



## THE WORLD WATER QUALITY ALLIANCE NEWSLETTER

### February 2024

The World Water Quality Alliance is convened by the United Nations Environment Programme and supported by the Swiss Confederation. It proudly presents its monthly newsletter, YEMAYA, named after the ancient African goddess of the ocean and motherhood. She is associated with fertility, femininity, protection, healing, and childbirth. Her domains are symbolized as water creatures: the seas, rivers, and lakes. She is honoured and revered in the African diaspora, particularly in Cuba, Haiti, Brazil, and the United States.

We, the World Water Quality Alliance Coordination Team, welcome articles about water quality. Tell us about your experiences. Describe the challenges you and your people face. Talk to our global community; talk to people from around the World. Send your articles to [wwqa-coordination@un.org](mailto:wwqa-coordination@un.org).

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## Unseen Superheroes: Wetlands



While the Amazon rainforest may be aptly named Earth's lungs, the World Wetland Day 2024 theme, “wetlands and human wellbeing” ***reminds us of the existence of often unseen superheroes: wetlands.***

Wetlands cover just 7% of the planet but are home to 40% of the world’s biodiversity [\[1\]](#). They play an irreplaceable role in regulating the global climate, moderating adverse water quality impacts of soil erosion, runoff, and wastewater contamination, maintaining the global hydrological cycle, protecting the ecosystem diversity, and safeguarding human welfare [\[2\]](#).

Since most of the services provided by wetland ecosystems have not been traded in the economic market, the value of wetland ecosystems continues to be underestimated by stakeholders, government, and the public [\[3\]](#).

***Tragically, this vital ecosystem faces a dire threat. Unfettered exploitation has led to a 35% decline between 1970-2015, a rate three times faster than forest loss, and a chilling 87% decline since the 1700s*** [\[4\]](#).

Hope lies in nature. Turning the tide on the triple planetary crisis demands a shift towards nature-based solutions, and at the forefront stands wetlands. By prioritizing their restoration and protection, we unlock a powerful toolkit to combat climate change, conserve biodiversity, and manage our water resources efficiently. Wetlands play a key role in maintaining water quality: they can act as nature based solutions to reduce levels of contaminants in surface waters by moderating the adverse water quality impacts of e.g. runoff, and wastewater contamination; they can buffer the degradation of water quality by retaining pollutants due to processes such as sedimentation and filtration. Wetlands have been proven to be capable of removing a number of organic and [inorganic substances](#) (e.g., nutrients, heavy metals, pesticides, hydrocarbons, [xenobiotics](#), antibiotics) from [contaminated water](#).

## **Wetlands And Human Wellbeing: A call for co-existence**

Born from a shared concern, the Ramsar Convention emerged in 1971 as the first global agreement dedicated to protecting natural resources. As of today, it boasts 172 contracting parties with about 2,500 sites. This groundbreaking treaty has established a robust framework for international cooperation in wetland conservation, encompassing the Ramsar Sites themselves, as well as vital areas like agriculture, tourism, and water management.

Wetlands are vital for human survival. They are among the most productive ecosystems in the world, comparable to rainforests and coral reefs [\[5\]](#). They sequester carbon, store, filter, and deliver water, protect coasts, support millions of livelihoods, and provide habitats for a staggering 40% of global biodiversity [\[6\]](#).

Yet these ecosystems have been overlooked within global climate and biodiversity policy and continue to be lost through poor management and lack of protection. According to several reports, unsustainable human activities are a major factor in wetland loss.

### **Climate Warriors**

Wetlands are a key player in global greenhouse gas budgets. They are among the most effective carbon sinks on earth [\[7\]](#). Mangroves and coastal wetlands, annually sequester 10 times more carbon than mature tropical forests, and store three to five times more carbon per equivalent area [\[8\]](#). Universally, wetlands are estimated to store over a third of the world's terrestrial carbon and their destruction often results in major releases of greenhouse gases into the atmosphere [\[9\]](#).

If we are to accelerate climate action then we must reverse the decline of natural wetlands, as they are central to any hopes of tackling the climate emergency facing our planet.

### **Taming the fury of floods**

Wetlands function as natural sponges that trap and slowly release surface water, rain, snowmelt, groundwater and flood waters. Trees, root mats and other wetland vegetation also slow the speed of flood waters and distribute them more slowly over the floodplain [\[10\]](#).

### **Biodiversity hotspot**

Wetlands have been called “biological super systems” because of the remarkable level of biodiversity they support. Many species of plants and animals are completely wetland dependent.

A staggering 40% of the world's plants and animals make their homes in wetlands, and every year 200 new species are discovered in freshwater [\[11\]](#).

### **Urgent action needed**

Empowering communities through education is a well-established approach for promoting responsible wetland management, as evidenced by extensive research. Knowledge of wetlands does influence behavior related to their protection, and a lack of knowledge can be linked to their destruction. Loopholes in existing laws and inconsistent enforcement have contributed to the decline of wetlands. Implementing comprehensive, well-enforced policies tailored to specific threats is crucial for wetland

conservation. Governments at all levels are becoming involved in wetlands restoration. Once seen as adversaries, wetlands are now increasingly recognized as partners in our quest for a sustainable future.

*Article contribution by Robert Wafula*

## Youth Engaged in Wetlands (YEW) celebrates World Wetlands Day 2024 - Wetlands and Human Wellbeing



Every year, World Wetlands Day is celebrated on the 2nd February. This year’s theme, “Wetlands and Human Wellbeing” is very relevant to the work of the World Water Quality Alliance (WWQA). Good water quality is essential for human wellbeing, and wetlands are essential for good water quality.

In fact, wetlands, water and life are inseparable. Wetlands not only hold most of our available fresh water, they improve its quality by naturally filtering pollutants, and provide a home for 40% of the species on our planet. For all life to thrive, urgent action is needed to protect wetlands and use water more sustainably to ensure there is enough for people and nature.

We need to protect our wetlands and water quality for many generations to come.

That’s why Youth Engaged in Wetlands (YEW), an international youth team of volunteers, was established – to ensure the conservation, protection and wise-use of wetlands.

YEW are on a mission to provide a global platform for young people to enable and empower them to help protect and promote our wetlands through: raising awareness, building capacity, fostering partnerships, campaigning for action, and exchanging information.

In the face of a changing world, the voices and insights of youth, and particularly girls in STEM, as well as their creativity and passion will be needed to navigate our way forward. They are the ones who can develop the skills needed for a green future.

YEW have successfully advocated for their voices to be heard where it matters, lobbying the Convention on Wetlands to increase its involvement of youth. The Convention on Wetlands has taken significant steps towards this with the passing of a [Resolution at COP 14 on youth engagement](#) and the support provided by the Secretary General and the Secretariat towards youth engagement.

YEW have become a welcome voice at meetings of the Convention and have helped support the establishment of a Youth Working Group of the Convention and youth workplan.

Momentum is building for 2024, with many countries following suit and engaging in youth-led wetland projects, creating youth advisory groups for projects, creating youth positions on environmental water management boards and appointing youth focal points to the Convention.

These activities are positive shift in the right direction, but there is much to be done!

To join YEW and the Youth Working Group in their groundswell towards a successful year for wetlands and human wellbeing, visit their website: <https://www.youthengagedinwetlands.com/> and get in contact!

Email: [youthengagedinwetlands@gmail.com](mailto:youthengagedinwetlands@gmail.com)

Facebook: <https://www.facebook.com/youthengagedinwetlands>

Instagram: <https://www.instagram.com/yewetlands/>

X/Twitter: <https://twitter.com/YEWetlands>

LinkedIn: <https://www.linkedin.com/company/youth-engaged-in-wetlands>

*Article by Ariana Magini, Oceania Regional Representative of Youth Engaged in Wetlands (YEW), and Australian Ramsar Youth Focal Point*





*1 - group photo provided by Ariana Magini Oceania Regional Representative of Youth Engaged in Wetlands (YEW), and Australian Ramsar Youth Focal Point*

## Learning Through Water: What does place-based education around water look like?



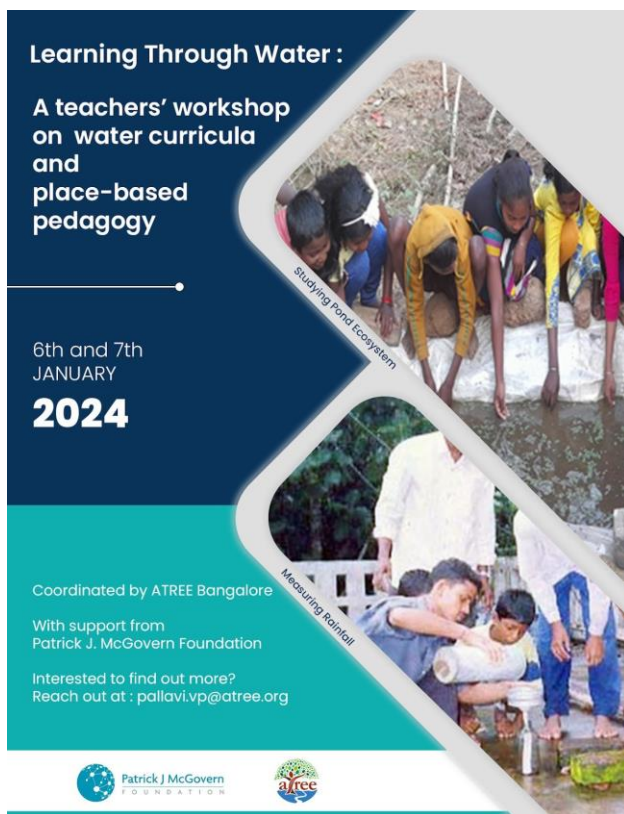
*“India is expected to be the nation most severely affected by water scarcity by 2050” (The United Nations World Water Development Report, 2023). “About 70% of surface water resources in India are polluted.”(World Economic Forum, 2019). “It’s poison, not water! Govt data shows toxic metals in groundwater” (India Today, August 2022).*

Headlines like these and more around water in India dominate our reading panes. Droughts, floods, glacial melts, contaminated water, inequities in water distribution, over-extraction of groundwater, river siltation, dam-led disasters - the overall scenario in India regarding water availability, water quality, and water equity is bleak.

A just, fair, and sustainable future of water rests on a comprehensive understanding of the water situation by everyone in India - its ecology, hydrology, as well as its quality. This kind of knowledge needs to be also provided to children and young adults– to promote critical thinking and environmental responsibility at an early age. But is knowledge enough? How do children move beyond understanding to responsibility, care, and relevant action? What skills and perspectives do teachers need to foster to push knowledge into action? What opportunities can teachers provide to help children become stewards of their neighborhood water bodies? Is interdisciplinary, experiential, outdoor learning (in short Place-Based Learning (PBL)) possible in the space of water education in schools in India today?



These were the questions that bothered us. As environmental education researchers and practitioners, we set out to explore whether school teachers manage such a transformative shift in their teaching-learning pursuits. If they do engage in PBL around Water, we wanted to know what were their highlights as well as their challenges. And finally, we wanted to explore the role of a sustainability and conservation research organization like [ATREE](#) in supporting this endeavor.



2 - Poster of the teachers' workshop. Image credit: ATREE

For this, we held two workshops - one with innovative and environmentally conscious teachers who engage in water education at the middle school level and one with children and their teachers that coincided with the celebration of World Wetlands Day (Feb 2, 2024).

A group of 18 middle-school teachers working in both public and private schools came together at ATREE Bangalore to discuss the nature and possibilities of a water-themed education in classrooms, on the 6th and 7th of January 2024. The workshop was titled "Learning Through Water - A Teacher's workshop on water curricula and place-based pedagogy".

On the first day, each teacher did a *show and tell* of one water-themed classroom resource that has worked for their classrooms and in their contexts. Teachers showcased story books, songs, dance drama clips, writing prompts, and a few low-cost water-based classroom experiments to help their students connect, visualize, experience, and understand complex concepts like environmental justice, water distress, oceanic currents, salinity, groundwater recharge, river systems, and cloud formation.

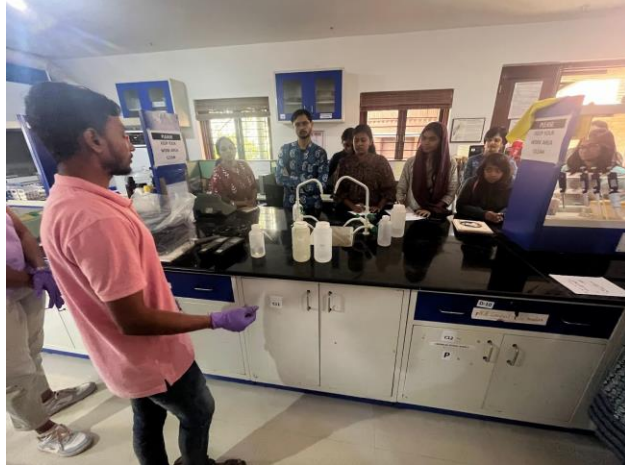
On the second day, the ATREE water lab demonstrated how to collect water samples and check for Dissolved Oxygen (DO), alkalinity (pH), and other parameters in stagnant water. Teachers learned about

lab experiments around water quality at higher education spaces as well as about ATREE's projects in monitoring lake water.

At the end of the workshop, the learnings were:

- There is quite a bit of interdisciplinary teaching-learning that is already happening at the middle school level around water as a theme on topics involving different landscapes such as coastal, wetlands, urban water, river water, oceans, etc.
- The middle school textbooks published by the National Council of Educational Research and Training (NCERT) and prescribed by the Central Board of Secondary Education (CBSE) have a wide range of age-appropriate hands-on activities. The water-related topics are multidisciplinary, relevant, and contextual, and encourage critical thinking about water conservation and sustainability.
- Teachers use both the STEM and STEAM approach while teaching about water. Songs, poetry, dance and movement, storytelling, and writing bring alive affective cognition for better engagement with the local water issues experienced by children. The STEM approach remains very doable with simple experiments around water ecology and hydrology inside classrooms, in labs, and as simple biodiversity observations.
- India has in recent times seen very good efforts in publishing good books for young adults to help them connect to nature and these books are already being used by teachers.
- All teachers felt the need to have a space to share their teaching practices as well as everyday classroom challenges around such place-based learning and requested ATREE to set up an interactive forum that converges regularly.
- Having a pond or water body in or near school enables embodied learning allowing for closer observations and experiential hands-on science education through activities like water quality testing.

One of the key outcomes of the workshop was to highlight the interdisciplinary nature of water education and discuss some contemporary teaching-learning resources contextual to India's water situation. Participants shared how art can go hand in hand with STEM education around water and inspired each other to do so. Teachers shared generously what pedagogies and teaching-learning resources work to promote a culture of curiosity and care about water in their own school ecosystems.



3 - Water lab at ATREE demonstrating water testing. Image credit: ATREE



4 - Workshop participants observing biodiversity in the pond at the ATREE office. Image credit: ATREE



5 - Poster of the children's workshop. Image credit: ATREE



6 - Students workshop. Image credit: ATREE

On World Wetlands Day, ATREE organized another workshop- this time partnering with a neighborhood school to explain to Class 8 children about the nature and role of wetlands in our ecosystem. The children indulged in a few hands-on activities that helped them understand better about a healthy wetland (a lake) near their school.

In the two-hour workshop, the children with the help of their science teacher and ATREE researchers learnt how to do a close observation and record scientifically. At the lake, the children discussed and

observed several microhabitats occupied by different aquatic birds. They also learned about different bird traits, like long legs and flying patterns essential for navigating across a wetland. After an hour's walk around the lake and observing aquatic birds, the children went back to their classroom and referenced a bird guide to validate their observations.

The children also studied the water sample collected by ATREE researchers for ammonia, phosphates, and pH levels in their lab. In addition, they observed the microorganisms in the water sample under a microscope. One hydra-looking microorganism turned out to be a microplastic bringing us back into the real world - one where threats of water conservation loom large.

At the end of the two workshops on water - one with teachers and one with children, we, the authors, feel that schools through their teachers have the potential to weave in hands-on education for water and conservation of water resources more strongly. But for that, the teachers need the support of relevant curricula resources and related activities. The teachers also need a community of water researchers and practitioners who converge for a common goal. The common goal of every child is to be a champion of water conservation with the necessary perspective, knowledge, and skills.

Our Common Future (as the Brundtland report, 1987 evocatively stated) depends on our creativity to support each other and build networks, as water educators of today, towards a vision of a more just, sustainable, and wastewater-wisely.

Contact us at [pallavi.vp@atree.org](mailto:pallavi.vp@atree.org); [madhushri.m@atree.org](mailto:madhushri.m@atree.org)

*Article contribution by Pallavi Varma Patil and Madhushri Mudke, ATREE- Bangalore India*



7 - Learning to collect water samples. Image credit: ATREE



8 - Observing birds and their habitats. Image credit: ATREE



9 - Referencing with the bird book. Image credit: ATREE



10 - Observing Microorganisms. Image credit: ATREE



11 - Is it acidic? Learning to test water samples. Image credit: ATREE

## **Bryan Spears - Aquatic Biogeochemist, UK Centre for Ecology & Hydrology**

**Could you share a bit about yourself and your journey as an Aquatic Biogeochemist at the UK Centre for Ecology & Hydrology? How did you find your passion for this field, and what key milestones have shaped your career?**

My interest in ecology began at undergraduate school in the late 1990s. I had an excellent supervisor at the Macaulay Land Use Institute, Tony Edwards, who encouraged the pursuit of exploratory science. Tony had me doing all sorts of fun field expeditions around the north of Scotland, including visiting many of the standing stones around that area and sampling the organisms growing on them. So, my love of history and science was born. From there, I was lucky enough to win a scholarship to study at Simon Fraser University in Vancouver, Canada, in the early 2000s. This allowed me to study lakes in the Mackenzie Delta, the western Canadian Arctic, and my first adventure north of the Shetland Islands! These arctic floodplain systems are a wonderful natural landscape of gradients across which to study biodiversity and ecosystem function, and of course, they are highly sensitive to a changing cryosphere. I returned to Scotland in the early 2000s to begin a Ph.D. at the University of St Andrews. I began working on bed sediment ecology and chemistry in Loch Leven and the Eden Estuary, two sites with an incredible scientific history. Loch Leven has over 60 years of scientific data, with papers on ecology dating back to the late 1800s. I began working at the UK Centre for Ecology & Hydrology (UKCEH) in 2007 and have been there since. My work has generally focussed on assessing the responses of freshwater ecosystems to land use and climate change, but a red thread has been assessing measures for restoring lakes following nutrient pollution.

I joined the World Water Quality Alliance (WWQA) in 2017 and established the WWQA Ecosystems Work Stream shortly afterward with my colleague Ken Irvine of IHE-Delft. The WWQA Ecosystems Team meets every second Friday and brings together experts from several organizations with shared ambitions in accelerating ecosystem restoration and protection.

More about WWQA Ecosystems here: <https://wwqa.info/workstreams/>



12 - Picture provided by Bryan Spears Aquatic Biogeochemist UK Centre for Ecology & Hydrology

### **Wetlands play a crucial role in water quality. How does your research in aquatic biogeochemistry contribute to the global understanding and improvement of water quality?**

From an academic perspective, the team at UKCEH perform long-term and large-scale monitoring and modelling work that allows us to understand the effects of environmental change on terrestrial, atmospheric and freshwater ecosystems. For example, nutrient pollution of wetlands (including lakes!) from agriculture and wastewater can fundamentally change the ecology of the receiving ecosystem, and we study this problem worldwide. Just as in fields where fertilisers are applied, primary production increases when we ‘fertilise’ lakes, and we get algal blooms. These blooms can harm humans but also contribute to freshwaters having the highest rates of biodiversity decline of all biomes. Climate change, especially warmer and drier summers, will likely exacerbate the issue. Our data and evidence help restoration practitioners and countries understand these processes and plans.

Another critical area of our work is identifying measures that allow adaptation to climate and land-use change. The WWQA Ecosystems Workstream has recently reviewed the evidence on this topic in a White Paper launched by UNEP at the UN Water Conference 2023 ([link below](#)); it provides policy-relevant recommendations for consideration by countries.

With support from the Global Environment Facility (GEF), we are beginning to work with countries and restoration practitioners to establish monitoring, assessment, and management plans focusing on sustainable phosphorus management and lake recovery. Our Chilean Ministry of the Environment



colleagues have become close collaborators in this activity. In this process, it is clear that science-based policy development is key. 'Data to Action' is one of the mantras drummed into us at the WWQA! The importance of evidence-based management is reflected in the cost of large-scale restoration programmes, which can reach tens to hundreds of millions of dollars for individual lakes. As laid out in our White Paper, the challenge is to ensure that this investment provides a return that supports ecological and socio-economic benefits.

WWQA White paper 'Embedding Lakes into the Global Sustainability Agenda':

<https://zenodo.org/records/10477644>

### **Engaging local communities is crucial for the conservation of wetlands. In your experience, how can we effectively communicate the importance of wetlands to the public and encourage sustainable practices, and how can initiatives like the World Water Quality Alliance contribute to these efforts?**

Effective science communication is key. I believe climate change and biodiversity loss are now accepted as major societal challenges in the public domain. This largely comes down to effective media, for example, Sir David Attenborough's Blue Planet and Planet Earth. I think the next major leap in science communication will highlight real-life accounts of local communities as they navigate the restoration journey, leading to a better way of life. Wetlands and lakes are excellent case studies in this respect, given the intrinsic reliance of local communities on safe and healthy freshwater ecosystems.

The WWQA is already on this path. Through 'The WWQA Pathway to the World Water Quality Assessment,' our colleagues have synthesised data streams, including satellite data and modelling, to produce forecasts relating society's behaviours to water quality degradation. These forecasts lay out in stark detail that the current path leaves a legacy to future generations of poor water quality, increased species extinctions, poor human health, and crippling losses and damages. However, they also offer solutions through sustainable urban development and agriculture, climate change mitigation, and healthier diet choices. In terms of human health impacts, in my opinion, the links between environmental degradation and mental health are massively underplayed. There is an opportunity for the WWQA to take the lead on effectively communicating these key messages.

I have experienced the groundswell of grassroots action groups through the WWQA – this is truly inspiring. One standard message I hear from them is the need for training in restoration practices on the ground. The WWQA provides a means for these groups to connect, share knowledge, and have a voice throughout the United Nations Environment Assembly. To contribute to the WWQA, a team from the European Commission Joint Research Centre led by Sandra Poikane convened a Global Community of Practice on lake restoration, growing in 2023 to include representatives from over 60 countries (link below). Ken Irvine and colleagues at IHE-Delft have assembled a team of experts to create educational modules on sustainable lake management designed to build capacity across the global restoration community. With Mike Lüring from Wageningen University, we will roll out this course to a focus group in Brazil in May 2024, thanks to the support of the International Society of Limnology. The course will then be launched globally. If you want to know more about future activities, please get in touch.

WWQA Global Community of Practice paper:

<https://www.sciencedirect.com/science/article/pii/S1470160X23014723>.

**Apart from World Wetlands Day in February, the month also hosts International Polar Bear Day (February 27th). You recently had the opportunity to research the Svalbard archipelago in the Arctic region. Did you come across a polar bear in its natural habitat, and what feelings did this evoke, especially knowing what risks they face with the accelerating pace of climate change?**

I did see a polar bear, multiple polar bears. Thankfully, none too close. That said, one thing that people may not be aware of is how fast they can swim. I clocked one on its post-lunch swim at about 10 km/h. So, you have to keep watch; they are sneaky!

Svalbard is a fantastic place. I am part of a team working on a project called BIOPOLE (link below), which is one of the first projects to study nutrient sources and their effects in polar oceans. This is important because nutrients delivered from the poles can regulate carbon cycling and drive marine fisheries in other parts of the world. Our team in Svalbard was responsible for sampling glacial melt water as it flows to the sea to assess changes in nutrient balance in response to climate change. Lots of time outside in boats and on foot, so there are lots of opportunities to see wildlife. Whilst there, our Poet Laureate, Prof Simon Armitage CBE, joined us and recorded a special for BBC Radio 4 (link below). This is an excellent example of combining science with art to describe the impacts of climate change on this environment.

On how I feel about the impacts of climate change on polar bear habitat? Over recent decades, I was shown the time-lapse of glacial retreat and sea ice loss in this region. It is being lost at an incredible rate. As a scientist, I feel determined. As a father, despair.

BIOPLE Project: [BIOPOLE - Biopole](#)

BBC Radio 4 Special featuring my colleague Alanna Grant: [BBC Radio 4 - Poet Laureate in the Arctic](#)



13 - Aerial image of a 'super glacier highway', Svalbard (photo credit, Bryan Spears UKCEH).



14 - The team from the UK Centre for Ecology & Hydrology (UKCEH) and the British Antarctic Survey (BAS) sampling glacial meltwater near Ny Ålesund, Svalbard (image rights: Iain Rudkin BAS)



15 - Polar bear tracks are significantly larger than my size 11 boot (photo credit, Bryan Spears, UKCEH).



16 - Sediment-laden meltwater from a retreated land-terminating glacier entering the coastal waters of Svalbard (photo credit, Bryan Spears, UKCEH)



17 - A. polar bear that was clocked swimming very quickly following its lunch (photo credit, Alanna Grant, UKCEH).

## The WWQA BULLETIN BOARD

### Towards harmonized standards for freshwater biodiversity monitoring and biological assessment using benthic macroinvertebrates

Monitoring programs at sub-national and national scales lack coordination, harmonization, and systematic review and analysis at continental and global scales, and thus fail to adequately assess and evaluate drivers of biodiversity and ecosystem degradation and loss at large spatial scales. In this study, the authors reviewed the state of the art, gaps and challenges in the freshwater assessment programs for both the biological condition (bioassessment) and biodiversity monitoring of freshwater ecosystems using the benthic macroinvertebrate community (i.e. the community of aquatic animals without backbones that are large enough to see without a microscope). They identified 20 gaps and challenges, which were classed into five major categories, these being (a) field sampling, (b) sample processing and identification, (c) metrics and indices, (d) assessment, and (e) other gaps and challenges. Above all, they identify the lack of harmonization as one of the most important gaps, hindering efficient collaboration and communication.

Read the full paper at: <https://doi.org/10.1016/j.scitotenv.2024.170360>

Biodiversity and Biological Monitoring and Assessment workstream of the WWQA

### Water Quality in Agriculture - Risks and Risk Mitigation

[Water quality in agriculture - Risks and risk mitigation](#) (FAO, 22 Jan 2024)

A new publication from the Food and Agriculture Organization of the United Nations (FAO) and the International Water Management Institute (IWMI), *Water Quality in Agriculture: Risks and Risk Mitigation*, serves as a comprehensive guide on the critical importance of water quality for sustainable agriculture and its role in achieving the United Nations Sustainable Development Goals.

The report outlines global water quality guidelines and standards, emphasizing the need for advanced monitoring and adherence to health-based targets set by the World Health Organization.

*Water Quality in Agriculture: Risks and Risk Mitigation* discusses the threats to water quality from pathogenic contaminants, explores the relationship between water quality and various agricultural sectors, including aquaculture and livestock production, and considers the complex interactions within watersheds and river basins and the necessity for effective water quality management practices that take into account potential downstream effects.

The document is intended for use by national and subnational governmental authorities, agricultural professionals and engineers and to be of value to the scientific research community and university students.

- Download the report [here](#).

### Knowledge Exchange Workshop: Citizen Science for SDG indicator 6.3.2

This video summarizes the key findings of a knowledge exchange workshop hosted by UNEP GEMS/Water and Earthwatch Europe held in Nairobi, November 2023.

A selection of participants share their insights from the workshop that brought together practitioners from ongoing projects in Africa with experts from Africa and Europe.

These projects, within the World Water Quality Alliance, are testing the integration of citizen scientist-generated water quality data with the data of national authorities for SDG indicator 6.3.2 reporting. This approach simultaneously helps to fill data gaps that help track progress towards SDG target 6.3 which is about 'improving water quality' in our freshwaters, and also provides a connection to the SDGs for those communities that are most impacted by the effects of poor water quality at the local level.

The hugely positive outcomes from this workshop mean that this work is being expanded in those countries that are already active, and new countries are recognizing the benefits and are adopting the approach.



### **Reminder: Citizen Science for Water Management and Sustainable Development**

The 3-week ON CAMPUS short course on **Citizen Science for Water Management and Sustainable Development** will be taking place again from 27 May to 14 June 2024 in Delft (NL) at the [IHE Delft Institute for Water Education](#). Detailed information about the short course, including fees and scholarships, is available [here](#).

### **Reminder: Free course - Sustainable Lake Management**

UNEP has launched [a new course](#) on sustainable lake management around restoring degraded lakes – an important contribution to [the UNEA 5.2 Resolution](#) on Sustainable Lake Management. The course delves into lake restoration and management best practice, which requires strong and inclusive stakeholder engagement and collaboration across multiple sectors.

### **Reminder: Lahti Lakes 2024: the international symposium on lake restoration science**

The symposium is co-organized by University of Helsinki, Lake Vesijärvi Foundation, SIL Working Group on lake restoration and the World Water Quality Alliance (Ecosystems workstream). The symposium takes place at the Sibelius Hall in Lahti, Finland from 3-5 June 2024, with an online participation option. Registration will be possible from January 2024 via a link on the symposium website [www.lahtilakes.fi](http://www.lahtilakes.fi)

**Still open: Registration and abstract submission:** via website until 14.02.2024 (early bird); until 31.03.2024 (regular).

## Job Openings

### Join the Youth Innovation Challenge for SDG6 Advancement

**The World Bank Youth Innovation Challenge:** Water Solutions for a New Climate Reality is designed to accelerate innovation and unlock the potential of the next generation of youth aquapreneurs (18-35 years) from around the world.

Explore this unique opportunity to make a difference by visiting the following link and sharing your application by 23 February 2024: [Youth Innovation Challenge](#). Here you'll find comprehensive information about the challenge, its goals, and how you can be part of this transformative initiative.



*18 - Hydrogeology Journal Technical Editorial Advisor – Vacancy*

The Technical Editorial Advisor (TEA) primarily supports the HJ team by handling manuscripts in their post-scientific-review stages, after the manuscripts have been scientifically accepted by the Editors. The position is managed by the HJ Executive Editor, Cliff Voss, and sits in the IAH Secretariat, managed by the IAH Executive Manager.

The role consists of:

- Responsibility for the HJ scientific editorial stage
- Administration of the HJ post-review processing stages
- Interface between the HJ authors, editors, publisher, and readers
- Support for the IAH Secretariat

To apply, please send your CV and a cover letter explaining why you are interested in and qualified for this post, to [info@iah.org](mailto:info@iah.org)

### Find out more

A full job description is available at: [https://iah.org/wp-content/uploads/2024/01/TEA-job-description\\_2023.01.19a.pdf](https://iah.org/wp-content/uploads/2024/01/TEA-job-description_2023.01.19a.pdf)

## WWQA Membership Application Form

The WWQA coordination team has set up a WWQA Membership Application Form to keep our growing membership organized.

We kindly request all members to fill out the form :)

<https://forms.office.com/e/BeF5iRuaP3>

## In the March Issue of YEMAYA

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- *World Water Day (22 March)*
    - *World Wildlife Day*
    - *International Day of Forest*
  - *6h session of the United Nations Environment Assembly highlights*
- 

*Please follow our social media handles at:*

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\*Unless otherwise indicated, all contributions are by the WWQA coordination team.



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YEMAYA welcomes articles, opinions and audio-visual material related to the issue of water quality. Please send any contribution to [wwqa-coordination@un.org](mailto:wwqa-coordination@un.org) with a short 100-word biography, the name of your organisation and a phone number where you can be contacted.