores a unique experience. Take a longer route to discover the area's wildlife, which remains active even in winter. With some luck, you might encounter wintering water birds like swans or mallards.

4. Milicz Ponds (Barycz Valley)

The Barycz Valley is renowned for its rich flora and fauna. The Milicz Ponds in winter are less frequented by tourists, making them perfect for a peaceful stroll. Snow-covered banks and frozen waters create a remarkable landscape. Nature enthusiasts will find it an excellent spot for birdwatching, with cranes, herons, and many other species present in their natural habitat.

5. Lake Wigry (Suwalszczyzna)

Lake Wigry in Wigry National Park is enchanting year-round, but winter brings a unique atmosphere. Snow-covered shores, forests reflected on the icy lake, and the silence of the surroundings make it an ideal place for a relaxing walk. Be sure to visit the Camaldolese monastery on Wigry, which looks particularly charming in its winter setting.

6. Kamieńczyk Waterfall (Karkonosze Mountains)

Kamieńczyk Waterfall is one of the highlights of the Karkonosze Mountains, attracting visitors with its uniqueness in winter. The frozen waterfall forms icy sculptures that look like works of art. A walk in the vicinity of Szklarska Poręba, where the waterfall is located, allows you to combine direct contact with nature with the admiration of mountain views. For the more adventurous, it’s also the starting point for trails leading to the higher parts of the Karkonosze.

7. Biebrza River (Podlasie)

The Biebrza Marshes are a harsh and mysterious place, especially in winter. The Biebrza River, surrounded by frozen wetlands and snowy fields, offers a view that lingers in the memory. Walking along the river, you might encounter moose, the symbol of this region, as well as many birds that stay here for the winter. It’s a place for those seeking quiet and connection with wild nature.

8. Lake Solina (Bieszczady Mountains)

In winter, Lake Solina offers a completely different experience than in summer. The snow-covered hills surrounding the reservoir and the tranquility of the area make a walk along the shore an excellent idea for a winter trip. Don’t miss the dam, which offers a beautiful panoramic

view of the lake.

9. Lake Czorsztyńskie (Pieniny Mountains)

Lake Czorsztyńskie in winter not only offers breathtaking views but also the chance to visit historic castles in Niedzica and Czorsztyn. The frozen lake and the mountains around it create a landscape that nature and history enthusiasts alike will appreciate. A walk in the area also provides an opportunity to admire the Pieniny in their winter glory.

photo: nahlik / depositphotos

10. Zegrze Reservoir (Mazovia)

Close to Warsaw, the Zegrze Reservoir attracts city dwellers looking for an escape from urban hustle and bustle. A walk along the frozen reservoir is a perfect way to spend a winter day outdoors. Under the right conditions, you might even see ice sailors training on the frozen surface.

Winter walks are relaxing and connect us with nature

Winter walks by the water are a wonderful way to relax and connect with nature. Poland offers many beautiful spots that impress with their charm this time of year. Be sure to prepare well, including wearing warm clothes and comfortable shoes, to fully enjoy these unique moments in nature.

RUSSIA DECLARES STATE OF EMERGENCY DUE TO OIL SPILL IN THE BLACK SEA

Posted on 27 December 2024 by Iwona Szyprowska-Głodzik

In mid-December 2024, a severe ecological disaster occurred in the Kerch Strait, which connects the Black Sea with the Sea of Azov. Following damage to two Russian oil tankers, thousands of tons of fuel oil spilled into the sea, prompting Russian authorities to declare a federal-level state of emergency.

Categories: Issue 23/2024, News
Tags: oil spill, Russia, sea

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Oil spill from tankers

On December 15, 2024, during a severe storm, two Russian tankers—Volgoneft-212 and Volgoneft-239—sustained significant damage in the Kerch Strait. The Volgoneft-212 broke into two parts, with its bow section sinking approximately 8 km from the shore. According to the *Financial Times*, one crew member died in the incident, while the remaining 13 were evacuated. The second tanker, Volgoneft-239, ran aground near the port of Taman, and its 14-member crew was safely rescued.

Both tankers were transporting a combined total of approximately 9,200 tons of fuel oil, a type of heavy heating oil. Preliminary estimates suggest that nearly 40% of the fuel (about 3,700 tons) leaked into the sea. The spill polluted over 55 km of coastline, primarily in the Anapa resort area in Krasnodar Krai.

Declaration of state of emergency

Initially, a state of emergency was declared by the regional authorities of Krasnodar Krai in response to the local scale of the disaster. However, due to its growing ecological and economic consequences, on December 26, 2024, the Russian Ministry of Emergency Situations decided to introduce a federal-level state of emergency. The announcement was made by Minister Alexander Kurenkov, emphasizing the need to mobilize government funds and deploy additional federal resources and services for rescue and cleanup operations.

"Considering the current situation and based on the reports we have received, I propose classifying the tanker disaster in the Kerch Strait as a federal-level emergency and establishing a federal response level," the minister stated. "This will enable the mobilization of additional forces and resources from federal executive authorities and state corporations, as well as provide necessary financial assistance to affected entities from the Russian government's reserve fund."

Rescue efforts along the kerch strait coast

The monitored area along the Krasnodar Krai coastline now spans 220 km. Cleanup operations are being carried out in five sectors: one in the Temryuk region and four near Anapa.

So far, approximately 30,000 tons of contaminated sand and soil have been collected, with over 23,500 tons transported to designated collection points. Surveys have been conducted over 295 square kilometers of the Kerch Strait, and more than 29,000 square meters of water have been cleaned. To contain the pollution, 450 meters of protective barriers have been deployed. In the port of Anapa, a coastal strip covering about 5 square kilometers has been cleaned. Thanks to volunteers' efforts, 1,154 birds affected by the disaster have been rescued.

Over 10,000 people, including volunteers, are involved in the rescue operations, supported by 360 units of equipment. Special emphasis has been placed on additional engineering machinery. Support points providing food, heating, and distribution of equipment and personal protective gear have been organized for those involved in the efforts.

WINTER MYTHS AND LEGENDS STEEPED IN WATER

Posted on 26 December 2024 by Agata Pavlinec

Winter is beautiful but also dark, harsh, and often cruel. This most challenging of all seasons has deeply influenced the cultures of many regions around the world, giving rise to fascinating myths and legends. Chilling tales are a specialty of northern societies, frequently intertwining the motif of water – a fitting symbol of winter's stillness, calm, detachment, and melancholy.

Categories: Issue 23/2024, News

Tags: legend, myths, sea, Sedna, water

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Cailleach, Queen of Winter

In Ireland, Scotland, and the Isle of Man, Celtic mythology birthed the goddess-witch Cailleach, also known as Beira. According to ancient beliefs, she was the mother of all gods, a giantess who created mountains and unleashed storms upon the world. Depicted as an old woman with white hair, yellowed teeth, and blue skin, she embodied winter and icy destruction.

One night, while guarding a well on Ben Cruachan, Cailleach is said to have fallen asleep, causing a flood that claimed hundreds of lives but also created Loch Awe, Scotland's longest lake. Similarly, when she washed her plaid in the icy waters of the Corryvreckan Gulf, she formed a massive whirlpool, now considered the third largest in the world, whose menacing roar can be heard almost 20 kilometers inland. After washing, the Queen of Winter spread her plaid on the land, covering it with a pristine white layer of snow. On Ireland's Beara Peninsula, a rock believed to be her remains marks the spot where Cailleach awaited the return of her husband, Manannán, the god of the sea.

Sedna, Mother of the Sea

In Inuit mythology, the figure of Sedna, goddess of the sea and marine creatures, inspires both fear and respect, as she has good reasons to seek vengeance on humanity. According to one version of the northern legend, she was a beautiful girl who refused to marry any hunter, angering her father – winters were long and harsh, and it was hard to feed the family. In desperation, Sedna eventually married a mysterious stranger who took her to a deserted island, where she discovered he was not a man but a bird spirit. Trapped in a nest, she awaited her fate.

Her fortunes changed when her father came to visit and decided to rescue her. He took her into his boat, but the bird spirit caught up with them and unleashed a fierce storm. Sedna fell overboard, clutching the boat's edge with her fingers at the last moment. Terrified of the bird spirit’s revenge, her father, fearing for his own life, cut off her fingers, sending her plunging into the depths of the sea.

Betrayed by humans, Sedna now waits in the ocean's depths, stirring up the fiercest winter storms. Her severed fingers turned into seals, walruses, and whales in the water. It’s no wonder that for centuries, Inuit travelers crossing the ice trembled at the thought of a sudden attack by the Mother of the Sea.

Nuckelavee, Niflheim and Morana – other winter myths from the north

The most terrifying demon of the Orkney Islands is the Nuckelavee – a half-man, half-sea-horse creature whose breath kills plants and animals and spreads epidemics among humans. Hidden in the ocean's depths during the summer, it is imprisoned by a benevolent spirit who ensures good weather and calm waters. In winter, however, Nuckelavee breaks free, turning the sea into a raging force of destruction.

In Norse mythology, one of the nine worlds connected by the sacred tree Yggdrasil is Niflheim – a realm of icy cold and frost. It is the destination for Viking souls who failed to die honorably. Frozen rivers crisscross Niflheim, surrounding the Hvergelmir well – a source that feeds the magical tree and numerous other rivers. Thus, death symbolically connects with the beginning of life.

Winter and water are not only storms, deadly frosts, and blizzards but also a period of transformation, change, and rebirth. It is impossible not to mention Morana, known locally as Marzanna, the Slavic goddess of winter and death. Her annual cycle culminated in a ritual drowning in spring – signifying the end of winter and the arrival of a time of blooming and abundance.

CHRISTMAS TRADITIONS AROUND THE WORLD: WATER AND SNOW

Posted on 25 December 2024 by Agata Pavlinec

Polish Christmas conjures up images of a 12-dish dinner, beautiful carols, the scent of a Christmas tree, and hay under the tablecloth. In some cultures, however, Christmas traditions demand greater resilience. Cold water and snow have become integral parts of December celebrations, inspiring and uniting local communities.

Categories: Issue 23/2024, News

Tags: Christmas, snow, traditions, water

Polish Christmas conjures up images of a 12-dish dinner, beautiful carols, the scent of a Christmas tree, and hay under the tablecloth. In some cultures, however, Christmas traditions demand greater resilience. Cold water and snow have become integral parts of December celebrations, inspiring and uniting local communities.

Cold baths

Cold water swimming on New Year's Day is a tradition firmly rooted in many countries, including Poland. However, taking a dip in icy waters also occurs during Christmas, though the motivations vary. In Norway, the ritual Julebad dates back to the 19th century and is tied to... the need to bathe before Christmas! According to Norwegian sociologist Eilert Sundt, the spread of Christianity in the Middle Ages led to a decline in the popularity of saunas, which were considered pagan. For cleanliness-obsessed Scandinavians, a plunge into icy waters was the only way to tidy up before the holidays.

Cleansing the soul is the aim of the Christmas tradition tied to Orthodox Christmas celebrations. In Russia, Bulgaria, and Romania, bathing in usually frozen bodies of water is believed to wash away sins and protect against evil. In 2020, two million Russians celebrated January holidays with a refreshing dip. In Balkan countries, priests encourage participation by throwing wooden crucifixes into the water—retrieving one is said to bring luck and protection for the year.

Group cold baths without religious undertones are also practiced during Christmas in the UK and Ireland—in Wales, even small children dive into freezing waves. Islanders rightly believe that cold exposure promotes health and offers better prospects for the coming year. Since 1864, Hyde Park's Serpentine Lake in London has hosted an annual Christmas swimming race over a distance of 100 yards.

Other water-based christmas traditions

Water, in a more controlled form, also features in Christmas traditions in other countries. In the Czech Republic, fortune-telling involves making boats from walnut shells with a candle placed in the center. After lighting the wick, the shell is floated in a bowl of water and observed. If it drifts to the center, the person can expect significant travels; if it stays near the edge, they should prepare for a quiet year at home. A circle of boats brushing against one another predicts harmony, while... sinking is considered a bad omen.

In Serbia, women traditionally leave the house on Christmas morning with a sprig of basil to collect water from a bucket or stream. This "strong water" is used for washing faces, drinking, and bathing infants. The ritual is believed to ensure robust health for the year ahead.

Greek Christmas traditions spare no one—not even St. Nicholas, who, as the patron of sailors, is constantly drenched in seawater. In homes, a wooden bowl of water with a cross wrapped in a sprig of basil is placed. This setup is used to sprinkle interiors, keeping mischievous goblins known as Killantzaroi at bay.

The magic of white christmas

An inseparable part of Christmas symbolism, even in the era of global warming, is snow, which we wish for each year. According to Lucinda Hawksley, biographer of Charles Dickens, the British author is to blame for this fascination. During the early years of his life, Dickens enjoyed snowy London thanks to the Little Ice Age. As an adult, he likely longed for snow and sold the public beautiful winter visions in his two popular works, *The Pickwick Papers* and *A Christmas Carol.*

In Scandinavia, building snow lanterns has been part of Christmas traditions for centuries, visually warming the frozen landscape. In our latitudes, however, we increasingly have to settle for artificial snow on the Christmas tree or snow globes that require shaking to see falling flakes. Not everywhere can or must Christmas be white, though. In Hawaii, where Christmas has been celebrated for over 200 years, Santa arrives with gifts on a kayak pulled by dolphins!

WHAT IS THE WATER FOOTPRINT OF YOUR CHRISTMAS EVE DINNER?

Posted on 24 December 2024 by Agata Pavlinec

Climate change is slowly but steadily reducing the chances of a white Christmas. For most of us, it has become clear that Christmas doesn't have to be extravagant because what we take today might be lacking in just a few years. Christmas Eve dinner is a perfect opportunity to start thinking about celebrations from the perspective of ecological responsibility and conserving limited resources. This year, try to reduce water consumption during preparations to support the disrupted hydrological cycle!

Categories: Issue 23/2024, News

Tags: Christmas Eve, water, water footprint

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Water is snow and life on earth

You might shrug off the idea of the water footprint of your Christmas Eve dinner – can the losses in your kitchen really have any significance for the world? The answer is yes, as you represent one of nearly 200 million households in the European Union. Every drop of water saved should be multiplied by 200 million, which translates easily into liters...

Drinking water is drawn from surface and underground sources – if you use less, more remains in nature. This means a reduced risk of droughts, agricultural crises, and crop failures, as well as a better chance for snow. Saving water also protects ecosystems and reduces energy consumption for pumping and purification, which translates to lower emissions. Unfortunately, global water consumption has increased sixfold since the beginning of the 20th century!

How can you save water while preparing christmas eve dinner?

Most Polish families spend the pre-Christmas period in the kitchen cooking, baking, kneading, and decorating. Liters of water flow from the tap, often unnecessarily. How can you maintain Christmas culinary traditions while being mindful of your water footprint? Here are some practical tips:

- Do not buy live carp or keep them in a bathtub – not only is it cruel to the animals, but it also wastes tens of liters of water.
- Wash fruits and vegetables in a bowl, and use the leftover water to water your Christmas tree.
- Cook vegetables for salads in the smallest amount of water possible – just enough to cover them slightly.
- Cook dumplings and ravioli in the same water, replenishing as needed. Reheat them in a pan or microwave, not in boiling water.
- When boiling water for tea or coffee, only boil the amount you need.
- If you are baking a cake, plan your work to dirty as few dishes as possible.
- Never thaw food under running water!
- Only run the dishwasher when it is fully loaded.
- Soak dirty pots and pans before washing them by hand, then clean them in a sink filled with water.
- Use minimal amounts of dishwashing liquid to save water during rinsing.

A good idea for Christmas Eve dinner is baked carp instead of fried. Not only is it a healthier, less fatty option, but it also reduces fat usage, which too often ends up in the sewer. Wastewater containing oil is harder to clean, and hardened fat can even block pipes.

https://wodnesprawy.pl/en/in-poland-we-waste-millions-of-tons-of-food-every-year-what-can-you-change-this-christmas/

Remember the water footprint of food products

The water footprint of your Christmas Eve dinner isn't just about household waste. The choice of individual food products also has far-reaching hydrological consequences. Foods with the highest water footprints include beef, nuts, lamb, pork ham, eggs, and dairy products. A cup of tea requires five times less water than a cup of coffee, and beer has a significantly lower water footprint than wine.

Of course, not everything can be avoided, but you can certainly learn to make more water-conscious decisions. This year's Christmas Eve dinner can be a small change with a big impact!

NIK REPORT: NATURE WITHOUT PROPER PROTECTION

Posted on 23 December 2024 by Iwona Szyprowska-Głodzik

Between 2013 and 2023, Poland's nature monitoring system, crucial for the protection of biodiversity, was implemented with serious shortcomings, according to a report by the Supreme Audit Office (NIK). Numerous issues were identified in the planning, implementation, and supervision of monitoring tasks, leading to violations of the Nature Protection Act and EU regulations. As a result, many plant, bird, and animal species requiring protection were excluded from observations, despite a significant increase in monitoring costs during this period.

Categories: Issue 23/2024, News

Tags: nature, NIK, report

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Key issues revealed in the report

NIK, in its analysis of the activities of the Chief Inspectorate for Environmental Protection (GIOŚ) and the Ministry of Climate and Environment, highlighted several problems undermining the effectiveness of nature conservation in Poland.

1. Incomplete scope of monitoring

Despite obligations under EU directives, between 2013 and 2023, not all species of community interest were included in monitoring programs.

- From 2013 to 2018, 73 out of 268 bird species and 33 out of 138 other animal species listed in the European Commission's reference lists were not monitored.
- From 2019 to 2023, 62 bird species and 58 animal species remained excluded from monitoring efforts.

2. Lack of reliable planning

Strategic documents prepared by GIOŚ were vague and lacked essential details:

- They did not specify the species and habitats requiring monitoring.
- Action plans and measurable indicators for assessing goal achievement were absent.
- The full scope of obligations under the Habitats and Birds Directives was not considered, leading to significant gaps in meeting international commitments.

3. Ineffective supervision of contractors

External entities tasked with monitoring often operated without adequate oversight. NIK found that:

- Contracts were misaligned with actual needs and contained loopholes enabling substandard execution of tasks.
- Penalties for delays and improper task execution were not enforced, resulting in financial losses exceeding 1 million PLN.
- Data provided by contractors were accepted despite non-compliance with established methodologies.

4. Surface water monitoring

Evaluating the status of surface water bodies (JCWP) is a key component of nature monitoring. However, the report highlighted significant deficiencies in this area:

- The frequency of water assessments was too low to ensure a comprehensive evaluation of ecological conditions.
- Certain JCWP were omitted from monitoring plans, resulting in a lack of systematic quality assessments.
- Methodological inconsistencies hindered the comparability of results across the country.

These issues threaten the implementation of the EU Water Framework Directive and complicate effective water resource management.

5. Rising costs and financial inefficiency

Despite numerous shortcomings, spending on nature monitoring more than doubled—from 49.5 million PLN in 2013–2018 to 109.5 million PLN in 2019–2023. GIOŚ failed to utilize data available from other institutions, such as national parks, leading to duplicated efforts and unnecessary expenses.

Consequences of irregularities

The shortcomings in the nature monitoring system have serious implications:

- Threat to biodiversity: The lack of data hampers swift responses to environmental changes and the implementation of protective measures.
- Loss of international credibility: Poland risks sanctions for failing to meet obligations under EU directives.
- Financial losses: Inefficient use of public funds weakens future environmental protection efforts.

NIK recommendations

NIK provided specific recommendations to improve the nature monitoring system:

- Planning reform: Introduce detailed schedules, measurable indicators, and clearly define species and habitats for monitoring.
- Enhanced supervision: Conduct regular quality checks on contractors, enforce contractual penalties, and adhere strictly to established methodologies.
- Spending optimization: Make better use of available data and avoid duplicating efforts to reduce unnecessary costs.
- Increased water monitoring frequency: Conduct regular and thorough assessments of all JCWP in compliance with EU requirements.

LAKE BAIKAL – THE OLDEST AND DEEPEST LAKE IN THE WORLD

Posted on 22 December 2024 by Iwona Szyprowska-Głodzik

Lake Baikal – the pearl of Siberia, a treasure of the world's natural heritage, and one of the most fascinating places on Earth. It is the oldest and deepest lake in the world, which for millions of years has hidden mysteries of life, geology, and climate.

Categories: Issue 23/2024, News
Tags: Baikal, lake

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A geographical giant in the heart of Siberia

Lake Baikal stretches for 636 km, connecting the Republic of Buryatia with the Irkutsk Oblast, and its width reaches up to 79 km in some places. However, the most impressive fact is that the lake's water fills a space plunging 1,642 meters deep, making it the deepest freshwater reservoir on Earth. Baikal is not just a lake but also a living testament to the geological history of our planet. It formed approximately 25 million years ago due to tectonic activity, and today the rift it occupies is widening by 2 cm annually, indicating dynamic processes that – according to scientists – could eventually form a new ocean.

Water as clear as crystal

Lake Baikal is renowned for its exceptional transparency. In summer, visibility can reach up to 40 meters. This purity is the result of unique microorganisms, such as Baikal sponges and tiny crustaceans like epischura, which naturally purify the water. The water in the lake has unique properties – it is extremely soft and low in mineral content, giving it a distinctive taste. In the past, drinking Baikal water was believed to bring health and longevity. Even today, many tourists are eager to taste this natural elixir.

A world of unique species

Lake Baikal's ecosystem is a natural wonder and one of the most unique on Earth. It hosts over 2,500 species of plants and animals, about 60% of which are endemic, meaning they exist nowhere else. This biodiversity is the result of the lake's isolation, age, and specific environmental conditions. The most iconic resident of the lake is the Baikal seal (*Pusa sibirica*), the only freshwater seal in the world. Adult seals grow up to 1.5 meters long and weigh around 70–100 kg.

Their ability to survive in freshwater and such a deep lake remains a mystery. Scientists suggest that the seal may have reached Baikal from the Arctic Ocean during an ice age. Interestingly, these seals can dive up to 300 meters deep and stay underwater for up to 70 minutes.

Baikal is home to over 50 species of fish, many of which are endemic. The most famous is the Baikal omul (*Coregonus migratorius*), a fish from the salmon family. Omul is a staple of the local cuisine, often served smoked, dried, or marinated. Another fascinating inhabitant is the golomyanka (*Comephorus baikalensis*), a fish with an extremely delicate, semi-transparent body. It is adapted to life at depths of up to 1.5 km, where pressure is immense, and temperatures are low. The golomyanka has no swim bladder, allowing it to thrive at varying depths.

This fish is also viviparous, a rarity among fish, giving birth to live young directly from the mother's body. In the lake's depths, besides fish, there are unique crustaceans, algae, and other organisms that contribute to the delicate balance of its ecosystem. In winter, when Baikal is covered by a thick layer of ice, life continues beneath its surface. Microorganisms such as cryophytic algae form greenish streaks on the transparent ice. During this period, fish and invertebrates adapt to the lower oxygen levels, continuing their life cycles despite the extreme conditions.

Legends and stories encased in Baikal’s waters

Lake Baikal has inspired legends for centuries, serving as a source of local myths and tales passed down through generations. For the people of Siberia, Baikal is not just a lake but a sacred place, full of spirits and mysteries.

The legend of Angara and the Shaman Rock

One of the most famous tales involves the Angara River, the only river flowing out of Baikal. According to the legend, Angara was the beautiful daughter of the mighty Baikal. She fell in love with Yenisei, a great Siberian river, and decided to flee to him. Enraged, Baikal hurled a massive stone – the Shaman Rock – after her, which can still be seen near Irkutsk at the mouth of the Angara. The rock symbolizes the father's wrath and his attempt to stop his daughter. In Buryat folklore, Angara and Yenisei represent a romantic love that overcame all obstacles.

The spirits of baikal

Another legend speaks of spirits dwelling in Baikal's depths. It is believed that the spirit of Baikal watches over its waters and punishes those who fail to show respect. Fishermen often make offerings to appease the "master of the lake" and ensure abundant catches. In some tales, the spirit of Baikal appears as an old man with a long white beard, emerging from the water to remind people to care for nature.

Olkhon Island – the center of mysteries and shamanism

Olkhon Island, the largest island on Baikal, is considered the spiritual heart of the lake. It is a hub of shamanistic worship, full of sacred sites and objects. The island is home to the famous Shaman Rock (Shamanskiy Stone), tied to numerous beliefs. According to legend, Baikal’s spirit resides in the rock, and the site radiates extraordinary energy. Shamans come here to perform rituals, pray for health, prosperity, and harmony with nature. Locals believe that Olkhon is a place where the worlds of humans and spirits intersect. Wooden poles adorned with colorful ribbons can be found along the island’s shores, symbolizing prayers offered to the spirits.

Icy phenomena and “singing ice”

In winter, Baikal becomes the stage for extraordinary natural phenomena, which have also become part of local lore. The ice covering the lake emits sounds resembling singing or groaning, once believed to be the voices of spirits inhabiting its depths. In reality, this phenomenon is caused by temperature changes, which make the ice crack and expand. These sounds, echoing across Siberia's wilderness, create an aura of mystery that has captivated people's imaginations for centuries.

The Siberian Atlantis

Another legend tells of a lost civilization that once inhabited the area around Baikal. Some claim that ruins of an ancient city lie beneath the lake's depths, submerged during massive earthquakes. While no evidence supports the existence of a "Siberian Atlantis," the tale fuels the imagination of researchers and travelers seeking traces of the past in Baikal's waters.

Mystical lights over Baikal

A final mystery involves lights seen above Baikal's surface, referred to by locals as "ghost lights." Some scientists explain this phenomenon as methane gas released from the lakebed, igniting upon contact with air. For local communities, these lights represent the souls of ancestors watching over the sacred lake.

https://wodnesprawy.pl/en/the-deepest-lakes-in-the-world/

The spiritual and cultural significance of Baikal

Baikal is not only a symbol of nature but also deeply rooted in Siberian culture. The Buryats, indigenous people of the region, regard it as a sacred place filled with power and mysteries. Shamanistic traditions and tales of spirits demonstrate that for local communities, Baikal is more than a lake – it is a living entity that demands respect and care. These legends are not only mystical in nature but also serve as a reminder of the fragility of nature and the need to preserve its harmony. Baikal has fascinated, inspired, and commanded respect for centuries, remaining a place where reality intertwines with myth.

PLITVICE LAKES, CASCADES, ORCHIDS, AND BEARS

Posted on 21 December 2024 by Agata Pavlinec

Croatia is primarily associated with pebble beaches and sapphire seas. However, its greatest natural treasure is the Plitvice Lakes, the country's oldest national park. It was here, among stunning waterfalls, that a series of popular Winnetou westerns were filmed in the 1960s. This fascinating land, listed as a UNESCO World Heritage Site, is a destination you can reach from Kraków in just 10 hours and is enchanting even in winter!

Categories: Issue 23/2024, News
Tags: Croatia, lake

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All the colors of water

The Plitvice Lakes National Park covers nearly 300 km^2, comprising forests, meadows, limestone rocks, and 16 lakes. These lakes are spread over two levels at altitudes of 500 and over 600 meters above sea level, creating a unique cascade system. Each lake has a slightly different color due to variations in mineral and biological composition and the angle of sunlight. Azure, turquoise, sapphire, and steel-gray surfaces are connected by waterfalls, the tallest of which is 78 meters high, fed by the small Plitvica River.

How did this extraordinary complex come to be? Geologists believe that streams flowing from the mountains eroded chalk and limestone over thousands of years, leading to the accumulation of travertine deposits. This sedimentation process is supported by local species of bacteria, algae, and mosses. The result was the formation of natural barriers that trapped water in basins, giving rise to the lakes. The largest of these, Kozjak Lake, formed 400 years ago from the merging of two smaller lakes. Today, it spans 82 hectares and reaches a depth of 47 meters. It is the only lake in the park where boats are allowed.

photo: Goran / Adobe Stock

Unique flora and fauna

Within the Plitvice Lakes, 1,400 plant species have been identified, representing 30% of Croatia's flora. This remarkable diversity results from the varied topography, ranging from 369 to 1,279 meters above sea level, and the meeting of marine and mountainous climates. The park features beech, fir, and spruce forests, alpine meadows, heathers, and wetland vegetation, including the rare marsh grass-of-Parnassus. Among the most precious botanical specimens are over 60 species of orchids and endemics such as *Scilla litardierei* or the large-petaled hellebore.

Among the lakes, 50 species of mammals can be found, including 22 rare and protected bats. The most exciting are the predators—brown bears, wolves, and lynxes—as well as otters. Additionally, the park is home to over 300 species of butterflies, two rare species of crayfish, nine species of woodpeckers, and eight species of owls.

Plitvice Lakes in winter

To protect nature, swimming in the Plitvice Lakes is strictly forbidden—visitors come here to connect with nature and hike, not to sunbathe. Despite this, the region attracts crowds in summer, which can make relaxation difficult. The park is open year-round, and winter offers the most peace and pristine charm.

The trails along the Upper Lakes are closed in freezing weather for safety reasons, but visitors can enjoy wandering around the Lower Lakes and Veliki Slap waterfall. Hiking paths also lead to the ridge of the Medveđak massif, which looks stunning covered in snow. On the meadows and in the forests, lucky visitors may even spot lynx, wolf, and bear tracks.

In addition, the village of Mukinje offers a cozy ski resort with numerous slopes approximately 400 meters long. The gentle slopes are perfect for families with children and beginner skiers.

FISH DAY: RESPECT FOR CARP

Posted on 20 December 2024 by Agata Pavlinec

On December 20th, for over 20 years, Poland has celebrated Fish Day, which intentionally precedes the purchase of Christmas carp. It's a great opportunity to reflect on the choices we are about to make. For too long, fish have been treated as voiceless, emotionless animals, whereas in reality, they are sensitive and surprisingly intelligent vertebrates.

Categories: Issue 23/2024, News
Tags: carp, carp ponds, fish

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Fish Day: a moment of empathy

In 2003, the Empathy Association, in cooperation with the Viva! Foundation, established Fish Day in Poland. Its purpose is to raise awareness that fish are sentient beings capable of feeling physical pain and should not be treated inhumanely.

According to the PETA organization, there is a wealth of scientific evidence confirming that fish have a developed nervous system. More than 20 pain receptors have been identified in the fish's head, overlapping with the areas where hooks are often placed. Observations also reveal that these animals suffer in unfavorable conditions, fall into apathy, stop eating, and remember unpleasant experiences for months, actively avoiding them.

On Fish Day, the District Sanitary and Epidemiological Station in Świnoujście also reminds us that fish can hear, many species have a well-developed sense of smell, and fish skin is as sensitive as the human eye. As highly social creatures, fish can build shelters and care for their offspring.

Carp: the most eco-friendly fish in Poland

Farmed carp are even less esteemed than wild fish—keeping them in a small bathtub filled with chlorinated water shows a lack of imagination and compassion. Meanwhile, Poland produces about 18,000 tons of carp annually, accounting for one-third of all freshwater fish caught in the country. The potential for harm is staggering.

The reputation of carp is further tarnished by its relatively low price and its bony flesh. Few people know that consuming carp is one of the most eco-friendly choices available to Polish consumers. Dr. hab. inż. Andrzej Pilarczyk from the Department of Ichthyobiology and Fisheries Management at the Polish Academy of Sciences in Gołysz points out that carp are currently fed natural diets, such as grain-based feeds. Furthermore, according to the WWF, closed carp farming poses no threat to the natural environment, nor does it carry significant risks of diseases or parasites. Open-pond farming, on the other hand, creates valuable ecological niches for other species, particularly waterfowl.

As an ecological source of protein and an integral symbol of Christmas, carp offers considerable benefits to us. Isn't it time to repay the favor, at least on Fish Day?

Buy responsibly!

The Empathy Foundation, as part of its efforts, advocates for veganism as a lifestyle that minimizes harm to animals. While this may not be a choice for everyone, scientists warn of potential health risks associated with a fully plant-based diet.

For most of us, carp remains a rational purchase in terms of economy, health, and ecology. However, farming fish for meat doesn't have to involve causing them unnecessary suffering.

In an official statement, WWF Poland opposes the sale and purchase of live fish, citing appalling conditions during storage and transport. The organization also deems it unacceptable to transport suffocating fish home in plastic bags without water and to kill them without proper training or expertise. WWF urges consumers to boycott the sale of live carp, arguing that decreasing demand will limit supply and save thousands of fish from unnecessary suffering.

Fortunately, Poland is making progress in carp protection. A citizen's bill proposing a ban on the sale of live fish has been awaiting debate in the Sejm for months. According to this year's survey conducted by Compassion in World Farming, as many as 69% of Poles support this ban.

SCALE OF FLOOD DAMAGE IN THE ŚLĄSKIE, OPOLSKIE, AND DOLNOŚLĄSKIE VOIVODESHIPS

Posted on 19 December 2024 by Zespół redakcyjny

The September flood that swept through Poland left behind extensive material losses in municipal and private infrastructure, as well as in the agricultural sector. We asked the authorities of the most affected voivodeships about the scale of destruction, the progress of the commissions assessing damages, and the forms of support already provided to those affected.

Categories: Issue 23/2024, News
Tags: flood, Poland

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Opolskie Voivodeship

The September flood caused significant damage in the Opolskie Voivodeship, impacting both infrastructure and agriculture. The estimated value of losses in municipal infrastructure currently stands at nearly PLN 3.3 billion, including damage to roads, bridges, public utility buildings, and other communal facilities. Losses in private infrastructure, encompassing residential and agricultural buildings, amount to over PLN 190 million.

The agricultural sector also suffered significant losses. According to data collected by the Opole Voivode, the following estimates were made:

- The number of affected farms: 1,243;
- The area of crops damaged by the disaster: 10,694 hectares;
- The value of damaged crops: PLN 32,282,477;
- Losses in farm buildings: PLN 1,018,606;
- Losses in machinery and farming equipment: PLN 425,579.

As of November 29, 2024, the total agricultural losses, including damages to beekeeping and fish farming operations, amounted to over PLN 36.6 million. Assistance provided to the affected includes renovation and construction allowances as well as support for farmers. To date, residents of the Opolskie Voivodeship have submitted 4,348 applications for renovation and construction allowances, and the disbursed funds total PLN 195.5 million. Additionally, PLN 67.5 million has been allocated to municipalities and PLN 1.4 million to counties for flood recovery efforts.

Śląskie Voivodeship

In the Śląskie Voivodeship, municipal infrastructure losses as of December 2, 2024, were estimated at PLN 804 million. In the agricultural sector, based on reported damages, the following losses were calculated:

- Value of crops damaged by the disaster: PLN 5,957,034;
- Value of greenhouse crops damaged: PLN 16,567;

- Losses caused by livestock deaths: PLN 25,037;
- Losses in apiaries: PLN 70,600;
- Losses in fish ponds: PLN 983,349;
- Losses in livestock buildings, machinery, and agricultural equipment: PLN 474,796.

Some municipal commissions have already completed their work, but full data will be available once all protocols have been verified.

Support for those affected in the Śląskie Voivodeship includes targeted and flood-specific allowances, as well as renovation and construction assistance. Disbursed funds include:

- Targeted allowances: PLN 14,863,368;
- Flood allowances: PLN 10,341,018;
- Renovation and construction assistance for residential buildings: PLN 12,541,865.77.

Funds are being disbursed continuously, often on the same day the application is submitted to the Śląskie Voivodeship Office.

https://wodnesprawy.pl/en/assistance-for-farmers-after-the-2024-floods-w/

Dolnośląskie Voivodeship

The Dolnośląskie Voivodeship was the most severely affected by the flood, with estimated losses as of December 5, 2024, exceeding PLN 5 billion. These losses span the agricultural sector, public infrastructure, as well as private and municipal properties.

Main photo: Jacek Halicki – Own work, CC BY-SA 4.0 / Wikimedia
Source: Based on press releases from the Dolnośląskie Voivodeship Office in Wrocław, the Śląskie Voivodeship Office, and the Opolskie Voivodeship Office.

CLIMATE CHANGE IS TAKING AWAY OUR WINTER

Posted on 18 December 2024 by Iwona Szyprowska-Głodzik

Snowy landscapes, like the one in the photo, are becoming an increasingly rare sight in Poland and around the world. Climate change, driven by greenhouse gas emissions, is gradually depriving us of winter by shortening the number of days with temperatures below 0°C. Data from the Climate Central report published in December 2024 shows that Poland, losing an average of nearly three weeks of cold days annually over the past decade, is among the countries most affected by this phenomenon. Global warming not only changes the face of winter but also disrupts the natural cycles of nature and the economy.

Categories: Issue 23/2024, News
Tags: climate change, global warming, winter

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The *Lost Winter* report

The *Lost Winter* report, prepared by Climate Central, provides a detailed analysis of the impact of climate change on winter temperatures between 2014 and 2023. The study covered 123 countries in the Northern Hemisphere and 901 cities, including 13 in Poland. Its aim was to determine how global warming has affected the number of winter days with minimum temperatures above 0°C — so-called "lost winter days."

The study utilized meteorological data from the ERA5 system and the Climate Shift Index (CSI) methodology, which estimates what the climate would look like without human influence. The analysis compared actual temperatures with those that would have occurred in a hypothetical world without greenhouse gas emissions. Results were presented at national, regional, and city levels, highlighting specific trends.

The global impact of disappearing winter frost

Globally, climate change has led to a noticeable increase in the number of winter days with temperatures above 0°C. In the past decade, 44 of the 123 countries analyzed experienced at least one additional week of such days per year on average. This phenomenon particularly affects cities in Asia and Europe, such as Riga in Latvia and Fuji in Japan, which have lost over three weeks of winter days annually. In the United States, 28 states have been significantly affected, including Arizona and Washington, where the number of days with temperatures above 0°C increased by over a week per year. This phenomenon impacts local ecosystems by reducing snow levels that would otherwise replenish rivers and reservoirs in spring.

Europe leads the way

Europe, as the fastest-warming continent, is experiencing particularly dramatic changes. Over the past decade, many European countries have seen a significant increase in the number of lost winter days. The Baltic States, including Lithuania, Latvia, and Estonia, have been the hardest hit, with an average of more than three additional weeks of days above 0°C each winter. Similar trends are observed in Denmark. These findings are especially alarming given that winter in Northern Europe plays a crucial role in sustaining local ecosystems and the economy, particularly the winter tourism sector. Countries like Germany, the Czech Republic, Belgium, and Norway have also reported an average increase of two to three weeks of additional days with temperatures above freezing.

Poland among the leaders in lost winters

Poland, due to its geographical location, is particularly vulnerable to the effects of climate change in the context of winter. The study included 13 Polish cities, each of which experienced at least two additional weeks of winter days with temperatures above 0°C annually compared to a decade ago. Szczecin, the city most affected by warming in Poland, reported as many as 23 additional days above freezing per year, significantly impacting the local ecosystem, economy, and winter tourism. Gdańsk, Lublin, Poznań, and Warsaw have also experienced significant changes, with an average increase of 20–21 days annually. Even mountainous regions like Wałbrzych reported an increase of 16 days, a notable change for skiing tourism and water resources, which rely heavily on snowfall.

What do the results mean?

Climate change, which reduces the number of cold winter days, has serious consequences for nature, the economy, and public health. Limited snow cover affects groundwater and river resources, leading to water shortages in spring and summer that are crucial for agriculture and industry. Disrupted plant growth cycles, especially for fruit trees and grains, increase the risk of crop losses, while earlier springs expose crops to frost. Meanwhile, warmer winters promote the proliferation of pests such as ticks and mosquitoes.

https://wodnesprawy.pl/en/hydrological-cycle-effect-of-snowfall-on-water-balance/

For mountain regions, shorter winter seasons mean losses in tourism, particularly in winter sports, which increasingly require artificial snow. The changes also impact public health — mild winters allow viruses and bacteria to survive longer and worsen air pollution. Reduced snowfall limits water supplies from meltwater, critical for ~~hydroelectric systems~~, increasing the risk of droughts and energy shortages. The scale of these challenges demands urgent adaptation measures, investments in water management, and reductions in greenhouse gas emissions to counteract the ongoing effects of global warming.

SUPPORT FOR FARMERS AFFECTED BY ADVERSE WEATHER EVENTS IN 2024

Posted on 17 December 2024 by Zespół redakcyjny

In 2024, Polish agriculture faced a series of adverse weather events, including floods, torrential rains, frost, and hurricanes. We inquired with the Ministry of Agriculture and Rural Development about assistance for farmers affected by these events. Below, we present information provided by the ministry, outlining the rules of support, application procedures, and the current situation regarding agricultural crop insurance.

Categories: Issue 23/2024, News
Tags: farm, farmers, flood, support

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Support for farmers affected by floods

This year's flood in September 2024 required the introduction of a state of natural disaster. According to the provisions of the Council of Ministers' Regulation of January 27, 2015, on the detailed scope and methods of implementing certain tasks of the Agency for Restructuring and Modernisation of Agriculture (Journal of Laws, item 187, as amended), farmers could apply for subsidies per hectare of flooded crops and refunds for the third and fourth installments of the agricultural tax.

- Deadline for applications:
    - Subsidy applications: November 15.
    - Tax refund applications: November 29.

Applications were submitted through the ARiMR's online systems.

- Subsidy amounts:
    - PLN 5,000 per hectare for crops such as corn, sugar beets, potatoes, fiber hemp, tobacco, hops, flax, vineyards, herbs, sunflowers, or vegetables.
    - PLN 4,000 per hectare for soybean crops.

Assistance for farmers affected by other weather events

Farmers who suffered losses in crops due to torrential rain, spring frost, or hurricanes up to September 10, 2024, could also apply for subsidies and tax refunds if damages exceeded 30% of their average annual agricultural production. Damages had to be assessed by a commission.

- Subsidy rates:
    - PLN 3,000 per hectare for damages of at least 70% of yield.
    - PLN 2,000 per hectare for damages between 50% and 70% of yield.

- PLN 1,000 per hectare for damages between 30% and 50% of yield.

- Deadline: November 15, 2024. Payments have already begun.

Disaster loans

Farmers affected by adverse weather conditions can apply for so-called disaster loans with reduced interest rates, subsidized by the ARiMR.

- Types of loans:
  - Working capital loans: For purchasing production materials such as plant protection products and fuel.
  - Investment loans: For restoring damaged assets, such as buildings, machinery, or livestock.

- Interest r**ates:**
  - 0.5% for farmers with insurance covering at least 50% of crops or livestock.
  - 4.925% for uninsured farmers.

- Conditions:
  - Loan amount: Up to PLN 5 million per farm or PLN 8 million for specialized production.
  - Loan term: Up to 4 years with government-subsidized interest.

Current agricultural insurance situation

Under the Act of July 7, 2005, on the insurance of agricultural crops and livestock (Journal of Laws of 2019, item 477), state budget subsidies cover 65% of insurance premiums for:

- Crops: Including cereals, corn, rapeseed, tobacco, vegetables, fruit trees, strawberries, and sugar beets.
- Livestock: Including cattle, horses, sheep, goats, poultry, and pigs.

The Ministry has proposed amendments to expand insurance coverage, planned for implementation in 2025.

Damage scale in 2024

Data from commissions assessing the scale and extent of damages in agricultural holdings and specialized production:

- Hurricanes: 496 farms, 2,472 ha.
- Hail: 12,858 farms, 127,839 ha.
- Torrential rain: 4,267 farms, 15,147 ha.
- Winter damage: 646 farms, 4,086 ha.
- Spring frost: 50,074 farms, 382,866 ha.
- Floods: 3,652 farms, 31,708 ha.
- Other (lightning, landslides): 2 farms, 4 ha.

Total:
71,995 farms affected, 564,122 hectares damaged.

Source: Press release from the Ministry of Agriculture and Rural Development.

FROM CIVIL PROTECTION TO ARTIFICIAL INTELLIGENCE – POLAND POWER OF BUSINESS CONGRESS 2024 CONCLUDES

Posted on 16 December 2024 by Katarzyna Mitrowska

On December 2, the Poland Power of Business 2024 Socio-Economic Congress concluded at the PGE National Stadium in Warsaw, gathering over 1,200 participants and more than 200 speakers. The event ended with a gala announcing the winners of the DNA – Because Helping Is in Our Genes competition. The winners were the Local Fund of the Śnieżnik Massif and the company Colian.

Categories: Issue 23/2024, News
Tags: business, congress, environment

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During the Poland Power of Business 2024 Congress, more than 25 discussion panels were held. Government representatives included Tomasz Siemoniak, Minister of Interior and Administration, who presented the objectives of the civil protection program; Ignacy Niemczycki, Secretary of State in the Chancellery of the Prime Minister, who discussed the priorities of Poland's presidency in the European Union; Anita Sowińska, Deputy Minister of Climate and Environment; and Adam Struzik, Marshal of the Mazowieckie Voivodeship.

Business leaders also participated, including Wojciech Wolny, CEO of Euvic, and Marian Owerko, founder of the Gedeon Help Foundation, who shared their forecasts for the development of Poland's economy amid dynamic global changes. Małgorzata Adamkiewicz, Chairwoman of the Supervisory Board of Adamed, emphasized the importance of innovation in public health.

Safety as a foundation for the future

The Congress was inaugurated by Dr. Piotr Wachowiak, Professor at SGH Warsaw School of Economics, and Tomasz Siemoniak, Minister of Interior and Administration and coordinator of special services. Siemoniak presented the civil protection and defense program, stressing that the new legislation aims to transform the philosophy of citizen protection by involving businesses, academia, and local communities. "From being a subject for services or officials, this topic must become a matter for all citizens," the minister stated.

The opening panel focused on international cooperation and preparing local structures to respond to crises. An effective civil protection program in Poland should rest on several key elements, such as strengthening the civil defense system, integrating technology more effectively, and engaging society. However, implementing such a program faces challenges, including the need to modernize infrastructure, adapt legal regulations, and educate citizens.

Priorities of Poland's EU presidency

The Congress featured a debate on the key directions for Poland's presidency of the European Union, which should focus on strengthening Europe’s economy and preparing it for future challenges. Ignacy Niemczycki emphasized that Poland will prioritize energy security and business competitiveness, advocating for cutting dependence on Russian gas and promoting a balanced energy transition. "Business expects three elements – geopolitical security, competitive energy prices, and stable supplies," said Niemczycki.

The main goals of the presidency, discussed during the panel, include actions for sustainable development, energy transformation, and introducing new mechanisms under the Clean Industry Deal to support the green industrial revolution. Participants included Witold Literacki, First Vice President of ORLEN, and Piotr Jabłoński, Managing Director of International Relations at BGK.

Inspiring panels – a diverse range of topics at Poland Power of Business

In addition to debates on security, sustainable development, and technological transformation, the Congress featured engaging discussions on topics such as the future of sports. Panelists highlighted the economic and civilizational benefits of the prospect of hosting the Olympic Games in Poland.

Debates on circular economy, electromobility, and mental health addressed both global and local issues, presenting specific solutions for the Polish economy. Discussions on innovation also explored the growing role of artificial intelligence and digital technologies in business. Topics like healthy food, ESG standards, and new recycling norms facilitated a multifaceted conversation about environmental protection and new corporate responsibilities. Panelists included Marcin Żurowski – Head of Logistics Legal, H&M Europe; Aleksandra Stępniak – Public Affairs Manager, Velux Poland; Anna Preisner – Head of Logistics Sustainability, H&M; Ryszard Hordyński – Director of Strategy and Communication, Huawei Poland; Beata Drzazga – Founder and CEO of BetaMed; Krzysztof Rdest – CEO of EMKA S.A.; Michał Kulpiński – Sustainability Manager, Ferrero Poland; Monika Palimąka – Director of Public Programs ESG, PKO BP; Katarzyna Kucisz-Rosłon – Senior Manager Impact Team, McDonald's; Henryk Kwapisz – Director of Institutional Relations, Saint-Gobain Poland; and Marcin Podgórski – Director of Waste Management, Emissions, and Integrated Permits at the Masovian Voivodeship Marshal's Office.

The Congress also brought together parliamentarians and government representatives who enriched key panels with their expertise. On the BE SMART stage, Izabela Bodnar and Katarzyna Kierzek-Koperska discussed legislative needs in finance and investment. On the BE VALUE stage, Katarzyna Ueberhan emphasized the importance of diversity and human rights in the Storyleaders panel. Anita Sowińska participated in a panel discussing new standards for extended producer responsibility (EPR). Their presence underscored the importance of government-business collaboration in addressing critical challenges.

Local fund of the Śnieżnik Massif and Colian win DNA competition

The Congress concluded with a gala for the DNA – Because Helping Is in Our Genes competition. This year's edition aimed to recognize organizations and companies involved in assisting residents of flood-affected areas. The Local Fund of the Śnieżnik Massif was praised for quickly organizing collections and providing support worth PLN 7.5 million, including building materials, household appliances, food, and psychological assistance. "I believe that altruism is encoded in our DNA," emphasized Zuzanna Komornicka.

The second laureate, Colian, was awarded for the Colian Helps campaign, which delivered over 333,000 bottles of water to the hardest-hit communities. "The flood was a moment when we realized we had to act and help," said Joanna Kąkol, the company's spokesperson.

Special awards for their efforts to support flood victims were also given to Paweł Gancarz, Marshal of the Lower Silesian Voivodeship; the Polsat Foundation; Employers of Poland; Corporate Connections; and the Polish Business Council.

"This event demonstrates that innovation, responsibility, and collaboration can shape the future of Poland's economy," concluded Agata Śmieja, President of the Clean Air Foundation.

main photo: Poland Power of Business Congress

ARTIFICIAL OR REAL CHRISTMAS TREE?

Posted on 15 December 2024 by Agata Pavlinec

Is it better to cut down a real tree only to throw it away afterward, or to buy an artificial tree made of polyethylene or polyvinyl chloride that can last for more than one season? Contrary to appearances, the answer to the question of which is the more environmentally friendly choice is not as straightforward as it seems. Which tree guarantees a cleaner conscience this holiday season?

Categories: Issue 23/2024, News
Tags: carbon footprint, christmas tree, holidays

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The long life of an artificial tree

A plastic tree has many practical advantages. It doesn't shed needles, doesn't require annual selection, purchase, or transport home, doesn't need watering, and has a perfect shape. Advocates of artificial trees also emphasize that they are bought once for several or even many years, which sounds undeniably eco-friendly.

However, there is a downside. Artificial trees are made from polyvinyl chloride (PVC) or polyethylene (PE), both of which are derived from the refining of crude oil. Their production involves significant emissions—PVC has a carbon footprint of 7.83 kg CO_2-eq, while PE is 2.9 kg CO_2-eq. Additionally, plastics are stabilized using heavy metals, making many artificial trees toxic, and nearly all eventually end up in landfills, where they will remain for hundreds of holiday seasons.

What's worse, artificial trees are transported over long distances, as they are produced in places where manufacturing costs are lowest, such as China. Emissions associated with shipping significantly increase the carbon footprint of a plastic tree.

Is a cut tree an eco-friendly choice?

Unlike artificial trees, the cultivation of real spruces and firs absorbs carbon dioxide instead of producing it. The growth process takes about seven years, during which intensive photosynthesis binds carbon within the plant's structure, helping to combat climate change. Admittedly, in the age of droughts, many plantations require irrigation, but heavy metals and other toxic substances are not a concern.

The biggest controversy surrounding the purchase of a real Christmas tree is, of course, cutting it down—it's hard not to see this as deforestation. However, experts point out that the production of firs and spruces is so profitable that growers plant 1–3 new trees for every one cut down. In the United States, 30 million Christmas trees are cut annually for the holidays, while 350–500 million seedlings continue to grow. It could be said that the demand for real Christmas trees drives reforestation!

photo: gpointstudio / envato

The end of a tree's life is crucial

Purchasing a real tree for the holidays is therefore more beneficial from the planet and climate perspective. However, it's essential to consider where you buy your tree and what you do with it after the holidays. Trees from local plantations are the most eco-friendly, as transport emissions are minimal, and the plants improve air quality in the region.

The final ecological balance comes after the decorations are removed. While all Christmas trees are technically biodegradable, those discarded in landfills emit methane, a potent greenhouse gas that exacerbates climate change. Burning trees is an even worse idea, as it releases all the carbon stored in the wood and needles into the atmosphere. So, what can you do? If you have a wood chipper, you can turn the branches into eco-friendly mulch for your garden beds. In many cities, local services handle this process. Additionally, dead trees are often collected by goat farms, where the animals eagerly feast on the coniferous treat.

https://wodnesprawy.pl/en/in-poland-we-waste-millions-of-tons-of-food-every-year-what-can-you-change-this-christmas/

If you still opt for an artificial tree, choose one made of polyethylene and use it for as long as possible. According to CNN, after 20 years of use, the carbon footprint of an artificial tree and a real tree starts to equalize!

MACIEJ SHAFT – A GEM OF SILESIAN TECHNOLOGY

Posted on 14 December 2024 by Iwona Szyprowska-Głodzik

In Zabrze, a city with a rich mining tradition, lies the Maciej Shaft – a unique site that captivates not only with its history but also its modern use. Once an essential part of the Concordia Mine infrastructure, it is now one of the most fascinating tourist attractions in Silesia. This is a place where the past meets the future, and industrial technology takes on a new life. Thanks to a well-thought-out revitalization, the Maciej Shaft has been transformed into a complex offering both education and entertainment while preserving the spirit of Silesian heritage. As part of the Silesian Voivodeship's Industrial Monuments Route, it exemplifies the effective fusion of heritage conservation and modern utilization.

Categories: Issue 23/2024, News
Tags: intake, mining

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A historical overview

Constructed at the beginning of the 20th century, the Maciej Shaft initially served as part of the Concordia Mine complex, playing a crucial role in mining coal deposits in the western mining areas. Known originally as Westschacht, its buildings and infrastructure were completed in the 1920s. It was the mine's tenth shaft, primarily used for ventilation and drainage purposes. After World War II, it became part of several successive mines: Concordia, Ludwik, Rokitnica, and finally Pstrowski.

Coal mining in the shaft's area ceased in 1978, and in 1992, plans for its decommissioning, along with its surface infrastructure, were set in motion. However, thanks to the efforts of the mining company Demex Ltd. and the Pstrowski Mine's agreement to forgo demolition, the shaft was converted into a deep-water intake. This revitalization breathed new life into the site, restoring it as a remarkable landmark on Silesia's cultural and historical map. Under its new ownership, the former buildings were repurposed, and the complex evolved into an intriguing tourist attraction that highlights the region's rich mining tradition.

A hidden treasure: deep-water intake

The transformation of the shaft into a deep-water intake became a cornerstone of its revitalization. Today, the Maciej Shaft not only provides visitors with pure, mineral-rich water free of contaminants but also serves as a tourist attraction in itself. It is a prime example of modern resource utilization and an ecological approach to industrial heritage.

Visitors have the opportunity to witness firsthand the technologies that once supported the mine's operations and now contribute to environmental protection and education. This experience deepens appreciation for the vital role the mine played in the life of the local community over the decades.

For more details on the Maciej Shaft's water intake, see the article: *Maciej Shaft (Westschacht) – A Unique Underground Water Resource in Zabrze*.

Transforming industrial heritage into a tourist attraction

The transformation of the Maciej Shaft is an excellent example of how industrial heritage can be revitalized. What was once the hub of intensive mining activity is now a place where education, tourism, and environmental protection coexist. The site offers educational tours,

workshops, and cultural events that attract both locals and visitors from across Poland.

An integral part of the complex is the Maciej Shaft Restaurant, which has gained recognition not only within the region but also on Poland's culinary map. Its inclusion in the prestigious culinary route *Silesian Tastes* and its accolades in the renowned Gault & Millau guide underscore its exceptional appeal. The restaurant serves dishes inspired by traditional Silesian cuisine, reimagined in a modern style.

photo: Szyb Maciej

Why visit the Maciej Shaft?

The Maciej Shaft is a place that amazes and inspires. It demonstrates that the history of mining can be more than a relic of the past – it can be the foundation for contemporary tourism and education. Visitors to this extraordinary site can immerse themselves in the spirit of Silesian tradition, savor exquisite cuisine, and experience a unique atmosphere that bridges the past and the future.

EXPIRATION OF THE POSSIBILITY TO ISSUE A DECISION BASED ON ARTICLE 234(3) OF THE WATER LAW

Posted on 13 December 2024 by Piotr Tarkowski

Cases involving changes to water conditions on land that negatively impact neighboring properties often take years to resolve before a proper decision is issued. Additionally, the harmful effects of such changes in water conditions sometimes only become evident after a considerable period (often years). To prevent decisions under Article 234(3) of the Water Law from being based on water conditions from an indefinite time in the past, the legislator introduced a type of "statute of limitations" for issuing such decisions in Article 234(5) of the Water Law. This provision states: Proceedings concerning the decision referred to in paragraph 3 shall not be initiated if more than five years have passed since the neighboring landowner became aware of the harmful impact on their property.

Categories: Issue 23/2024, News

Tag: water law

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Permissibility of proceedings based on time limits

According to the Provincial Administrative Court in Gdańsk, the time limit mentioned in Article 234(5) of the Water Law means that proceedings to issue a decision requiring the restoration of the previous condition or the implementation of devices to prevent damage cannot be initiated if more than five years have passed since the neighboring landowner became aware of the harmful impact on their property.

The key factor determining the permissibility of initiating proceedings is establishing the moment when the neighboring landowner learned of the harmful impact on their property. The court agreed with the prevailing judicial view that this provision requires evidence that a change in water conditions on the neighboring land is causing damage to the applicant’s property, justifying the initiation of proceedings, and that the applicant has been aware of this fact for no more than five years.
(See Judgment of the Provincial Administrative Court in Gdańsk, October 16, 2024, Case No. II SA/Gd 508/24).

Summary and analysis of the above judgment

Based on Article 234(5) of the Water Law and the court's position in the judgment, the following conclusions can be drawn:

- The expiration of the five-year period from the date the neighboring landowner became aware of the harmful impact excludes the possibility of initiating proceedings.
- The five-year period is not counted from the date the harmful change occurred or even when the harmful impact actually began, but from the date the neighboring landowner became aware of the harmful impact on their property.
- Therefore, the critical factor is when the neighboring landowner learned about the harmful impact. This fact must be determined when making the procedural decision to initiate proceedings.
- The application to initiate proceedings should include circumstances demonstrating compliance with this time limit. If not included, the authority must request additional information.
  (See the above judgment of the Provincial Administrative Court in Gdańsk: The legislator places the burden of proving this circumstance on the applicant.)
- The burden of proof for meeting the time limit is relaxed at this stage—the applicant only needs to make the circumstances plausible, not conclusively prove them.

(See Judgment of the Provincial Administrative Court in Kraków, May 7, 2019, Case No. II SA/Kr 260/19).

- Administrative authorities initiating proceedings ex officio must also obtain this information beforehand from the landowner whose property is affected by changes on the neighboring land.
  (See the above judgment of the Provincial Administrative Court in Gdańsk.)

- Failure to demonstrate compliance with the time limit entitles the authority to refuse to initiate proceedings.

Termination of proceedings due to time xxpiration

If an authority initiates proceedings because:

1. It failed to verify compliance with the above time limit during the initiation phase; or

2. It is later revealed that, contrary to initial findings, the applicant became aware of the harmful impact earlier than claimed in the application, and this occurred more than five years before submitting the application;

Then the proceedings should be terminated. The authority has a legal basis to issue a decision terminating the proceedings under Article 105(2) of the Administrative Procedure Code.
(See the above judgment of the Provincial Administrative Court in Gdańsk and the judgment of the Provincial Administrative Court in Kraków).

The issue of the proceedings becoming moot due to the expiration of the time limit can and should be examined at any stage of the proceedings, including during the appeal process. *(See the above judgment of the Provincial Administrative Court in Gdańsk: The objection regarding the expiration of the time limit under Article 234(5) of the Water Law was raised in an appeal against the first-instance authority's decision.)*

Given the importance attributed to adhering to the time limit (its violation eliminates the possibility of resolving the case substantively and issuing a decision on the merits), the moment the landowner becomes aware of the harmful impact on their property should be established without doubt. *(See Judgment of the Provincial Administrative Court in Poznań, September 20, 2023, Case No. III SA/Po 347/23, and the above judgment of the Provincial Administrative Court in Gdańsk).*

WATER ISSUES AND MORE. 50TH ISSUE OF THE NEWSPAPER

Posted on 12 December 2024 by Agnieszka Hobot

The time for summaries has come. Summaries of a time full of challenges and adversity, and at the same time filled with hard and creative work. I give into your hands the 50th edition of Water Matters - since it's about water, it brings a tear to the eye. After 2 years I can definitely say - it was worth it! Not only because I'm happy with the very existence of the newspaper, but most of all because you want to read us and that there are more and more of you. It's nice, surprising and motivating. I couldn't even dream of such a development.

Categories: Issue 23/2024, Issue topic

Tags: climate change, Drought, water, Water matters

The time for summaries has come. Summaries of a time full of challenges and adversity, and at the same time filled with hard and creative work. I give into your hands the 50th edition of *Water Matters* - since it's about water, it brings a tear to the eye. After 2 years I can definitely say - it was worth it! Not only because I'm happy with the very existence of the newspaper, but most of all because you want to read us and that there are more and more of you. It's nice, surprising and motivating. I couldn't even dream of such a development.

This special 50th edition is a special moment for us, an opportunity to reflect and take stock of our experiences. It's a time to appreciate every moment, effort and difficulties that have been overcome. From the beginning, for us - the editors of the newspaper - the topic of water seemed obvious - after all, we deal with it every day. We thought we were writing about something natural, always present and unchanging. Yes, the amount of water on Earth does not change, and its circulation continues, and yet....

...Recent years have brought us a deeper understanding of the water issue, which has confirmed how complex and delicate its circulation is. We recognize that the availability of resources and our ability to use them are changing dynamically. The water cycle - that fundamental mechanism that shapes life on Earth - is proving to be more sensitive than we might have thought. This is prompting us to pay even more attention to our actions and take responsibility for resource management.

At *Water Matters*, we have always tried to show how water affects every aspect of our lives. But do we realize how much we affect its availability? How much does our activity violate its natural circulation? For all intents and purposes, we don't know that yet. We are seeing more and more frequent droughts and floods. Scientists' predictions are not optimistic. And while we try to make sense of this data and predict disasters, one thing remains certain - without taking action, we may face consequences that far exceed our imaginations.

Each issue of our magazine is a new page of stories about water - the source of life that shapes the world around us in an almost imperceptible, yet undeniable way. So we are passionate about exploring the changing phenomena, inquiring into their origins, and sharing with you the latest scientific discoveries and thoughts of recognized experts. Our ambition is for water to cease to be just an abstract topic of scientific debates or a collection of impersonal statistics, and to become an understandable symbol of dependence and concern for everyone. Water is more than a subject - it is life in its purest form.

pic. Juho Luomala / Unsplash

I sometimes wonder if we ask ourselves questions about water on a daily basis. As a rule, its importance becomes apparent to us only in the

face of scarcity or excess. When the lawn dries up in the summer and the faucet barely drips, we realize what an undervalued resource water is. But are we able to look at it in the long term? Do we know how to counteract situations that are becoming more acute every year? These are questions that require not only reflection, but also concrete action - and that is already much more difficult.

The task we set ourselves at *Water Matters* is not just to inform. We want to raise awareness and inspire action. Sometimes all it takes is a small step - saving water, taking care of its resources on a daily basis. Each of us can do this through everyday decisions, both personal and business. And these are the ones that determine the effectiveness of water conservation in our country, not just regulations and big investment activities.

The anniversary of the 50th issue of *Water Matters* is also an opportunity to thank you. First of all, to our Readers. It is thanks to you that the magazine is developing and gaining a new audience. Your support, interest and involvement give us the strength to continue our work. Every message and opinion, every comment we receive is extremely valuable. It shows that what we are doing makes sense.

I would also like to thank the entire *Water Matters* team. Your work, dedication and passion are the aquatic bloodstream of this magazine. It is thanks to you that we have been able to create something that inspires, makes you think, and mobilizes you to action. Thank you also to all the experts, scientists and authors who support us with their knowledge and experience, sharing their thoughts and discoveries. Your work is the foundation on which we build each successive edition.

Looking ahead, I know that there are still many challenges ahead. Water will be a topic that will not stop resounding - on the contrary, it will gain in importance. Climate change, growing demand, the need for better management - all of these present us with new tasks. But I am convinced that together we can face them. *Water Matters* will continue to accompany you on this journey. In 2025. Many changes await us - both in shaping the newspaper's image and in new editorial activities that will give the magazine the opportunity to share water issues more widely.

So, I place in your hands the 50th issue of *Water Matters* with the hope that it will - especially in this pre-Christmas time - inspire even deeper reflection on how we treat our resources and living space. Thank you for being with us. I trust that we will rise to the challenges ahead, and that future issues will bring even more knowledge, motivation and inspiration to all of us.

THE STATE OF EUROPE'S WATERS - EEA REPORT

Posted on 12 December 2024 by Monika Zabrzeńska-Chaterera

Europe's population, environment and economy depend on water, its adequate quantity and quality. However, due to existing pressures and the effects of climate change, we are increasingly hearing that it is not possible to guarantee the availability of sufficient water of good quality.

Categories: From the European Commission, Issue 23/2024, Onet
Tags: EEA, report, water levels

Europe's population, environment and economy depend on water, its adequate quantity and quality. However, due to existing pressures and the effects of climate change, we are increasingly hearing that it is not possible to guarantee the availability of sufficient water of good quality. As indicated in the European Climate Risk Assessment (EUCRA), climate change is a critical pressure that is likely to threaten Europe's future water security.

Published in 2024. report *State of Europe's waters 2024. the need to improve water resilience* indicates that water stress is increasingly found in Europe, affecting 20 percent of its territory and 30 percent of its population each year. These numbers are likely to increase in the future due to climate change.

The report, prepared by the European Environment Agency (EEA), outlines three overarching challenges facing future European water management. These challenges include:

- Protection and restoration of aquatic ecosystems;
- Achieving the ambition of zero pollution;
- Adaptation to water scarcity, drought and flood risk.

The EEA report entitled *State of Europe's waters 2024. the need to improve water resilience* can be downloaded from the website of the Publications Office of the European Union.

General context

The Water Framework Directive 2000/60/EC (WFD) indicates that *water is not a commercial product like any other, but rather a heritage that must be protected, defended and treated as such.*

Good water quality and sufficient water in rivers, lakes, groundwater, transitional and coastal waters or wetlands is essential for nature to thrive. In return, healthy ecosystems support many services for society, such as water purification and lowering water supply costs. They are also a source of food, mitigate droughts and floods, and contribute to carbon storage.

Water also plays a key role in Europe's competitiveness and strategic autonomy, and in supporting the green and digital transformation.

The European Union's (EU) water policy includes regulations and strategies that view water from different angles. Ensuring a balance between competing water demands appears to be a key challenge.

Threats from climate change, pollution and loss of biodiversity affect water quality and availability, which in turn affects water use, including water for the environment. Recent extreme weather events in Europe, such as floods, droughts and high temperatures, are raising awareness of these risks.

As the report points out, in addition to solving the problems already present in water policy, it is necessary to identify new problems that are emerging or could emerge, and then find effective solutions.

Report *State of Europe's waters 2024. the need to improve water resilience*

The report, published in 2024, is based on data and information reported by all 27 EU countries, among others, as part of reporting on WFD implementation. It presents the state of water resources in Europe and addresses three key challenges facing water resources management, viz:

1. Protection and restoration of aquatic ecosystems;
2. Achieving the ambition of zero pollution;
3. Adaptation to water scarcity, drought and flood risk.

In addition, the report points out that the European Green Deal has set ambitious plans for a circular economy. Integrating water resilience into the green transition seems necessary, making it an important element in water-dependent sectors.

Since water is not an option, but the basis of life and the functioning of society and the environment, and given the assessment of the state of water submitted to the EC by the Member States, more decisive action is needed.

Current trends indicate that decisions must be made between competing needs such as public water supply, agriculture, nature, industry. To ensure long-term water security, Europe needs to restore the natural character of water, reduce water pollution and better manage water resources. This requires increased effort, innovation and cooperation at all levels of governance, from local water or land management to European strategic policy.

Increasing water stress, droughts and floods

Water stress in Europe affects 20 percent of its territory and 30 percent of its population each year, the report indicates. The scale of this phenomenon is likely to increase in the coming years due to climate change. And this one poses a serious threat to water resources and water-dependent ecosystems and the ecosystem services they provide.

In addition, with climate change on the horizon, managing flood risk in Europe in an affordable and sustainable manner will become increasingly important, but also increasingly challenging. As we have seen in recent years, and the autumn of 2024 has shown Europeans the true scale of the problem, sudden and intense rainfall leads to flash floods and flooding and increasing flood risk. Floods affect human well-being and ecosystems, threatening loss of life, significant economic losses and environmental pollution.

As the report points out, floods and water shortages threaten food and water security and the health of the population. They also come at a high economic cost. These stresses are projected to increase with climate change, which, the report points out, will potentially lead to competitive pressures and could undermine the EU's internal cohesion.

Costs generated by increasing water stress, droughts and floods

As the report points out, events in recent years, such as the 2021 floods in Germany, Belgium and the Netherlands, cost 44 billion euros. Drought and heat across the continent cost 2022. ca. 40 billion euros.

Among other things, water scarcity affects aquatic and water-dependent ecosystems and the ecosystem services they provide. For example, if a drought reduces wetlands, it will result in a decrease in habitat, poorer water purification and less carbon sequestration and storage, and consequently increase the costs required for water purification or air protection.

Without climate change mitigation and more effective adaptation, it is estimated that without mitigation, the direct damage caused by floods alone by the end of the century will increase by a factor of six over current levels.

Water quality in Europe

The Water Framework Directive laid the foundation for integrated water management at the level of river basin districts. It set a target - to achieve good water status by 2015, and by 2021 or 2027, if warranted.

As a result, European Union (EU) member states have made significant efforts to monitor surface and groundwater and invest in measures to help reduce pressure on them. As the report indicates, since 2010, EU member states have achieved some improvements in biological quality elements and reductions in some chemical pollutants. The list of monitored chemicals has expanded, and a better scientific understanding of toxicity has led to more stringent quality standards to protect human health and the environment. However, as the report points out, such efforts have rarely translated into overall improvements in water quality.

In 2021. Only 37 percent of surface water bodies in Europe had good or high ecological status, and 29 percent had good chemical status. In the same year, 9 percent of groundwater bodies were assessed as being in good quantitative status, 77 percent in good chemical status. At this point, it is worth noting that groundwater supplies two-thirds of the EU's drinking water and supports ecosystems such as wetlands and rivers.

As the report points out, difficulties in achieving good ecological status mean that Europe's aquatic ecosystems remain degraded.

POLLUTANTS IN FERTILIZERS - REPORT COMMISSIONED BY EC

Posted on 12 December 2024 by Monika Zabrzeńska-Chaterera

Fertilizers may contain contaminants that can affect human health or the environment, including by contaminating groundwater, surface water and drinking water, accumulating in crops or livestock.

Categories: From the European Commission, Issue 23/2024, Onet
Tags: contaminants, Fertilizers

Fertilizers may contain contaminants that can affect human health or the environment, including by contaminating groundwater, surface water and drinking water, accumulating in crops or livestock.

Since the Fertilizer Products Regulation (EU) 2019/1009 does not resolve all issues in this area, the European Commission has commissioned an assessment of the problem. Published in 2024 on the website of the Publications Office of the European Union, the report *Contaminants in Fertilizers: Assessment of the risks from their presence and socio-economic impacts of a possible restriction under REACH* , describes three separate but related objectives:

- Assessing the presence of contaminants in fertilizers;
- Identification of fertilizers of concern due to the impact of fertilizer ingredients or products on environmental degradation, including pollution of natural resources or on human health through the environment;
- Assesses the challenges of analyzing fertilizer alternatives.

The report can be downloaded from the website of the Publications Office of the European Union.

General context

Fertilizers may contain contaminants that affect human health and the environment. Such contaminants or intentionally added substances are partially addressed in the Fertilizer Products Regulation (EU) 2019/1009. This regulation sets out requirements for various categories of fertilizer products, but not all potential contaminants or intentionally added substances of concern are included. In addition, Regulation (EU) 2019/1009 does not apply to fertilizer products marketed under national regulations.

Therefore, if there is a need to eliminate certain identified risks to human health and/or the environment, it is proposed to assess whether it is possible to apply REACH (Registration, Evaluation, Authorization and Restriction of Chemicals) in these specific cases.

In addition, activities by the European Chemicals Agency (ECHA) in the field of fertilizers (e.g., the preparation of the Annex XV dossier on calcium cyanamide restriction) have raised some questions about how best to conduct regulatory management analysis (RMOA) and analysis of alternatives (AOA).

In this context, the European Commission-Directorate General for the Environment commissioned the assessment, which has three separate but related objectives:

1. Assessment of the presence of contaminants in fertilizers and documentation of fertilizers that pose potential risks to human health and the environment;
2. Identification of potential fertilizers of concern due to the impact of fertilizer ingredients or products on environmental degradation, including pollution of natural resources or on human health through environmental pollution;
3. Assessing the challenges of analyzing fertilizer alternatives.

Report Pollutants in Fertilizers

The scope of the assessment in the report, published in 2024, includes organic, organo-mineral and inorganic fertilizers defined in accordance with Annex I of Regulation (EU) 2019/1009. At the request of the European Commission (EC), an additional risk assessment was conducted for pyrazoles, which are used as nitrification inhibitors.

The following categories of fertilizer products were not included in the survey:

- liming agents;
- soil improvers;
- growing media;
- inhibitors;
- plant biostimulators;
- Some mixtures of fertilizer products.

Conclusions of the report Pollutants in Fertilizers

The market analysis was based on a review of relevant literature and statistical sources at the international, European and national levels. The report indicates that during the period under review, France, Germany, Poland and Spain were the four main countries using mineral fertilizers, accounting for more than half of the EU's total mineral fertilizer consumption (55.4 percent).

The results of the survey include statistics describing the EU fertilizer market and a compilation of information on the hazards and risks associated with the presence of contaminants in fertilizers.

The applications point to numerous and significant data gaps and missing statistics for market analysis. In addition, for reasons of confidentiality, data held by fertilizer manufacturers and required for the analysis of alternatives to fertilizers or substances that may have negative effects on the environment, human or animal health are not publicly available. In the absence of data, an expert opinion was used. Nevertheless, it may be challenged and considered biased.

As the report points out, there is currently insufficient data on the use of specific fertilizers for microanalysis to be possible, so in most cases the assessment has been based on macroanalysis. An example of insufficiently detailed figures is the use of calcium cyanamide, and in the case of technological additives, the information is proprietary and therefore confidential and unavailable.

Given the paucity of data, the evaluation of economic feasibility relied on a combination of qualitative and quantitative factors, varying according to the type of pollutant/fertilizer of concern.

Fertilizers of concern due to (intentionally added) ingredients

One of the objectives of the study was to identify substances that, when used in fertilizers, may pose (directly or indirectly through products) a risk to the environment or humans.

The consultation and analysis of the REACH registration dossier, indicated that the REACH list of substances used in fertilizers (PC 12 - Fertilizers) contains 1183 substances. The report indicated a list of 154 substances classified as CMR (sensitizing or carcinogenic, mutagenic or reproductive toxicity), STOT RE (repeated exposure target organ toxicity) or chronic aquatic toxicity, or as having endocrine disrupting potential and used in the agricultural sector in fertilizers in quantities exceeding 100 tons per year.

The report identifies substances of potential concern which include:

- 53 inorganic, representing the metals Ti, Mn, Fe, Co, Ni, Cu, Zn and Al and their compounds (in addition to non-metals such as ammonium compounds);
- 9 boron;
- 36 organic.

Most of the identified substances of potential concern are non-fertilizer chemicals used to improve the quality and stability of fertilizers:

- Additives to improve fertilizer performance -- use of additives to control nitrification, leaching or volatilization processes;
- Additives for the preservation and stabilization of fertilizers - for example, as corrosion inhibitors and anti-caking, anti-dust and hydrophobic agents.

EU CARBON DIOXIDE REMOVAL CERTIFICATION FRAMEWORK

Posted on 12 December 2024 by Karol Kucharski

The European Council has approved the first EU-wide certification framework for CO2 removal, carbon-intensive techniques and carbon storage in products to encourage CO2 removal and reduce emissions from soil. The prepared regulation, as announced by the European Commission, is the first step toward a comprehensive certification framework.

Categories: From the European Commission, Issue 23/2024, Onet
Tags: carbon dioxide, CO2, EU

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EU carbon dioxide removal certification framework

Work officially began on November 30, 2024, when the European Commission proposed a regulation establishing a voluntary framework for the certification of high-quality CO_2 removal methods, as we reported in a previous article: European Commission proposes certification of carbon dioxide removal to help achieve net zero emissions.

After less than a year, the European Council adopted the negotiating mandate at Coreper level, and on November 21, 2023. European Parliament approved its position. After three rounds of negotiations, EU lawmakers reached an agreement on the final form of the regulation, and with that, the European Council officially approved the regulation in a vote on November 19, 2024.

How does the EU carbon dioxide removal certification framework work?

The EU's CO_2 removal certification framework includes measures such as:

- Sustainable CO_2 removal: capture and storage of atmospheric or biogenic CO_2 for several centuries (e.g., bioenergy production with capture and storage, capture directly from the air and storage);
- CO_2 storage activities that allow CO_2 to be captured and stored in durable products for at least 35 years (e.g., in wood-based building products);
- Carbon-intensive techniques that increase CO_2 sequestration and storage in forests and soils, or that reduce greenhouse gas emissions from soils and are carried out over a period of at least five years (e.g., reforestation, restoration of peatlands or wetlands, improved fertilizer application).

What is the significance of the EU's carbon dioxide removal certification framework?

Certification is key to providing greater clarity and transparency in CO_2 removal activities and avoiding inaccuracies in their identification. The system is intended to encourage effective, sustainable and verifiable methods. The certifications will make it possible to validate actions, which is important for companies that want to show their commitment to climate protection.

CO_2 removal by natural systems has declined in recent years, and its place has yet to be taken by industrial action. The EU, through the EU certification framework, wants to intensify carbon dioxide removal activities and is seeking to develop clear rules to regulate these activities.

How will the EU certification system work?

The certification process for CO_2 removal activities is to be voluntary. To demonstrate compliance of their initiatives with the regulation, entities will be able to use the services of certification organizations. Such organizations will be subject to reliable and transparent monitoring, verification and reporting rules to promote confidence in the system and ensure environmental integrity. Accountability mechanisms will also be put in place to respond to any release of captured CO_2 back into the atmosphere.

To ensure transparency and full traceability of so-called certified units that benefit from $net\ CO_2$ absorption or in terms of net soil emission reductions, the Commission will establish an EU-wide electronic registry 4 years after the regulation enters into force.

What steps must be taken to obtain certification?

To be certified, CO_2 removal activities $must$ meet the following criteria:

- produce quantified benefits in terms of net CO_2 sequestration or net soil emission reductions;
- meet the additionality criterion, meaning that they go beyond the basic requirements of the law for individual entities and should become financially viable due to the incentive effect provided by certification;
- serve to ensure long-term storage of CO_2 while minimizing the risk of CO_2 release;
- not cause serious damage to the environment and be able to bring additional benefits in the context of one or more of the Sustainable Development Goals.

FOREST FIRES IN THE EU - 2023 REPORT.

Posted on 12 December 2024 by Karol Kucharski

According to the latest report summarizing the 2023 forest fires, published by the European Commission's Joint Research Center, the fire consumed more than 500,000 hectares of natural land. This is an area that is roughly half the size of the island of Cyprus. An indirect cause of the increasingly frequent fires on the Old Continent is drought and water shortages in forests.

Categories: From the European Commission, Issue 23/2024, Onet

Tags: Drought, EU, fire, fires, forests, water shortage

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Forest fires in the EU - drought and water shortages

The main cause of forest fires is catastrophic drought, caused by climate change. The impact of this change was highlighted in the first-ever European Climate Risk Assessment (EUCRA) and the European Commission's Communication on Climate Risk Management in Europe, published this year.

Climate change not only increases the area affected by fires, but also extends the fire season beyond the traditional summer period, and causes them to occur in areas not normally affected. We wrote about record temperatures and fires in July in 2023 in a previous article: July 2023. month of fires and heat records.

Long-term droughts lead to a drop in groundwater levels and cause significant water shortages in forests. The lack of water deprives plants of nutrients, thereby causing them to die, and consequently increases their susceptibility to fires.

EU forest fires a growing challenge for firefighting services

The high incidence and intensity of forest fires during prolonged fire seasons poses a challenge to firefighting services in Europe and around the world. Ground operations are becoming more difficult, if not impossible, and extinguishing from the air is more problematic and cumbersome.

The European Forest Fire Information System (EFFIS) was created to address these challenges. It is a network of 43 countries that provide information on forest fires in their areas and assess their impact in Europe. It is also a platform for sharing good practices in fire prevention, suppression, restoration and other fire management activities.

As of 2015. EFFIS is one component of the Copernicus emergency management services, the EU's Earth observation program, which provides information on the planet and its environment from both satellite monitoring and in situ data.

How to combat the causes of forest fires?

To counter forest fires in Europe and globally, landscapes in vulnerable regions should be managed by preventing the accumulation of high-risk fuels and their spatial continuity. Another measure to reduce the risk of forest fires are preventive measures based on nature's resources, such as promoting the species composition of less fire-prone trees, allowing grazing and an integrated approach to landscape planning.

According to the report, about 96 percent of forest fires in the EU were caused by human actions, which means that education and awareness campaigns are an essential element to prevent fires. It is important that as the climate crisis deepens, the people of Europe prepare for more frequent and intense forest fires. Preventive measures must include all communities, with particular emphasis on populations living in rural areas and in direct contact with natural areas. A key role in countering forest fires in the EU is played by the European Commission's Joint Research Center, which, through the analyses it performs, provides a wealth of valuable information on recommendations for targeting policy and protecting fire-prone regions.

Forest fires in the EU in 2024. - preliminary data

A preliminary assessment of the 2024 fire season in the EU shows that fires consumed less area than the average of the past two decades. This is mainly due to the periodic rainfall that affected much of the EU in spring and summer.

At the same time, the numerous forest fires that broke out in Portugal in September caused damage to exceed the EU average of recent decades. All in all, however, 2024 can be considered a less severe year for vegetation, as damage showed a downward trend for the first time in three years.

WHAT IS THE WATER SECTOR IN POLAND?

Posted on 12 December 2024 by Marta Saracyn

To ask myself the title question: What is the water sector? I was inspired by a conversation among people interested in investing in this area. Each participant in the meeting had his or her own idea of what economic activities and activities are related to the water sector. However, when it came to classifying investments, the ideas were very quickly limited to sewage treatment plants, sewage systems and water supply systems.

Categories: Business and economics, Issue 23/2024, Onet
Tags: water, water industry, water sector

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How do we commonly define the water sector?

So after that conversation, I began to wonder and ask various experts how they viewed the water sector. I even went so far in my search as to ask ChatGPT for a definition. Here is his answer:

The water sector (otherwise known as the water management sector) includes all activities, institutions, technologies and services related to water management. Its purpose is to meet society's needs for access to water and to ensure its rational and sustainable use. It is crucial to the economy, the environment and public health.

Wikipedia's English version, on the other hand, states that:

The water industry provides drinking water and wastewater services (including sewage treatment) to the residential, commercial and industrial sectors. Typically, utilities operate water supply networks. The water industry does not include manufacturers and suppliers of bottled water, which is part of beverage production and belongs to the food sector.

The water industry includes, among other things, water engineering, operationsconstructionconstruction sewage treatment plantssewage treatment plants, supplysupply of equipmentequipment and specialized chemicals for water treatment.

The water industry serves other industries, including the food sector that produces beverages such as bottled water.

What these readily available definitions, and many of the answers I received, have in common is that the water sector includes the provision of drinking and industrial water and the collection of wastewater. I would venture to say that this is how the water sector is commonly perceived.

Is the water sector just water and sewerage?

With this understanding, as it is commonly understood, the water sector is actually limited to the activities of municipal companies, Polish Waters and sometimes municipalities. This extremely narrow-minded approach causes us to miss the proper importance of water in the economy.

If we talk about the water sector only in the context of water supply, sewerage and hydraulic engineering, we will quickly come to the conclusion that it is a very small and specialized area. In addition, it includes virtually only activities related to government and local government entities. In my opinion, this takes responsibility for the water sector and water more generally off the shoulders of other entities, including, above all, business. The activities of manufacturing, service or construction companies, unless they manufacture or install pipes or build reservoirs, are not related to the water sector. And this is already an erroneous conclusion.

Activities in the water sector

In that case, how else can the water sector be viewed? In my mind, for years, water management and something that can be called the water sector has been drawn horizontally by the traditional division into industries. Thus, the water sector includes transportation - in the context of inland navigation, energy - after all, we have hydroelectric power plants, but also water-dependent conventional energy, and many others.

If I were to organize my vision of the water sector I would point out that it includes:

1. Supply of drinking water and water for industry and services - waterworks, intakes, water treatment plants, desalination plants;
2. Sewage disposal and treatment - sewage systems, sewage treatment plants;
3. Industrial water management - the use of water in industrial processes;
4. Water management in agriculture - irrigation, land reclamation, fish farming;
5. Water conservation and management of water resources - monitoring of water quality and quantity, renaturalization, retention management, protection from pollution;
6. Water engineering - construction and maintenance of hydrotechnical structures;
7. Tourism - management of tourist infrastructure related to the waters (marinas, stands, navigable routes), swimming pools;
8. Flood and drought risk management - planning and implementation of drought and flood control measures, emergency management;
9. Power industry - energy production from water, cooling installations in power plants;
10. Construction - plumbing systems in buildings;
11. production, services and works for the above activities;
12. Urbanized land management - integrated and sustainable stormwater management (SUBS).

Probably this list could be significantly lengthened and made more specific, such as water for cooling systems in the IT industry or fire protection. Viewed this way, the water sector is very broad and includes virtually all areas of the economy, even defense. Consequently, water management needs have a much broader meaning and more responsible parties.

Does this mean that the water sector is gone?

So many traditionally defined industries include elements related to water management that the thought arises quite quickly that one can actually say that such a thing as a water sector does not exist. I somewhat agree with this statement. Water elements are embedded virtually in most types of economic activity. Responsibility for effective water management should be a permanent part of business operations. This is indicated by the sustainability reporting requirements of the CSRD. Along with climate, pollution, biodiversity and the circular economy,

water is a topic that must be compulsorily assessed in terms of its relevance to business operations. There are no exclusions in the directive and reporting standards for some *non-water* sectors, and the water sector is not included in the list of sector standards.

One break from this approach is the list of activities that make a significant contribution to achieving environmental goals as defined by the EU Sustainable Development Taxonomy. There, unfortunately, we find only activities related to wastewater treatment and water supply. It is probably worth writing a separate article about how difficult it is at the EU level to agree on common definitions and technical qualification criteria for non-climate environmental goals.

Why look more broadly at the water sector?

Expanding the definition of the water sector beyond water supply and sanitation can bring a number of benefits. The first involves expanding the group of entities that share responsibility for water management. This approach does not include a passive expectation that the Water Authority or the local water utility will provide the water resource for the company's operations. Users are also responsible for the processes, stability and quality of the resources used. This opens up new opportunities for cooperation, such as: in the formula of Public-Private Partnerships (PPP) or initiatives along the lines of Partnerships for Water (e.g. Alliance for Waterstewardship).

In the context of the factor that started my discussion of the water sector, it is worth pointing out that this approach significantly expands the list of water investments. Any modernization that includes improving use efficiency, closing circuits, retaining rainwater, expanding irrigation systems and many, many other activities can be considered an investment in the water sector.

For the financial sector, where I work, this approach significantly expands the scope of financing sustainable water activities, while for entrepreneurs it allows them to show as an asset and a reason to get better financing terms their progress in sustainability not only in climate, but also in other environmental areas.

So I will conclude my thoughts in this 50th anniversary issue of *Water Matters* with an appeal: Let's look at the water sector, whether it is defined or not, broadly, as broadly as possible! It will pay off for all of us.

HOW MUCH IS DESERTIFICATION COSTING US? THE ECONOMIC BALANCE SHEET OF WATER SHORTAGES

Posted on 12 December 2024 by Agata Pavlinec

The 16th summit of the United Nations Convention to Combat Desertification (UNCCD), also known as COP16, was held in Riyadh, Saudi Arabia, from December 2-13, 2024. This year's theme was Our Land. Our Future and referred to the urgent need to accelerate action to strengthen the world's resilience to drought. Participants focused mainly on the economic side of the effects of desertification and the remedial actions needed.

Categories: Business and economics, Issue 23/2024, Onet
Tags: desertification, report, water shortage

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Costs of desertification according to UN estimates

The launch of the COP16 summit in Riyadh not coincidentally coincided with the publication of the report *Investing in Land's Future: financial needs assessment for UNCCD*. The document is an analysis of the financial costs of land degradation and widespread desertification worldwide. It shows that $2.6 trillion will be needed by 2030 to rehabilitate 1 billion hectares of degraded land and increase drought resilience.

The UNCDD report shows that already 40 percent of the Earth's surface is degraded, affecting the well-being of as many as 3.2 billion people. The greatest costs are, of course, borne by those poorest - traditional communities, rural farms and small farmers. The erosion problem is compounded by intensifying droughts, which have increased in severity by 29 percent since 2000. By the middle of this century, three-quarters of humanity will be suffering from drought.

We have been fighting the problem of desertification not since today. Investments in this sphere have increased from $37 billion in 2016 to $66 billion in 2022. However, they are still too low - according to the report's authors, the funding gap is $278 billion. annually.

Why do you need to invest more?

The global economy suffers losses of $878 billion annually as a result of desertification, land degradation and drought mitigation. These costs include, in particular, reductions in agricultural productivity and ecosystem services, climatic damage from soil carbon loss, and drought damage. Unfortunately, an additional 100 million hectares are being degraded each year, and by 2050 agricultural production losses due to climate change and deteriorating soil conditions are expected to reach 10 percent globally, and up to 50 percent in some regions.

Investing in soil remediation, meanwhile, is highly profitable. Improving the quality of agricultural land obviously means higher yields and increased global food security. It is also easier to implement sustainable strategies on better soils, as plants are in better condition and do not need constant support. Soil restoration also translates into sequestering large amounts of carbon and reducing the vulnerability of local communities to drought. In total, the restoration of 1 billion hectares of land can generate economic benefits of $1.8 trillion.

And don't forget the more difficult to quantify benefits in the form of improved well-being of local communities, increased water retention capacity of farmland, economic growth associated with ecosystem use, or support for public health and biological diversity. According to UNCCD analysts, $1 invested in combating desertification yields $8 in social, environmental and economic gains.

Key to increasing investment in the fight against land degradation and desertification is the involvement of the private sector, which - so far - has only a 6 percent share of financing. This can be done through the development of public-private partnerships, blended financing models and green bonds, among others.

Africa in the most difficult situation

As much as 62 percent of the postulated investment should go to Africa, where $191 billion will be needed to rehabilitate 600 million hectares

of degraded land. annually. The desert continent is losing an area of 100 soccer fields every minute, threatening the well-being of communities, food and water security, and public health. Well-invested funds could increase agricultural productivity in North Africa by 10 percent and sub-Saharan Africa by 5 percent.

The second largest candidate for massive soil remediation is Latin America with the Caribbean, where the UNCCD report says 20 percent of proposed investments should go. Here, 256 million hectares of land require urgent restoration.

Desertification in Europe - where is it worst?

Land degradation associated with climate change and predatory human activity is unfortunately making itself felt on our continent as well. A report on the state of soils in the EU, published in November this year by the European Academies Scientific Advisory Council (EASAC), states that as much as 24 percent of European land is affected by water erosion. By 2050. The ratio could increase by 13-25 percent.

On 74 percent of agricultural soils, disturbed nutrient ratios are found - in particular, an excess of nitrogen and a decrease in organic carbon. In 2018. 13 of the 28 EU member states have declared a serious risk of desertification. The situation is particularly dire in Portugal, Spain, Italy, Greece, Bulgaria, Romania, Cyprus and Malta.

The Soil Atlas 2024 report, prepared by the German Think Tank Heinrich-Böll-Stiftung, shows that the main problem is intensive agricultural processes that lead to soil erosion, salinization and compression. Add to this the overexploitation of water resources, the depletion of groundwater and the deterioration of water quality due to fertilizer abuse, and desertification becomes an increasing threat. The final *nail in the coffin* turns out to be heat waves, fires and prolonged droughts.

A more detailed study by Romanian scientists on soil degradation in Europe indicates the most dangerous processes: desiccation (Spain, Romania), pesticide pollution (Poland, Italy, Spain) and heavy metals (France, Italy, Greece). Up to 60-70 percent of European soils were found to be *unhealthy*.

In Europe combined, water, wind and crop erosion is displacing some 575 million tons of soil per year. The process is particularly fast in Turkey (five times faster than the global average), where nearly 13 percent of all land is already severely degraded.

COP 16 - how to fight desertification?

The Riyadh summit talked about ways to counter desertification and soil degradation around the world. The role of traditional communities, recognized as guardians of green areas, was considered crucial in this process. Their knowledge of how to protect grasslands or coral reefs cannot be overestimated, according to COP16 participants, so it was advocated that indigenous communities should have a seat at the negotiating table.

At the initiative of Saudi Arabia, which is particularly affected by the problem of desertification, an agenda has been set up to mobilize the financial resources necessary to achieve the ambitious goal of reclaiming 1.5 billion hectares by 2030. These are to come in particular from state budgets, financial institutions, international organizations, but also the private sector.

https://wodnesprawy.pl/arabia-saudyjska-zmienia-pustynie-w-parki-i-pola-up/

Halting desertification and rehabilitating already degraded areas holds great potential for climate action and biodiversity restoration. As UNCCD Executive Secretary Ibrahim Thiaw said at the opening ceremony of COP 16: *How we manage land today will determine the future of life*

on Earth.

IN POLAND, WE WASTE MILLIONS OF TONS OF FOOD EVERY YEAR. WHAT CAN YOU CHANGE THIS CHRISTMAS?

Posted on 12 December 2024 by Agnieszka Hobot

Christmas is a time for reflection, including on what is on our tables. In Poland, almost 5 million tons of food are wasted every year, and the cultivation of traditions does not facilitate changes in this regard. What are the main causes of this phenomenon? Can consumer choices really make a difference? In an interview with Agnieszka Hobot, Anna Spurek, director of the Green REV Institute, reveals the behind-the-scenes of the global food production system, points out why a plant-based diet should be based on local and seasonal products, and explains how small changes - especially during the holiday season - can become a step toward greater responsibility.

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Agnieszka Hobot: In the run-up to Christmas, the topic of food waste becomes particularly topical. However, it seems that despite numerous discussions, we are still unable to deal with this problem. What, in your opinion, are the main causes of this phenomenon in Poland?

Anna Spurek: The problem of food waste does not exist in a vacuum - it's part of a much broader system that includes how food is produced, distributed and consumed. Let's start with what we can afford and what choices we have. In Poland, more and more people are reaching for the cheapest products because their budgets are limited. According to the Poverty Watch 2024 report, the material situation of Poles is the worst in a decade. We choose food available in nearby stores, often in Żabki, Biedronki or Lidl, which provide the illusion of abundance. Meanwhile, the climate crisis and the problem of malnutrition in the world are invisible to us. It is worth recalling that 900 million people are currently starving and 3 billion do not have access to healthy, sustainable food.

The key function of food is to nourish the body - not just to provide calories, but to provide the ingredients necessary for proper functioning. Unfortunately, corporations focus on selling cheap and often low-quality products. This results in health problems such as obesity, diabetes and diet-related diseases. In such a system, food waste is a side effect - we buy products that spoil quickly, are improperly labeled or don't know how to use them effectively.

A.H.: If so, can food waste be reduced through better shopping planning and consumer education?

A.S.: Education is only part of the solution. Systemic changes are needed. Consumers are often unfairly blamed for wasting. We need to have access to healthy, local and seasonal food. Currently, there is a lack of widely available culinary, health and food education, which leads to poor purchasing decisions. The production and sale of food in excess is the result of a profit-driven market - from advertising to promotions. Being able to buy strawberries in January or cherries from Argentina for astronomical sums does not mean that the system is working efficiently. On the contrary, it is a manifestation of overproduction and waste of resources.

It is also worth noting the waste in the livestock sector. The production of meat, dairy and eggs involves the suffering of so-called farm animals, some of which do not make it to consumption at all. One in six animals is simply discarded. This shows how unfair and inefficient the current food system is.

A.H.: Can you imagine a food system that functions differently?

A.S.: For such a system to exist, action is needed on many levels. Education from an early age should include information on healthy eating, cooking and choosing local and seasonal foods. It is also crucial to create regulations that support the production of sustainable food and reduce waste at the production and distribution stages. Without such changes, food waste will remain a symptom of a deeper problem - a broken system that caters to the financial needs of corporations at the expense of consumers, public health and the environment.

A.H.: You mentioned that the food system in its current form is flawed and largely beyond the control of consumers. Could raising public awareness be the key to change, or are other measures needed to reduce food waste and change attitudes toward nutrition?

A.S.: To change the situation, it is necessary to reformulate the entire "food story." Currently, as a society, we are almost completely disconnected from it. However, this does not mean that consumers are completely devoid of responsibility - we should develop critical

thinking about what and how we buy. At the same time, the degree of privilege plays a key role. People with higher incomes have more opportunities to choose healthy food, while residents of smaller towns with limited access to stores or transportation are often forced to choose low-quality products.

This is not just a problem for individuals - the European Commission already announced draft legislation for a sustainable food system two years ago, which was to include mechanisms to counter waste. However, these proposals are still not sufficient. Systemic responsibility should be assumed by governments, local governments and retail chains. For example, chains can influence consumer choices by what they promote and how they arrange products on the shelves. If they can effectively advertise unhealthy food or encourage excessive shopping, they can just as well promote healthy and sustainable choices.

A.H.: What else can be done at the system level to reduce food waste?

A.S.: First, education - from an early age. In kindergartens and schools, children should learn what healthy, local and seasonal food is, why it is worth choosing it and how to prepare it. Second, regulations are needed to support access to healthy food for all. Fiscal mechanisms could, for example, reduce the price of healthy and local food, while raising taxes on off-season imports, like cherries in February.

It is also important that retail chains are obliged to responsibly manage surplus food. Today, unfortunately, many products are wasted already at the production or distribution stage.

A.H.: What steps is the Foundation taking to affect these changes?

A.S.: We operate mainly at the systemic level. We are submitting legislative recommendations, including on the law against food waste. Unfortunately, the current version of the law is only a cosmetic change - we need much stronger action. We are fighting for governments and politicians to take responsibility for this problem, because only they have the tools to make real changes.

Consumers cannot be the only ones with responsibility. With more than 10 percent of Europeans living in food poverty, shifting the blame for food waste to them is unfair. There are systemic inequalities - limited access to healthy food, transportation exclusion, lower incomes. All of this means that some people can afford to make informed choices, while others cannot.

But I stress that we need a comprehensive approach - from education, to changes in fiscal policy, to regulation of retail chains and promotion of healthy food. Only then can we talk about reducing waste, which is one of the most visible symptoms of a flawed food system.

A.H.: It seems to me that doctors rarely pay attention to the importance of healthy eating, yet it is the basis of well-being. I've never heard a simple "eat healthy, you'll feel better" from a doctor. However, I would like to confront two myths. The first is the notion that a plant-based diet always means that we don't waste food or harm the environment. I often hear that someone is a vegetarian and therefore "does everything right." Meanwhile, obtaining such products as the popular avocado is associated with huge problems, such as violence against people in their countries of origin. How do you assess this public awareness and its impact on actual consumer choices?

A.S.: This is a very important topic, and I'm glad you brought up the example of avocados, because it perfectly illustrates the problem of food globalization. In the "Plant School" program, we always emphasize: a plant-based diet should be local, unprocessed and sustainable. This means using products from local farmers, as long as we have access to them. In Poland, despite more than 1 million farms, only a small part of them operate in an efficient and sustainable way.

Globalization of food is one of the greatest challenges of our time. Politicians and policymakers have allowed it to grow, promising benefits that in reality are illusory. Tomatoes are an example - the ones we buy in cans may come from China, and we are not sure how they were produced. Instead, we should use food that grows close to us and is adapted to local conditions.

It is also important for us to understand that food is not only a way to satisfy hunger, but also an expression of care and closeness. For example, vegan cuisine can be excellent if it is based on local, seasonal products. We work with many people to create menus composed exclusively of such ingredients, which shows that it is possible to eat in harmony with nature and health.

A.H.: You mentioned the shift away from local products. Many people, especially in smaller towns, have given up their own home gardens in favor of quicker access to products in stores. Shouldn't we go back to these good practices, promoting local production and using unused land in Poland?

A.S.: Indeed, we are seeing a massive shift away from traditional forms of farming. This phenomenon is the result of the Common Agricultural Policy, which largely promotes industrial farming and ranching. In the European Union, huge resources are allocated to support the meat and dairy sectors, while small local farms are often unable to compete with them.

However, I am not advocating a return to the past. I believe that the future belongs to a sustainable, plant-based diet, based on technology and modern solutions, such as vertical farms. At the same time, it is crucial to rethink the entire food system - from production to consumption. Corporations don't care about healthy consumers, because healthy people don't generate profits. That's why it's important to promote a responsible approach to food, where quality, not quantity, matters.

A.H.: What can we do, especially during the holiday season, to put these ideas into practice and take better care of ourselves and others?

A.S.: The holidays are the perfect time to get back to basics - to celebrate food as an expression of love and care. Instead of reaching for exotic products, go for local ingredients, such as seasonal vegetables or homemade preserves. This is not only healthy, but also more emotionally valuable food.

Let's remember that a meal is not just about calories, but about memories and closeness. The smell of homemade borscht or homegrown mushrooms is something that cannot be bought in the store or replaced by ready-made products. By returning to these values, we can not only take care of our health, but also create truly special moments with our loved ones.

HOW DOES WALRUSHING AFFECT HEALTH? AN INTERVIEW WITH DR. JAN CZARNECKI

Posted on 12 December 2024 by Agnieszka Hobot

Could ice-cold water be the key to health and better well-being? In an interview with Agnieszka Hobot, physician and practitioner Dr. n. med. Jan Czarnecki reveals the secrets of walruses - from biochemical changes in the body to mental benefits that surprise even skeptics. Learn how to get started, how to avoid mistakes and get the most out of cold baths.

Categories: Feedback, In this issue, Issue 23/2024, Onet
Tags: bath, swimming, walrushing, winter, winter swimming

Could ice-cold water be the key to health and better well-being? In an interview with Agnieszka Hobot, physician and practitioner Dr. n. med. Jan Czarnecki reveals the secrets of walruses - from biochemical changes in the body to psychological benefits that surprise even skeptics. Learn how to get started, how to avoid mistakes and get the most out of cold baths.

Agnieszka Hobot: Winter, with its frigid air and snowy landscapes, is not only a time for nature to rest, but also a challenge for our bodies. For some it means avoiding the cold, while for others it is an opportunity to take a dip in icy water. What do you think are the potential health benefits of walruses?

Jan Czarnecki: One of the benefits that I can point out from my own experience is the overall improvement in mood and well-being. I think any walrus will be happy to confirm this. As for scientific reports showing that the benefits outweigh any possible negative effects, there are unfortunately relatively few. There are some studies, particularly from Finland, that show that walrus practitioners experience improved drive, find it easier to get up in the morning, and are more brilliant and have more vital energy. Most of us walruses feel better after such a swim.

There have also been recent reports of a decrease in cortisol, or the stress hormone, after walruses. Studies indicate that about three hours after swimming, its level drops significantly compared to the height before the immersion. However, it should be noted that the study had some limitations - it was not conducted with a control group, which makes it difficult to infer from these observations. Only 12 people took part in the study, which also increases the margin of error. Nonetheless, a significant decrease in cortisol levels appeared three hours after the walruses.

Interestingly, no increase in beta-endorphins was observed, which is quite often emphasized as a key effect of walruses. However, I want to point out that the improvement in well-being does not depend solely on the level of one substance or another. It is a very complex process that cannot be clearly measured or reduced to a specific biochemical indicator.

A.H.: I think many people are afraid of their first attempts at walruses. What abnormal bodily reactions can occur during these initial experiences? Are there any symptoms that should cause concern?

J.C.: People who suffer from cold-induced urticaria can expect an exacerbation of symptoms. Also, people who know they have or assume they may have aneurysms, which are weakened artery walls, should not go walrushing. Rapid increases in blood pressure during cold water immersion can lead to their rupture. The same is true for asthma, especially cold-induced asthma. Increased shortness of breath may require immediate medical attention. Another group that should approach walruses with caution are people with heart rhythm disorders. The heart reacts by accelerating its rhythm during contact with the cold, which is contraindicated in people with cardiac problems.

It is worth noting that although the risk of serious complications is relatively low, anyone planning to go walrushing should consult a doctor beforehand, especially if they suffer from any chronic conditions. Most people feel much better after walruses, but it should be remembered that the body's reactions are individual and may vary depending on the condition.

A.H.: There is a lot of talk about boosting immunity through walruses. Can you really see changes in metabolism or increased tolerance to other extremes, such as high temperatures, in people who regularly immerse themselves in cold water?

J.C.: I will answer this question based on both my own observations and conversations with people in the walrus community. Indeed, cold tolerance increases significantly, which is extremely satisfying. I often encounter comments like: *I'm warm-temperate, so walruses are not for me*. I think this attitude can be represented by the statement: *I won't go to the gym because I am weak and I don't want to lift weights because they are heavy*.

Walrus swimming is about confronting a challenge and overcoming one's own limitations. Entering cold water means getting out of the safe zone, facing strong discomfort, enduring as much as we ourselves deem appropriate, and then calmly exiting the water. This type of challenge can be very helpful for people with low self-esteem, who feel low in their own lives, or who simply have a low tolerance for the cold.

You also asked about the effect of walruses on immunity. We don't yet have conclusive data confirming this effect, but there are some hypotheses that I share at lectures and workshops. When immersed in cold water, the walrus body changes its response to the cold. Instead of a strong tightening of the vessels, a vasodilation mechanism begins to appear. Frequent infections may be related to the vasoconstriction of the mucous membranes of the upper respiratory tract in response to the cold, in order to keep the body warm. However, it can be assumed that the opposite is happening in walruses - the vessels begin to dilate, which increases blood flow and facilitates contact between immune cells and tissues. This improves immune surveillance, which can lead to greater immunity.

An interesting study that has been done on this issue is one from the UK from about 20 years ago. Participants in a laboratory setting immersed their feet up to their ankles in water at 10°C for 20 minutes. Interestingly, about 10 percent of the participants (out of a total group of 180 people) noticed symptoms of infection after this experiment. This suggests that infection can be triggered not only by contact with external pathogens, but also by activation of pathogens already present in the body. When blood vessels contract for a prolonged period of time, especially in the fall and winter, this can trigger a cold.

A.H.: You mentioned mental well-being and that walruses can support people with lower self-esteem. I think it's worth encouraging walruses, but how then to properly prepare the body? Does it need to be toughened up, or is it enough to simply put on gloves, a cap and get into the cold water, as some people suggest?

J.C.: Indeed, when talking about walruses, I often focus on mental well-being, which stems from my specialty in which I train, namely psychiatry. Walrusing can have a really positive effect on your well-being, but it's also worth preparing your body well to avoid unpleasant consequences.

It's best to start preparing by gradually getting the body used to the cold, such as taking cold showers. If someone has a problem with icy water, they can start with warmer water and lower the temperature at the end. If it's still a problem, it's a good idea to start by pouring cold water only on the legs, such as the calves, and gradually increase the area of the body subjected to the cold. The key is to be patient and gradually increase the exposure - the more difficult the process, the smaller the steps you should take. The important thing is - despite the difficulties - to keep moving forward, and the results will come with time. In conclusion, I would recommend before attempting walruses for the first time, daily cold showers for a week - preferably for a minimum of one minute, with completely cold water. This should adequately prepare the body.

As for gloves and a beanie - I'm for yes, but only at the beginning. If one wants to work on one's cold tolerance and practice gradual exposure, then it is worth aiming to give up these warmers after a while. Initially, they can be helpful, but the higher the tolerance to cold, the more it is worth giving up gloves and dipping hands in cold water, as well as a hat to expose the head.

I personally, as an instructor of the Wim Hof method, enter the cold water without any additional clothing items. I try to keep the surface of the water at chin level, which means that the neck is also submerged - an important thermoregulatory zone worth paying attention to. However, I admit that in the past I used a cap and gloves and gradually gave them up. I think it's worth using this protection at first, but eventually aim for full exposure to the cold.

A.H.: This is one last question, since we have already talked about preparation. Are there any other mistakes that beginners make? Is there anything that should be avoided during the first exposures of the whole body to the cold, especially for prolonged immersion?

J.C.: The first mistake that comes to mind is excessive competition, especially among men. Walrus swimming has a certain spectatorial aspect

to it - it is impressive, and people who practice it often feel pride. This is understandable. There was a meme circulating on the Internet recently that reflected this quite aptly. I believe that walrushing is indeed something to brag about, but its deeper dimension should not be forgotten.

Walrusing, in my opinion, is all about introspection - the ability to focus on one's own feelings and quiet the mind, despite a situation that the body perceives as life-threatening. It's about the ability to remain calm and remain unaffected, despite extreme conditions. For me, this is an exercise of a mental nature as well, with many positive effects.

The social aspect of walruses is also worth mentioning. Walruses in a group are more motivating and enjoyable - walrus practitioners often form communities, which encourages joint activities and relationship building. However, this has its pros and cons. The biggest danger is the unhealthy competition that emerges - who can last longer in the water. The key is to know when to say enough and let go before the body reaches, or exceeds, its limits of endurance. Staying in cold water too long just to impress others can have serious health consequences. That's why it's important to learn to recognize when the body has reached its limits and not to prolong exposure to the cold against the body's signals.

KARPIOKI – AN INNOVATIVE SNACK MADE FROM CARP MEAT

Posted on 12 December 2024 by Grzegorz Tokarczyk, Grzegorz Bienkiewicz, Patrycja Biernacka

Categories: Feedback, Issue 23/2024, Onet
Tags: carp, snack

The innovative snack called carpioki was created as a response to today's challenges of food waste and the need for healthier alternatives to popular snacks.

Sustainably produced products that combine health, taste and ecological qualities are gaining popularity in the food market. Karpioki - innovative carp snacks - are an example of foods that respond to these needs. They are an alternative to traditional snacks. Their creation was inspired not only by the desire for culinary innovation, but also by the need to make efficient use of leftover meat, often wasted during fillet production.

Carp as an underrated culinary resource

Carp, despite being an integral part of the culinary traditions of many countries, including Poland, for centuries, is currently not very popular as a raw material for large-scale food production. Its consumption is largely seasonal, associated mainly with the Christmas season. During this time, traditional carp appears on Christmas Eve tables in the form of fried fillets, in jelly or after smoking. Outside this period, demand for it is relatively low, leaving many valuable resources of this fish untapped.

A barrier to the popularization of carp as a culinary resource is often associations with its peculiar taste, as well as fears of numerous bones, which deter many potential consumers. Carp is also perceived as a fish that is difficult to process, which discourages both individual customers and food producers. As a result, its meat is sometimes undervalued. And this is a pity, because it is rich in nutritional values that benefit our health. It is a source of easily digestible protein and omega-3 fatty acids (including EPA and DHA), which have beneficial effects on the cardiovascular system.

How carpioles are made

One of the goals of the project, in addition to increasing fish consumption through a new and innovative form of serving it, was to use processing side streams for consumption. The problem of underutilized carp meat resources mainly concerns the leftovers from filleting the fish. In the traditional production model, these items are often treated as waste or used to a limited extent. However, in an era of increasing environmental awareness and growing emphasis on circular economy, this approach is becoming less and less acceptable. Therefore, meat obtained by separation from post-filet residues is mainly used for carp production.

The process of making carpaccio consists of several steps. The most important is the combination of the meat with the starchy ingredient, which is obtained by intensive mixing with the addition of water, salt and sugar. The next stage is the glutination of the starch by evaporation. This is when a compact structure is formed from the combination of two large molecules, which are protein and starch. The bars obtained after the evaporation process (Photo 1) are cut into thin slices and subjected to a drying process, obtaining a semi-finished product in the form of a *pellet* (Photo 2). It can be sold in this form or subjected to deep-frying to give it the desired sensory characteristics, namely porosity and crunchiness (photo 3).

Photo. 1. Batony karpioków po procesie parowania, przygotowane do cięcia

Photo. 2. Karpioki (pelet) przed smażeniem

Photo. 3. Karpioki po smażeniu, gotowe do spożycia

A healthier alternative to chips

Karpioki are roasted fish prepared from a mixture of carp meat and starch. The key goal was to create a product that uses the full potential of the fish. With simple ingredients - carp meat, tapioca starch, a bit of salt and sugar - a product with a high content of protein, fish lipids, minerals and vitamins was achieved.

This innovative snack expands in the process of deep-frying, increases its volume, and at the same time becomes a crunchy morsel, reminiscent of classic chips or roasts. Despite deep-frying the snack to achieve the desired qualities, the fat and saturated fatty acid content is significantly lower compared to popular snacks, which also translates into a lower energy value - more than 7 percent compared to a classic commercial roasting and more than 13.5 percent. - with crisps. A comparison of the nutritional value of carpaccio and commercially available snacks is shown in Table 1.

	raisins	chips	carps
energy (kcal)	515	545	480
grease	30	33	26
including sfa	2,3	4,0	2,0
protein	1,3	6,2	14,5
carbohydrates	60	58	48
of which sugars	0,5	2,8	0,5
salt	2,4	1,6	0,5

Tab. 1. Porównanie wartości odżywczej karpioków i klasycznych produktów rynkowych ;
Own research: Department of Fish, Plant and Catering Technology, Faculty of Food and Fisheries Sciences, West Pomeranian University of Technology

in Szczecin

The most nutritionally important ingredient in the innovative snack is the wholesome, well-absorbed protein of the fish. The high protein content (14.5 percent), ten times higher than that of roasted fish and more than twice that of chips, is an important argument for people who make conscious dietary choices. Besides, it authorizes the promotion of the product with the nutrition claim - "source of protein." With 50% fish (carp) content, these snacks are a source of easily digestible protein with high digestibility and essential amino acids, including lysine. Research carried out at the Department of Fish, Plant and Catering Technology at ZUT in Szczecin showed high lysine content in snacks. Depending on the percentage of fish in the carpaccio, the lysine content ranged from 1.3 g to 2.3 g per 100 g of product.

Analyzing the nutritional results shown in Table 1, it is important to note the amount of salt reduced to 0.5 percent, while keeping the sensory qualities at the desired level. The Reference Dietary Allowance (RWS) for salt in carbs was just 3 percent, while chips had almost 10 percent and romaine had as much as 14.4 percent.

Development prospects

The advantage of carpoches is their versatility - they can be eaten as a healthy snack between meals, a side dish or an option for children. Their unique properties and neutral taste give the product the potential to conquer the market both in Poland and abroad. The key to success, however, will be further development of the technology, consideration of consumer preferences and effective product launch.

Summary

Karpioki is an example of how an innovative approach to food raw materials can benefit not only consumers, but also the environment. With their nutritional value and eco-friendly nature, they can become an interesting alternative to traditional snacks. New technologies that are changing the way we think about food are opening the door to unlimited possibilities. Products such as carpioki are proof that science and the food industry have the potential to create trends that respond to both market needs and the challenges facing global society. It's a culinary innovation that could affect the way we view fish and its role in our daily diet.

Dr inż. Grzegorz Tokarczyk jest profesorem Zachodniopomorskiego Uniwersytetu Technologicznego w Szczecinie i kierownikiem Katedry Technologii Rybnej, Roślinnej i Gastronomicznej na Wydziale Nauk o Żywności i Rybactwa. Konsultant naukowy Departamentu Rybołówstwa Ministerstwa Rolnictwa i Rozwoju Wsi. Prowadzi badania w zakresie analizy białek i tłuszczów, zmian składników żywności zachodzących podczas przetwarzania surowców pochodzenia wodnego oraz nowych i innowacyjnych produktów spożywczych. Zajmuje się również zagadnieniami dotyczącymi prawa żywnościowego, w tym znakowaniem produktów rybołówstwa.

Dr inż. Grzegorz Bienkiewicz jest profesorem Zachodniopomorskiego Uniwersytetu Technologicznego w Szczecinie i pracownikiem Katedry Towaroznawstwa, Oceny Jakości, Inżynierii Procesowej i Żywienia Człowieka na Wydziale Nauk o Żywności i Rybactwa. Rzeczoznawca UOKiK z lisy Zachodniopomorskiego Inspektora Jakości Handlowej. Prowadzi badania w zakresie jakości lipidów żywności, szczególnie lipidów ryb. Zajmuje się również zagadnieniami dotyczącymi prawa żywnościowego, w tym znakowaniem produktów rybołówstwa.

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PENGUINS - BIRDS THAT SWIM

Posted on 12 December 2024 by Iwona Szyprowska-Głodzik

Penguins are true gentlemen in the natural world. Their distinctive, tuxedo-like coloration gives them elegance while setting them apart from other bird species. But behind this charm is also a remarkable story of survival and adaptation to some of the harshest environments on Earth. How do they cope with the extreme cold of Antarctica? Why did they lose their ability to fly? And what made the emperor penguin appear on a beach in Australia? Let's dive into the world of penguins - masters of adaptation - to learn fascinating facts about their daily life and constant struggle for survival.

Categories: From the world, Issue 23/2024, Onet
Tags: Antarctica, birds, penguins

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Penguins - inhabitants of the southern oceans

They are found only in the Southern Hemisphere, and their geographic range is extremely diverse. The best-known species, such as the emperor penguin and Adeli, inhabit the harsh wilderness of Antarctica, where they must survive in temperatures that drop below -60°C, amid glaciers and winds blowing at speeds of up to 200 km/h. Other species, such as the Magellanic penguin and the white-beaked penguin, prefer warmer regions. They can be found on the coasts of South America, South Africa and even the tropical Galapagos Islands.

Any living environment requires penguins to adapt to the prevailing conditions. In Antarctica, their biggest enemies are extreme cold, strong winds and limited food availability during the polar winter. In warmer areas, such as the coasts of South America, the main challenges are water pollution, overfishing and other human-related threats.

Life in a tuxedo

Penguins are masters of adaptation, having adapted perfectly to extreme environmental conditions over millions of years of evolution. Their dense, waterproof plumage, consisting of multiple layers of feathers, provides them with effective insulation against penetrating cold and water. In addition, a thick layer of fat under the skin acts as a thermal insulator and energy store, especially useful during periods when access to food is limited.

On land, they move in a distinctive way, swinging on short legs, which gives them a somewhat comical charm. However, their awkwardness in such conditions does not hinder their survival - in difficult terrain they often use their bellies to glide across the ice, thus conserving energy.

However, they show their true dominance in the water, where their body becomes an almost perfect swimming tool. Their streamlined shape minimizes drag, and their wings, which have been transformed into flippers, allow for fast and precise movements. Thanks to this, penguins can reach speeds of up to 15 km/h, becoming extremely effective predators in their environment.

Strength in the group - the social life of penguins

Penguins are social animals that live in colonies of tens to even hundreds of thousands of individuals. Living in a group allows them to survive in harsh conditions. In Antarctica, where winters are particularly harsh, emperor penguins form tight groups, known as heat nurseries. Individuals standing on the outside of the circle periodically swap places with those inside so that everyone has a chance to warm up.

Penguins' mating rituals are also evidence of their social nature. Males attract mates with complex dances, bows and specific sounds. When fertilization occurs, the parents share responsibilities. The male often incubates the egg, holding it on his feet and covering it with a fold of skin, while the female goes on long hunts.

pic. vladsilver / depositphotos

Why don't they fly?

Although penguins belong to birds, evolution transformed their wings into flippers, stripping them of the ability to fly. This adaptation was necessary because they spend most of their lives in the water, where they hunt and forage for food.

Their bodies are ideally suited to underwater challenges - their streamlined shape reduces water resistance, and their strong muscles enable them to dive effectively. Some species, like the emperor penguin, can dive to depths of more than 500 meters and last underwater for up to 20 minutes. While the loss of flight ability seems like a limitation, it actually allows them to be among the most effective hunters among seabirds.

Diet and hunting ability

Penguins are some of the most persistent and successful hunters in the bird world. Their diet is varied, although the main ingredients are

fish, squid and krill - small crustaceans that are the mainstay of marine ecosystems in the southern hemisphere. Each meal is the result of effort and precision, which penguins have mastered to perfection through millions of years of evolution.

Emperor penguins, which are the largest species among penguins, are true record-breakers in diving. They can dive to depths of 450 to even 500 meters and remain underwater for an impressive 20 minutes. Such ability is due to unique physiological adaptations. When diving, their heart slows down and blood flow is concentrated on the most important organs, the brain and the heart precisely. At the same time, their muscles use the oxygen reserves stored in myoglobin, which allows them to effectively extend their time underwater. Their eyesight is adapted to underwater hunting, allowing them to spot prey even in the twilight of the deep, where sunlight does not reach.

Threats and the struggle for survival

Despite their impressive adaptability, penguins have to contend with numerous threats. The effects of climate change, such as melting glaciers and warming oceans, are affecting food availability. Declining krill populations, caused by changes in marine ecosystems, pose a serious threat to their diet.

The penguins' situation is further complicated by human activity. Excessive fishing, ocean pollution and interference with breeding sites significantly hinder the survival of these birds.

https://wodnesprawy.pl/pingwiny-kapia-sie-w-wodzie-z-mikroplastikiem-alar/

Emperor penguin in Australia

On November 1, 2024, an unusual visitor was spotted on Ocean Beach in Western Australia - an emperor penguin. The adult male, later named Gus, was more than 3,200 kilometers from his native Antarctica. The emaciated and severely malnourished bird caused a sensation, being the first representative of its species on the Australian continent. Experts suspect that it lost its orientation during a storm and followed unusual ocean currents.

Gus was taken to a wildlife rehabilitation center, where he received the necessary care. His story shows how climate change is affecting penguin behavior, forcing them to leave their natural habitats in search of food. Gus's case is not only emblematic of the penguins' struggle with global challenges, but also a reminder of the need to protect their natural habitat before it's too late.

ICICLES, SEA FLOWERS, ICE BALLS AND OTHER WINTER WONDERS OF NATURE

Posted on 12 December 2024 by Iwona Szyprowska-Głodzik

Winter reveals to us the most unusual facets of nature, turning water into icy works of art that surprise us with their variety and beauty. From delicate sea flowers to fragile icicles to mysterious ice bubbles, these phenomena are proof of nature's infinite creativity. Each of these formations conceals physical and biological processes that not only delight, but also provide valuable research material for scientists.

Categories: From the world, In this issue, Issue 23/2024, Onet
Tags: ice, ice formations, sea ice

Winter reveals to us the most unusual facets of nature, turning water into icy works of art that surprise us with their variety and beauty. From delicate sea flowers to fragile icicles to mysterious ice bubbles, these phenomena are proof of nature's infinite creativity. Each of these formations conceals physical and biological processes that not only delight, but also provide valuable research material for scientists.

pic. David Dibert / Unsplash

Icicles of ice

Icicles are among the most recognizable ice formations that appear on roofs, tree branches or rocks. They form as a result of cyclic melting and freezing of water at temperatures close to 0°C. The water, flowing down from higher surfaces, freezes and forms elongated structures. Icicles can reach a variety of sizes, from a few centimeters to more than two meters in length, depending on the amount of water available and the duration of the process. These forms are beautiful, but falling can pose a danger to passersby and animals, so in cities their removal is a duty.

Sea flowers

Sea ice flowers (sea ice flowers) are one of the most beautiful phenomena found in polar regions. They are formed on the freshly frozen surface of sea ice, where very low air temperature (below -20°C), high humidity and lack of wind create ideal conditions for their formation. In the process, rising moisture from seawater crystallizes and forms flower-like structures from a few millimeters to a few centimeters in diameter.

They are most often seen in the Arctic and Antarctica, especially in places where sea ice forms over large areas, such as the Weddell Sea. Sea flowers are rich in salt, minerals and microorganisms such as bacteria and viruses that survive in extreme conditions. They are a source of marine aerosols that affect atmospheric composition and cloud formation. However, due to the warming of the climate, this phenomenon is becoming increasingly rare, which increases the importance of research into its impact on global climate processes.

Hairy ice

*Hair*ice*(hair ice*) is an extremely rare and intriguing phenomenon that can be observed in deciduous forests on dead wood. It forms when the air temperature drops slightly below 0°C and the air is humid. Its unique appearance resembles fine white fibers only a few tens of micrometers thick, which can reach lengths of up to several centimeters.

Trichome ice is formed by the presence of the fungus *Exidiopsis effusa*, which secretes chemicals that limit the growth of ice crystals. This process allows moisture extracted from the wood to freeze in the form of thin, silky structures. The phenomenon is most common in the moist forests of Europe, such as Germany's Thuringian Forest, but can also be observed in Poland in regions with abundant dead wood, such as the Bialowieza Forest.

Morschulce

Seagulls, also known as ice balls, are rare formations that appear on beaches during severe cold and windy weather. They are formed when overcooled water mixes with slush and the movement of waves forms round pieces of freezing snow, which are then thrown ashore. Such ice balls have been observed in the Polish Baltic Sea - on the Hel Peninsula, as well as on the Vistula Lagoon, among others.

Pancake ice

*Pancake*ice is a characteristic phenomenon that occurs in polar waters and regions with cold climates. It is formed when thin layers of ice break under the influence of water movement, and then these fragments rub against each other, forming rounded forms with raised edges, resembling pancakes. Their diameter varies from several centimeters to as much as several meters, depending on hydrological conditions.

They are most common in the Beaufort Sea and the Bering Strait, but can also be seen in the Baltic Sea, in the Gulf of Finland area, during heavy frosts. Pancake ice can be the initial stage in the formation of larger ice sheets and plays a key role in polar ecosystems, providing, for example, habitat for microorganisms and protection against ice erosion.

Ice bubbles

Ice bubbles are one of the most picturesque ice phenomena that can be observed on lakes. They form when gases, such as methane or carbon dioxide, are released from decaying organic matter at the bottom of the lake and rise toward the surface. As the water freezes, these bubbles become trapped in the ice, creating striking layered patterns.

Lake Abraham in Canada is known for the methane bubbles that form a particularly spectacular sight there. A similar phenomenon occurs on Lake Baikal in Russia, where bubbles form on the frozen surface, forming spectacular mosaics. Ice bubbles are not only beautiful, but also important for climate change research, since methane is a potent greenhouse gas. Their observation provides valuable data on emissions from natural bodies of water.

Toros

Toros, also known as ice tsunamis, is a phenomenon involving the piling up of ice floes on the shores of bodies of water under the influence of wind and sea currents. They are most often formed during a thaw, when the solid ice sheet breaks, forming an ice pack that is then moved landward. Toros can reach thicknesses of up to a dozen meters, building impressive ice formations on coasts.

In Poland, this phenomenon can be observed on the Baltic Sea, especially on the Hel Peninsula. In January 2024. In Kuznica, large amounts of broken ice piled up to two meters high, attracting the attention of many residents and tourists.

Toros are not only a spectacular sight, but also a phenomenon that affects local ecosystems and can pose a threat to coastal infrastructure. Their presence is indicative of the dynamic processes taking place in the polar and subpolar environment, and their study provides valuable information on climate change and hydrological conditions in the region.

Beauty and the key role

Winter ice formations are not only spectacular natural wonders, but also extremely important elements of ecosystems and indicators of climate change. Each of the described phenomena shows the diversity of processes taking place in the winter environment.

Observation and analysis of these formations allow scientists to better understand the mechanisms governing freezing, thawing and the influence of temperature on global hydrological and climatic processes. For nature lovers, in turn, the winter wonders are proof of nature's infinite creativity, inspiring reflection on the need to protect the environment and consciously manage natural resources.

MACIEJ (WESTSCHACHT) SHAFT - A UNIQUE UNDERGROUND WATER INTAKE IN ZABRZE

Posted on 12 December 2024 by Marcin Stępień

Maciej Shaft is a historic mining plant, a legacy of Zabrze and Silesian coal mining. It used to be part of the Concordia Mine, and has been since the 1990s. In the 1970s. is undergoing a transformation, turning into a socio-cultural space that is attractive to visitors who want to take advantage of its food and entertainment offerings.

Categories: In this issue, Issue 23/2024, Onet, Science
Tags: mining, take, water intake

Maciej Shaft is a historic mining plant, a legacy of Zabrze and Silesian coal mining. It used to be part of the Concordia Mine, and has been since the 1990s. In the 1970s. is undergoing a transformation, turning into a socio-cultural space that is attractive to visitors who want to take advantage of its food and entertainment offerings.

Origins

Today, the Maciej shaft is located in Zabrze, on Srebrna Street in the Maciejów district, in the industrial complex left over from the Pstrowski coal mine. When its exploration began in 1922, it was named Westschacht because it was to provide access to the western part of the mining field of the Concordia Grube mine, which had been in operation since 1841. This area fell to the Germans after World War I, uprisings and a plebiscite in 1922.

At the time, Zabrze was called Hindenburg, the current Maciejowice was called Mathesdorf, and the street was called Silber Strasse. Most of the dozens of mines fell to Poland after the plebiscite, only 14 of them remained on German territory, and therefore, in order to increase coal production, all of them had to be modernized and new mining sites had to be sought. This is how the story of a rather unusual facility for which water is of primary importance begins.

Drilling work

Excavation of the shaft began with a circular shaft disk with a diameter of 4350 mm. At the same time, on the surface, work began on providing the basic infrastructure of the mine: the hoisting tower, the buildings of the engine room, the shaft top, the sorting plant, the switchgear, the converter, the fan room, as well as the administrative and residential buildings for the employees were being constructed. While investments on the surface were going smoothly, from the very beginning below the surface, work was moving very slowly, which was related to the difficult hydrogeological conditions.

Initially, they drilled into Quaternary formations, which consisted of alternating layers of clay and highly failing sands, often fine-grained. Before drilling through 30 meters of the youngest geological formations, they repeatedly encountered cupping, which is a mixture of fine sands, clays and water trapped between them under considerable pressure. When cut, they behave like a homogeneous liquid mass, often posing a danger to mining. Below the Quaternary formations, shales and Triassic sandstones were encountered, lying to a depth of about 82 meters, the latter also heavily waterlogged.

The aquifer extended in the foot part of the Triassic formations in a series known as the Spruce Tree strata. The sandstones and sands that occur here in the form of several levels do not maintain continuity - they are interspersed with clay layers. Directly beneath them lay Carboniferous sediments, including coal seams. Due to intensive groundwater inflows, the drilling was eventually terminated at a depth of 198 meters, and this occurred only after ten years. At this depth, it was connected to a trench from the mining level in the main Concordia mine field.

The Westschacht shaft was secured with a cement mortar masonry casing with a total thickness of 50 cm, which made it watertight. From then on, it began to fulfill the roles of ventilation, mining, material, downhill and dewatering. As it turned out, coal mining was not at all its most important function. Only three low-flesh coal seams were encountered here, which were additionally severely tectonically disturbed, but they provided the basis for the mine's output for the next few years.

Water production

In addition to coal, water turned out to be the mine's real wealth. It was decided to make use of its surplus, and in 1928 a Water Supply Plant was established to produce drinking and industrial water based on mine water from the Westschacht shaft and the Jan shaft of the Mikulczyce mine. One of the two pump stations was installed in the Westschacht shaft. On site, the water was filtered, chlorinated and subjected to a de-gelatinization process. Quite quickly, the Water Works expanded. New buildings were constructed in the vicinity of the shaft, and as drilling progressed, groundwater was exploited from the two aquifers of the Westschacht shaft and from several levels of the Jan shaft.

In addition, groundwater was also exploited from four deep wells (50-100 m deep) located about 1.5 km north of the Westschacht shaft. The total length of the water supply network soon reached 30 km. The main water supply system was located along the railroad line connecting Gliwice and Bytom and supplied water to the surrounding towns, mines and steel mills. Water pipes made of cast iron or steel ranged in diameter from 150 to as much as 500 mm.

The Water Supply Plant's annual production reached 8 million$^{m^3}$. Underground water from behind the Westschacht casing seeped into a reservoir at the 110-meter level and from there was directed to the bottom of the shaft, where it mixed with water flowing in from other areas of the mine. From there, they were pumped by pipeline to the surface, to a de-gelatinizer, and from 1938 they were also subjected to a chlorination process.

Maciej shaft

In 1945, Zabrze found itself within the borders of Poland. The Westschacht shaft was renamed Maciej, the Water Supply Plant was nationalized and in 1949 was handed over to the Zabrze Coal Industry Plants for management. For more than 30 consecutive years, the Maciej shaft was an extremely important point on the map of the city's water supply. The Concordia Mine, then as Ludwik-Concordia, and in the final phase of its operation as Pstrowski, was obliged to maintain a continuous supply of groundwater, but due to specific geological conditions, the intake was quite often contaminated with sand and clay, which forced stoppages in supply.

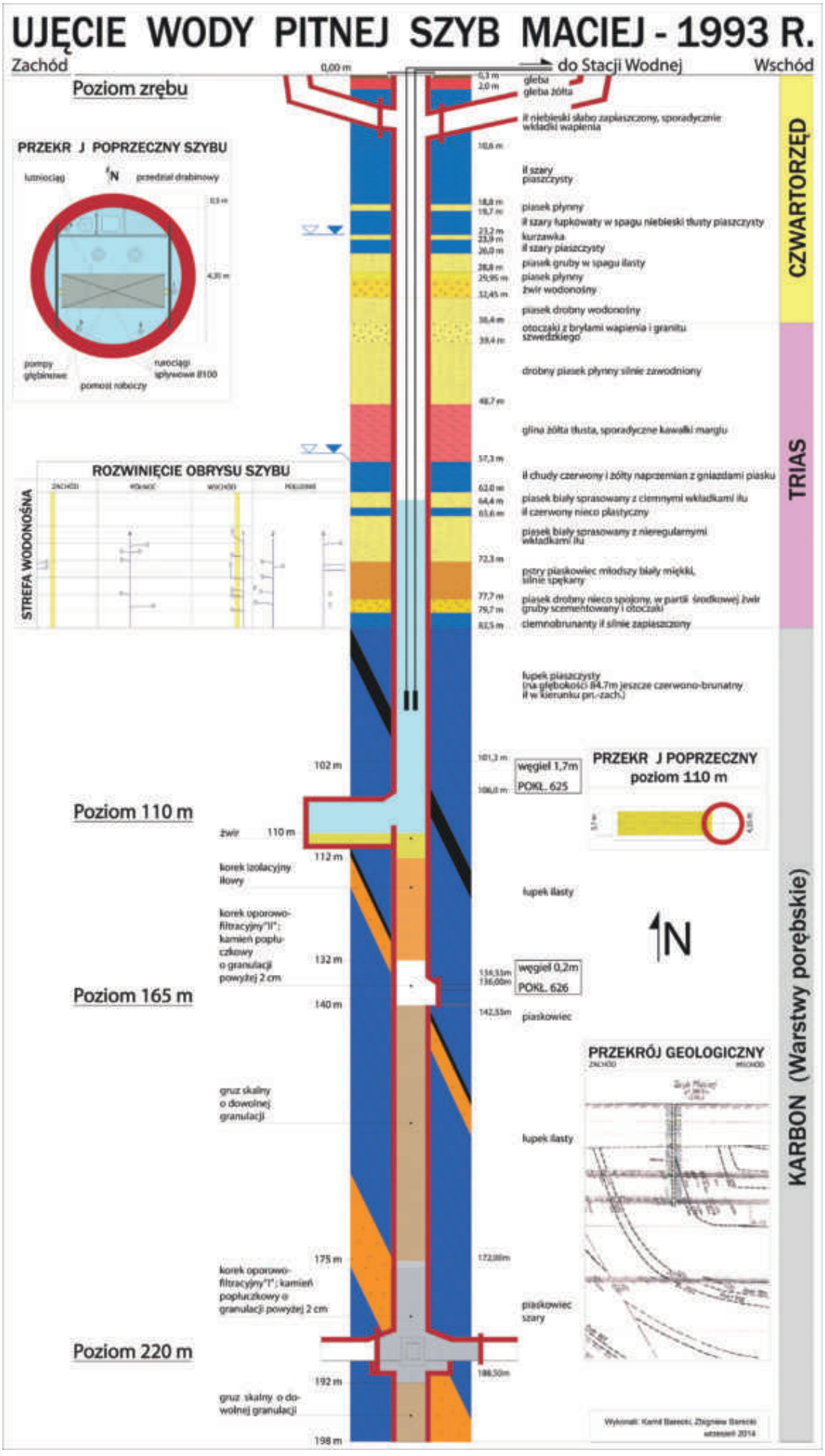
In the 1950s, a new water treatment plant was built, equipping it with new gravel filters, treated water tanks and a new pump station. At the end of the 1980s, the coal deposits were depleted, and thus the Pstrowski mine began decommissioning some of the workings along with the surface infrastructure. It ceased operations in 1997, and its heir was the Siltech Mining Company, which - as the first private coal mine in post-war Poland - took over the exploitation of the rest of the deposit.

As part of the ownership transformation, the Maciej Shaft area was leased to the Demex Mining Company, which proposed converting it into a water intake and buying out the remains of the above-ground part, thereby saving the entire complex from liquidation. The project envisaged decommissioning the lower part of the shaft (in Carboniferous formations) by backfilling it with rock material and cutting off the remaining workings with clay plugs. The upper part of the shaft was adapted in 1993 into a water intake according to the scheme shown below. This is the only technical solution of its kind in Poland (and probably in the world). The groundwater inflow to the shaft currently takes place from the Triassic Swierklaniecki strata at the level of 64-79 meters. The waters are pumped to the surface by submersible pumps, after which they go to the Water Station, from where, after filtration, they were transferred to recipients.

pic. Maciej shaft

Demex also carried out repair and conservation work on the surface infrastructure, which culminated in the entry of the buildings into the register of monuments and the revitalization of the entire complex for tourist purposes, taking into account the protection and use of the water intake. In 2005, Maciej Shaft was included in the Route of Monuments of Technology, and in 2011 Demex was awarded the Laureate Diploma for its exemplary concept of adapting the engine room of Maciej Shaft for tourist purposes.

Since 1997, Zabrze's waterworks have given up receiving water from the Maciej Shaft, but the intake itself has been working due to the need to dewater some of the mine workings of the Pstrowski mine in liquidation. These waters are used, among others, by the Zabrze Combined Heat and Power Plant. A water dispenser - a vending machine for purchasing drinking water - has also been installed in the vicinity of the Maciej shaft. The approved resources of the intake amount to 120$^{m3/h}$ and it currently has the status of an alternative source of water supply for the city of Zabrze.


UJĘCIE WODY PITNEJ SZYB MACIEJ - 1993 R.
Zachód
do Stacji Wodnej
Wschód
Poziom zrębu
PRZEKR J POPRZECZNY SZYBU
lutniociąg
N
przedział drabinowy
pompy głębinowe
pomost roboczy
rurociągi spływowa Ø100
ROZWINIĘCIE OBRYSU SZYBU
STREFA WODONOŚNA
0,00 m
0,3 m
2,0 m
gleba
gleba żółta
il niebieski słabo zapiaszczony, sporadycznie wkładki wapienia
10,6 m
il szary piaszczysty
18,8 m
19,7 m
piasek płynny
il szary łupkowaty w spągu niebieski tłusty piaszczysty
23,2 m
23,9 m
kurzawka
26,0 m
il szary piaszczysty
28,8 m
29,95 m
piasek gruby w spągu ilasty
piasek płynny
32,45 m
żwir wodonośny
piasek drobny wodonośny
38,4 m
39,4 m
otoczaki z brykami wapienia i granitu szwedzkiego
drobny piasek płynny silnie zawodniony
48,7 m
glina żółta tłusta, sporadyczne kawałki margla
57,3 m
il chudy czerwony i żółty naprzemian z gniazdami piasku
62,0 m
64,4 m
piasek biały sprasowany z ciemnymi wkładkami ilu
65,6 m
il czerwony nieco plastyczny
piasek biały sprasowany z nieregularnymi wkładkami ilu
72,3 m
piaskowiec młodszy biały miękki, silnie spękany
77,7 m
79,7 m
piasek drobny nieco spojony, w partii środkowej żwir gruby scementowany i otoczaki
82,5 m
ciemnobrunatny il silnie zapiaszczony
łupek piaszczysty (na głębokości 84,7m jeszcze czerwono-brunatny il w kierunku pn.-zach.)
CZWARTORZĘD
TRIAS
KARBON (Warstwy porębskie)
102 m
Poziom 110 m
101,3 m
106,0 m
węgiel 1,7m
POKŁ. 625
PRZEKR J POPRZECZNY
poziom 110 m
żwir
110 m
112 m
korek izolacyjny iłowy
łupek ilasty
N
korek oporowo-filtracyjny"II": kamień popłuczkowy o granulacji powyżej 2 cm
132 m
Poziom 165 m
134,53m
136,00m
węgiel 0,2m
POKŁ. 626
140 m
142,55m
piaskowiec
PRZEKRÓJ GEOLOGICZNY
ZACHÓD
WSCHÓD
gruz skalny o dowolnej granulacji
łupek ilasty
175 m
172,00m
korek oporowo-filtracyjny"I": kamień popłuczkowy o granulacji powyżej 2 cm
piaskowiec szary
Poziom 220 m
188,50m
192 m
gruz skalny o dowolnej granulacji
198 m

Source: Demex Mining Company Sp. z o.o.

Photo. main: Maciej Shaft

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WINTER SPAWNING OF GLACIAL RELICS OF THE BALTIC SEA

Posted on 12 December 2024 by Adam Kapler

Among the fishes of the All-Ocean, we will meet many more species spawning in winter than in freshwater. In rivers and lakes, December marks the end of the spawning of many salmonids and the beginning of burbot. In the Atlantic, on the other hand, this is the spawning time of the halibut we know so well from our plates, as well as many peculiar species. Some of them are living monuments to the cooler phases of the climate in the gray waters of the Baltic: the longnose striper Lumpenus lampretaeformis, the four-horned hen (hornbill) Myoxocephalus quadricornis and the bottomfish Liparis liparis. Due to the rarity of their occurrence and their importance to science, all three have lived to see species protection in our country (partial from 2014 to the present). The fourth kingfisher among our fish is the unprotected oystercatcher Pholis gunnelus [1, 2, 5, 7, 9, 12, 14].

Categories: Issue 23/2024, Onet, Science
Tags: fish, spawn, winter

Among the fishes of the All-Ocean, we will meet many more species spawning in winter than in freshwater. In rivers and lakes, December marks the end of the spawning of many salmonids and the beginning of burbot. In the Atlantic, on the other hand, this is the spawning time of the halibut we know so well from our plates, as well as many peculiar species. Some of them are living monuments to the cooler phases of the climate in the gray waters of the Baltic: the long-billed striped bass *Lumpenus lampretaeformis*, the four-horned hen (hornbill) *Myoxocephalus quadricornis* , and the bottomfish *Liparis liparis*. Due to the rarity of their occurrence and their importance to science, all three have lived to see species protection in our country (partial from 2014 to the present). The fourth *kingfisher* among our fish is the unprotected oystercatcher *Pholis gunnelus* .

Winter spawning of the ribbonfish

The banded eel belongs to the family of stychiidae of the order Perchidae. As its name suggests, it is characterized by its ribbon-shaped, highly elongated body, making it somewhat similar to an eel. With its naked, pointed head with relatively large eyes, thread-like ventral fins and a long dorsal fin extending from head to tail, it looks quite amazing. Its sides and back are colored light brown with a blue or green tint, decorated with a marbled pattern, while its belly is green-yellow. It lays eggs on the bottom in December and January. These eggs are few in number, about 1,000 grains per female.

Freshly hatched larvae float in the depths of water (pelagial) for about 3 months. They then feed on plankton. When they grow up, they descend to the bottom and begin, like their parents, to feed on small benthic fauna. They become sexually mature after 3 years, and live to a maximum of 9. *Lumpenus lampretaeformis* is most commonly found in the North Atlantic: from the White Sea through Greenland, Szpicbergen, the Faroe Islands and the coast of Scotland to Labrador; further south - in the Danish Straits, the Baltic Sea, off the coast of Massachusetts - in a scattering, as a remnant of colder climatic eras. The striped bass prefers greater depths, 30-200 meters, usually over sandy or muddy bottoms. The gray waters of the Polish Baltic are too sweet and too warm for it. It seeks places that are exceptionally cool and most heavily saline .

About the chicken that was not a rooster

Hornbill and demersal, on the other hand, are representatives of the order Scorpenocephalans, belonging to the cephalopod and demersal families, respectively. The four-horned hen is a typical inhabitant of cold Arctic and Atlantic waters. It needs cold and well-oxygenated places. It is less concerned about salinity, which is why in North America, Scandinavia and Russia it is found in estuarine sections of rivers or in lakes, for example: Onedze . Polish Wikipedia still classifies it as a member of the family of headwaters, but some ichthyologists have recently moved it to the related family *Psychrolutidae*, which lacks a Polish name. A typical member of that family - the blobfish *Psychrolutes marcidus* - has remained the hero of many memes for more than 10 years as the world's ugliest fish.

The hornbill owes its name to the presence of four seemingly insignificant, but easily discernible, papillate outgrowths on its flat, sort of frog-like, head with a broad snout. It has a characteristically tapering, somewhat laterally flattened tail. Its spotted gray-brown pattern camouflages it perfectly on a rocky bottom. Unlike the ribbonfish, it prefers the shallows. Here it hunts mollusks, crustaceans and small fish. It moults like the ribbonfish - from December to January. It lays more eggs, from 2 to 9 thousand grains per female.

As in the case of many other fish that produce few eggs (from sticklebacks to pikeminnows to prairie fish), the male guards the deposit. *M. quadricornis* is the largest mature among small fish, as it lives up to 14 years. The IUCN has assigned the quadricornis hen the lowest category of threat "least concern (LC)". This is an overly optimistic estimate, especially for relict populations from the Baltic Sea, Karelia lakes, Finland and Sweden. They, after all, can't retreat northward, fleeing climate warming and pollution. In summer they save themselves from the heat by descending to depths of 100 meters, but there they are increasingly dying in anaerobic zones .

Small is precious

Most sources cite the example of the common denfish Liparis *liparis* (not to be confused with the *small, green man-eating Liparis loeselii Liparis loeselii* - because the latter is a plant!), typical of the colder shelf waters of the northeastern Atlantic, from New Earth and the Barents Sea through the Norwegian and Celtic Seas to the English Channel. As early as almost a century ago, there were claims that the Baltic population had evolved into a separate species of the bearded dunlin *L. barbatus*. This taxonomic approach fundamentally changes our view of this evolutionary lineage (population group). It should be reflected in a more serious approach to the conservation of this inconspicuous fish. The dennik, due to its hollow, slippery skin, laterally flattened tail, perpetually bloated belly and seemingly oversized head, looks like a huge tadpole.

By nature it is short lived, usually 3 years. It moults slightly longer than the others, from November up to and including March. Its translucent, dirty yellow, sticky, demersal (bottom) eggs are laid in walnut-sized clumps. It sticks to colonies of bryozoans, caviomorph polyps, algal molds or the crevices of stones. The denworm larvae hatch after 6-8 weeks. They are characterized by a bulbous shape and are 5.5 mm long. They lead, like the tapefish, a pelagic lifestyle, drifting with the currents often over great distances. When they grow to 16 mm in length and grow a ventral sucker, they descend toward the bottom and begin an adult lifestyle, catching crustaceans, less frequently fish and polychaetes .

pic. Ecomare/Sytske Dijksen - Ecomare, CC BY-SA 4.0 / Wikimedia

Oystercatcher shares features with predecessors

The oystercatcher *Pholis gunellus* is a member of the oystercatcher family of the order perch. In appearance, it resembles the ribbonfish due to its ribbon-like body, covered with a thick layer of mucus. Like the denfish and henfish, it inhabits coastal shallows, descending to 100 meters in summer. Baltic forms, compared to typical Arctic and Atlantic forms, are dwarfed (20 instead of 30 cm long), found from the White and Norwegian Seas to the Delaware Bay.

It moults from November to January, in waters of 0-2°C. It is ostracophilic, like tropical cichlids, when it lays its eggs into empty shells, rather than in psotic mounds between rocks. It produces remarkably few eggs, raptly 80-200 grains of 1.7-2.2 mm in diameter per egg. Interestingly, the fry are cared for by both parents (mainly the mother?), not just the father. *P. gunellus* larvae lead a pelagic, planktonic lifestyle. After reaching 3 cm in length, they switch to an adult, demersal lifestyle. Oystercatchers live up to 5 years .

How (not) glacial relics?

Experienced fishermen and scientists warn that mere listing of protected species will do little to change the situation of Baltic glacial relics. It is much more effective to protect entire ecosystems. First of all, it is necessary to prevent further overfertilization (eutrophication) of the waters of our sea. It leads to the formation of anaerobic zones near the bottom and blooms of poisonous cyanobacteria. That's why it's so important to use less fertilizer inland, and then protect the Baltic's catchment area through buffer zones of rivers and ditches.

Let's leave the remnants of reed beds and riparian areas! Let's create new buffer zones! And the Baltic *kingfishers* and the rest of the fishery will thank us! In the sea itself, too, there is much to be done. It is very important to have the right timing and technologies for carrying out hydrotechnical works, related to leisure, harbor and energy infrastructure, especially when erecting new wind farms and digging aggregates. The latter are not lacking on the shoals of our economic zone. After all, in addition to the well-known amber, we have quite a lot of iron-manganese concretions, construction aggregates or heavy minerals. It is worth giving up fishing gear that destroys the structure of the bottom, especially vegetation and shoals of mollusks. Fuel spills and sunken munitions also do not serve ichthyofauna .

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AQUATIC PUBLICATION REVIEW (31)

Posted on 12 December 2024 by Agnieszka Kolada

Climate change is increasingly affecting all ecosystems on Earth, from permafrost to the Arctic to marine and tropical ecosystems and human communities. Recent scientific studies show that warming processes and their effects are accelerating, causing unforeseen effects such as an increase in the risk of deaths among young people, degradation of permafrost, an ice-free Arctic and changes in ocean food webs.

Categories: Issue 23/2024, Science

Tags: Arctic, climate change, literature review, permafrost, review

Climate change is increasingly affecting all ecosystems on Earth, from permafrost to the Arctic to marine and tropical ecosystems and human communities. Recent scientific studies show that warming processes and their effects are accelerating, causing unforeseen effects such as an increase in the risk of deaths among young people, degradation of permafrost, an ice-free Arctic and changes in ocean food webs.

1. the first ice-free day in the Arctic Ocean could occur before 2030

Li Y., Zhang H., Kumar P. *et al.* (2024). The first ice-free day in the Arctic Ocean could occur before 2030.Nat Commun 15, 10101.

For decades, scientists have been warning about the impact of climate change on the Arctic, and the vision of an Arctic Ocean devoid of ice in summer is becoming increasingly real. A new study, based on CMIP6 climate models, makes a fairly accurate prediction. The study indicates that the first ice-free day in Antarctica could occur as early as within the next few years, with a non-zero probability of occurring before 2030.

The research was carried out by an international team of scientists, who used daily data from CMIP6 climate models covering various greenhouse gas (SSP) emission scenarios. The simulations were based on assumptions about the state of sea ice in 2023, when the minimum daily area was 3.39 million km^2. The team analyzed a total of 366 simulations from 11 models, taking into account both internal climate variability and different socioeconomic development pathways.

The researchers found that the first day when the Arctic Ocean will be completely ice-free could occur as early as within the next three years, counting from conditions in 2023, which means that the phenomenon could occur even before 2030. This is a very pessimistic plan. In other scenarios, taking into account different baseline data, the timeframe for the appearance of an ice-free day in the Antarctic Sea is in the range of 7-20 years.

The greatest threat to the presence of ice in the Arctic Sea is extreme weather, such as the influx of warm air in winter, spring blockades and summer storms. Analyses have shown that such events are becoming more frequent in a warming Arctic.

2. enhanced warming of European mountain permafrost in the early 21st century

Jones P., Müller R., Santiago P. *et al.* (2024). Enhanced warming of European mountain permafrost in the early 21st century. Nat Commun 15, 10508.

Warming of Europe's mountain permafrost, a key component of the cryosphere, has accelerated significantly in the 21st century. The results of the latest study, based on decadal data from 64 boreholes in the Alps, Scandinavia, Iceland, the Sierra Nevada and Svalbard, confirm that between 2013 and 2022, the rate of temperature increase at a depth of 10 meters exceeded 1°C per decade. This is significantly higher than previous estimates.

Temperatures rose fastest in cold, ice-poor land at high altitudes and latitudes, such as Svalbard and the Western Alps. Ice-rich land close to the melting point showed a slower rate of change due to the latent heat effect. It masks temperature fluctuations until the ice has completely melted. Significantly, over the past decade, permafrost has completely disappeared in 17 percent of the locations surveyed at a depth of 10 meters.

The analysis showed that the warming process of the mountain permafrost in Europe is proceeding at different intensities depending on the season. In recent years, higher summer and autumn temperatures have had the greatest impact. In the long term, however, warmer winters

are key.

Scientists stress the urgent need for long-term monitoring, especially in under-researched regions such as the Pyrenees, the Carpathians and the highest parts of the Alps. The continuation of these studies is crucial for assessing the impact of climate change and developing adaptation strategies.

3. high heat is preferentially killing the young, not the old, new research finds

Shrader J., Bressler R. D., Wilson A. *et al.* (2024). High heat is preferentially killing the young, not the old, new research finds. Science Advances.

Previous analyses have indicated that the elderly are most at risk of dying from extreme heat in the context of a warming climate. However, a new study, conducted in Mexico, turns this view upside down, revealing that as many as 75 percent of heat-related deaths involve people under the age of 35, with those aged 18 to 35 accounting for the largest percentage. These results are all the more surprising given that young people are considered the most resilient group in the population.

The study was conducted by an international team of scientists, including researchers from Columbia Climate School and Stanford University. The team used detailed mortality and daily temperature data from Mexico, covering the period 1998-2019. The analysis involved correlating high mortality - the number of deaths above average - with temperatures measured on the wet thermometer scale, which takes into account the effects of heat and humidity.

An average of about 3,300 heat-related deaths per year have been reported in Mexico. Nearly a third of these involved people between the ages of 18 and 35, a disproportionately high number in relation to this group's share of the population. Infants and children under the age of 5 were also in the high-risk group. In contrast, people aged 50-70 rarely died as a result of high temperatures.

The researchers note that young people are particularly vulnerable to the effects of hot weather due to the type of work they do, mostly physical, often in harsh conditions without access to air conditioning. This includes farming, construction and working in enclosed, poorly ventilated spaces. In addition, they are the ones who are more likely to engage in strenuous outdoor physical activities, such as playing sports, which increases the risk of dehydration and heat stroke.

The study's findings indicate that young people are more vulnerable to the effects of heat than previously assumed, with important global implications. In middle- and low-income countries, where they perform physical labor in harsh conditions, heat-related mortality may be even higher.

The researchers also noted that in Mexico, the elderly were more likely to die from moderate cold rather than heat, which is linked to their susceptibility to infections indoors. Nonetheless, global warming has caused an increase in the percentage of heat-related deaths since the beginning of the 21st century, a trend that is expected to increase.

4. how do marine food webs respond to increasing alkalinity?

Johansson L., Pacheco F., Smith J. *et al.* (2024). How do marine food webs respond to increasing alkalinity? Science Advances.

Increasing the alkalinity of the oceans can play a key role in the fight against climate change, enabling greater carbon dioxide uptake and counteracting water acidification. The OAE (Ocean Alkalinity Enhancement) method, which involves adding soluble minerals such as sodium

carbonate or bicarbonate to seawater, increases the ocean's ability to fix$_{CO2}$. However, the process can lead to increased water pH, raising questions about its potential impact on aquatic organisms and the stability of food webs.

Although initial studies indicate that moderate alkalinity changes have minimal impact on zooplankton and do not disrupt food chains, the researchers stress the need for further analysis. In particular, it is important to study how the method will affect diverse marine ecosystems and whether long-term chemical changes will harm sensitive species.

Zooplankton showed high tolerance to chemical changes in the water, and the nutritional quality of the organic particles had no significant effect on consumers. The experiment was conducted in oligotrophic subtropical waters, which may have limited the possible responses of zooplankton to chemical changes.

The study used KOSMOS (Kiel Off-Shore Mesocosms for Ocean Simulations) mesocosms, which are large tubes, isolating a column of water of 8^{m3}, submerged in seawater. The experiment was conducted off the coast of Gran Canaria. Different concentrations of sodium carbonate and bicarbonate were added to the tubes to obtain varying OAE values. Zooplankton responses to the chemical changes were monitored, analyzing biomass, diversity and fatty acid content, among others, for 33 days. OAE could become an important tool in the fight against global warming, enhancing the ocean's ability to absorb$_{CO2}$ and reduce its acidification.

The study indicates that with moderate changes in alkalinity, the impact on zooplankton is minimal, making the method a promising option for climate protection efforts. Although the results of the experiment are optimistic, the researchers stress the need for further analysis, especially in other marine environments and using different OAE techniques.