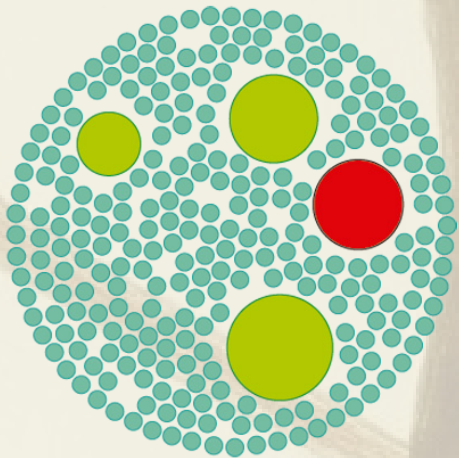




THE PHYCOLOGIST

The Newsletter of the British Phycological Society



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- Hilda Canter-Lund Competition 2025
- BPS at the Royal Society: The Algal Evolution
- Phycologists on the Global Stage: Conference Reports from Five Countries

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Hello readers,

It's been a busy summer of research, conferences and projects! Also, a look at the very successful "The Algal Revolution" display at the Royal Society Summer Exhibition. Very much looking forward to hearing more about all of the research endeavours of our community at the 74th Annual General Meeting in Aberystwyth in January!

Very best,
Amanda Burson



Hilda Canter-Lund winning photographs by Milan Beck & Katia Jones

Remember – do keep sending in your contributions. Write to us with your phycological views, news, work events, or any matter you wish to share with the readers of The Phycologist. **YOUR** input is required; all relevant material will be considered (job adverts, science reports, book reviews, news items of topical interest, meeting announcements, research news and suggestions for future articles are always welcome).

Without YOU the Newsletter Would Not Exist!

As a reminder, previous issues of The Phycologist can be downloaded at
<http://www.brphycsoc.org/the-phycologist-back-issues/>

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ANNOUNCEMENTS

BPS MEETING ANNOUNCEMENT:

74th Annual Meeting

6th - 8th January 2026

at

Aberystwyth University



Special Sessions in:

- Microalgae Physiology and Taxonomy
- Applied Phycology
- Science Outreach
- General Phycology

Conference Website

<https://aber.brphycsoc.org/wordpress/>

PROJECT & INTERNSHIP REPORTS

The effect of monthly extracts from common inter-tidal UK wracks on model plant seedling growth and soil respirometry

Background

Growing up surrounded by nature, I have always been fascinated by the vast quantity of resources we have on our planet and their role in providing ecosystem services. Upon learning that we have yet to explore them to their maximum potential, I have since been interested in how we can sustainably develop novel industries to keep up with our needs. This interest led to my studies on plant biology, which provided an insight into boosting agriculture and increasing its efficiency through many intensive strategies. However, many of these strategies can leave a long-term environmental impact, negatively affect animal and wildlife welfare, pose human health risks and/or cause biodiversity loss. Thus, despite having significantly improved agricultural systems in the last century, factors such as population pressure, climate change, and land degradation still challenge researchers to find a resource that could keep up with the global food demand whilst providing environmental benefits, especially through rising sea levels.

This is when I thought of seaweed aquaculture. Seaweeds have been used as soil amendments and fertilisers for millennia, enabling natural degradation to release nutrients, minerals and carbohydrates into the soil to support soil structure, microbial populations, and crop plant growth. Cultivation of seaweed provides habitat and protection for marine life, contributes to oceanic carbon sequestration, and its steady market gives the opportunity to expand despite rising sea levels. It must be noted that less than 1% of seaweeds are used commercially to make fertilisers, leaving the vast majority of seaweeds unexploited for this purpose. Thus, researching the most common British seaweeds in the intertidal zones became a viable option. Among these, *Ascophyllum nodosum* (egg wrack) stands out since it is one of the main seaweeds used in commercial seaweed fertilisers, and its effect on plant growth has been widely studied. However, the impact of seasonal variation on seaweed fertilisers has yet to be determined on plant growth.

In 2023-2024 I conducted my undergraduate project at Aberystwyth University, using a year of monthly-collected samples from *A. nodosum* and other common intertidal wracks, *F. serratus* (serrated wrack) and *F. vesiculosus* (bladder wrack) (samples collected at Aberystwyth by Dr Aaron Brown, then University of Leeds). Using this resource, I studied how seasonal variation in these species affected plant growth in model crop *Arabidopsis thaliana*, beetroot (*Beta vulgaris*) and lettuce (*Lactuca sativa*) in replicate compost-based pot trials within a controlled environment chamber.

BPS Internship

Building on my undergraduate studies, my supervisor (Dr Jessica Adams) and I designed the BPS summer internship to further this work from a secondary angle, that of the effect of the seaweed extracts on soil microorganisms. This project aimed to apply seaweed extracts on natural soil and analyse the release of gases from soil microbiota using a respirometer system currently held at the University of Reading, within the laboratory of Prof. Thomas Sizmur. This has been made available to us for this work and is also assisted by a Reading-based PhD student co-supervised by Dr Adams.

Soil microbiota plays a crucial role in maintaining soil health and enhancing plant performance. For instance, soil microbes regulate carbon storage, nutrient cycling and the decomposition of organic material, which increases nutrient availability and stimulates plant growth. Their role in the carbon cycle is highlighted by the rate at which they release and sequester carbon, thus regulating the input and output of CO₂ into the atmosphere. This CO₂ flux is controlled by interactions between temperature, moisture, pH, land management and biology. Since the soil is the second largest reservoir of carbon and more CO₂ is released from it than from anthropogenic sources, the role of soil microbiota in speeding up climate change is of critical importance. Previous works have studied the impact of seaweed fertilisers on soil structure and microbial composition, however soil respirometry studies have yet to be identified with seaweed fertilisers. Thus, we can study CO₂ fluxes based on the soil microbes’ response to different seaweed extracts.

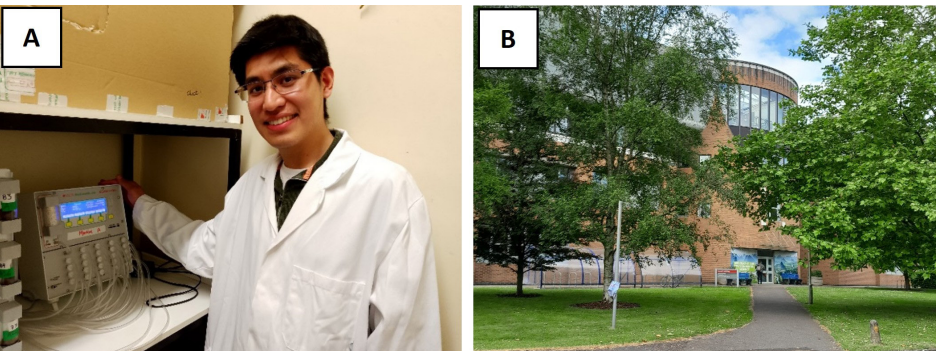


Figure 1(A) picture of Jose Gutierrez and (B) Soil Research Centre, Russell Building, University of Reading.

Methods

Seaweed sampling and extract preparations
A. nodosum, *F. vesiculosus* and *F. serratus* were collected monthly from November 2021 until October 2022 from Aberystwyth shores (52°24'54.7"N 4°05'27.5"W). Samples were frozen, freeze-dried, and ground into fine powder, then stored in zip-lock bags within an opaque container. Seaweed powder from each species-month (n=108) was placed in 50 ml Falcon tubes (Starlab, Brussels) and mixed with deionised water in a ratio of 1:20, 1:50 and 1:100 (W/V). Samples were vortexed for 15 seconds and transferred into a shaking water bath (Isotemp SWB 15, Fisher Scientific, Waltham) for 2 hours at 75°C, vortexing them again every 30 minutes until it was done. Samples were centrifuged at 400 rpm for 5 min at 4 °C (Centrifuge 5810 R, Eppendorf, Hamburg), and the supernatant was pipetted into 2 ml Eppendorf’s (Greiner, Kremsmünster). The remaining supernatant was transferred 15 ml into Falcon tubes (Starlab, Brussels). Seaweed extracts and their residues were stored at -20 °C freezers.

Soil sampling and respirometry

The soil was previously collected from arable soils from the University of Reading research farm at Sonning, Berkshire, UK (latitude 51°28'53.7"N, longitude 0°53'48.8"W). Upon collection, soil samples were sieved to 4 mm and stored in a sealed container in a 4 °C fridge. Soil characteristics such were measured using standard laboratory methods (see Table 1). For this experiment, an equivalent of 10 g (dry weight) of soil were weighed for each capsule.

Table 1: Physiochemical properties of arable soil from Sonning, Berkshire, UK. Work conducted by Hanqing Lin, University of Reading.

The experiments were conducted in June 2024 and consisted of testing 36 different combinations of seaweed and seasonality in four trials (one trial per week). For analysis, each combination used three replicates where possible as

Physicochemical Properties	Value
Organic matter (%)	2.58 ± 0.06
Sand (%)	64.27 ± 1.13
Silt (%)	34.29 ± 0.91
Clay (%)	1.11 ± 0.32
Texture	Sandy loam
% water holding capacity	30.88
pH	6.09 ± 0.03
Dissolved organic carbon (mg kg ⁻¹)	51.47 ± 1.59

there was mechanical failure within the respirometer system, undetected at the time, which has led to the exclusion of a significant number of samples. Where only duplicates are available, an average was generated and used for statistical analyses. The experiment used the equivalent of 10 g (dry weight) of soil for each sample, to which were added 1 ml of seaweed extract and 400 µL of deionised water. Control samples used 1.4 ml of either deionised water, glucose or seaweed commercial fertiliser. The soil was gently mixed after adding solvents and stored in a sealed glass capsule (n= 48). Once all the capsules were sealed, these were transferred and connected into a multi-sample soil respiration system (EGA60, ADC Bioscientific Ltd, Hoddesdon) to measure CO₂ flux for 110 hours (see Figure 2) within a closed 30°C room. Once the trial period had been completed, the soil inside each capsule was discarded and data was retrieved for analysis. This was repeated for each week until four datasets were obtained.

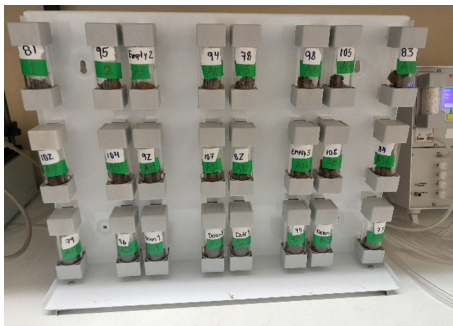


Figure 2: Setup of the respirometer system with individual capsules for each seaweed-treated soil samples ($n=48$).

Results

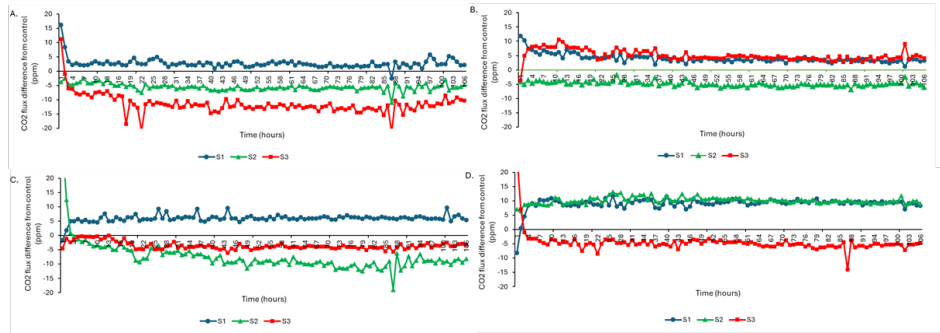


Figure 3: CO₂ flux (ppm) difference between deionised water (x-axis) and seaweed-treated samples (n=36) across (A) Spring, (B) Summer, (C) Autumn and (D) Winter. S1= *A. nodosum*, S2= *F. serratus* and S3= *F. vesiculosus*.

Results were compiled and normalised in Excel 365 (Microsoft, Version 2309, Build 16811.20004) against deionised water control to show CO₂ flux at each time point. Samples were grouped into twelve months, where each month was composed of an average CO₂ flux of *A. nodosum*, *F. serratus* and *F. vesiculosus* for that month. Due to the mechanical failure, monthly analysis was not possible but four months have been selected and assigned to seasons: spring (April), summer (June), autumn (September) and winter (December). Due to the technical issues mentioned above, there have been delays in completion of the data interpretation and the significance of these findings have not been finalised. Figure 3 shows the average CO₂ flux across seasons, using deionised water control as the x-axis and S1-S3 as the three seaweed species. We are intending to combine findings from this internship with the undergraduate study results to generate a paper for submission before the end of 2024. I would like to thank Dr. Jessica Adams from Aberystwyth University and the BPS (Award # 2024BPS013) for this opportunity. I would also like to thank Dr. Tom Sizmur, Dr. Alex Adekambi and Sam Kehoe from Reading University for their help, support, training and data discussions within their lab.

Submitted by: Jose Gabriel Gutierrez Higa
Aberystwyth University

Supervisory Team: Jessica Adams, Tom Sizmur and Alex Adekanmbi

Working towards functional recombinant sulfatases for Ulvan polysaccharide breakdown

Marine eutrophication, prominently driven by factors such as agricultural runoff, results in excessive algal growth within aquatic ecosystems. This leads to reduced oxygen in the water, as well as the release of toxins, posing serious risks not only to aquatic organisms but also to humans and terrestrial animals that depend on these water sources (Lan et al., 2024). A green macroalgae most commonly associated with this excessive growth also known as “green tides” is *Ulva* spp., also known as “sea lettuce”. These species multiply and grow rapidly under nutrient-rich conditions, forming large amounts of biomass in the polluted water bodies every year (Fort et al., 2020). Despite its abundance, biomass of *Ulva* spp. is still an underused resource worldwide, with significant potential for applications in food, biofuel, pharmaceutical, nutraceutical, and bioremediation industries (Simon et al., 2022).

The predominant polysaccharide found within *Ulva* is known as ulvan, a complex sulfated heteropolysaccharide located in the algal cell wall. One way of utilising ulvan is to break it down into simple sugars and biotransform the

sugars to compounds of interest. However, the complex structure needs the action of several enzymes and no cocktail for the complete breakdown of ulvan is available yet. Ulvan is a sulphated polymer mainly composed of rhamnose, iduronic acid, xylose, and glucuronic acid, with the degree of sulfation varying depending on the species, season, environment and method of extraction used (Li et al., 2023).

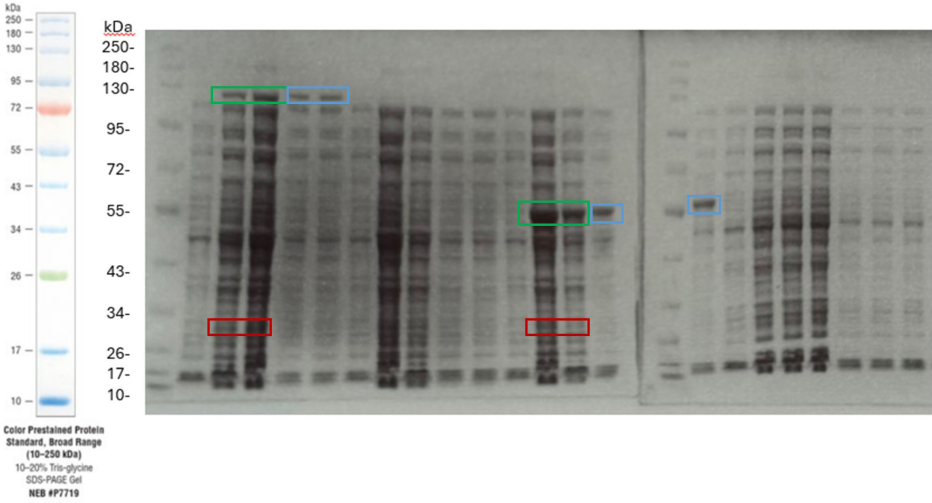
This project builds on the work carried out by our supervisor, Dr. Valerie Rodrigues, in the EU-funded MACSSFT project, which was focused on the development of an enzymatic cocktail to valorise ulvan. In this project, all enzymes except the sulfatases were successfully cloned, yielding functional recombinant enzymes. However, the removal of sulfate groups from the ulvan is necessary for the sugars to be able to undergo fermentation. The demand for ulvan active sulfatases is high, yet their availability is extremely limited due to the scarcity of known enzymes and the absence of commercial sources. In the earlier work, efforts were made to clone seven sulfatases found in *Alteromonas* sp. 76-1 onto an ulvan utilising polysaccharide utilisation locus (PUL) was carried out. The principal challenge which arose in this project was the co-cloning and expression of the formylglycine-generating enzyme (FGE) gene required for the post-translational modification necessary to make the sulfatases functionally active.

The current project therefore aims to produce functional recombinant ulvan-active sulfatases to complete the enzymatic cocktail required for ulvan degradation, allowing for fermentation of released sugars and the creation of value-added products. This will contribute to the sustainable valorisation of Ulva biomass while tackling the environmental and economic challenges associated with green tides.

The project started with investigating the 7 recombinant *E.coli* where the 7 sulfatase genes and the FGE gene were co-cloned on different plasmids to verify the presence of the FGE gene. A PCR analysis was used to check for the presence of the FGE gene, and the presence of the gene was detected in all the clones. However, no expression of the FGE gene was observed. Given that no expression of the FGE gene was observed, we decided to work on the cloning strategy and clone the sulfatase and the FGE gene on the same plasmid i.e. pET 28a(+) which was previously used only for the sulfatase gene.

Cloning was carried out using traditional restriction enzyme-based cloning methodologies. Cloning sites were chosen from the pET28a (+) plasmid to insert the respective sulfatase gene and the FGE gene. Forward and reverse primers for each gene with the appropriate restriction sites were designed. The sulfatase gene and the FGE gene were added one at a time to the plasmid. The genes were amplified using the primers, the amplified gene and the plasmid were digested with the appropriate restriction enzymes to cleave the DNA at the specific sites, leading to the formation of sticky ends. Once these sticky ends were created, it allowed for the insertion of the gene into the plasmid using an enzyme called T4 DNA ligase. The plasmid with the gene was then transformed into a cloning strain (NEB5 alpha or NEB 10-beta competent cells) where the plasmid was propagated and used for the cloning of the second gene. The plasmid with both genes was propagated, extracted and transformed into an expression strain (T7 express competent *E.coli*) for the expression of both enzymes. A colony PCR was carried out at the end of every transformation to confirm the presence of the target gene in the clone.

To check the expression of both enzymes, colonies were inoculated and grown overnight in LB supplemented with 50 $\mu\text{g mL}^{-1}$ kanamycin. Next, 10ml LB was inoculated with 100 μl from an overnight culture. The culture was grown at 37 °C and 200 rpm until the OD reached 0.4–0.6. Protein expression was then induced with 1 mM IPTG followed by the incubation of the cultures at 15 °C and 250 rpm overnight. Cells were harvested by centrifugation and the cell pellets were frozen at – 80 °C until further use. Samples were taken before the addition of IPTG and at the time of harvest and analysed using SDS-PAGE with a SurePAGE Bis-Tris 10% gel for confirmation of overexpression. Cell pellets were also lysed and the cell lysate was analysed using SDS-PAGE to check the solubility of the protein. Of the 7 sulfatase gene, 6 were taken ahead for co-cloning the two genes (sulfatase + FGE) on the same plasmid. Of these, 2 were found to express both the genes and the sulfatases were expressed as soluble proteins. Initial screening on a synthetic substrate has shown no activity, however, further testing on the natural substrate i.e. ulvan needs to be carried out to verify the functionality of the gene as sulfatases are known to have problems with activity on synthetic substrates (Ortiz-Tena et al., 2018).



SDS-PAGE gel showing co-expression of recombinant sulfatases and FGE. For the two genes that were successfully expressed as soluble proteins with FGE, Green highlights show the expressed sulfatases, Red highlights show the expressed FGE, Blue highlights show the sulfatase in the cell lysate indicating that it is soluble.

Key benefits gained from this internship experience



Thomas Jenkins

Entering the last year of my integrated master’s degree in Biology at Aberystwyth University, I feel very grateful to have completed this internship. As a result of my broad course, I have been fortunate to explore multiple opportunities from modules including tropical zoology in the Amazon rainforest through to modules covering parasitology and biotechnology. Having now completed this internship, I have more skills to take forward with me as I continue to apply to graduate jobs.

Through this internship I have been able to build on previous laboratory knowledge gained in my 3rd year dissertation project, which focused on the isolation of predatory Myxobacteria from an estuary. This is a body of work I am immensely proud of and led to the discovery of four novel genera. The internship has helped me gain more experience in aseptic techniques when dealing with genetically modified organisms, inoculating samples, pouring plates, performing PCR’s, making and loading agarose gels for gel electrophoresis and visualising gels.

This project has taught me how to design primers and evaluate cloning strategies on plasmids allowing for the addition of sulfatase and FGE genes through the selection of restriction enzyme primers. Through this process I have gained the knowledge and confidence to carry out new protocols such as: PCR cleanups, quantification of DNA samples using a Nanodrop, set up restriction enzyme digestion and ligation reactions, carry out transformation of recombinant plasmids in E.coli cells, make glycerol stocks, and induce the overexpression of target genes.

The skills gained through this internship will aid in the completion of my final year dissertation on the characterisation of the microbes isolated in last year’s dissertation. This internship has been incredibly rewarding, while adding to previous experience as I set to begin my career in Biology.



Raye Scottow

I am currently entering the 4th year of my Mbiol Biochemistry degree at Aberystwyth University, with research focused on the predatory bacteria Myxobacteria and its potential applications within crop protection. My interest in phycology started through involvement in algae-based projects led by PhD students and postdoctoral researchers at the university. This led to the opportunity to assist at The Royal Society Summer Science Exhibition 2025 for The British Phycological Society’s stand, which aimed to educate the public about the vast uses of algae that are being discovered and explored such as the creation of bioplastics. This experience enhanced my interest in the world of phycological research and made me very enthusiastic to research it further. Over the six-week internship, I significantly developed my existing lab skills. I gained further experience in performing PCR and gel electrophoresis to isolate and confirm the presence of target genes, followed by DNA extraction using gel purification kits. I also improved my technique in inoculating and culturing bacteria, adapting conditions based on its applications. Building on the foundation I obtained from my third-year research project, I gained several more molecular biology skills, such as designing primers for the insertion of genes of interest into the pET-28a(+) plasmid and performing PCR optimisation for these primers. I gained experience in using commercial kits for plasmid extraction, PCR cleanup, and DNA purification from agarose gels. I also revisited the process of carrying out SDS-PAGE for protein analysis. Additionally, I learned techniques that were new to me, such as setting up restriction digestion and ligation reactions, and transforming plasmids into competent E. coli strains.

My final year research project will continue to focus on Myxobacteria and the secondary metabolites it produces to continue looking into its potential as biopesticides against common bacterial phytopathogens. After completing my Mbiol, I intend to pursue a PhD to explore either the antimicrobial properties of Myxobacterial secondary metabolites or the biorefining potential of seaweed species such as Ulva, particularly focusing on ulvan extraction and the enzymatic pathways involved. Through both my academic and internship experience, I have developed a strong foundation in microbiology and

molecular biology, and I am eager to continue working on sustainable solutions within agriculture and biotechnology. This internship has greatly reinforced my desire to pursue a lab-based research career. The skills and confidence I have gained will benefit my fourth-year project and provide a strong foundation for a future PhD in molecular microbiology or biochemistry.

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We are grateful to the British Phycological Society’s Summer Undergraduate Internship Bursary (award #2025BPS148) for the funding to support this research.

Submitted by: Thomas Jenkins & Raye Scottow
Aberystwyth University
Supervisor: Valerie Rodriguesi



STUDENT BURSARY REPORTS

The 25th International Seaweed Symposium 2025



At the beginning of May, I attended the 25th International Seaweed Symposium (ISS) 2025 in Victoria, Canada, with the generous support of the BPS Travel Bursary (2024BPS130_MC). ISS was a stimulating melting pot of phycological research, ranging from industry application to academic research.

Attending ISS at the end of my PhD was the perfect opportunity to present my last data chapter from my thesis to an international audience and network to find a postdoctoral position. As part of the Carbon Cycling session, I held a 15-minute presentation on “The Burial of Carbon in Kelp-Farm Associated Sediments”. Here, I discussed the carbon stocks and burial rates within seaweed farm-associated sediments, potential carbon donors and sediment characteristics. In brief, the study system, a 2 ha sugar kelp farm, likely negligibly impacts naturally occurring carbon stocks and the local sediment environment, with kelp detritus probably remineralised or exported to adjacent sink sites rather than stored within the system. As such, I concluded that expansion of the seaweed farming industry should not be driven by its blue carbon potential but by other factors like future food security, job creation and the replacement of high carbon products with low carbon alternatives. Questions from delegates created an opportunity to further discuss my findings. Furthermore, an attendee reached out to me following my talk to direct me to apply to a postdoctoral role with Blue Carbon Canada.

This was my first time at ISS and I found it very welcoming, interesting and productive. The conference instilled excitement in me to continue researching seaweeds, boosted my confidence to present my work internationally, and allowed me to connect with like-minded seaweed lovers from different disciplines and countries.

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Attending and presenting at the International Seaweed Symposium 2025

Thanks to the support of the British Phycological Society I had the privilege of travelling to Victoria, Canada on ləkʷaəŋən traditional territory to attend and present my PhD research at the 25th International Seaweed Symposium (ISS25). Originally from Vancouver, Canada, it was a full circle experience to travel back to my home province of British Columbia to present on my PhD research in Scotland. I was joined by 728 delegates from all around the world to discuss emerging research and innovations with seaweeds. The ISS is one of the leading global conferences on seaweeds, attended by experts from academia, research, industry, charities, government, and more. In addition to attending talks on a wide array of topics ranging from microbial communities associated with seaweeds to innovations in seaweed aquaculture to the cultural significance of seaweeds, the ISS allowed me to connect with specialists in seaweed research I would otherwise not have had the opportunity to meet. In fact, I learned the first seaweed farmer outside Asia was also a woman from British Columbia!



At the ISS25, I presented on the use of environmental DNA (eDNA) to assess biodiversity associated with seaweed aquaculture. The potential for seaweed farms to provide habitat to wildlife and enhance biodiversity is an increasing area of interest, however, there is currently limited data that directly quantifies this habitat provisioning capacity. eDNA is a molecular method that may capture species missed by visual surveys of seaweed biomass, surrounding benthic habitat and waters. Although eDNA is increasingly used to collect biodiversity data in various environments, it has seldom been applied to habitat created by seaweed farms. For this study, a total of 80 marine sediment, 20 seawater and 12 seaweed swab samples collected in and around the Scottish Association for Marine Science (SAMS) experimental seaweed farm in Oban, Scotland. eDNA was extracted from samples then sequenced with the support

and expert hands-on lab and bespoke bioinformatics training from NERC Environmental Omics Facility (NEOF) staff. I shared initial findings from this study with aims to help inform eDNA applications to seaweed aquaculture biodiversity assessments, and how eDNA could potentially be a highly suitable tool for providing evidence of seaweed farming’s enhancement of biodiversity and meeting the requirements of biodiversity policies. Following my presentation, I connected with other researchers also using eDNA at seaweed



It was fantastic to be back in British Columbia and enjoy the beautiful scenery surrounding Victoria. There was a mid-conference break where participants had the choice of various tours to explore the area. I went on a whale watching tour where I saw two humpbacks, sea lions and numerous bald eagles. I also saw lots of bull kelp (*Nereocystis luetkeana*) which can grow up to 35 metres in length!



I would like to sincerely thank the BPS (award number 2025BPS149) for their generous support of my attendance of the ISS25. This funding allowed me to share my research and make connections with global seaweed experts that will help inform my PhD research going forward and future career aspirations. The ISS25 provided the most optimal opportunity for my first conference presentation as a PhD candidate and being able to present in my home province made this experience all the more special.

Submitted by: Hayley Swanlund
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Field Notes from Vancouver Island: A Student’s Trip to the Canadian West Coast

Thanks to a British Phycological Society student travel award, I had the opportunity to present my PhD research at the 25th International Seaweed Symposium (ISS) on Vancouver Island, Canada. The 25th ISS brought together researchers, industry leaders, policymakers, and Indigenous Peoples globally to connect, learn and share knowledge about the latest advancements in seaweed science, and technology and utilisation. The conference has a strong restoration ecology remit, making it of particular relevance to my research on “developing kelp restoration methods for the UK”. Travelling with two other students from the Marine Biological Association, we joined ~700 other delegates from around the world to engage with 450 interesting talks and 150 posters on the theme of “Igniting Innovation: Building on the past to advance the seaweed momentum”.

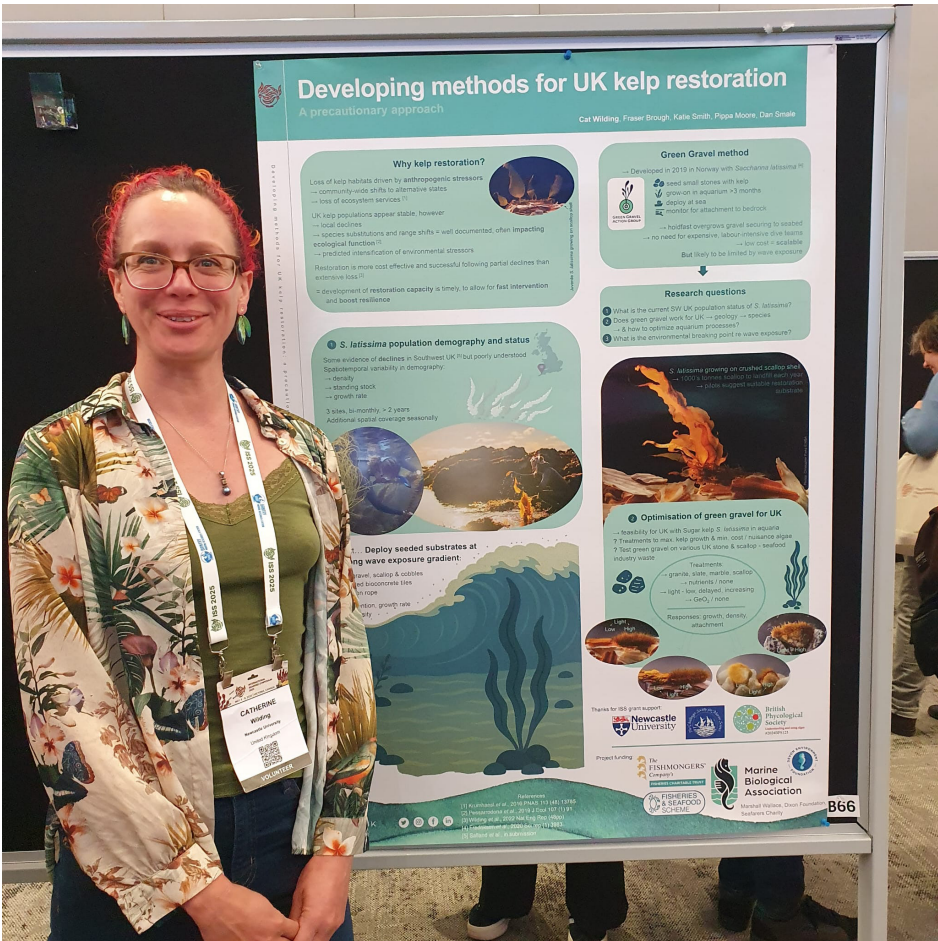


Marine Biological Association 'team kelp' and alumni at the conference

Arriving with time to explore before the conference, we were struck by the scale of north American wild life - giant barnacles, golden bull kelp, and a bald eagle greeting us within minutes of arriving at the beach – and all of it was super-sized! In the week leading up to the conference, we visited local marine institutes and joined researchers at the Hakai Institute on fieldwork by assisting with Nereocystis microbiome sampling. Watching bull kelp sway in the current while glowing golden in morning sun, surrounded above by ancient grove temperate rainforest, was a stunning scene that left a lasting impression. At North Island College, I learned about ongoing restoration trials utilising advanced bioreactors for gametophyte culture — an exciting look at cutting edge technology for kelp restoration. Between visits, I managed to kayak and dive in waters thick with plankton and marine life. Highlights included Steller sea lions, giant pacific octopus, sea otters feeding on urchins, and curious river otters on the shoreline.

The Symposium opened with a First Nations welcome and featured a diverse programme of research. With six concurrent sessions running at a time it was often difficult to choose between them! A particularly memorable and inspiring talk was the plenary by Dr Karen Filbee-Dexter “Seaweed Forests in a Warming Ocean: Consequences of Loss and Hopes for the Future”.

The atmosphere was supportive and dynamic, encouraging open conversation across career stages. A ‘seaweed wizards’ session, focussing on eminent phycologists who are nearing the end of their careers was particularly reassuring, with clear messaging that even renown researchers are approachable and friendly!



Poster presentation

Presenting my poster sparked several useful discussions, which have already helped shape my research approach. This is particularly valuable given the lack of research focus on my topic in the UK – it was really exciting to hear technical insights from peers working on kelp restoration internationally, and I can’t wait to implement some of my new ideas into my PhD work! The trip not only deepened my understanding of kelp ecology and restoration but also highlighted the value of international collaboration and community. I’m extremely grateful for the bursary (BPS Award number: 2024BPS125) that allowed this opportunity, which has really enabled me to grow as a scientist.

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The 13th International Conference on Toxic Cyanobacteria (ICTC13)

The 13th International Conference on Toxic Cyanobacteria was held from May 4th to the 8th in the picturesque region of Chania on the island of Crete, Greece. The conference was held at Minoa Palace Resort, a stunning spot that made it almost too easy to forget I was there for work. Over four busy days we delved into scheduled seminars and workshops, with plenty of opportunities to wander through the poster sessions and strike up conversations.



I was scheduled to present the first day, which, honestly, was ideal – it meant I could get the nerves out of the way early and settle into enjoying the rest of the conference. My work, affectionally referred to as “Algal-rithm”, is an interdisciplinary project which brings together artificial intelligence (AI) and algal classification and enumeration.

Excitingly, there were several AI oriented presentations, opening numerous opportunities for collaboration and discussion. One standout exhibitor was ioLight, who in partnership with BloomOptix, used a portable microscope powered by AI for classification and enumeration. Similarly, Dr. Arash Zamyadi gave an impressive talk on his work combining AI and algal classification. Dr. Zamyadi is particularly passionate about building collaborations through shared datasets, which could be key in pushing the field forward. It was a pleasure to meet so many people equally excited about the intersection of AI and algae. While still relatively niche field, the enthusiasm and innovation suggest a promising future for the field. The ‘Ecology and Taxonomy’ and ‘Monitoring and Modelling’ sessions were my bread and butter. They helped fill lingering gaps in my knowledge, such as how do we classify cryptic species by Associate Professor Petr Dvořák, while also reinforcing and contextualizing what I already knew.



Tuesday we were treated to an afternoon in Chania, where a guided tour took us through winding narrow streets to the Old Port. As we were allowed time to explore, I finally got to try the gyros from Oasis – a local spot that has been around for 50 years which has more than lived up to its reputation. Throughout the city, and true to much of Greece, Crete had many stray cats, most of them stretched out in the sun, perfectly content. Honestly, by the end of the trip, I couldn’t help but think they might be onto something.



The final day surprised me the most, mainly for the sheer number of collaborative efforts being proposed. Dr Jing Li introduced the idea of the ‘Cyanobacteria Knowledge Hub’, a centralized database aimed at both researchers and the public. Professor Ernani Pinto also proposed a new journal, Cyanobacteria, designed to offer a more tailored publishing platform for the cyanobacterial community.

I’m incredibly grateful to The British Phycological Society for funding my attendance to my first international conference (BPS award #2024BPS0127). The opportunity has been invaluable, and I look forward to future collaborations and discoveries. Finally, a further thank you to the organizers and sponsors that made ICTC13 a great success.

Submitted by: Alenza Lancaster,
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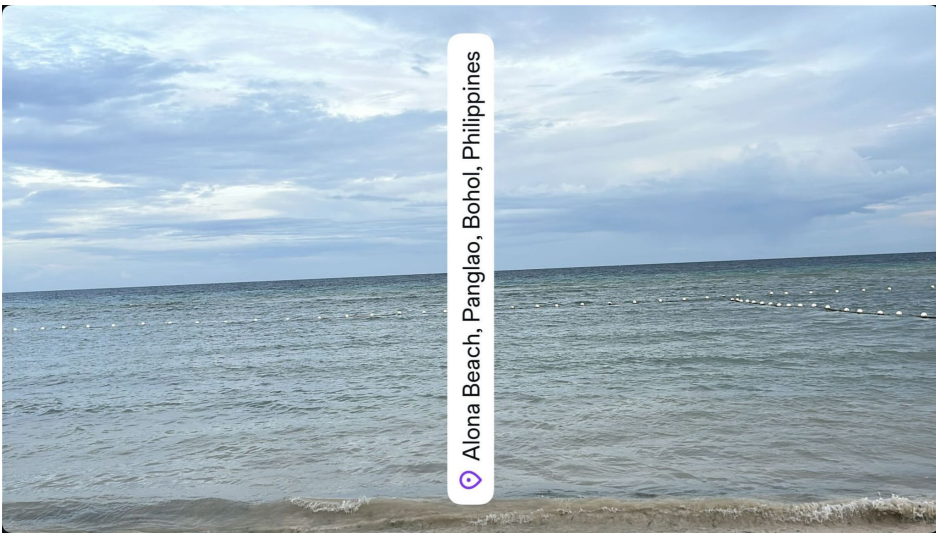
13th International Phycological Congress 2025, Panglao, Bohol

I had the opportunity to attend and participate in the 13th International Phycological Congress from June 8 to 13, 2025, in Panglao, Bohol. This conference served as a significant platform for researchers worldwide to present their work, exchange ideas, and discuss the latest advancements in the field.

I presented my research, ‘Phylogeny and Systematic Position of the Small Diatom Genus Capartogramma (Bacillariophyta)’, during the oral presentation session at the conference. The presentation was well-received, and I was able to share insights into the evolutionary history of Capartogramma species, emphasizing their recent diversification within East African lakes based on molecular clock analyses.



Attending the symposium allowed me to gain valuable feedback on my work, especially regarding phylogenetic calibration and molecular dating methods. I visited Alona Beach in Panglao, Bohol. The beach has clear, shallow water and fine white sand, ideal for coastal studies. The calm waves and clean shoreline support diverse marine life. It’s a peaceful environment to observe natural coastal processes.



Networking opportunities at the conference were exceptional. I connected with leading experts in the algal field. These interactions have opened doors for potential collaborations in future studies on diatom evolution and ecological adaptations. I sincerely thank the British Phycological Society (BPS) for awarding me the Travel Bursary Award #2024BPS129, which made this enriching experience possible. I look forward to applying the knowledge and skills gained during the symposium to further my research and career in phycology.

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The International Temperate Reefs Symposium

In July 2025, I had the opportunity to attend the International Temperate Reefs Symposium in Brest, France, thanks to the generous support of the British Phycological Society through their travel bursary (award #2025BPS150). This was my first time attending this conference, and it was a great experience!

I presented part of my PhD research on the resilience of NE Atlantic intertidal forests, which investigates how canopy-forming macroalgae respond to climate-related disturbances across a latitudinal gradient, as well as the key environmental and biological drivers that influence their recovery. This is part of a collaborative experiment involving several researchers who were also at the symposium. Presenting to such a relevant and engaged audience gave me the chance to share an update on the project and gain valuable feedback. It also opened helpful conversations with other researchers working on similar systems.



Travel

In an attempt to reduce my carbon footprint of attending this conference, I travelled by ferry instead of flying. This route gave me the chance to stop in Roscoff, home to the renowned marine research station (Station Biologique de Roscoff). I was fortunate to visit the station, catch up with local collaborators, and get a tour of the aquarium facilities. It was a great way to start the trip!

Conference Highlights

The conference programme was absolutely packed, with every day filled with engaging talks, posters, and discussions. Two sessions that stood out for me were “Macroalgal Traits” and “Resistance, Resilience and Phase Shifts”. Both of these sessions were closely related to my research and introduced some new ideas which I am excited to apply to my work.

The conference also included a poster session, with lots of creative posters that sparked some valuable discussions. I had some great conversations that gave me fresh ideas to improve my own research as well as how to effectively communicate my work. I also attended the keynote and plenary talks, which were excellent and covered broader temperate reef topics, helping me to appreciate the bigger picture behind the more focused research sessions.

One of the highlights of the week was the student mixer night, where academics shared stories about times when things didn’t go as planned in their careers, along with their advice for early career researchers. Another memorable moment was the conference dinner which was held at Océanopolis, the aquarium in Brest. It was a great way to wrap up the conference and connect with other researchers while surrounded by marine life.



My research group, The Coastal Ecology Lab, Swansea University, in front of the ITRS sign

Looking Ahead

Attending the International Temperate Reefs Symposium has been a really inspiring experience. It gave me fresh insights into temperate reef ecology, expanded my understanding of resilience mechanisms in macroalgal communities, and highlighted new approaches I'm excited to incorporate into my PhD work.

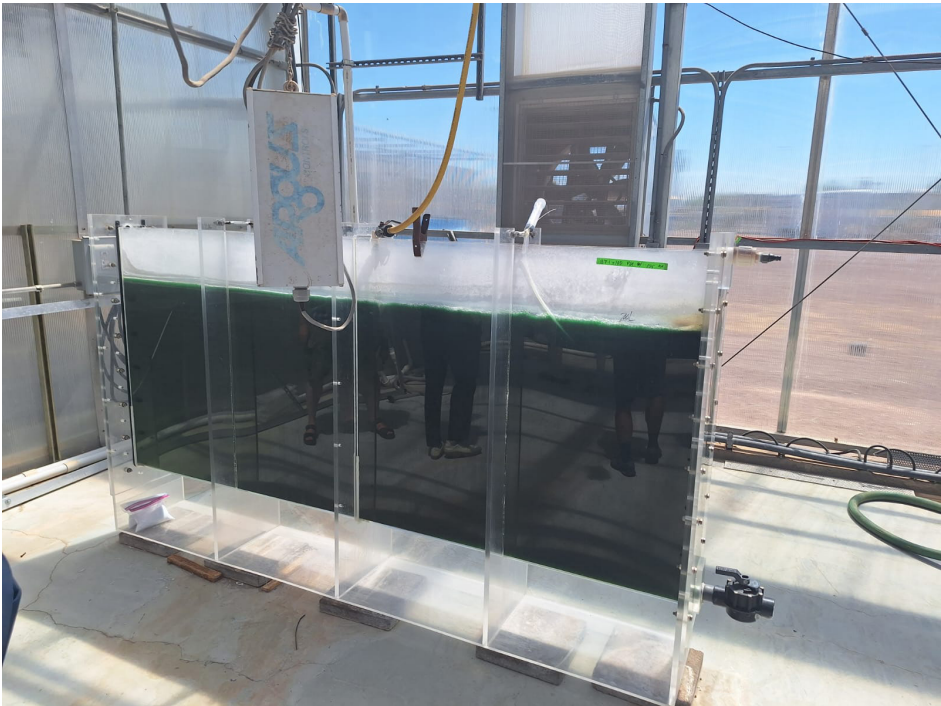
I'm very grateful to the British Phycological Society for their support through the travel bursary. Without it, I wouldn't have had the opportunity to attend such a valuable event, present my work, and engage with the vibrant international community working on temperate reefs.



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A First Taste of the International Stage: Attending AlgalBBB 2025

Last month, I had the privilege of attending the International Conference on Algal Biomass, Biofuels and Bioproducts (AlgalBBB 2025), held from 16 to 18 June at the Marriott Phoenix Resort in Tempe, Arizona, USA. As a first time attendee at an international conference, this was a major step in my PhD journey and an experience that left me both inspired and sunburnt.

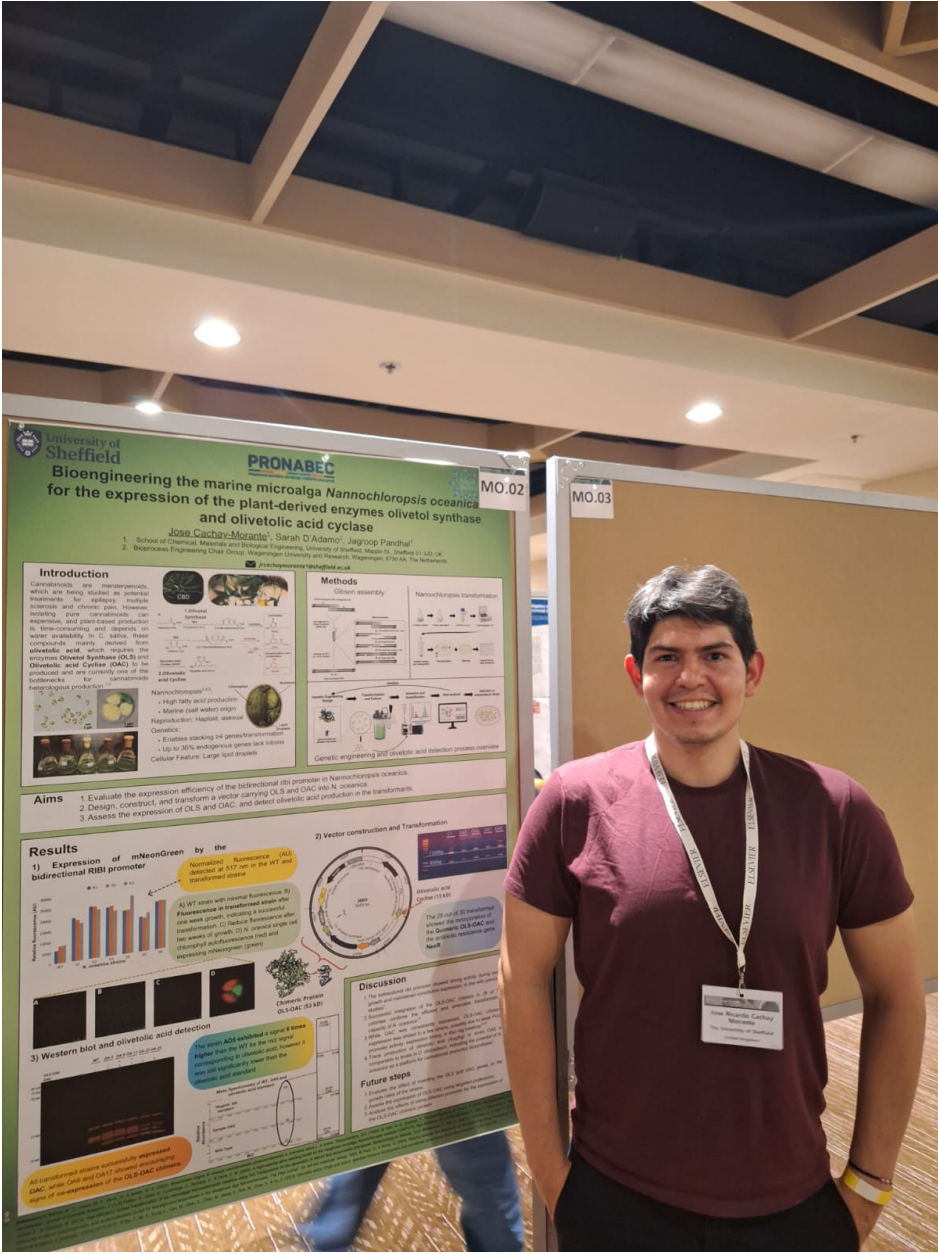


The trip began a day early with a visit to AzCATI, the Arizona Center for Algae Technology and Innovation, on 15 June. The tour offered a fascinating look into large scale algal cultivation. While I had read about various cultivation technologies in research papers, seeing them in person was an entirely different experience. The highlight for me was a rotating algal biofilm system demonstrated at pilot scale. Watching the algae grow across the fabric surface and realising how easily the biomass could be harvested made the technology feel impressively efficient and practical for future application.



The conference programme covered a wide range of topics in algal biotechnology, from molecular and metabolic engineering to cultivation systems and the production of high value bioproducts. Keynote speakers included Dr Kyle J. Lauersen (KAUST), who spoke about resource circularity in algal metabolic engineering, and Professor Olav Kruse (Bielefeld University), who presented advanced engineering strategies for algal systems. One particularly interesting session for me was the presentation by Merve Saudhof, who spoke about the production of terpenoids in Chlamydomonas. Her talk helped me realise how much potential there is in harnessing algal platforms like Chlamydomonas for producing complex molecules, and it gave me new ideas for new screening tools that I might adapt in my own work.

A highlight of the event was the informal career development coaching sessions held during the coffee breaks. These provided helpful insights for early career researchers and covered topics such as career planning, research impact and strategies for securing funding. The relaxed format made these sessions feel very accessible. Networking throughout the event also allowed me to meet researchers from across the globe, including the UK, Mexico, Italy, the USA and Australia. These exchanges opened the door to potential future collaborations, and it was refreshing to connect with people tackling similar questions in very different contexts.



At the conference itself, I presented both a poster and a three-minute mini oral on part of my current research project: “Bioengineering the marine microalga Nannochloropsis oceanica for the expression of the plant derived enzymes olivetol synthase and olivetolic acid cyclase.” It was my first time presenting to such a large and international audience, and admittedly, I was nervous. The countdown timer during the mini oral presentation only added to the pressure. However, the experience proved worthwhile. To my surprise and delight, I received a Mark of Excellence for my poster. I had not expected this, and it was a rewarding recognition that made all the preparation feel worthwhile.



Of course, I cannot fail to mention the Arizona heat, which was unlike anything I had ever experienced. With temperatures consistently over 40 degrees Celsius, I quickly learned the importance of staying hydrated, pacing myself and always finding shade when walking outside.

Looking back, attending and presenting at AlgalBBB 2025 was far more than just a conference. It was a genuine milestone in my academic journey. I returned home with fresh ideas, increased confidence, and a broader view of the field of algal biotechnology. I am sincerely grateful to the British Phycological Society for awarding me a Travel Bursary (award #2025BPS170), which made my attendance possible. I would also like to thank the AlgalBBB organisers, and the AzCATI team for hosting such a well organised and inspiring event.



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circularity' by Kyle Lauersen from King Abdullah University of Science and Technology, Saudi Arabia. During the coffee breaks, networking sessions were organised for early career researcher to interact with eminent researchers and learn their perspective on the future of algal research. On the same day I gave an oral talk on 'Unlocking the optimal wavelength for different growth phases for *Arthrospira platensis* in a tubular airlift photobioreactor'. In my talk, I addressed the challenges in efficiently illuminating photobioreactors and the engineering approach that could be utilised to address this problem. The talk also covered our findings in modelling the light propagation in photobioreactors and effect of different wavelength on growth and pigment production. I received positive feedback on our modelling approach and queries on the scalability of our illumination system.

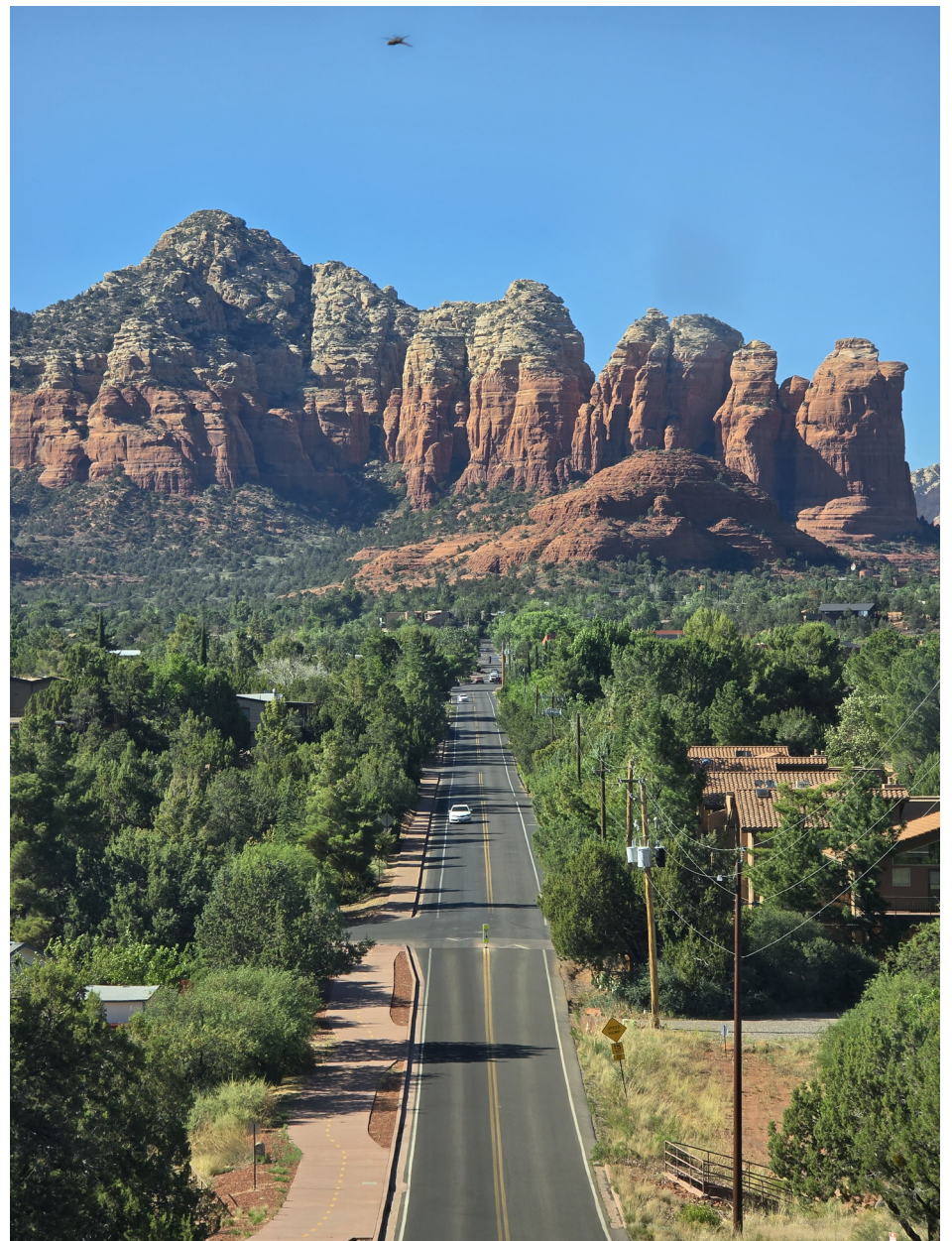
Attending the International Conference on Algal Biomass, Biofuels and Bioproducts (Algal BBB)- Arizona, USA



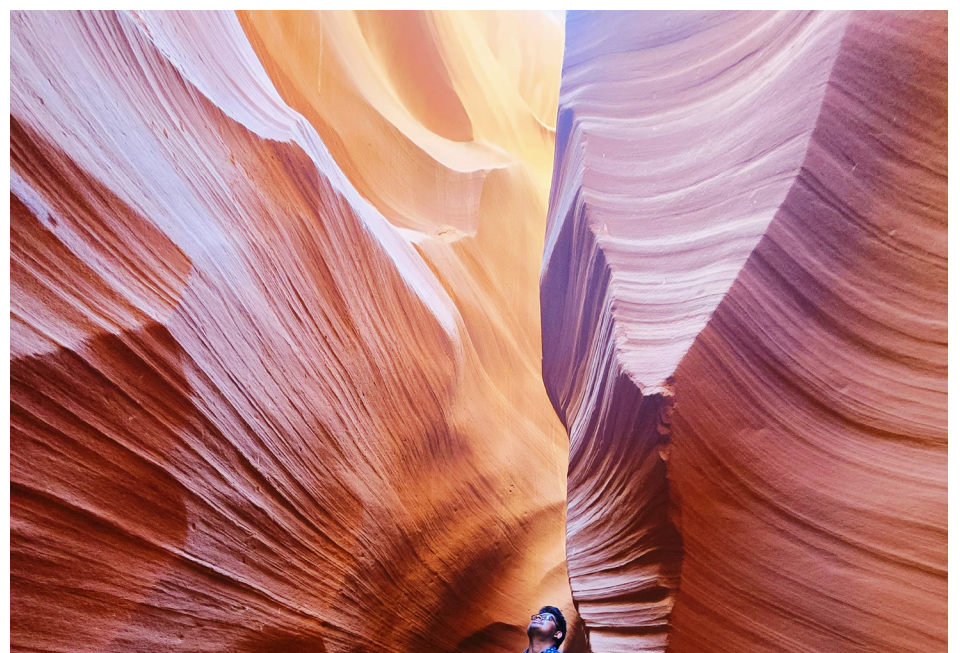
The International Conference on Algal Biomass, Biofuels and Bioproducts (Algal BBB) was held from 16th-18th June in Arizona, USA. The meeting had over 400 delegates from all over the world to discuss and share their latest findings in the realm of algal biotechnology research. The topics covered in the conference ranged from developments in molecular engineering for algal biotechnology, phototrophic systems, bioreactor design to life cycle assessments for algal processes. I had the opportunity to attend the conference and present my research findings with the financial support from the British Phycological Society (BPS 2025BPS147).



The conference started off with a visit to The Arizona Centre for Algae Technology and Innovation (AzCATI) on the 15th. The researchers at AzCATI showed us the different indoor and outdoor testing sites for scaling up algal bioprocesses. We were also to learn about the various monitoring and analytical tools used at AzCATI to ensure optimal growth and understand algae-pest dynamics. The warm sunny days of Arizona was a positive change from cloudy east coast of Scotland, where I am currently pursuing my PhD. The presentations of the conference presentations began on the 16th with a plenary talk on 'Algal biotechnology and metabolic engineering in resource



This years' Algal BBB was a slightly more focused on the synthetic biology approaches for using algal systems as a factory for producing valuable compounds. Despite this, I thoroughly enjoyed all the talks and were able to network with many researchers working on improving the engineering aspects involved in algal processes. The conference offered an excellent platform to connect with world-leading researchers and broaden my scientific network. I would like to extend my gratitude to the organising committee of Algal BBB for putting together a successful conference and British Phycological Society for the travel bursary award to attend the meeting.



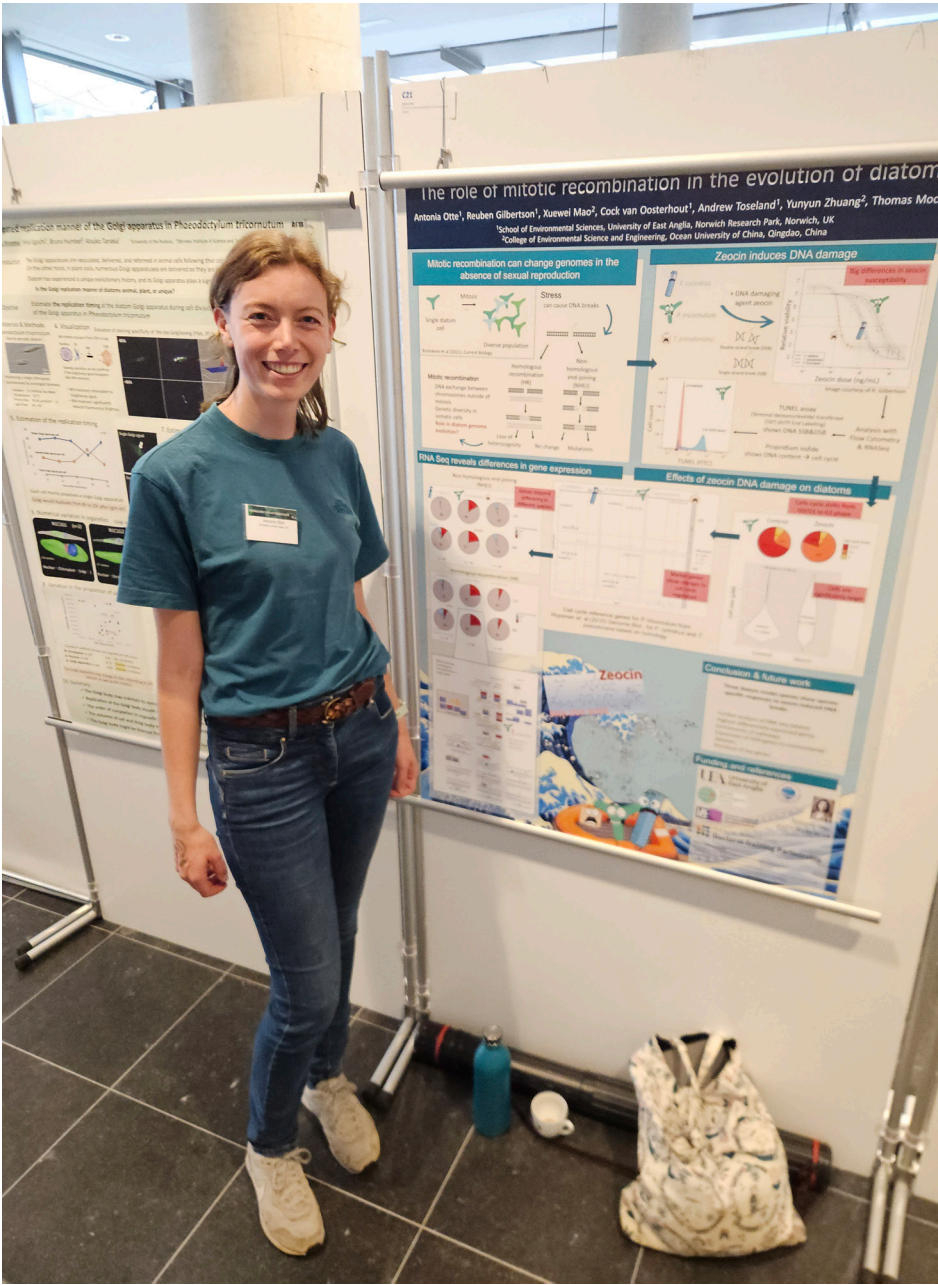
Submitted by: Aswin Sasi,
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The Molecular Life of Diatoms 8: From Mitotic Recombination to Marine Ecosystems

At the end of June, thanks to the award of a BPS Travel Bursary (award #2025BPS171), I attended the Molecular Life of Diatoms 8 conference in Ghent, Belgium. This biennial event brings together leading researchers in diatom molecular biology, and I was particularly pleased to reconnect with fellow scientists I had met at the previous 7th meeting. Over 200 participants attended the conference and engaged in the presentations in the main auditorium as well as the many poster sessions.

On Monday evening, an Early Career Researcher (ECR) event was organised by PhD students from Ghent. It began with an information session on EU starting grants followed by a social activity. This allowed me to connect with fellow PhD students and Postdocs and proved to be a valuable addition to the programme.

During the genomics poster session, I presented my poster titled ‘The role of mitotic recombination in the evolution of diatoms’ (see photo). Since diatoms reproduce mostly asexually, mitotic crossover following DNA damage could be an important driver in diatom adaptation and evolution. Despite the conservation of DNA repair systems throughout the tree of life, the response to DNA damage in diatoms and how it links to diatom evolution remain unknown.



Me during the poster session (Photo credit: Arthur Cleyman)

My poster illustrated how three model diatom species respond differently to the DNA-damaging agent zeocin, with the centric *Thalassiosira pseudonana* being more sensitive than the two pennate diatoms *Phaeodactylum tricornutum* and the cold-adapted *Fragilariopsis cylindrus*. Through RNA sequencing I was able to see variations in DNA repair pathway regulation and uncover key genes responsible for mitotic recombination and resulting genomic changes.

Throughout the conference breaks and poster sessions, I had many opportunities to discuss my work with other researchers. Given that zeocin is commonly used as a selective marker in diatom transformation, its role in causing DNA damage caused engaging conversations. I also benefitted from conversations with cell biologists and cell cycle researchers which deepened my understanding of the cellular responses to DNA damage and how these intersect with my experiments. Furthermore, I was able to discuss laboratory protocols with fellow PhD students and identify common challenges. It was rewarding to offer advice early-stage PhD students. Beyond the academic programme, I enjoyed the beautiful setting of Ghent, with its medieval

architecture such as the caste (see picture). As there are several research groups studying diatoms based in Ghent, networking with local researchers was especially valuable, as Ghent could be a potential location for research opportunities in the future.



Participants of MLD8 (photo credit: official MLD8 conference photo)



Castle of the Counts in Ghent

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Diatom killer: deciphering the mechanisms promoting activity of a facultative algicidal bacterium

Thanks to the generous support of the British Phycological Society, I was able to attend the 8th Molecular Life of Diatoms conference held in Ghent, Belgium from 22-26 June 2025. This conference brings together international researchers from all career stages, early career to leaders in the field, to present on recent molecular diatom research. This event was an excellent opportunity to network with colleagues in my field as well as hear about the current hot topics in diatom research. Ghent was a beautiful canal-filled city and the diatom researchers based at Ghent University (who took on much of the event logistics) were excellent and welcoming hosts.



Photo credit Dr. Ellen Harrison

My abstract titled “Diatom killer: deciphering the mechanisms promoting activity of a facultative algicidal bacterium” was accepted for a poster presentation in the Symbiosis & Other Interactions session. This poster was about my current PhD research exploring the molecular mechanisms used by a recently isolated bacterium that kills diatoms in a species-specific manner. I appreciated that the conference organizers asked presenters to leave posters hung for the entire week, as it allowed me to continue conversations about my work with colleagues beyond the designated poster presentation sessions. I had fun and engaging conversations during my presentation sessions and received excellent feedback and suggestions from fellow conference participants. I learned loads while exploring other posters as well, everything from different imaging techniques that can be used to visualize internal components of diatoms cells, what diatom metabolites different types of bacteria preferentially degrade, what genes diatoms turn on/off during different stages of reproduction, and much more. It was great finding complementary research to my own just through conversations at other participants’ posters as well. One new contact offered to send synthesized quorum sensing compounds my bacteria produces for future experiments. I was also able to provide advice to another new contact on how to isolate their own algicidal bacteria for future experiments. This in-person exchange of scientific knowledge is really helpful for future work and collaborations!

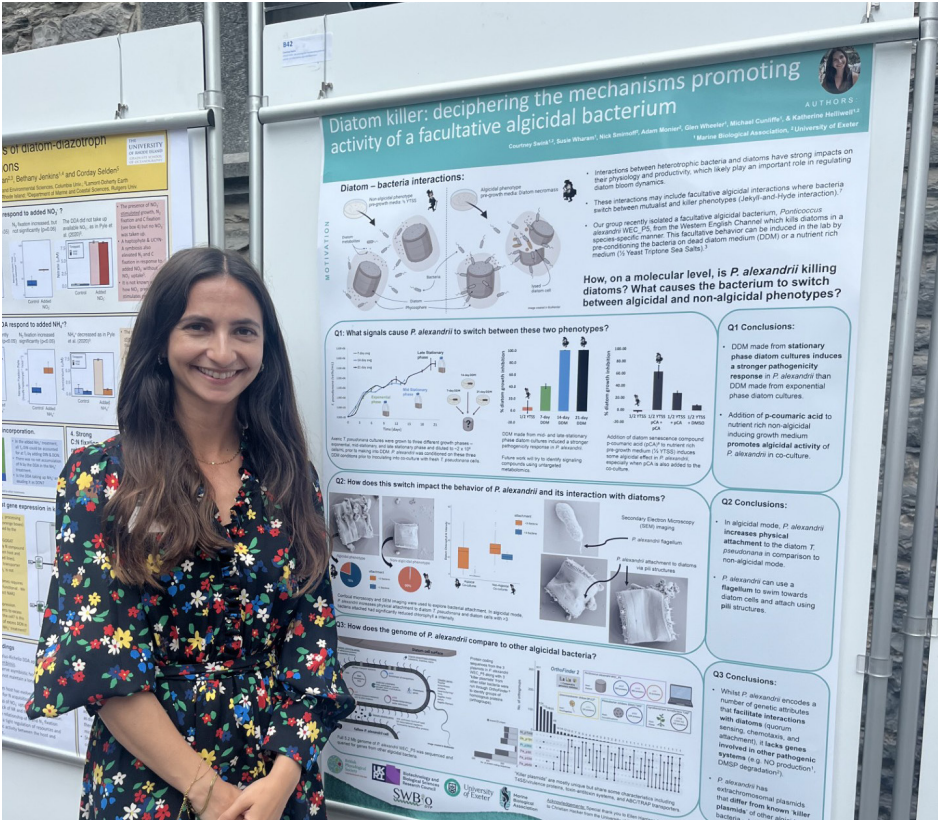


Photo credit Dr. Ellen Harrison

I gained lots of new knowledge through the oral presentations throughout the conference as well. I heard a good overview of the reproductive life cycle of diatoms and non-photochemical fluorescence quenching (NPQ) which I haven’t learned much about previously. There were interesting discussions about methods in the field, such the challenges and trade-offs for different techniques for genetically modifying diatoms and results from new single-cell RNA sequencing studies. I learned about how benthic diatoms can move via gliding or vertical migration in sediments and even learned about organisms I have never heard about before – dinotoms! My favourite talks were those most relevant to my own research about diatom-bacteria interactions. The conference hosted “meet the expert” sessions where you could meet in small groups with invited speakers, so I was able personally meet and ask several follow-up questions to the invited speaker of the interaction’s session.

One of the best aspects of this conference were all the opportunities to interact with other participants. My supervisor was able to introduce me to people she has worked with previously and help me make new connections. There were several attendees I had met once previously at other conferences so it was fantastic to reconnect and catch up with them as well. One colleague from my previous research group also presented, and I was glad to catch up with her and hear all about the great research my previous group has been up to since I started my PhD. A particular highlight was the Early Career Event hosted on the evening of the first day of the conference. At this event was a panel discussion about the application process for fellowships funded by the European Research Council followed by a fun “diatom mystery game.” This was both an informative and fun way to make new connections with other early career researchers like myself early on in the conference.

Overall, attending this conference was an excellent professional development experience for myself as an early career PhD student. I gained valuable experience presenting my research, gained new professional connections and reconnected with colleagues located globally, and learned a lot about diatoms in a short amount of time. Thank you so much to BPS for their generous support through a Student Bursary (award #2025BPS168) to make my attendance at this conference possible. I was also able to reduce my carbon footprint by traveling to this event by train rather than flying thanks to the financial support of BPS.

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BPS Collecting and Identifying Seaweeds

With content ranging from individual species identification to phylogeny as well as practical skills taught by leaders in the field, the British Phycological Society’s Collecting and Identifying Seaweeds course is an absolute must for any aspiring phycologist.

The introductory session, led by Christine Maggs, set the tone for the week with a thorough algal overview covering key details about both macro and micro groups, and included a fascinating exploration of the multiple endosymbiotic events. Due to the late low tide, the morning was spent at the University of Plymouth’s Coxside Marine Centre using specimens provided – primarily from the Pembrokeshire coastline – to get to grips with the microscopes and dichotomous keys whilst whetting the appetite for the afternoon’s gathering at Renney Point.



Before setting off for the fieldwork session, two lectures were delivered on techniques for preservation and identification. Juliet Brodie demonstrated the methods for compiling a herbarium, highlighting the materials required for optimal results, key information to record for each specimen, and the importance of pressed seaweeds as DNA repositories. Christine Maggs then took over to demonstrate a technique for sectioning seaweeds for staining and identification, with a focus on differentiating internal structures within Rhodophyta axes and furoid conceptacles. The day closed with a two-hour exploration of the picturesque and biologically diverse Renney Point, with numerous specimens collected for identification back in the lab.



By the second morning, the heady scent of DMS was in the air, a comforting pungency familiar to marine biologists. A large portion of the day was dedicated to refining identification skills; talks on seaweed reproduction and non-natives punctuated the session as well as an optional boat trip for the collection of seaweeds growing on mooring ropes and observing sublittoral seaweeds with an ROV. I took the opportunity to refine my sectioning skills using seaweeds from the Ceramiales, including *Ceramium ciliatum* and

Heterosiphonia plumosa, a valuable procedure required for the positive identification of some of the more difficult families. Once the final group had returned from their boat trip, we delved into the complex world of algal life histories with Christine Maggs, distinguishing the different forms of reproduction including the multi-phased alternation of generations. Methods for culturing seaweeds were included in this talk including techniques to carry out the process at home, offering an alternative use for a wine fridge! Lectures on the red and brown algae featured on the third day, both delivered by Juliet Brodie. We were also treated to access to copies of Bob Fletcher’s eagerly awaited and highly accomplished tome on the Phaeophyceae, which assisted with identification. The day’s fieldwork, led by Francis Bunker and Jason Hall-Spencer, was concerned with species associated with artificial structures which were observed and collected from local marinas. As anticipated, *Undaria pinnatifida* was a common presence. The day ended with a barbecue out on the terrace overlooking the Plymouth Sound giving the perfect opportunity to reflect on the course so far, connect with like-minded peers and share my latest experiments with seaweed snacks.



The final day opened with talks from Christine Maggs and Anne Bunker on green algae which included a closer look at the chloroplasts and motile gametes of the Ulvaceae under high power. It was fascinating to see the distinct shapes of the chloroplasts and begin to discern different components such as the pyrenoid. Later, Jason-Hall Spencer not only provided a comprehensive overview of coralline algae but also highlighted the threats to both calcareous and non-calcareous seaweeds from ocean acidification. Jason’s work on oceanic CO₂ vents also featured, giving a vision into the future of the impacts of changing ocean pH on benthic ecosystems. The week closed with a final flurry of species identification and burning questions for the course leaders who were extremely generous with their time and expertise.

As I move into the final phase of my undergraduate degree, with thoughts of postgraduate applications within the field of phycology, I feel better positioned and empowered by this course which I can’t recommend highly enough. I would like to offer sincere thanks to the British Phycological Society for funding my attendance with an award of £500, a huge source of support for my future career. BPS 2025BPS145.

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Hilda Canter-Lund Competition

This award was established by the British Phycological Society in recognition of Hilda Canter-Lund, whose stunning photographs will be known to many members. Her photomicrographs of freshwater algae combined high technical and aesthetic qualities whilst still capturing the quintessence of the organisms she was studying.

Congratulations to all that made the shortlist, the competition was strong this year, and the BPS thanks everyone who submitted images and voted for their favourites.

2025 Winners Macro Category



Milan Beck: “Freezing Fucus”

Milan is a PhD student at the University of Bremen in Germany, currently studying the effects of long-term temperature stress on intertidal macroalgae in the high Arctic on Svalbard. As part of a bigger project, he spent almost a full year at the research station in Ny Alesund witnessing the impressive change of the landscape from the midnight sunlit tundra in summer to polar night and aurora borealis shining on the snow-covered mountains in winter. Four years ago, Milan was able to visit Longyearbyen for the first time. He spent 6 months working and studying there for his master’s thesis at the northern most university (UNIS), ultimately sparking his passion for polar regions and research.

During the field phase of my PhD, I stayed in Ny Alesund (Svalbard) for almost a year and have seen Fucus distichus – the object of my study – in many different shapes and forms. By far the most impressive and beautiful was this year in April when a mixture of extremely cold temperatures, retreating tides and splashing waves encased the algae in shimmering droplets of water creating a surreal and dreamy scenery. Frozen in time and space, this picture showcases the impressive physiological plasticity and resilience of Arctic intertidal macroalgae and how they are able to survive the most extreme conditions.





Katia Jones: “Cystocarp Fra Nui”

My name is Katia Jones, and I am a bachelor’s student in Biological Sciences at the National University of Patagonia San Juan Bosco (UNPSJB – Puerto Madryn, Chubut, Argentina). I’ve always been fascinated by the sea and its endless beauty in all its forms. I’m currently working on my undergraduate thesis on the genus *Rhodymenia* (an alga as beautiful as it is interesting!) at the National Scientific and Technical Research Council (CONICET – CENPAT). My interest in algae began when I discovered their incredible diversity of shapes and colours. Photography allows me to capture this richness through both a scientific and artistic lens.



This cystocarp presents itself to the lens in the form of a marine Fra-Nui desert: like the “fruit” of the algae, where the carpospores hide like tiny seeds of life.

*In the picture, we see a cross-section of a mature cystocarp of *Hymenena* sp., taken with a Leica DM2500 microscope using a digital camera and Leica imaging software. The sample was collected in the intertidal zone of Magagna Beach (Chubut, Argentina) in January 2025. This is part of my undergraduate thesis, and when I made the cut, I immediately thought a raspberry dipped in chocolate. A sweet coincidence between biology and craving, I invite you to taste science with the same pleasure through this picture*

BPS at the Royal Society Summer Science Exhibition July 2025 - “The Algal Revolution”

One of the aims of the BPS is to “increase public awareness of the importance and applications of algae, and to contribute to public debate on issues involving algae”. There would be many ways to address this worthy aim but putting keen BPS members together with >10,000 members of the public at what is arguably the UK’s premier scientific outreach event, seemed a very good match. Accordingly, we applied to the Royal Society summer science exhibition, firstly in November 2023 (not selected) and then, after a few strategic tweaks, in November 2024 (selected!). After the excitement of selection, the hard work of converting the brief application document into a robust, staffed, equipped, and financed 6-day event began.

Our exhibit focused on three practical areas: seaweed “bioplastics”, algal pigment art, and microalgal biotechnology, activities that suited the team and which allowed us to showcase a range of algal applications. As a backdrop to the practical activities, we designed a graphics screen (Fig. 1, thanks to Mikey Ross, Martyn Kelly and Chris Carter for contributing), and a film (thanks to Susi Arnott and Pete Knapp) to give greater phycological context for our visitors. The film is now on the front page of the BPS website <https://brphycsoc.org/> (you may need to scroll down). Our event also had an event webpage (thanks to Luke Barnett and Leo Cherrin) which you can still access at <https://rs.brphycsoc.org/>. Our event website had almost 3,000 unique visitors (about 65,000 hits) in the build up to the event.

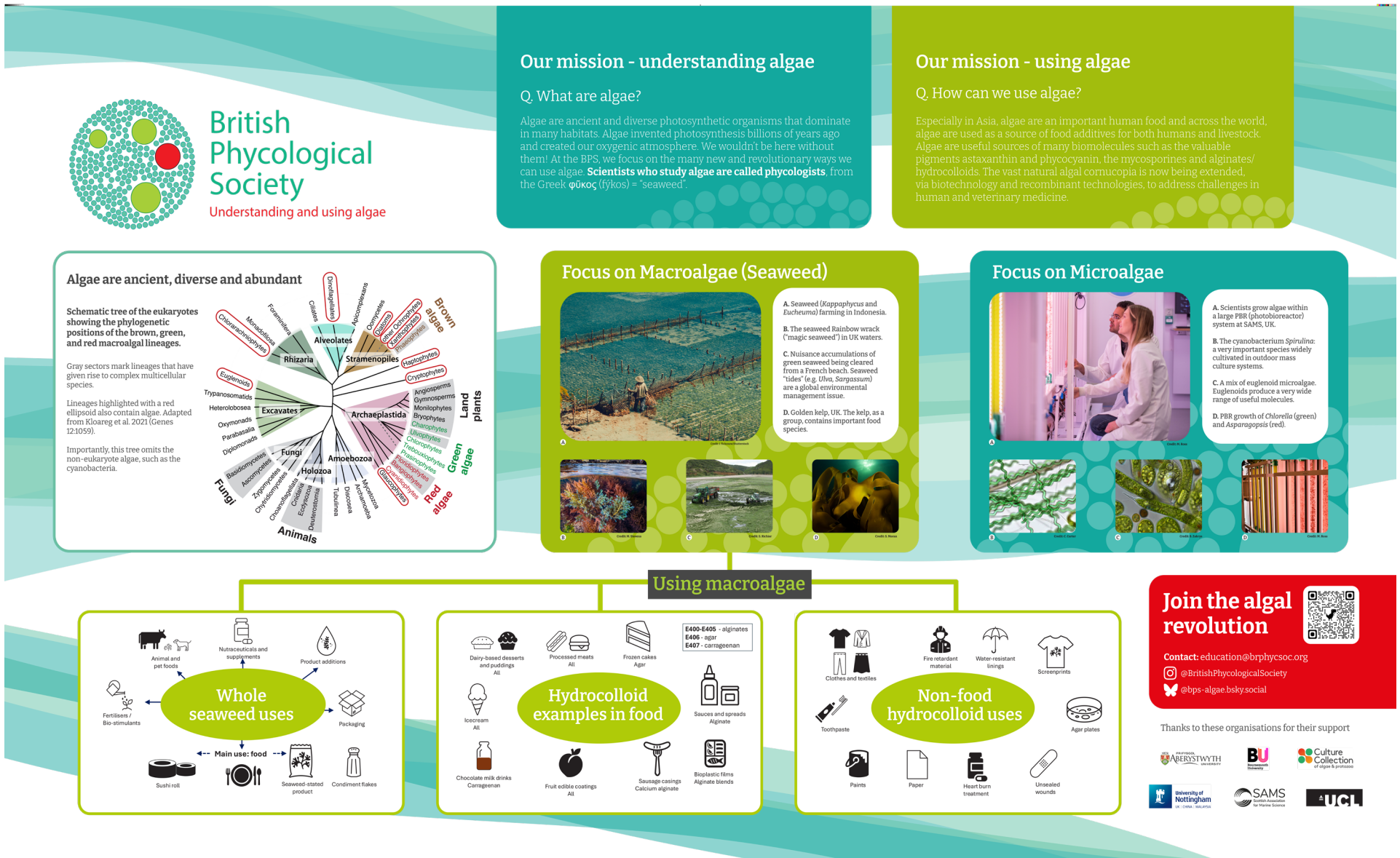


Figure 1. “The algal revolution” graphic backdrop

Through the winter and spring, the project team held regular meetings to plan and design the exhibit and its practical activities. Luke Barnett and Jessica Adams at Aberystwyth led on bioplastics, further optimising an activity used successfully at the Aberystwyth arm of national science week in March 25. Live mixing of sodium alginate and calcium chloride to produce a plastic film allowed discussions on plastic structure, biodegradability, the role of plasticisers, and the concerns associated with petrochemical plastics. This activity elicited much comment and discussion; and Luke also gave a presentation at the Royal Society during the event (see: <https://royalsociety.org/science-events-and-lectures/2025/07/fri-algae-revolution-talk/>).

Colleagues at SAMS (especially Francisca Vermeulen) kindly led on the algal pigment art activity, growing/collecting a range of colourful microalgae (e.g. Spirulina (of course) and Haematococcus) and macroalgae (Palmaria) to create paints and flakes for algal pigment art (Fig. 2 & 2a). This activity, targeted at our younger visitors, proved very popular and led to a request to advise the scouts on adding this activity to their repertoire. Our last activity, led by Saul Purton with Luyao Yang and Anna Watson from UCL; used CCAP cultures (thanks to Joanne Field) and microscopes to find and assess various microalgae species. This activity also featured a large PhycoBubble Photobioreactor (thanks to Varicon Aqua) growing Chlorella and Chlamydomonas. These great props helped immerse visitors in the life of a phycologist and the opportunity to explore with a microscope (a perennially popular outreach activity) proved very rewarding for all types of visitors.



Figure 2. Algal art examples – different each day - here an algal dragon and our exhibit logo

The team assembled in the stifling London heat of early July to set up the event. The grand old Royal Society building, with its interesting history, is a stranger to air conditioning or at least is in the part we set up in. Frequent refreshment was needed and with additional help from UCL and Prof. Chris Maggs we were able to set up smoothly ready to start the next day. The need to work with a huge range of visitors (approx. age range 2-90?) and to stay fresh over the 6 days meant that we needed a lot of people to help staff our exhibit. We are very grateful to the generous and very able BPS members, and others, who stepped forward. A small selection of these colleagues is shown in Fig. 4, 5, and 6 - 36 colleagues worked on the exhibit in total, from 17 universities, 5 governmental or NGO organisations and 1 company. A strength of our exhibit was the range of phycological experience and knowledge present within the exhibit staff, and their enthusiasm to conduct the “meaningful conversations” with visitors which the Royal Society rightly prize as the main ingredient for success during the annual exhibition. Since the event we have surveyed our exhibition volunteers and are pleased that all volunteers reported their experience as positive overall, with many keen to volunteer again. We gained useful feedback from volunteers too, which will be used to improve future BPS outreach activities.



Figure. 4 Day one team ready for visitors!



Figure 5. Prof. Chris Maggs and Sin  ad Morris with Lord Vallance at one of the Soiree events



Figure 6. The UCL PBR meisters – Saul Purton and Luyao Yang

Feedback from Our Event Volunteers

“It was great to feel like I was helping to contribute to inspiring the next generation of phycologists. I was nervous about interacting with teenagers, but it was great fun. It was also great to build connections with other BPS members”

“I enjoyed the exhibition a lot! I enjoyed to see excited visitors, adults and children fascinated alike. My highlight was to see the joy when someone looked into a microscope for the first time in their life”

“The engagement with the public was great, but also being able to see all the other BPS algal nerds and talk about what they have been working on and seeing the overall excitement from everyone about phycology”

“Fantastic opportunity to engage with a very enthusiastic public”

“The event was very well organised and put together. The experiments and demonstrations were well thought, scientific and very interactive. All the coordinators and volunteers were very friendly”

Views from the Soirée

“The most significant point for me was when Patrick Vallance visited all the stands. He showed genuine interest in the exhibits. I told him I used to work for him when he was the Government’s Chief Scientific Advisor (loosely true, as I was JNCC Chief Scientist!). The buffet downstairs was very impressive - beautiful food in a fantastic setting - and I had the company of Sinéad Morris from Bournemouth, whom I lured down. I couldn’t help feeling a bit sad that the two FRS phycologists (John Raven and Tony Walsby) are now both dead - the last time I was at the Royal Society exhibition Tony and his wife were there together”

-Chris Maggs

“I was grateful to be afforded the opportunity to help to present some of the exciting research of BPS members at the Royal Society Soiree on the 3rd of July 2025. The evening began with a visit from Patrick Vallance, Minister of State for Science. We expressed to him our belief that algae offers many potentially lucrative avenues for growth in the green economy. As part of this, we demonstrated our degradable alginate-based plastic as a green alternative to fossil fuel-based single-use plastics. As the evening progressed, we had many prestigious visitors to our stand from across the full spectrum of the sciences. The Fellows and guests were appreciative of the potential of algae to help to combat some of the environmental issues that affect the UK. It was inspiring to be amongst such esteemed company in the hallowed halls of the historical Royal Society. Going forward, it would be good to see the Royal Society take a more proactive stance on the future of science by inviting guests from across the great diversity of top researchers in the UK. Overall, we at the BPS achieved our goal of demonstrating that algae offers so much more than meets the eye and can contribute to a greener future for Britain and the world”

-Sinéad Morris (Bournemouth University)

“It was a very engaging event, and I had the opportunity to talk about algal research to a lot of members from the Royal Society and invited guests”

- Aswin Sasi (University of St Andrews)

“I attended the Royal Society Summer Event Gala Dinner, which was a truly engaging and insightful experience. Our team represented a stall on algal science, and throughout the evening I had the opportunity to meet many scientists, Royal Society Fellows, and their families. We discussed a wide range of topics, from environmental challenges to the ways in which science can help to address them. I particularly enjoyed conversations with scientists from London, Manchester and Oxford, who shared fascinating backgrounds and perspectives.

The event itself was beautifully organised, with elegant decorations, fresh flowers, excellent food and delightful drinks. It was both intellectually stimulating and socially enriching, and I would be very pleased to attend such an occasion again in the future”

- Alla Silkina (Swansea University)

“The soiree event was a wonderful opportunity to meet influential guests from the Society and to have some thought provoking discussions. The Royal Society staff made sure that the event ran smoothly and helped to create a lovely relaxed atmosphere while maintaining high standards. It was fantastic to be able to showcase the cutting edge research and highlight the amazing work carried out by our researchers. The whole experience was very positive from start to finish and it’s incredible to think we were able to pass on a little of our knowledge and enthusiasm to a host of distinguished guests who we may not otherwise get the opportunity to interact with.”

-Emily Radford (Aberystwyth University)



Figure 7. Thursday soir   attendees – L-R Alla Silkina, Chris Maggs, Emily Radford and Sin  ad Morris

In conclusion, the event brought us together and we have the satisfaction of proving we can run a successful large-scale public engagement event. We have learnt a lot by running this event and other large outreach events we may target include the New Scientist Live and the British Science Association festival. We thank the BPS for funding and council members for all the excellent behind-the-scenes support. Any members who would like to discuss the work of the BPS education and outreach team can email Dan at education@brphycsoc.org.

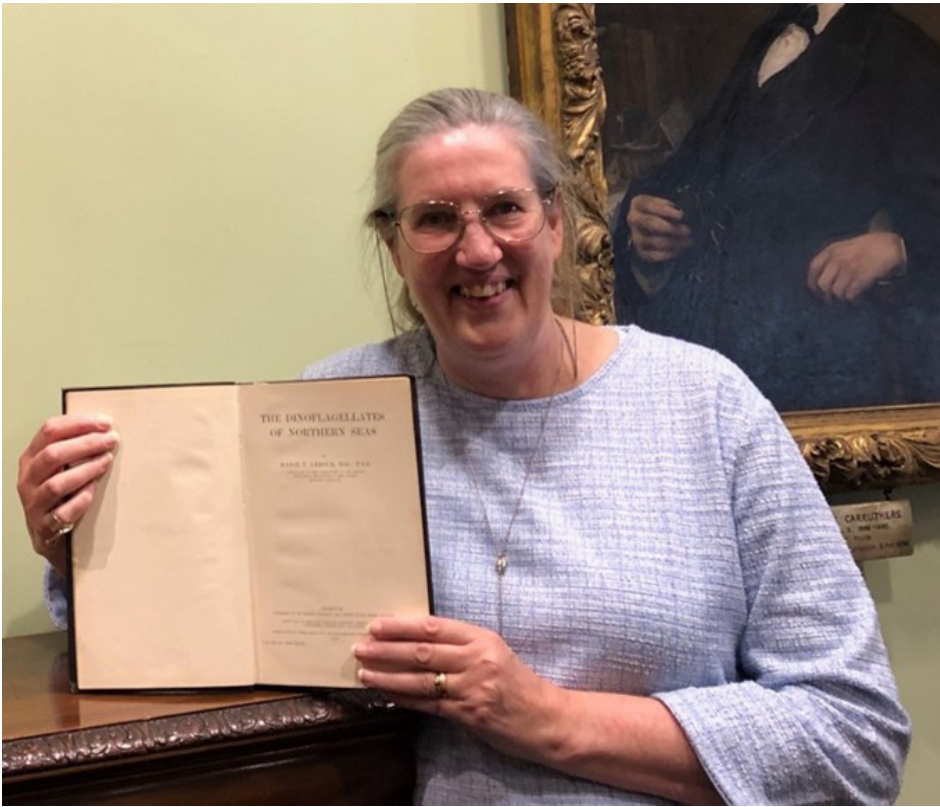
Submitted by: Dan Franklin & Jessica Adams
Bournemouth University & Aberystwyth University

Who Wants Phycology Books?

A few months ago, the BPS was contacted by the son of a deceased phycologist, Dorothy Ballantine, who worked on toxic dinoflagellates with Mamie Park at the MBA, Plymouth. Mamie Park had isolated a bloom-forming dinoflagellate from Plymouth Sound in 1950. This was described by Ballantine in 1956 as the new bloom-forming species, *Gymnodinium veneficum*, producing a very powerful toxin which is lethal to fish and other organisms. It was subsequently shown to be conspecific with *Karlodinium micrum*, and was transferred to *Karlodinium* as *K. veneficum*.



Dorothy's son decided to donate a few of her phycology books to the BPS: his main considerations were that they be appreciated and not be broken up to use the plates. As we don't have a library, the Council decided to sell them to BPS members and donate the proceeds to the society. They included a beautiful Kofoid & Swezy (1921) volume called *The Free-living Unarmored Dinoflagellata*, with stunning colour plates, and three volumes of Harvey's 1871 4-volume edition of *Phycologia Britannica*. All of them now have new owners who have kindly donated more than the market value to the BPS.



Professor Jane Lewis, photographed with the dinoflagellate books, will keep one of them and took another up to Scotland to the SAMS library.



Professor Juliet Brodie is the proud new owner of the Harvey volumes.

Dorothy's son was delighted. "Thank you. That is perfect...my mother took up painting and China pottery art later in life! It couldn't have been more appropriate if we had tried."

The experience of offering these to the membership has been very interesting. Books of retiring or deceased phycologists typically go in the bin. We were contacted last year by the company doing the house clearance on John Raven's books (via Rodney Forster, whose PhD was there) and I rescued a car-load and took them to SAMS for their library. Unfortunately, a lot more books had to be thrown away.

If anyone in future wishes to dispose of phycology books, I would be happy to look after them on behalf of the BPS. In my will I have left my own book collection to the BPS. I bought the most important ones from Linda Irvine after David died, and I would like them to go to the next generation of phycobibliophiles!!

Submitted by: Christine A. Maggs
School of Biological Sciences, Queen's University Belfast



Dr. Sue Gubbay wanted Dorothy's copy of Newton's (1931) Handbook of the British Seaweeds and sent us this picture of her with one of Sue's seaweed paintings.

INSTRUCTIONS FOR CONTRIBUTORS

Copy which is submitted for publication in The Phycologist should be concise and informative. Articles should be scientifically sound, as jargon free as possible and written in a readable scientific magazine style. Unless essential, references should not be included. All types of relevant material will be considered, these include job advertisements, scientific reports, book reviews, news items of topical interest, meeting announcements, grant awards, promotions, appointments, profiles of eminent phycologists and obituaries. If you are interested in submitting material that does not fall within any of these broad categories, or you are unsure of the appropriateness of a potential article, then contact the editor. Suggestions for future articles or a series of articles are welcomed.

Copy should be submitted, preferably as attachments to email or on disc (MS Word for Windows or Rich Text Format). **Illustrations and photos to accompany copy are welcomed and should be supplied as JPEG or TIFF file format no less than 600 dpi resolution. The editor reserves the right to edit the material before final publication.**

Submission of Copy and Deadlines

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Algal dragon drawn from algal pigments at “The Algal Revolution” display in the Royal Society Summer Science Exhibition, 2025; credit: Daniel Franklin

