PRIFYSGOL BANGOR UNIVERSITY

SUMMER 2025

THE BRIDGE

News from the
School of Ocean Sciences
and the
School of Ocean Sciences Alumni Association

"After almost 100 years on the planet, I now understand the most important place on Earth is not on land, but at sea."

"The ocean can bounce back to life. If left alone it may not just recover but thrive beyond anything anyone alive has ever seen. In front of us is a chance to protect our climate, our food, our home."

Sir David Attenborough
Honorary Bangor Graduate

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OPEN DAYS

Sunday 12th October 2025
Saturday 1st November 2025
Saturday 22nd November 2025

Book your place:
@ *bangor.ac.uk/openday*

THE BRIDGE

The Bridge is the newsletter of the School of Ocean of Sciences and SOS alumni and is published twice a year. It is edited by Professor Tom Rippeth.

For contributions to the next edition of the Bridge:
t.p.rippeth@bangor.ac.uk

Remember you can catch up with previous editions of "The Bridge" online:
https://www.bangor.ac.uk/oceansciences/newsletter.php.en

Dates for your diary

- 5th August 2025 10:30-12:30: The new bilingual Anglesey Coastal Landscape and Wildlife poster is to be launched at the National Eisteddfod, Wrexham.
- 6th December 2025: The annual Reef Conservation UK conference will be held in Bangor. Further information: http://www.reefconservationuk.org/rcuk-2025/
- 8th – 10th September 2026: The UK Challenger Society Conference returns to Bangor. It will mark 42 years since the first modern Challenger Society conference, which was also held in Bangor.

Welcome to the Summer 2025 edition of 'The Bridge' newsletter.

As you will see it has been a busy six months here in Menai Bridge and amongst our alumni.

We have many successes to celebrate, including those of two of our alumni, **Emily Cunningham** and **Lee Robinson**, who were both awarded MBEs in the New Year Honours List.

We also welcomed back a number of alumni to advise our current students about future careers, for which we are very grateful. As you will see from our SOS Alumni Association chair's letter we have new plans in place to further help our students with their transition to work.

It is great to hear from some of our 'COVID-generation' graduates who overcame the immense challenges of studying during the pandemic and lockdowns. We are confident that these graduates have the key skills to address global problems such as climate change, biodiversity loss, renewable energy, wellbeing, food and clean water needs.

The school has had numerous visitors over the past few months. These have included the Archbishop of Wales, the **Most Reverand Andrew John**, to celebrate World Ocean Day, and the Deputy First Minister of the Wales, **Huw Irranca-Davies** AS, whose government portfolio includes climate change and rural affairs including sustainable fisheries.

We also bid happy retirement to two long serving members of staff, both of whom first joined in the 1980s. Professor **Lewis Levay** has retired from his role as director of SEACAMS. Lewis first joined the school as a student on the MSc in Marine Biology in 1987. The school's multimedia technician **David Roberts** is also retiring. David has played a key role in the development of the Bridge newsletter in recent years.

Professor John Turner

Last, but by no means least, we look forward to celebrating the successes of our 2025 cohort of graduating students on the 10th July, to wish them every success in their careers and to welcome them into the SOS Alumni Association.

Professor John Turner,
Head of the School of Ocean Sciences.

A message from Mick Cook, Chair, School of Ocean Sciences Alumni Association (SOSA)

Mike Cook

As I have previously written, the demand for marine scientists has never been greater, particularly in helping achieve the energy transition. Therefore, we as the SOS Alumni Association, need to continue to support the school in the development of the future generation of marine scientists who are needed to deliver the transition.

This subject formed a significant part of our discussions at the recent SOSA committee meeting. A central tenet of these discussions revolved around soft skills training and what SOSA can do to help ensure Bangor University marine science students gain the softer skills that form such an important aspect in achieving a successful career after graduation.

In SOSA we have an expert cohort who not only cover a wide range of marine science careers, but also a broad diversity of careers and experiences. This puts us in a strong position to help guide students in gaining the skills they need.

As you will be aware SOS has been very successful in growing over recent years, and that we in SOSA have played an important role in ensuring Bangor University continues to be a leading institution producing world-leading marine scientists. However, this growth in student numbers makes extra demands in ensuring our students gain these necessary skills.

New initiatives discussed to help meet that demand include (i) the expansion of the current 'placement/internship' schemes. (ii) More interaction between students and alumni, with a focus on career case histories, and in particular 'what are the soft skills required in the workplace?'. (iii) An 'employability event' attached to the University's 'My Graduate Career' week to be held later in 2025 or as a separate 'SOS employability event'. Should you be willing and able to contribute towards this important aspect of student life, please contact myself or the Head of School, John Turner (j.turner@bangor.ac.uk).

Mick Cook, Chair, Bangor University School of Ocean Sciences Alumni Association (SOSA)

mick@mickcook.com

Welcome to Eliana Caragia, the new student editor of the Bridge

As you will have noticed our students are increasingly contributing to the Bridge and so we thought it time to appoint a student editor to facilitate this process. We are delighted that Eliana Caragia has come forward to take up this position.

"Hi, I'm Eliana, and I study BSc Ocean Science as an undergraduate student. I am originally from Romania, and I joined Bangor University in September last year. I am a Course Representative for SOS first-year students, and I'm also a student ambassador, looking after students during open days and guiding them around the campus. I am looking forward to hearing your inspiring stories soon."

Eliana Caragia

Congratulations

Climate scientist wins prestigious award

Dr Iestyn Woolway

Dr **Iestyn Woolway**, a NERC Independent Research Fellow and Reader at the School of Ocean Sciences, has been honoured with the 2025 Yentsch-Schindler Early Career Award by The Association for the Sciences of Limnology and Oceanography (ASLO).

ASLO presents the Yentsch-Schindler Early Career Award each year to an early career scientist who has made outstanding and balanced contributions to research, education, and society.

The award is for his influential work describing the effects of climate warming on lakes worldwide, including shifts in seasonal timing, stratification, ice-cover and heatwaves, in addition to his exceptional educational and outreach contributions to society and the global scientific community, including early career researchers.

Dr Woolway's work bridges oceanography (the scientific study of the ocean) and limnology (the study of inland aquatic ecosystems such as rivers and lakes), using innovative approaches to examine the effects of climate change on natural waters.

His research has been internationally recognised, with over 112 published papers and 14 cited in the latest Intergovernmental Panel on Climate Change (IPCC) report.

ASLO President **Susanne Menden-Deuer** said, *"ASLO is honored to recognize Dr. Woolway's exceptional contributions to climate science, his leadership in the field of limnology, and his commitment to mentoring early career aquatic scientists. Dr. Woolway is an inspiration through his scientific contributions and dissemination in the popular press."*

Dr **Iestyn Woolway** said, *"I am honoured to receive this recognition from The Association for the Sciences of Limnology and Oceanography. It is vital to continue advancing scientific understanding of freshwater ecosystems in the face of climate change—an area of research that is becoming increasingly critical for the sustainability of our planet."*

Iestyn has also been listed as one of the UK's most influential environmental professionals in the 2025 ENDS Report Power List.

New Years Honours List

We are delighted to report that two Ocean Science alumni were recognised in the New Year's Honours list.

Emily Cunningham has been awarded an MBE in the King's New Year Honours List 2025 for services to marine conservation and coastal communities. She received her MBE from HRH The Princess Royal at an Investiture at Windsor Castle in April.

Emily (MSci Marine Biology, 2012) has worked in ocean conservation for over a decade, both in the UK and overseas. Her work has taken her all across our blue planet, from Antarctica to the Amazon. She is currently Global Lead for river dolphin conservation at WWF International and was recently appointed as an Honorary Associate Research Fellow at the University of Exeter.

Emily Cunningham MBE

Lee Rawlinson (Marine Biology 1998), who was a Director at the Environment Agency, was honoured with an MBE for services to the Environment.

Congratulations to **Charlotte Malone** (a current Marine Biology and Oceanography student) on winning the 2025 North Wales Rivers Trust Volunteer of the year award. Find out more about Charlotte's voluntary work in the winter 2024-25 edition of the Bridge.

Winter Graduation

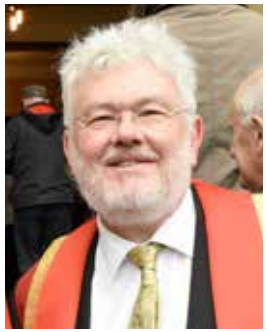
We were delighted to celebrate the graduation of the 2023-24 postgraduate students at the Winter graduation in December.

Each year prizes are awarded to the highest scoring students on our MSc programmes. For the academic year 2023-24 these awards went to **Angus Rees** (MSc Marine Biology) who won the Jeremy Jones Memorial Prize for the highest MSc mark on the Marine Biology programmes, and **Kiona Bilstra (MSc Applied Marine Geosciences)** the Darbyshire Prize, for the highest student in Marine Physical Sciences.

Former staff member and Head of School Professor David Thomas has also been awarded an honorary fellowship by Bangor University for services to education. David was a Professor of Marine Biology and taught biogeochemistry with research interests in sea ice and has also edited several textbooks on Marine Biology and sea ice.

Angus Rees

Kiona Bilstra



Student-led awards

Every year Student Voice Awards and Student-Led Teaching Awards are organised by the Students' Union. They are based on student nominations and are among the highest honours for staff and students across the university, recognising exceptional teaching, support, and contributions to the wider student experience.

We are delighted to report that Ocean Science staff and students both scooped awards. Geological Oceanography student **Emily Yorke** won an award for her work as the Neurodivergent Students Network Leader. This role sits within the student's union and involves running various campaigns and projects to support that specific student group. During this year the campaigns have focused on making lectures accessible for neurodivergent students, by creating a teaching guide, which has been sent to each school and is in the process of being circulated more widely amongst teaching staff.

Emily Yorke

Martyn Kurr won the Teacher of the Year Award whilst **Martyn Roberts** was a runner-up for the 'Dissertation Supervisor of the Year' award.

Martyn Kurr and Martyn Roberts

Learned Society of Wales

T**om Rippeth**, Professor of Physical Oceanography, has been inducted as a Fellow of the Learned Society of Wales (LSW).

He is among the leading figures to join Wales' National Academy, whose Fellowship mission is to promote and develop Wales' research and innovation community, and to support the use of excellent and diverse research to solve the challenges faced in Wales and across the world.

Katka photography

Katka photography

The Learned Society of Wales AGM also saw Laura Richardson presented with her Dilwyn Medal (STEMM). The medals are awarded annually in recognition of outstanding early career research.

Read the full story in the Winter 24/25 edition of the Bridge.

Research Highlighted

Sophie Ward

Congratulations to Sophie Ward whose new paper on "The Role of Long-Term Hydrodynamic Evolution in the Accumulation and Preservation of Organic Carbon-Rich Shelf Sea Deposits" has been highlighted by the American Geophysical Union. The co-authors included alumni Zoe Roseby (MSci Geological Oceanography, 2015) who is now a geoscientist at Exeter University, Sophie Wilmes (BSc Ocean Sciences, 2009; PhD Physical Oceanography, 2015) and James Scourse who was a professor of Geological Oceanography in the school for many years.

The timeliness of this important research into Blue Carbon has recently been highlighted in David Attenborough's latest film Ocean.

Paper: Ward, S., Bradley, S. L., Roseby, Z. A., Wilmes, S.-B., Vosper, D. F., Roberts, C. M. & Scourse, J. D. (2025). The Role of Long-Term Hydrodynamic Evolution in the Accumulation and Preservation of Organic Carbon-Rich Shelf Sea Deposits. Journal of Geophysical Research: Oceans. 130, 4, e2024JC022092.

Sedimentology Prizes

The school was more successful than ever at the annual AGM of the British Sedimentological Research Group (affiliated to the Geological Society). No less than three prizes were awarded to present and former SOS students.

Michael Jolley (MSci Marine Biology and Oceanography) was awarded the BSRG award for Undergraduate Sedimentology 2024. This is for the best final-year undergraduate sedimentological project at a UK or Irish University. The title of his dissertation, supervised by **Mattias Green**, is "How inaccurate are deep time models during the Permian?"

Lewis O'Dwyer-Buckland (MSci Geological Oceanography, 2024) was awarded the BSRG award for Masters Sedimentology 2024. This is for the best sedimentological project completed by a student on a research Masters course, at a UK or Irish university, and celebrates skills and achievement in sedimentology. The title of his MSci thesis, supervised by **Dei Huws**, is "Investigating major climate controls on the East African tropics from the middle Pleistocene to present".

Finally, alumni Dr **Megan Baker** (BSc Ocean Sciences, 2014; MSc Applied Marine Geosciences, 2015; PhD Geological Oceanography, 2019) was awarded the prestigious Roland Goldring Award, named after a famous trace fossil specialist who passed away in 2005. This award recognises a noteworthy contribution to any field of sedimentology, with nominees within ten years (full time equivalent) of the commencement of their research career. Many of you will remember Megan as both an undergraduate and PhD student here in SOS, who investigated turbidity currents and other underwater landslides in the SOS Hydrodynamics Laboratory as well as in deep-marine sedimentary rocks near Aberystwyth, which has landed her many awards, including the Drapers Medal in 2018 and now the Roland Goldring Award.

Michael Jolley

Lewis O'Dwyer-Buckland

Since leaving Bangor, Megan made waves in Durham, where she studied similar flow types in the modern Congo Canyon, offshore West Africa, developing a seismic method to remotely 'listen' to these destructive flows moving at high speed down the canyon. Another important part of her research focus is carbon transport into the deep ocean by turbidity currents, a much-underrated contribution to the global carbon cycle. She is also an EDI champion, both in BSRG and at Durham University.

Post Graduate Student Awards

Each year the College of Science and Engineering holds a conference to enable postgraduate students to present their work in a 'friendly' environment with prizes being awarded for the best talks. We are delighted to report that Ocean Science students dominated this year's awards with **Sijing Shen** winning one of the best 3rd year student awards and both **Khalid Abdulhafit Bukhari** and **Tom Gale** winning best speed talk and poster awards.

Sijing Shen PhD Award

Sijing is studying the '*Agulhas meander*' and the subtropical front which link the Indian Ocean from the South Atlantic and the influence on retroflection path with Professor **Yueng-Djern Lenn**. **Khalid** is studying the influence of coastal topography on the tidal response to sea level rise under the supervision of Professor **Mattias Green**. **Tom** is studying non-breeding season habitat selection of European shags in tidal stream environments, under the supervision of **James Waggitt**.

School News

Welsh Crucible

Drs **Winnie Coutene-Jones** and **Laura Richardson** are amongst the five Bangor University early career researchers to be awarded coveted places in the 2025 Welsh Crucible. The Welsh Crucible is an award-winning programme designed to foster personal, professional, and leadership development among future research leaders in Wales.

Each year, 30 exceptional researchers from across Wales are chosen to participate in a series of intensive and immersive residential workshops. These workshops provide a unique opportunity to work with researchers from other disciplines, enhance the impact of their work, and support the development of their international research careers.

Winnie is a lecturer in Marine Pollution. Her multidisciplinary research examines the extent, behaviour, and ecological impacts of microplastic pollution to guide effective, science-based interventions. She works closely with policymakers in support of the UN Plastics Treaty negotiations.

Laura is a Research Fellow specialising in marine ecology and fisheries science. She was also the recipient of the 2024 Learned Society of Wales Dillwyn Medal for STEMM (*see Winter 24/25 edition of the Bridge*).

Welcome Back!

We were pleased to welcome back Professor **Andy Davies**, who was a very popular lecturer in the School of Ocean Sciences for many years before his move 'across the pond' to the University of Rhode Island in 2018.

Andy continues to work on reefs, using a mixture of natural history observation, experimentation and novel technologies to untangle the ecology of these enigmatic habitats. You can find out more about his research by visiting *https://anddavies.co.uk/*

During his visit Andy was pleased to catch up with three of his mentees, Drs **Craig Robertson**, **Martyn Kurr** and **Martyn Roberts**, all of whom are now lecturers in the school.

It was also great to welcome alumni **Tom *"The Blowfish"* Hird** (Marine Biology, 2006) and **Alice Lipscombe-Southwell** (Zoology with Marine Zoology, 2005) back to Bangor's Pontio building to lead a lecture in Science Communication. Tom and Alice shared their experience in science communications in print media, on radio, TV, online and in live shows and gave a very interesting and inspiring session. We also welcomed back alumni **Jake Davies** (Applied Marine Biology, 2018) and **Donovan Lewis** (Marine Vertebrate Zoology, 2016), who shared insights from their careers in wildlife media with students.

*Andy is seen here with his graduating PhD students **Martyn Kurr** and **Laura Bush** (now at Fugro) back in 2016.*

All roads lead back to Bangor – Professor David Jones returns to attend summer graduation of his 46th PhD student

Anyone who worked or studied in Menai Bridge from 1968-2001 will remember Professor David Jones, especially those marine biology students who spent many hours counting crustacean larvae or identifying sand beach fauna and zooplankton, or who joined field courses on the beaches of North Wales, Sherkin Island or Watamu in Kenya. After taking early retirement from SOS in 2001, David built on his extensive experience in the Arabian Gulf by taking on the role of EU advisor for Kuwait and Saudi Arabia for the oil damage caused by the Iraq war.

After this, he was asked to act as environmental manager for Al-Ahmad Sea City, a major coastal development project on the southern coast of Kuwait, where he oversaw a long term environmental monitoring programme recording the successful establishment of 188km of new coastal habitats, including seagrass, mangrove, corals, and increased biodiversity from new species of isopods to fish communities and marine mammals.

This summer's graduation in July will mark the completion of his 46th successful PhD supervision. Nithyanandan (Anand) Manickam, who worked at alongside David for 10 years as the resident marine biologist at Sea City, will be attending the ceremony to receive his degree, after passing his viva in late 2024, for his PhD thesis on "Establishment of functional artificial marine habitats in design of coastal mega developments; a case study of the Sabah Al-Ahmad Sea City, Kuwait, Northwestern Arabian Gulf", based on papers reporting this extensive body of work.

David and Wendy moved back to Bangor in 2024 and are pleased to be able to attend Anand's graduation. For those who are interested in seeing some more about the Sea City project, there is information on Wikipedia and it also has been the subject of a series produced by Discovery Channel; David and Anand are featured in a section on some of the ecological work, which can be found here:

https://www.saasc.com/info-lounge/video-album/discovery-episode-2/ (scroll across to section 8).

Welsh Deputy First Minister visits

We were delighted to welcome the deputy First Minister of Wales and Cabinet Secretary for Climate Change and Rural Affairs, **Huw Irranca-Davies AS**, and **Gian Marco Currado**, Director of Rural Affairs who visited the school to meet the fisheries research group and see the work being undertaken by the group to support the sustainable management of the Welsh seas.

The fisheries research group, led by Dr **Natalie Hold**, has been undertaking research to underpin sustainable management of Welsh Fisheries and has just been awarded £1.82M by Welsh Government to continue this work until March 2027. The group has been instrumental in delivering annual assessments of key Welsh fisheries and the development of stock assessment models to support management decisions and provide the evidence base that underpins new policy to deliver commitments of the UK Fisheries Act.

The Deputy First Minister discussed the key role of the Bangor group in delivering sustainable fisheries. He also spent time discussing the research with PhD students and early career researchers. He saw experiments from PhD Student **Charlie Heney**, that are researching the impacts of heatwaves on the reproduction and brood development of European lobsters.

In addition, there was a visit to the School of Ocean Sciences Oyster Hatchery to see the facility that provided 200,000 juvenile oysters for a Native Oyster restoration project in South Wales that the Deputy First Minister visited earlier in the year.

*Eds Note: Some alumni may remember Huw Irranca-Davies' son **Rhodri**, who graduated from the school with a degree in Marine Biology 8 years ago.*

Archbishop of Wales visits

The Archbishop of Wales visited the School to record a message for World Oceans Day in June. During the visit **Most Reverand Andrew Joh**n met with **Professor Yueng-Djern Lenn** to hear about the latest research going on in the school and the threats facing our ocean.

Commenting on his visit the **Most Reverand Andrew John** said: *"It was a privilege to join the dedicated team at Bangor University Ocean Sciences this World Oceans Day. Their pioneering research reminds us of the wonder of the seas—and our shared responsibility to care for creation."*

New Projects

New grant to study the impact of underwater tsunamis' around Antarctica

Ocean Sciences Professor **Katrien Van Landeghem** and **Kate Retallick** are part of an international team of researchers which will advance a ground-breaking study on underwater tsunamis around Antarctica. The group has been awarded £3.7M and is led by British Antarctic Survey (BAS).

The research will assess how these underwater tsunamis contribute to the mixing of ocean waters, a process that plays a critical role in shaping global climate systems, the Antarctic Ice Sheet, and marine ecosystems.

PhD student **Kate Retallick** said, *"Acoustic mapping experts at Bangor University will travel to Antarctica and investigate the shape of the glacier ice front all the way down the seabed. This challenging research will help understand the process of icebergs breaking off and stirring the oceans."*

Professor **Katrien Van Landeghem** added, *"The expertise from our technicians and PhD student Kate is vital here. We are creating underwater sonar imaging of the ice margin by designing a bespoke solution with one of Bangor University's multibeam echosounders - a type of sonar that is used to map the seabed. We will aim it sideways to send sound waves sideways, which we then receive and calculate distance between boat and ice front, in 3 dimensions. This bespoke setup will be from the Erebus, the small research vessel which is part of the Sir David Attenborough polar vessel. Kate will go to Antarctica to do this in the next 2 winters (Antarctic summers)."*

Helping the Ice Road Truckers and high Arctic communities

A new research initiative will address the escalating challenges faced by indigenous communities in the Arctic due to climate change.

Dr **Iestyn Woolway** joins an international team which is being supported by the Government of Canada.

As the Arctic warms at four times the global rate, the shrinking ice and snow cover threaten transportation, food security, and health for Inuit and Sámi populations.

This new project prioritises community-driven solutions by blending indigenous knowledge with cutting-edge science to mitigate risks and promote resilience.

The expected outcomes of this initiative are safer travel routes for Arctic communities, new strategies to sustain traditional practices and improve food security and strengthened collaboration between scientists and Indigenous groups to address climate challenges.

Iestyn, who is the UK principal investigator for this project, said, *"Bangor University is grateful for the grant from the Government of Canada and would like to thank them for their support.*

"This project demonstrates our collective commitment to tackling the most significant threat to our planet and the future of humanity, which is climate change.

"We are determined in our drive to find innovative solutions that could have a significant impact on some of the world's most vulnerable populations.

"This ambitious project aims to safeguard Arctic communities' future while advancing global understanding of cryosphere dynamics in a rapidly warming world."

Climate scientist to study impact of extreme weather events on Amazon basin

A Bangor University climate scientist is embarking on a study of the impact of extreme weather events on the Amazon basin river system.

Dr Iestyn Woolway will be focusing on a critical and understudied scientific topic - how multiple extreme events, like heatwaves and droughts, can occur together and amplify their harmful effects.

The research project, which is being supported by the Royal Society, aims to study these extreme events to better understand their impact and find ways to help the Amazon and its communities cope.

The Amazon basin, in South America, is home to one of the world's largest and most important river systems, supporting a rich diversity of life and providing for millions of people.

However, this region has seen an increase of extreme weather events, such as severe heatwaves, droughts, and floods. For example, in September 2023, the region suffered its worst drought in over a century. This caused hundreds of lake ecosystems to collapse, including in Lake Tefé, (a large water system in the heart of the Amazon), where 10% of the dolphin population were lost in a single week due to the extreme temperatures caused by the drought.

These kinds of events are becoming more frequent and intense due to climate change, posing significant threats to the environment and the people living there.

Iestyn said, *"By combining historical data, satellite images, fieldwork, and computer models, we hope to gain a comprehensive understanding of these events and their impacts on both local communities and the environment.*

"We will work closely with Amazonian communities to identify the main challenges they face and develop practical solutions to increase their resilience to these extreme events.

"The wider benefits of our research include providing valuable insights that can inform better policies and conservation strategies. By helping to protect the Amazon's unique ecosystems and supporting the livelihoods of its people, our project will contribute to the region's long-term economic stability and environmental health.

"This research is vital for promoting sustainable development and ensuring the well-being of some of the world's most vulnerable communities."

Students accompany Yueng to give her Prestigious Royal Geographic Society Lecture

Yueng-Djern Lenn, Professor in Physical Oceanography, recently delivered an insightful talk at the Royal Geographical Society's prestigious Monday Night Lecture Series. Her presentation explored Arctic Ocean mixing, emphasising its impact on heat fluxes that contribute to melting sea ice and nutrient fluxes that sustain primary production.

Thanks to the Bangor Fund, Yueng-Djern's travel, along with that of 10 students, was fully funded. The students were selected through a competitive selection process facilitated by Yueng-Djern together with **Mattias Green** (Professor in Physical Oceanography), and Dr **Laura Grange** (Reader in Marine Biology), ensuring a diverse group across academic levels and degree programs.

The trip provided a valuable blend of academic and professional development. Ahead of the seminar, students toured the Royal Geographical Society's historic buildings, guided by the organisation's director of outreach. The evening also included a reception hosted by the Society's Director, offering students the opportunity to connect with peers, professionals, and artists.

Reflecting on the experience, **Yueng** said, *"The students were delighted to attend and represented the University with pride. A particularly meaningful outcome was their appreciation for meeting peers from different year groups, fostering new connections that enriched their university experience. I was especially pleased that we could offer them this opportunity, as it introduced them to the professional world of science in a way they had never experienced before. It also made the event even more meaningful for me*.

"Thanks to the Bangor Fund, this event underscored Bangor University's commitment to creating opportunities that inspire both academic and professional growth. I was so pleased we had the chance to give these students this opportunity."

The Bangor Fund is sustained by generous alumni donations and administered by the Development and Alumni Relations Office.

Festival Of The Sea

In March staff from the school joined one of Wales' first Festival of the Sea/Gŵyl y Môr events within the walls of Flint's historical castle. Festival of the Sea brought together a range of partners from across the marine sector to celebrate and spread awareness of the sea and its benefits to everyone in Wales. Over 600 visitors attended.

Professor **Yueng-Djern Lenn** led a fantastic sea-themed T-shirt ink printing activity. Children had a lot of fun designing and decorating a T-shirt using local seaweeds and shells from the Welsh coastline. PhD student, **Mercedes Lopez**, and MRes student, **Guilia Leanza**, shared their exciting saltmarsh research with interactive activities for the public to learn about the different species found in saltmarshes. Professor **Tom Rippeth** manned a display on the groundbreaking work of **Jack Darbyshire**, the first Professor of Physical Oceanography at Bangor, in predicting ocean waves for military operations during WW2.

Rhianna Parry and **Maria Hayden-Hughes** who work on the Wild Oysters Conwy Bay project, had a live demonstration of oysters filter-feeding displaying how powerful they are at improving water quality and clarity. Members of the public, both young and old, were fascinated exploring our local underwater habitats and wildlife using VR headsets, and made a 'Pledge to the Ocean', an art activity to reflect how they'll protect our ocean. The Festival of the Sea was a huge success with over 600 visitors throughout the fun-filled day celebrating all things marine!

Festival of the Sea /Gŵyl y Môr has been brought together by the Welsh Ocean Literacy Coalition, a network of 30+ organisations from across Wales. Reece Halstead, Ocean Literacy Coordinator for Wales and Festival of the Sea /Gŵyl y Môr organiser says: "No matter your age or your background, everyone in Wales has a relationship with the sea, sometimes without us even realising that we have one. Festival of the Sea aims to celebrate this relationship and give attendees the chance to dive into the marine world and discover something new about our coasts and seas in Wales!"

Sea Slugs in the Menai Straits

Yolanda Evans, an undergraduate Marine Biology student, shares her new found passion for sea slugs.

"I found my first sea slugs here on Anglesey back in February 2024 and they quickly became an obsession. Now you can often find me under the Menai Bridge crouched over rockpools in all weathers and times of day.

There is such a great diversity of sea slugs throughout the UK, but especially here in the Menai Straits! Often overlooked, even nature enthusiasts do not realize these amazing creatures can easily be found by just rockpooling. Lifting up rocks, rummaging through seaweed, searching through hydroids, or even just on the sediment surface, once you know where and how to look, it is hard not to notice them.

Many of the slugs found in Menai Straits are nudibranchs, a carnivorous sea slug group. There are two main groups:

- *Aeolids*- covered in long finger-like projections, known as cerata which are their gills and contain their digestive gland which is tipped with a cnidosac. Cnidosacs are an amazing anatomical feature as they use them to store the nematocysts (stinging cells) of their prey, which they then use to defend themselves.

- *Dorids*- instead of cerata, they have a gill circle on their posterior known as a branchial plume. Some dorid species can also release secretions of sulphuric acid from glands beneath their epidermis which is used for defense

For many sea slug species, distinguishing them can be hard as the differences can be subtle, such as the number of sections

(lamellae) on their rhinophores or the amount of body pigment.

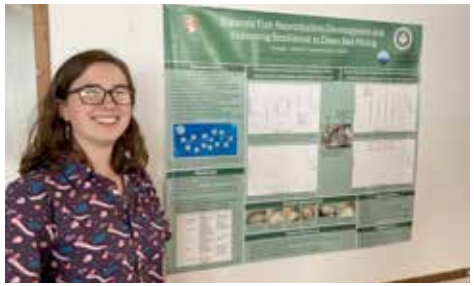
This makes the world of sea slug identification even more fascinating. I have now spent countless hours reading and researching the topic. To date, I've photographed and identified 47 different species in the Menai Strait, in front of the School of Ocean Sciences, and I hope to explore other parts of the country in the future. Of the ones I've seen, my favorites are shown here.

In particular, *Elysia viridis*, is an incredible example. E. viridis is a sacoglossan. Instead of being carnivorous like nudibranchs, sacoglossans are strictly herbivorous and use their pointed radular teeth to pierce into algal cells and remove their chloroplasts. They store these chloroplasts and use them to photosynthesise, producing their own food in a process known as kleptoplasty!

On arriving here at the School of Ocean Science, I was looking forward to studying sharks (elasmobranchs). While these are still a big passion of mine, sea slugs are definitely taking over my life. The idea of a future career working with sea slugs is definitely very attractive. I encourage others to appreciate these obscure creatures as even though they are small, they can bring immense joy."

Placement Year Experience

All Ocean Sciences undergraduate students have the opportunity to take a placement year. Here **Georgia Watson** (BSc Marine Biology and Zoology) tells us about her recent placement experience:

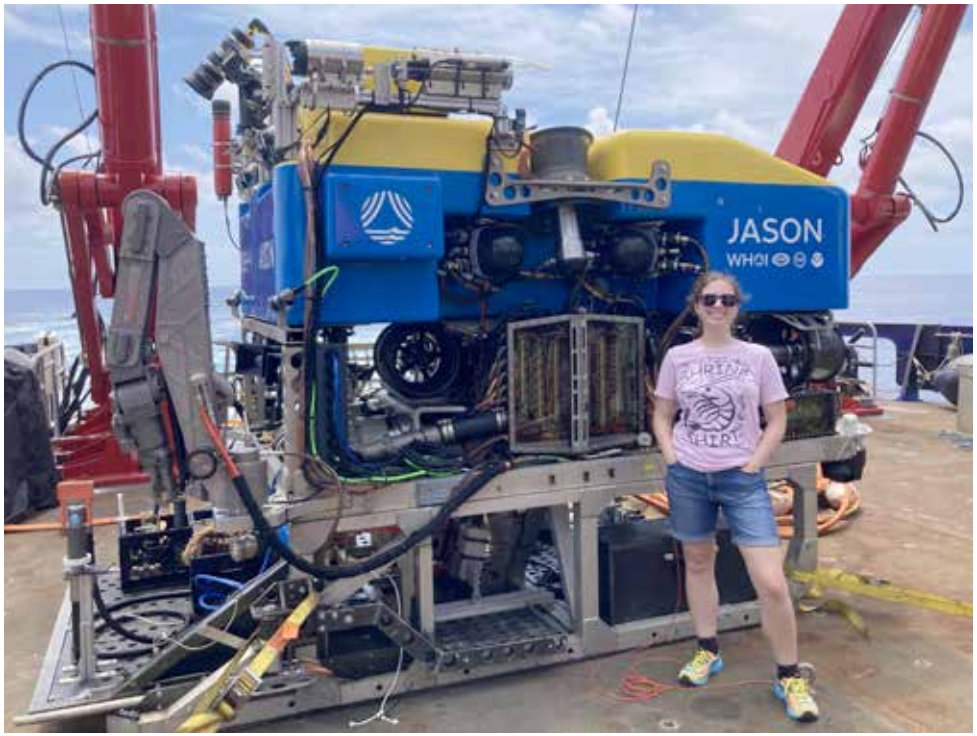


"For the past academic year, I have had the privilege of studying at the University of Hawai'i at Mānoa as part of my placement year with my undergraduate degree in Marine Biology and Zoology. I have been working with Professor Jeffrey Drazen, a leading researcher in the field of deep-sea fish ecology, on several projects. I have investigated the reproductive development of deep-sea fishes and assessed their recovery potential to deep-sea mining pollution and disturbance. This research will be used to advise managers and mining companies on how to minimize impacts.

I also annotated footage from baited cameras sent down to the sea floor from 1000 to 2000 meters to assess the biodiversity of scavenging communities from around the Pacific. In my footage I have seen a wide variety of deep-sea sharks, rays, shrimp, crabs and I have even identified a fish never before seen in Papua New Guinea, the colossal slickhead! The placement year program at Bangor University has allowed me to learn and connect with people in places I never thought I would get to visit in my life.

In my free time, I have gone snorkeling in some of the most pristine reefs in the world at Hanauma Bay, enjoyed fresh poké from local markets and basked in some of the best views in Kualoa Valley.

The foundational education I have received from the teachers at the School of Ocean Science here at Bangor has given me the tools I need to thrive and fully embrace my time here in Hawaii. I have always wanted to study the deep sea and being a committee member of the Endeavour Society at Bangor gave me the confidence and network to reach out to Professor Drazen about joining him in his lab. As my time here in Hawai'i draws to a close, I still have so much to do and learn, a trip to go snorkeling in the middle of the Pacific Ocean, a deep-sea research cruise to Station ALOHA and even the opportunity to swim with manta rays when they come up to the surface at night to feed! I would not have had this fantastic opportunity without the skills and confidence Bangor has given me. I recommend all students to apply for a placement year with their degree. You never know where you may end up!"



All aboard

Bangor University is recognized globally as a leading institution for sea going marine science. As far as possible we encourage our students to get experience of collecting data at sea. Here we hear from PhD student **Meg O'Hara** (BSc Geological Oceanography, MSc Physical Oceanography) about her recent trip to the South Atlantic:

"In February and March of 2025, I was fortunate enough to participate in the 275th scientific cruise onboard the RRS James Cook for the CarTRidge (Enhanced carbon export driven by internal tides over the mid-Atlantic ridge) project. The cruise took us to two locations in the South Atlantic Ocean, one station over a deep Basin and the other on a peak of the Mid-Atlantic Ridge, both at 16 degrees south.

There were 22 scientists on board making up three teams: Oceanography, Plankton and Particle. As part of the Oceanography team, I was responsible for filtering sea water captured from range of depths (the deepest was 4700m!) to remove particulate matter and then preparing samples for analysis on land to quantify dissolved organic carbon.

The cruise was a total of 47 days at sea and was a fantastic experience! I soon found out sleep can sometimes be elusive on a research ship, but the food and crew were excellent and there was always somebody around to play Bananagrams with! I learnt so much during my time, including the requirements to plan for unforeseen circumstances, such as a container delivery delay of 6 days. Luckily, our Principal Scientific Officer, Professor **Jonathan Sharples** of Liverpool University (a Bangor Physical Oceanography alumni), was a pro at shuffling schedules and making the plan work despite a few setbacks.

I particularly enjoyed understanding different scientific disciplines in much more detail than I would normally be exposed to. For my own work, the time was invaluable as I got firsthand experience in how the data I use is collected, and I now understand limitations and practicalities of doing so. It was truly an invaluable experience, and I am incredibly grateful for those that made it possible for me to take part, particularly to the ENVISION Doctoral Training Partnership PhD programme, my Supervisor **Mattias Green**, and PSO **Jonathan Sharples**!"

Conference time!

PhD student **Kiran Bhandari** tells us about the 21st Annual Marine Biological Association Postgraduate Conference in April.

"This was my second MBA postgraduate conference having attended in 2023. Joining me from the university were research Masters students **Giulia Leanza** and **Adrianna Lipinska** and MSc Marine Top-Predator Ecology students **Savannah Young** and **Aisha Grey**.

We were welcomed to the conference by Dr Magnus Johnson of the University of Hull. Many will recognise his name from his research on Antarctic krill and *Nethrops norvegicus*.

The conference started with a series of student presentations providing the opportunity to ask questions after each talk. Many of the talks in this first block focused on kelp production. After lunch we had a series of talks from my fellow MSc course mate Dr **Andy Olivier** (MSc Marine Environmental Protection, 2012/2013) now of the Yorkshire Wildlife Trust, Zoe Pearson of Howell Marine Consulting, Dr Hong Chin Ng (SeaGrown), Dr Jean-Luc Solandt and another Bangor alumnus Dr **Siobhan Vye** of SAERI. After the talks, they all participated in a panel discussion focusing on careers with advice on how to get employment at their organisations.

The day concluded with a fun quiz of 10 rounds where a Hull PhD student and his wife would play a cover of a well-known song. We then had to name the artist. This was followed by a general knowledge question with a rather tenuous connection to the song, and an even more tenuously

related question about marine biology. Adrianna and Giulia's team won the quiz!

The focus of day 2 was the importance of communication in marine science. We were split into teams and first had to draw our idea of the perfect researcher, and then to come up with a short slogan to describe science communication which the general public would understand. Following more talks we were treated to a private evening visit to The Deep aquarium, one of the most unique aquariums in the world as it is built right underneath the Humber estuary (under 20 tonnes of water!) for a dinner of street-food and another quiz, this time purely on marine biology using the Kahoot app.

The final day began with a talk from Rod Downie of WWF, with more student talks covering a range of subjects. These included Antarctic sponges, behaviour of sharks in South Africa, bluefin tuna and killer whale spatial overlap and one on the dumbo octopus!

After lunch the conference concluded with my talk where I presented the findings of my PhD project on the prevalence of diseases in edible crabs, together with three more student presentations. Prizes were then awarded for the best talks and posters, and a final farewell and thank you from the MBA.

Overall, it was a really great experience, and I must extend my gratitude to the organising committee, in particular Ellie Burrell who sent all the emails detailing everything we needed to know before attending. It was a fantastic opportunity to network with other marine scientists, present your work in a relaxed, low-pressure environment and get some valuable feedback from others about your research. I was also blown away by the quality of the science that was on show during the talks. Next year's conference will be held in Newcastle, and I strongly urge other postgraduates, particularly PhD students, to attend, even if you are only at the early stages of your PhD research. There are bursaries available from the MBA to assist with the costs of attending the conference, of which applications will be available early next year. It would be a very valuable experience!"

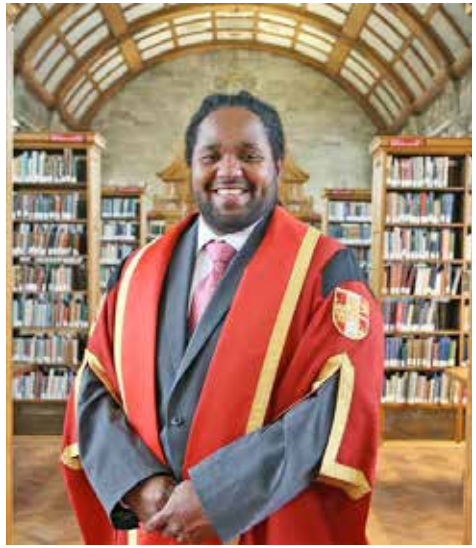
Bangor University ranked as one of the leading institutions for sustainability globally

Bangor University has again been recognised for its exceptional commitment to sustainability, retaining its First-Class Award in the 2024/25 People and Planet University League. This marks the sixth consecutive year that the university has achieved this distinction. Bangor ranked 19th out of 149 universities int he UK.

In the Times Higher Education (THE) Impact Rankings for 2025, Bangor is now the 9th most sustainable university in the UK, and joint 64th globally. This year saw a record 2,318 universities from across the world in the ranking system.

Bangor University has also ranked in the top 11% worldwide for sustainability in the International QS Sustainability Rankings 2025. These rankings are focused around three key areas, which are Environmental Impact, Social Impact, and Governance. Bangor were ranked in the top 100 globally, in the areas of Environmental Education and Environmental Research.

Bangor University alumnus and Strictly champion Hamza Yassin publishes new book: Hamza's Wild World



Bangor University alumnus and honorary graduate, Hamza Yassin, has released a new children's book, Hamza's Wild World. This new title promises to take young readers on a captivating journey through the wonders of the animal kingdom.

TV naturalist works with Bangor academics to record world-first sighting

Steve Backshall, has published a scientific paper following a unique sighting he made filming a recent documentary.

Steve, who is also honorary senior lecturer here at Bangor, worked with two academics from the university to write the paper. The research has revealed a more complicated relationship between giant cowbirds and South American tapirs in the Amazon rainforest, than originally thought.

Steve said, “We were filming for a documentary in Suriname when we saw this behaviour for the first time and managed to get it on film. I realised this was probably the first time it had even been recorded, so I got in touch with my colleagues at Bangor University and we worked on getting it published in a scientific paper".

He added "It was great working with the two academics at Bangor – as they clearly share my passion for the natural world, which is one of the reasons I love Bangor University so much. "

Dr **Mark Mainwaring**, a bird expert and the paper’s main co-author, said: “We’re incredibly lucky to have Steve as a colleague here at Bangor as he is such a knowledgeable naturalist. Writing a paper with him was great as this was a real world-first recording of such a behaviour.”

Paper: S Backshall, C Dunn and M Mainwaring (2025). A Newly Discovered Symbiotic Relationship Between Giant Cowbirds (*Molothrus oryzivorus*) and South American Tapirs (*Tapirus terrestris*) in Suriname. Austral Ecology, *https://doi.org/10.1111/aec.70020*.

During a recent visit, Steve also found time to join the Bangor University Dive Club to explore the amazing diversity of marine life around Anglesey.

Accelerate Action: Inspiring Careers in Marine Science

This event was held to celebrate International Women and Girls in Science in February, with nearly 100 attendees. It was jointly organised by the student-led *Endeavour Society* and the Wild Oysters Conwy Bay Project. The panel included **Natalie Hold** and **Yueng-Djern Lenn** from SOS.

The panel provided insights on equity, diversity, and inclusion (EDI) in marine science, particularly around increasing representation of underserved ethnic minority groups and creating more inclusive opportunities and diverse marine career journeys. They also brought to light the importance of conservation meets sustainable seafood and fisheries, with a focus on responsible sourcing. There was also an important conversation around mothers in science, and the challenges of balancing academic and industry careers with parenthood. The panel discussions on career journeys helped to demonstrate the many different paths into marine science. Overall, it is hoped that the meeting will inspire all of the attending to pursue a career in marine science/STEM roles and to push for even greater inclusivity in our field.

Annual Ocean Sciences Careers Fair

Professor **Katrien van Landeghem** would like to say a huge thank you to Fugro, RWE, The Crown Estate, North Wales Wildlife Trust / Ymddiriedolaeth Natur Gogledd Cymru, Intertek Metoc, Love The Oceans, Eco-Scope Ltd and Gardline Limited for joining us at the annual Ocean Sciences careers fair in February. More than 100 of our ocean sciences students enjoyed meeting you to discuss their skill sets and their futures! Many thanks also to the team of student volunteers who helped set up and run the fair.

Bangor University championing UK's first ocean literacy strategy

The Wales Coasts and Seas Partnership (CaSP Cymru) has launched an Ocean Literacy framework for Wales aiming to grow people's relationship with our coasts and seas.

The first of its kind in the UK, '*Y Môr a Ni*' (The Sea and Us) combines the knowledge and experience of 22 organisations including NRW (Natural Resources Wales), Welsh Government, The Marine Conservation Society, North Wales Wildlife Trust working together as the Welsh Ocean Literacy Coalition to build awareness of our influence on the sea and the sea's influence on us.

The more connected people feel to the sea, the more conscious people become about their individual and societal effects on marine and coastal environments. This can lead to behavioural changes that safeguard and protect these important natural spaces as well as all the benefits they provide.

On behalf of the ocean literacy team honorary Research Fellow **Dr Liz Morris-Webb** said, *"I would like to thank CASP for leading the way with Y Môr a Ni, and to all those involved. It has been an exciting opportunity to be a part of the co-creation process, developing a vision and pathway to a Wales that is better connected with its surrounding waters."*

"Restoring society's relationship with the ocean through nurturing our connection with it and inspiring people to understand it is an essential step towards keeping our planet habitable, and I am pleased that Wales, the Welsh Ocean Literacy Coalition and specifically Bangor University, are leading the way."

Research Reveals Major Gaps in Tidal Knowledge that Frequently Lead to a Risk to Life for Coastal Visitors

Research conducted by Bangor University in partnership with the RNLI has uncovered a significant lack of public awareness regarding tidal movements. The RNLI are now able to highlight the gaps in coastal safety knowledge that could lead to dangerous situations.

The study, which surveyed 1,368 participants across the UK and Ireland, found that 15% of respondents reported being cut off or nearly cut off by the tide at some point in their lives – which translates to 10 million people across the UK overall.

The research also revealed that four in ten people have little to no understanding of tides, and only half check tide times before visiting a beach. Even more concerning, only 24% of the public possess the necessary skills to correctly read and interpret tide tables.

As approximately half of the world's coastline has a tidal range that exceeds standing depth, being cut off by the tide is not just a British problem. The interdisciplinary research team from Bangor University included Ocean Science's Dr **Martin Austin** and Dr **Liz Morris-Webb**, in collaboration with Professor **Thora Tenbrink** (Professor in Linguistics at Bangor), in the world's first attempt to examine the public awareness and attitudes towards tides.

Their findings will inform future RNLI public campaigns and educational initiatives aimed at improving tidal literacy in the UK.

In response to the findings, the RNLI is urging the public to take simple but crucial steps before heading to the coast – such as making sure they know what the tide will be doing that day at the place they're visiting. This can be done by checking a trusted online source, such as the Met Office, for tide times and coastal conditions. The tides vary by location and day to day, meaning even familiar beaches can pose unexpected risks.

Key messages for coastal visitors that arise from the research include:

- Know when low water is at your chosen destination. This can be very different depending on where you are – remember that every beach is different. Avoid islands, isolated rocks, sand banks and headland walks on a rising tide.
- Watch the tide. Stay alert and monitor your surroundings at the beach. Watch the direction of the incoming tide, as well as its speed and strength.
- Check and know your exits, especially if you are walking around cliffy headlands.

Building on the RNLI – SOS tidal cut off collaboration, a new initiative to enrol SOS students into the public facing RNLI Water Safety team has been established. An initial group of 17 students met the regional RNLI Water Safety team at Beaumaris Lifeboat Station in March to find out about the role of the RNLI and its water safety education programme. This new collaboration will see students educating the public by applying their expertise of ocean tides, waves and coastal dynamics, combined with the training that they will receive from the RNLI in water safety awareness and lifesaving actions, to raise the level of public education and thereby ensure that people can enjoy the coast safely.

Ocean-inspired Music premiere

A new piece by Bangor University's Professor **Andrew Lewis**, for brass ensemble and electronics, has been premiered at the Eastman School of Music. Eastman is one of America's leading music conservatories.

The piece, called 'Soundings', is inspired by the work of Professor **Yeung-Djern Lenn,** an expert in the processes driving the overturning currents that impact the climate of the polar oceans.

In 'Soundings', 15 brass players are placed around the concert hall surrounding the audience, while 16 loudspeakers project immersive electronic sounds. The movement of sounds around the hall is based on data from Prof Lenn's map of the global ocean circulation system.

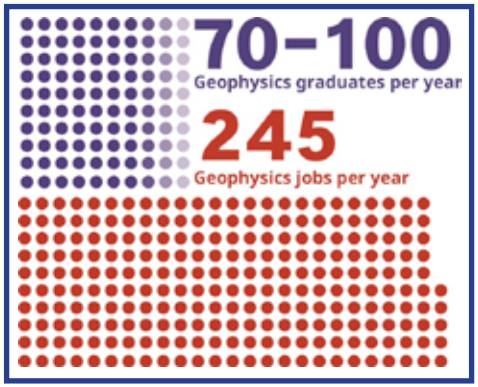
Bangor helping to fill major skills shortage

A report by *The Studio of Possible* on behalf of *Sulmara*, a subsea and inspection services company has identified a critical skills gap for hydrographers and geophysicists in the energy industry suggesting it poses a significant risk to the proper execution of survey projects. They comment that:

"The lack of a fully skilled workforce has also resulted in survey specifications to be increased beyond what is fit for purpose to try and combat the drop in quality."

"Institutional knowledge lost through oil downturns and COVID-19 has left a major shortage of professionals with more than 10 years' experience. In turn, this leaves a gap of mentors for graduates to learn on the job."

In identifying this skills shortage they also highlight the key contribution of recent Bangor Ocean Sciences graduates in helping plug that gap.



Recent UK Government Skill Most Wanted Survey

Cameron Mayor (BSc Ocean and Geophysics, 2021)

With a love of physics and keen to be involved in one of the world's most progressive industries, Cameron has realised his ambition of working in renewable energy.

He is a surveyor in construction for windfarms with leading independent subsea survey and inspection company, Sulmara. His work includes trenching and multibeam echosounder (MBES) surveying which is a type of sonar that is used to map the seabed

Cameron, who was born in America and brought up in London. While he knew the career he wanted to get into, he said many students aren't aware of the opportunities for hydrographers and geophysicists.

"More public understanding of the roles and jobs in the energy industry would help raise awareness.

"If you like adventure and are interested in pushing yourself academically, you will find it in hydrology and geophysics. Whether its writing scripts and coding to problem solving, your academic limits go as far as you are interested in pushing them."

Following his first job as a data processor for a geophysical land survey company, Cameron joined Sulmara as a graduate. He is now focused on building his skillsets through the firm's robust training programme:

"I feel I have progressed with every offshore trip to a new level of understanding," said Cameron.

"The exposure to new training and work has been great. Sulmara's technical training manager, Jamie Johnston, does a great job at providing practical training across the board and with the latest hydrographic software.

"Resource managers always offer roles and opportunities for scopes of work too that I haven't been involved with, from sea surface salinity processing, pre-lay grapnel run operations and mattress laying to trenching, MBES survey work and data processing.

"On top of this, I'm keen to gain more experience in processing and online surveying roles as well as with a sensor operator for winch operations.

"For me, this job will continue to bring interest as long as the industry continues to evolve with the technology. Not only do you learn something new on every trip, there is the opportunity to travel as well as a work-life balance."

George Barker (BSc Geological Oceanography, 2022)

Within nine weeks of joining Sulmara as an offshore survey graduate, George found himself on a project in Texas where he received hands-on training on the anatomy, deployment and maintenance of a USV.

Prior to this, he had undergone a rigorous, practical training programme spanning everything from survey processing, data refinement and patch testing to an offshore survival course.

"Studying a subject is distinctly different to its real-world application," said George, who graduated in Geological Oceanography from Bangor University in Wales. "The confident coordinated response that comes with time in the industry cannot be learned anywhere but in the field. Every detail must be considered and accounted for with real-time responses necessary to meet arising variables.

"The survey in Texas involved running 500km of survey lines to assess the bathymetric, magnetometry, and sub-bottom profile of the area for future carbon capture pipelines. USVs are increasingly shaping the future of the offshore industry, with Sulmara continuously pushing boundaries with each new project.

"I was taught piloting, meteorology factors and sound velocity data acquisition, and I now have invaluable experience disassembling and reassembling the USV with alternate payloads. It was a large learning curve made easier with coaching from experienced surveyors and a supportive team. I now feel confident to operate to the highest standard that Sulmara sets on correct survey operation."

Thanks to his geography teacher at school, George was inspired to study geology however the COVID-19 pandemic put paid to his aspirations to get into the energy industry and he went on to be a clean water process engineer at Yorkshire Water for more than two years.

"The local geography in Yorkshire is immensely interesting and unique," he said. "The very reason my ancestors inhabited this area is due to the economic potential provided by the soft water for textiles. Working for Yorkshire Water allowed me to better understand the relationship between the natural hydrological phenomenon and my home.

"COVID-19 derailed my studies and my planned year in the energy industry. I had to regroup and enter an industry which would afford me the greatest experience in hydrological principles. Once COVID-19 had receded and I had a firm understanding of my job as a clean water process engineer, I decided it was time to enter the field for which I had studied."

After researching survey companies and consulting those he knew in industry, George set his sights on Sulmara and within a week of applying, he landed the graduate role.

"I am early into my career and the learning curve has been steep. But already, I have had the opportunities to work on some astronomically interesting engineering projects with incredibly knowledgeable colleagues and through the trust I receive growing exponentially, I see the progress in the responsibility.

"My highlight with Sulmara has been the Champlain Hudson Power Express renewable power transmission project in New York on the Hudson River. The work was fascinating and hugely important to the city. The environment was incredible and somewhere I had never thought I would be.

"I have worked in locations and environments I had never even imagined. For me, the role is an adventure, encompassed on all sides by the elements I find most interesting in the world. Sulmara has given me the opportunity to experience what I believe to be my dream job."

New Book

The Atlas of Early Modern Wildlife

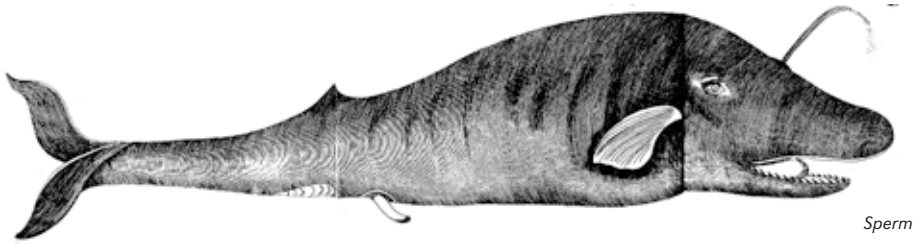
A new book has been published by Dr **Lee Raye** who works as a researcher at SOS on the FisHistory project and the Open University. The examines written records of wildlife in Britain and Ireland recorded before modern records began. *The Atlas of Early Modern Wildlife* looks at the era before climate change, before the intensification of agriculture, before even the Industrial Revolution. In the sixteenth to eighteenth centuries, beavers still swim in the River Ness. Isolated populations of wolves and lynxes linger in the uplands. Sea eagles are widespread around the coasts. Wildcats and pine martens remain common in the Lake District. For an Ocean Sciences audience the book is particularly of interest for its inclusion of species like the great auk, walrus, angelshark, and sperm whale.

In this ground-breaking volume, the observations of early modern amateur naturalists, travellers and local historians are gathered together for the very first time. Drawing on over 10,000 records from across Britain and Ireland, the book presents maps and notes on the former distribution of over 150 species, providing a new baseline against which to discuss subsequent declines and extinctions, expansions and introductions. A guide to identification describes the reliable and unreliable names of each species, including the pre-Linnaean scientific nomenclature, as well as local names in early modern English and, where used in the sources, Irish, Scots, Scottish Gaelic, Welsh, Cornish and Norn.

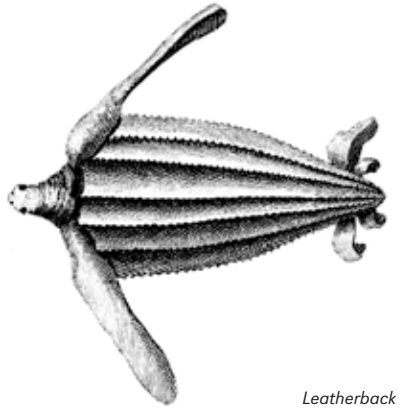
Angel Shark

The book has been shortlisted for the Marsh Book Award.

https://pelagicpublishing.com/products/the-atlas-of-early-modern-wildlife?srsltid=AfmBOool6x54bMt1pFtpA5YHZaOpCBLnu-BI3D-OghLJEcnkNt20SpKc



Sperm Whale



Leatherback Turtle

Alumni News

Jess Fox (BSc Marine Biology and Oceanography, 2020; MSc Physical Oceanography, 2021)

As waves crashed over the bow and wind whistled through my hair, I stood proudly on the upper deck of HMS RICHMOND on my first deployment as an Officer in His Majesty's Royal Navy. After four years away from Bangor, I'd returned to the sea.

I had the great privilege of studying at the School of Ocean Sciences for both my BSc (Marine Biology with Oceanography) and MSc (Physical Oceanography) between 2017-2021. Practical marine biology and coastal geomorphology were my favoured subjects and both remain particular personal interests today.

After graduating, I worked as Deck Crew on the Dutch tall ship Bark EUROPA which took

me to Antarctica in 2022 – fulfilling one of my longest-standing ambitions. The Drake's Passage (between Cape Horn and the tip of the Antarctic Peninsula) was wild and treacherous: wave heights scaling metres and howling, incessant winds. I'd been hideously seasick on the passage south, but when we arrived in Antarctica we were greeted with peace and serenity: penguins happily plopping in and out of the water, albatross gliding overhead and barely a breath of wind. "Have I died and gone to heaven?!" I thought. It was an oasis like I'd never seen before. Later that year, I took my first step into the world of work.

I exchanged salt water for fresh and worked for Southern Water as a Water Quality Process Scientist, which was a fascinating role and one which I'd not previously appreciated even existed! My job was to manage the scientific treatment of drinking water from source (e.g. an aquifer, river or reservoir) to tap and ensure the processes were aligned with strict regulation. The skills I'd learned in critical data analysis and report-writing from university were indispensable; for example: every day I'd report on the status of my water supply sites and always had in the back of my mind: "don't just say 'more' of x, y, z; find the data and quantify it!". I spent two years in this position and learned a great deal about industry, water production and engineering management, but I was missing working with the ocean. By this point – for almost 8 years I'd been spending my free time at sea on tall ships like EUROPA, but earning a living is not so conducive to seafaring. Or is it...

In a leap of faith, I decided to step away from industry and take a new path: the Royal Navy. In May 2024, I joined Britannia Royal Naval College in Dartmouth for Initial Officer Training (IOT) where I spent 29 weeks undergoing gruelling fitness drills, navigation training on the River Dart, endless ironing and lessons in leadership – plus so much more. On 19th December 2024, I completed IOT and was awarded a King's Commission and the rank of Midshipman; a very proud moment.

Since then, I've spent three transformative and hugely enjoyable months on board the Type-23 Frigate HMS RICHMOND which specialises in anti-submarine warfare. This period at sea for new Royal Navy Officers is known as Common Fleet Time – a hands-on training period on board an operational warship. HMS RICHMOND spent most of that time generating for the recently publicised NATO global deployment, so the programme was busy with exercises and training in preparation for the voyage to come.

The next step in my career will be to complete further specialist training at HMS SULTAN in Gosport – the home of Marine Engineering training for the Royal Navy. Throughout the course I'll be putting into practice elements of theory and knowledge from my experience in industry and dusting off my learning and revision techniques from university in an effort to become a Marine Engineering Officer. The opportunities that the STEM degrees from the School of Ocean Sciences afford are remarkably broad and I look forward with great excitement to my future as an engineer and Servicewoman.

Chelsey Baker (BSc Ocean Sciences, 2014)

I began studying Ocean Science at Bangor in 2011 and graduated with a first-class degree in 2014. During my time at Bangor, I realised that I was particularly interested in marine biogeochemistry and enjoyed the taste for research I got whilst completing my undergraduate dissertation. This spurred me to on apply for the MSc in Oceanography at the University of Southampton to follow the Marine Biogeochemistry pathway.

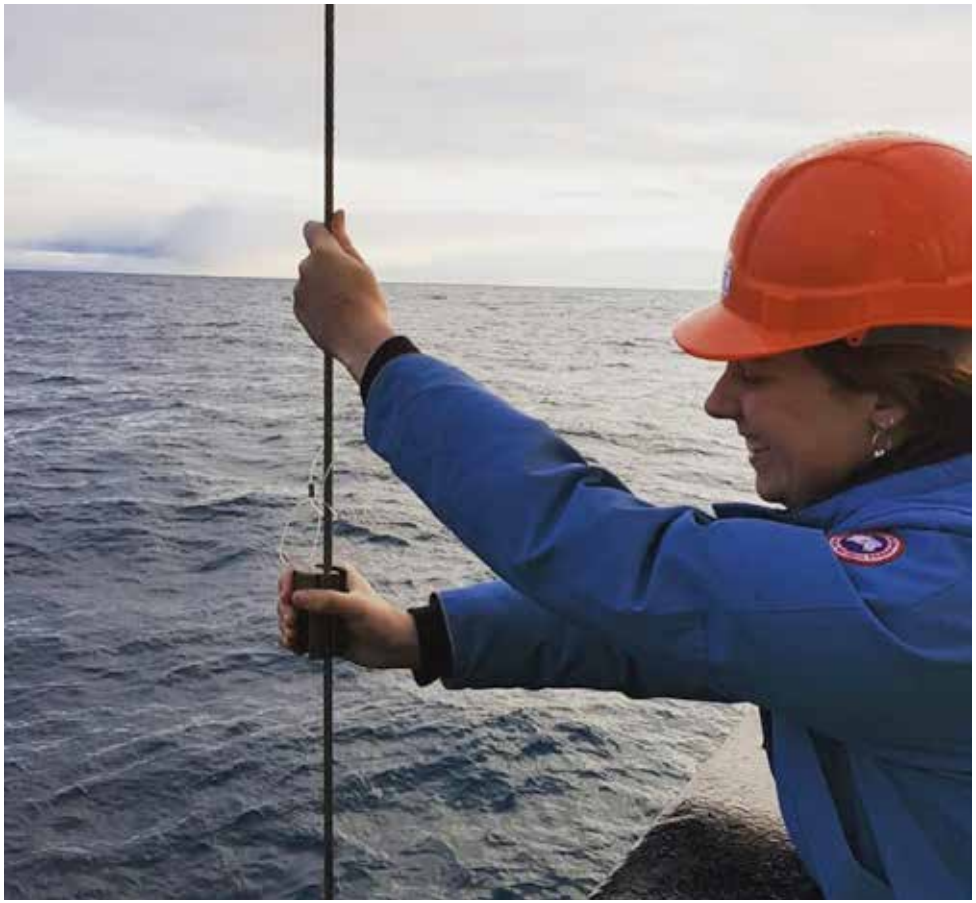
During the MSc Oceanography I learned more about the biological carbon pump and realised that I had found the area that really captured my interest! I started working with researchers from the National Oceanography Centre (NOC) on sinking particle fluxes and biological ocean carbon storage, which was the subject of my MSc thesis. I really enjoyed the research I did during that time and I had the opportunity to go on a 3 week research expedition to the Porcupine Abyssal Plain Sustained Observatory in the Northeast Atlantic which was an amazing experience. I decided to apply for a PhD working in the same research group at NOC and was lucky enough to be accepted into the SPITFIRE DTP programme. I then spent a great 4 years researching deep ocean particle fluxes in the Iceland Basin which included lots of laboratory analysis of sediment trap samples, data analysis of satellite data and models, a couple of bonus research cruises, a couple stints working for NOC as a laboratory technician, and a 3 month research placement to Woods Hole Oceanographic Institute.

As I was coming to the end of my PhD I knew I wanted to stay in research and as I was settled in Southampton was aiming to secure a position nearby. As I was approaching thesis submission a post-doctoral position on the North Atlantic Carbon cycle opened up in the Marine Systems Modelling group at NOC. I had dabbled with some modelling during my MSc and PhD and found it very interesting and so I decided to apply and to my great surprise they offered me the job and I started in February 2020.

During my time in the modelling group I have expanded my skillset to include coding in python, running particle tracking simulations and analysing Earth System Model ensembles. I have also diversified the topics that I work on including climate mitigation solutions, such as evaluating marine carbon dioxide removal approaches, as well as working alongside social scientists to understand the impact of such solutions on society, and I continue to undertake research using observations too. Throughout my time working at NOC I've been fortunate enough to have some unique experiences including attending and presenting COP28 in Dubai, drafting mini essays for Lucy Hawking's children's book 'Princess Olivia investigates the sea of plastic' and several research cruises to the Atlantic and Southern Oceans.

After five years as a post-doctoral researcher at NOC, I recently got promoted to Senior Research Scientist. I had no idea where my career would take me when I was studying for my Ocean Science degree at Bangor but I slowly found my key research area of interest and with a healthy dose

of enthusiasm, saying 'yes' to opportunities that were out of my comfort zone, and great mentors along the way I have been fortunate enough to forge a fun and rewarding career in ocean science.



Dylan Moses (BSc Ocean Sciences, 2022)

Studying Ocean Sciences gave me the opportunity to complete modules in both Oceanography and Marine Biology.

From a young age my passion for the seas and oceans was built around conservation for these wonderful environments.

After graduating I became a horticultural assistant and thoroughly enjoyed my time learning about a whole manner of different trees and shrubs. One of my party tricks is being able to name trees by their Latin names! However, nothing could shake my desire to get back into the marine field.

So, after a year and a half I applied for the 'Marine Futures Internship' in North Wales. It was the first of its kind in North Wales, having ran in other locations in England. I was thrilled to be chosen as this gave me the opportunity to increase my experience in different marine sectors, while working with four different partners: The Crown Estate, North Wales Wildlife Trust, M-SParc and Menter Môn Morlais.

Having been an intern from July to December (2024), I gained sectoral knowledge in community engagement, marine renewable energy, marine policy and conservation. As a result of this diverse experience, I felt I was well prepared to enter the working world.

That is when an amazing role focusing on saltmarsh habitats opened up with the North Wales Wildlife Trust. So, for the next year (and more, hopefully!) I will be researching historic and present baselines for saltmarsh and engaging and educating local people about their wonderful saltmarsh ecosystems.

Roedden i'n falch i lanio'r swydd newydd, yn ymchwilio cors heli yng Ngogledd Cymru. Mae hi wedi fod yn uchelgais i fi i weithio yn yr sector morol, yn arbennig yn yr sector cadwraeth.

Joe Strong (BSc Ocean and Geophysics, 2022)

After graduating from Bangor, I joined RPS as a Geophysicist and unexploded ordnance (UXO) consultant working in their marine team. In my role I design and support UXO surveys and mitigation programs for telecom and renewable energy projects. I primarily work with magnetic datasets, processing and assessing magnetic anomalies to determine whether they could potentially be items of UXO. As well as this I regularly work with a number of other geophysical datasets including MBES, SSS, SBP and electromagnetic data, all of which can be useful to support assessing magnetic anomalies.

Whilst my work is primarily office based, I have had the opportunity to work offshore as a client representative, overseeing data collection and acting as a link between the onshore client and offshore operations. So far, I have worked on vessels around Europe such as Sweden, Spain and The Netherlands. I have been very lucky to work with a wide range of clients and survey companies whilst learning how to process data from a range of different sensors, it certainly has kept things interesting with no day really the same.

Emmer Litt (BSc Geological Oceanography, 2006; MSc and PhD in Physical Oceanography, 2007 & 2011)

From sieving sand to sieving paperwork.... We all start off so bright eyed, dreaming of a life filled with boats and... no, not dolphins!

Everyone assumes if you studied some sort of marine science you know everything about marine biology, whether you are walking on the beach with family or friends and asked to ID some shell or someone asks you for career advice for their child who likes marine mammals. I really don't – although have picked up a few things through osmosis!

I am a Marine Geoscienitist. My time in Menai Bridge were very fun times, my playground for growing up and finding my academic spark surrounded by fabulous friends and mentors. Like many, I didn't settle that far away. These days I sit at my desk in the mountains, about 10 miles from Menai Bridge, heading up Marine Licensing delivery in Wales on behalf of Welsh Government Ministers. I explain it as planning permission for the sea. I really enjoy it, the team are fantastic, the work interesting and there is never a dull day, that's for sure.

I left Menai Bridge with a BSc in Geological Oceanography (2003-2006), MSc Applied Physical Oceanography (2006-2007) and a PhD joint with Plymouth Marine Laboratory and Bangor University, investigating C02 fluxes in contrasting Shelf Sea Regimes (2007-2011). I was lucky to secure a role shortly after at the Countryside Council for Wales, now Natural Resources Wales, as an advisor in Marine and Coastal Physical Science. After 10 years, I felt a new challenge was needed, so decided to understand how my role as an advisor was used in coming to decisions on permitting activities in the sea. I often joke that a law degree would have been more useful as my world is now full of legislation and policies that guide our decisions. So, if you look out to sea around Wales and see a wind farm, a coastal defence, a seaweed farm or anything else construction or deposit related, that is what I spend my time now doing, ensuring the right development is in the right place.

My life does contain boats, it's just more likely to be on the weekend with the family and maybe with the odd dolphin offshore, although I couldn't tell you which species!

Congratulations

Prof. Sandra Shumway (PhD Marine Biology, 1977)
who was recently honored as a Foreign Fellow of the Korean Academy of Marine Science and as an Honorary Life Member of the World Aquaculture Society.

Edward Favell (BSc Marine Biology, MSc Applied Marine Geosciences, 2014)
on his new position as a principle geophysicist at Fugro

Amelie Smith (BSc Ocean Sciences, 2024)
on her new position as trainee geoenvironmental technician at WS UK.

Ellie Harland (BSc Geological Oceanography, 2021)
on her new position as a catchment monitoring advisor at the Northumbrian Water Group.

Harrison Gilder (BSc Ocean and Geophysics, 2023)
on his position at European Geophysical Services.

Katie Sieradzen (MSci Geological Oceanography, 2015)
on gaining a PhD in Physical Oceanography from Bangor University.

Tom Johnstone (MSc Marine Environmental Protection, 2020)

I graduated from MEP in 2020. In May 2024 I established 'we are Nature based CIC', a not-for profit company based in Wales working on Nature based Solutions and Nature Guardianship. We were swiftly appointed the Nature Guardian to the Usk Catchment Partnership, the first time any organisation of any kind in Wales has had the voice of Nature on its decision-making structure.

We then secured funding for over £100,000 worth of Natural Flood Management (NFM) work across Conwy and Powys, all successfully delivered by March '25 and we are now awaiting the publication of the Wellbeing of Future Generation commissioners annual report, which we have been featured in for our pioneering work on Nature Guardianship.

We are actively seeking other organisations of any size or type who would like to bring the voice of Nature into their boards, committees or decision-making structures.

Find out more at *www.wearenaturebased.co.uk/*
wearenaturebased@protonmail.com /
www.linkedin.com/in/tom-johnstone/

Marcus Gay (Marine Chemistry, 1998)

Not All Chemists Wear White Coats – An International Journey from Bangor University

"In the autumn of 1995, I boarded a train from Bristol Temple Meads with a 65-litre Karrimor rucksack covered in patches from Ten Tors expeditions and a wok strapped to the outside. My destination? Bangor University in North Wales—a place that would launch me into a career that's taken me from Arctic tundra to US boardrooms.

I arrived at Bangor to study marine biogeochemistry, drawn by the university's strong focus on marine science and its unique coastal setting. At the time, I had just taken up scuba diving with a local Sub-Aqua Club and was deeply inspired by a Royal Society of Chemistry poster I remembered from school. It showed divers working on a coral reef with the caption: "Not all chemists wear a white coat." That idea stuck with me—and Bangor gave me the chance to make it real.

Bangor's interdisciplinary approach to marine and environmental science gave me the tools and inspiration to pursue my passion. I stayed on to complete a Master of Science in environmental chemistry, gaining research experience and academic mentorship that opened doors beyond the UK.

By 1999, armed with my Bangor degrees and that same Karrimor backpack (minus the wok), I hopped a flight to Raleigh-Durham, North Carolina, to work as a marine science educator. That role, based around the Neuse River and the Outer Banks, was meant to be a three-month adventure. But it planted the seed for a much longer chapter abroad.

As my North Carolina stint came to a close, I applied for a summer research position with a US Arctic climate programme. I was interviewed in Woods Hole, Massachusetts, by a team of internationally renowned climate scientists—and offered the job, pending visa approval. Within weeks, I was on a plane to Alaska to begin scientific diving and field research in one of the most remote regions of the world.

Marcus in Llandudno, Summer 2024, attending a Marine Energy Wales members summit.

That "summer job" grew into five years of year-round work. Summers were spent in Arctic Alaska, flown by helicopter to collect environmental samples from remote arctic lakes and rivers. Winters were spent in Woods Hole, analysing those samples and reporting on the chemical interactions of bacteria and algae in cold-climate aquatic ecosystems. I was quite literally the chemist who didn't wear a white coat—most of the summer I wore a drysuit.

From there, I transitioned to industrial R&D in the US. I joined a biotech startup spun out of MIT that focused on turning algae and bacteria into renewable biofuels by capturing emissions from power plants. I led parts of the R&D lab programme in Cambridge, Massachusetts, and later managed the construction of our large-scale demonstration facility in Arizona and customer project in Cadiz, Spain. In 2007, National Geographic covered our work, and I was quoted (somewhat prophetically) saying, "If we're a penny more expensive than fossil fuel, we'll go bust." Sadly, while the tech worked, the business model in 2004 didn't. We went bust.

That chapter marked a turning point rather than an end. Over the next two decades—my career in the US evolved as I moved into consulting roles, supporting the development of a broad range of renewable energy technologies. Most recently, I served as VP of Product Development at a startup focused on wave-powered desalination —harnessing wave-energy to produce drinking water for remote island communities. I successfully secured over $2 million in non-dilutive funding from the US Department of Energy, but when COVID disrupted access to venture capital, I was asked by the Board to step in as interim CEO and help oversee an orderly wind-down of the company.

Now, after more than two decades abroad, I've returned to the UK and taken up a leadership role at a Bristol-based engineering consultancy that supports innovators in the marine energy space. Working to support innovators of wind, wave and tidal-stream technology, I'm helping to expand our international presence across Europe and the US, working with the next generation of researchers and entrepreneurs who—like I once did—see science not just as discovery, but as a pathway to building a better, more sustainable world.

Bangor helped me see chemistry and ocean-science, not just as something to study, but as a way to explore the world. I've dived under Arctic ice, worked in biotech labs, and helped develop new marine technologies. I did wear a white coat now and then—but it's the wetsuits, hard hats, and lifejackets I remember the best.

If you're a fellow Bangor alumnus working in marine science, energy, or cleantech, I'd love to connect. You can find me on LinkedIn: linkedin.com/in/marcusgay or Insta: *https://www.instagram.com/aquatic.explorer* "

Giulia Cecchi (Marine Biology & Oceanography, 2024)

"I have been awarded a Full Scholarship for the Erasmus Mundus programme "CoastHAZAR". Erasmus Mundus Joint Masters are prestigious international masters, jointly designed and delivered by a group of higher education institutions.

They involve at least 3 institutions from at least 3 different countries, and multiple associated partners from the academic and non-academic world. Masters offer 20 full scholarships to the best-ranked students worldwide, covering tuition fees and living allowance.

Giulia Cecchi alumni

Coast HAZAR is a master on Coastal Hazards, Risks, Climate Change Impacts and Adaptation, delivered by the University of Santander (Cantabria), IHE Delf UNESCO (Netherlands), and University of Algarve (Portugal).

My application was supported by recommendation letters from Professors **Peter Robins** and **Yueng-Djern Lenn**."

Research Highlights:

HOW CLIMATE CHANGE COULD BE INCREASING YOUR CHANCE OF CATCHING A VIRUS FROM SEWAGE

When we think of climate change, we may consider extreme weather events – record-breaking heatwaves, heavy downpours and devastating floods. But have you considered that these changes could also increase your risk of exposure to certain viruses?

We now live in world where extreme weather events are common. With the increasing frequency of prolonged rainstorms and heatwaves, climate change may raise the likelihood of being exposed to sewage-associated viruses in rivers, lakes and coastal waters. Intense rainstorms can also result in rainwater overloading urban sewer systems. As a result, raw untreated sewage is released into rivers, lakes and coastal waters.

Newly published research by the Bangor waste-water team shows that sewage-associated viruses can persist for days in certain weather conditions, raising health risks for people exposed to untreated outfall.

Raw sewage contains human urine and excrement and carries with it a rich load of dead cells, food waste, pharmaceuticals, bacteria and viruses. Although most viruses shed by humans are relatively harmless, people infected with disease-causing viruses – such as enterovirus and norovirus – can shed billions of viral particles each time they go to the toilet.

Even after the disease symptoms have passed, people can still shed the viruses in large amounts when they use the lavatory. These are then released into the sewer system, flowing through the network until they reach the sewage treatment plant.

Typical wastewater treatment practices used in the UK are more than 99% effective at removing viruses. But despite this efficiency, treated wastewater discharged into the environment still poses some risk. Consequently, every day of the year, our rivers, lakes and seas receive potentially harmful viruses.

However, the release of raw untreated sewage represents a much more severe risk.

Our advice to reduce the risk of infection, based on our research, suggests that people should avoid recreational activities in waters affected by sewage discharge for at least 2.5 days during cloudy weather, and at least 24 hours after sunny days. And climate change could worsen the problem: some summers may see an increase in sewage contamination, especially following heavy rain after droughts.

Paper: JL. Kevill, K Herridge, Xiaorong Li, Kata Farkas, SK. Malham, P Robins, DL. Jones (2025). Comparative impact of sunlight and salinity on human pathogenic virus survival in river, estuarine, and marine water microcosms. Water Research, 278, 123411.

Mapping the Ocean Floor with Ancient Tides

A new study uses a paleotidal model to trace the formation of carbon-rich mud deposits over thousands of years.

In shallow coastal waters around the world, mud and other fine-grained sediments such as clay and silt form critical blue carbon sinks. Offshore infrastructure such as wind turbines and oil platforms, as well as fishing practices such as bottom trawling, can have major effects on the seafloor. So knowing the locations of these mud-rich sedimentary deposits is key to making coastal management decisions.

Ward et al. (2025) set out to map three mud depocenters—large offshore muddy deposits—in the coastal waters around Great Britain and Ireland. The mud-rich areas they selected were Fladen Ground, northeast of Scotland in the North Sea; the

Photo: Matt Jarvis

Celtic Deep, southeast of Ireland; and the Western Irish Sea Mud Belt, in the Irish Sea.

Their location at the bottom of the ocean makes these muddy deposits notoriously difficult to map. Furthermore, contemporary sedimentary deposits do not necessarily stem from modern conditions—some deposits are relicts from past ocean behavior.

To address these challenges, the authors built a paleotidal model that can re-create factors dictating the behavior and movement of ocean water, such as water depth and the speed and path of tidal currents. They reconstructed ancient seafloor topography using past sea level changes interpreted via glacial isostatic adjustment models. Using this reconstruction, they were able to simulate the tidal conditions driving the formation of the mud deposits as far back as 17,000 years ago.

The model revealed that mud settled differently across the three focal areas. In the Celtic Deep and the Western Irish Sea Mud Belt, mud appears to have accumulated over the past 10,000 years and continues to accrue today. Conversely, in Fladen Ground, the mud deposits are the result of past sea conditions and are preserved by today's calmer tidal conditions. The results demonstrate how modeling past conditions can help map today's carbon stores, especially in data-limited areas. The approach offers a valuable tool for managing coastal waters and preserving blue carbon, the authors say.

By Aaron Sidder, Science Writer, EOS Research Spotlight (*https://eos.org/research-spotlights/mapping-the-ocean-floor-with-ancient-tides*)

Paper: Ward, S., Bradley, S. L., Roseby, Z. A., Wilmes, S.-B., Vosper, D. F., Roberts, C. M. & Scourse, J. D. (2025). The Role of Long-Term Hydrodynamic Evolution in the Accumulation and Preservation of Organic Carbon-Rich Shelf Sea Deposits. Journal of Geophysical Research: Oceans. 130, 4, e2024JC022092.

Seabirds make clever use of winds to plan foraging trips over hundreds of kilometres

Seabirds are the most threatened group of birds in the world. A new study led by researchers at the School of Ocean Sciences reveals the sophisticated decision-making seabirds known as Manx shearwaters must make to find fish at sea.

By measuring the effort it takes shearwaters to fly in different wind conditions, Dr **Stephanie Harris** and colleagues discovered that the birds decide on where to fly to find fish based on the wind, carefully balancing the energy gained from food with the energy spent searching for it.

Image: scopoli-s-shearwater

On windy days, travelling in certain directions is much easier than on others. The research showed that on a windy day shearwaters looked for food in places it was easier to fly to. In contrast, on calmer days the birds instead favoured places they anticipate will be good for finding fish.

Lead author Dr Stephanie Harris said "Seabirds are faced with a huge ocean in which to find food, and being able to plan where to go is important",

She added "The implication is that shearwaters do have a plan for where they are going to feed and also have a rough idea of how much it will cost in terms of energy to get there depending on the wind".

Paper: Stephanie M. Harris, Charles M. Bishop, Sarah Bond, Paul G. Fernandes, Tim Guilford, Patrick J. Lewin, Oliver Padget, **Pete Robins, Will T. Schneider, James J. Waggitt, Sophie B. Wilmes, Line S. Cordes** (2025). Adjustable wind selectivity in shearwaters implies knowledge of the foraging landscape. Current Biology, *https://doi.org/10.1016/j.cub.2024.12.017*

Underwater robotic gliders provide new insights into the impact of a melting megaberg

The pioneering use of underwater robotic gliders have provided new insights into the oceanographic impacts of a giant melting iceberg.

In an ambitious world-first mission undertaken by British Antarctic Survey, these vehicles were deployed close to iceberg A-68a in Antarctica, providing important new measurements of the effects of iceberg meltwater on the surrounding Southern Ocean and ecosystem.

The findings of the study, which was led by Dr **Natasha Lucas**, a physical oceanographer at Bangor University's School of Ocean Sciences, have been published in the journal Nature Geoscience.

The researchers found that meltwater from the surface, sides and base of the

Natasha Lucas

giant iceberg cause large changes in the temperature and salinity structure of the upper part of the water column.

Importantly, melt from the base of the iceberg mixes with relatively warm and salty deep water and 'upwells', bringing with it nutrients from the deeper ocean and mineral-rich particles from within the iceberg itself.

This additional supply of nutrients stimulates the growth of phytoplankton (microscopic marine plants) in the surface, which forms the base of the highly productive Antarctic food chain.

As the number of calving icebergs is likely to increase due to the impact of climate change, understanding the complex physical and biological impacts on the ocean waters through which they transit is important to predicting future ocean circulation and the health of Antarctic ecosystems

Due to the inherent danger of iceberg proximity to ships, this is thought to be the first time scientists have collected measurements right next to a melting megaberg, robotic gliders sampling where ships cannot, giving an unprecedented window into the impact of meltwater on the surrounding Southern Ocean

Commenting **Natasha** said, *"We believe this is the first time measurements have been made so close to an iceberg – so it's really ground-breaking stuff! It was just really exciting to see the data come back and see how the ocean was changing so drastically.*

"The number of giant icebergs is increasing with climate change so it's important that we understand the physical and biological processes that happen as an iceberg of this size melts, often far from its source.

"By mixing up these ocean layers – which are normally very stable in the Antarctic summer – the ocean's temperature, its salinity and the amount of nutrients are all changed. This ultimately impacts how much heat and carbon is exchanged between our ocean and atmosphere."

She commented further: *"This mission was far from straight forward. We were piloting the gliders remotely from over 12000 km away, each in our own 'lockdown' offices during COVID, relying on infrequent cloud-free satellite imagery to locate the iceberg and smaller icebergs around it.*

"A-68a was constantly on the move, we sadly lost one glider, and the second glider got trapped under A-68a a few times. However, after it emerged victorious 17 days later with a wealth of data, we were able to quantify the processes involved as these giant icebergs melt."

Paper: Natasha Lucas et al. (2025). Giant iceberg meltwater increases upper-ocean stratification and vertical mixing. Nature Geoscience, *https://www.nature.com/articles/s41561-025-01659-7*

Increase in subsurface heatwaves in lakes threaten habitats, researchers warn

An increase in heatwaves that take place below the surface of lakes threaten aquatic habitats, researchers have warned.

A team of climate scientists, led by Dr **Iestyn Woolway** from Bangor University, conducted a study that has been published in the scientific journal Nature Climate Change.

It found that over the past 40 years deep-water heatwaves have increased in frequency, duration and intensity.

In addition to that, what are known as vertically compounding heatwaves, where extreme heat occurs simultaneously at the surface and bottom, have risen.

To capture changes in some of the largest lakes of the world, and to investigate within-lake variations in heatwaves, the outputs from a three-dimensional (3D) model of the Laurentian Great Lakes of North America was investigated.

Extreme hot water events in lakes can substantially disrupt aquatic ecosystems, and although surface heatwaves are well studied, their vertical structures within lakes remain largely unexplored.

The findings of the study, in which Bangor University's School of Ocean sciences collaborated with scientists from Michigan Technological University and Southern University of Science and Technology reveal that subsurface heatwaves are frequent, often longer lasting but less intense than surface events.

It also warns that by the end of the century, changes in heatwave patterns, particularly under high emissions, are projected to intensify.

Dr Iestyn Woolway, of Bangor University, said, "*Our investigation identified several findings relating to the decreasing potential of a vertical thermal escape from surface heatwaves, and an increase in the vertical distance that species should travel to escape a surface heatwave when a thermal refuge exists.*

"It found considerable variability in the vertical structure of subsurface heatwaves across lakes, and the increased occurrence of bottom heatwaves with and without extreme surface conditions and an increase in the frequency of vertically compounding heatwaves."

Dr Iestyn Woolway added, *"Previous studies have suggested that many aquatic species will need to migrate to cooler water at higher elevation or latitude this century to maintain a preferred thermal habitat. Aquatic species could also escape the thermal stress of surface heatwaves by migrating to deeper regions within a lake.*

"However, our investigation demonstrates that, while there is often the potential for aquatic species to travel vertically within a lake to reach cooler water, the proportion of lake surface heatwaves without a thermal refuge in deeper water has increased.

"This vertical expansion of lake surface heatwaves highlights the dynamic nature of these extreme heat events, prompting aquatic organisms to adjust their distribution patterns. As the effects of lake surface heatwaves reach increasingly deeper water, a reduction in sufficient habitat can result in changes to species abundance and range.

"These findings highlight the need for more subsurface monitoring to fully understand and predict the ecological impacts of lake heatwaves."

Paper: RI Woolway, MB. Kayastha, Y Tong, L Feng, H Shi & P Xue (2025). Subsurface heatwaves in lakes. Nature Geosciences, *https://www.nature.com/articles/s41558-025-02314-0*

PRIFYSGOL
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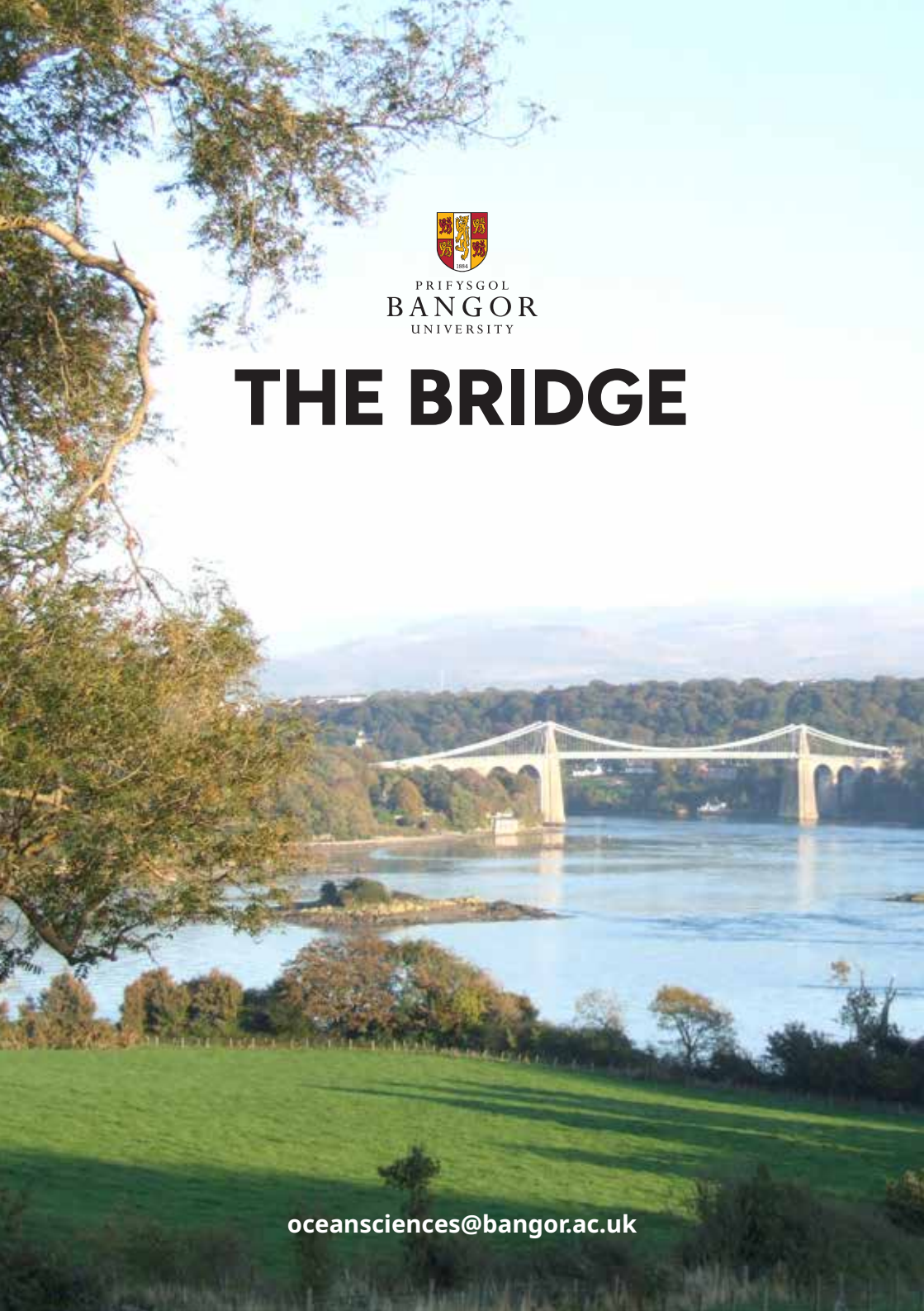
THE BRIDGE



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