The Phycologist

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New FEPS Representative

Ice algae

Phycology field course

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2024
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Editorial

Enjoy reports on field courses, conferences and research studies all supported, at least in part, by the BPS! Also a bit of phycological past and present: another profile of a phycologist of the past and a report of seaweed diversity from the BPS's field course.

Very best,

Amanda Burson

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 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 https://brphycsoc.org/the-phycologist-back-issues/

TABLE OF CONTENTS

Front cover picture credit: Dave Paterson

Back cover picture credit: Tom Harvey

Meso-scale patterning of glacial algal blooms on high-Arctic glaciers

Submitted by: Tom Harvey
University of Bristol
BPS Award Number: 2023_BPS_0217

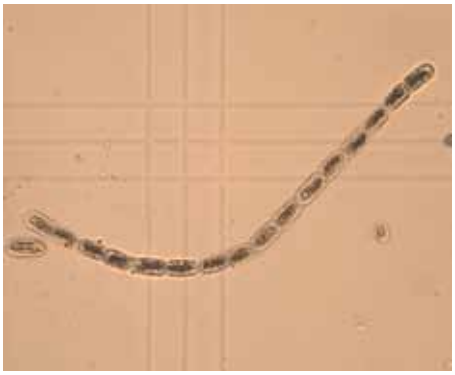
Glacial and polar landscapes have always fascinated me. This is one of the main reasons I chose to study Geographical Sciences. In particular, the fact that such hostile environments still manage to support a microbial ecosystem, which in turn supports the larger biota in these seemingly lifeless locations, captures my imagination. I have been lucky in the sense that I grew up in mountain environments and have a lot of glacier experience as a mountaineer, however a scientific expedition to an area as remote and potentially dangerous as Svalbard has always appealed to me. This side of academia has always attracted me and is what ultimately motivated me to attempt this project.

I had heard about Dr Christopher Williamson's research group MicroLab@Bristol which is based at the University of Bristol. As he was my lecturer in Glacial Microbiology I started asking whether it would be possible if an undergraduate could participate in one of the Arctic expeditions organized by MicroLab. This is when I found out about the funding provided by the BPS for summer undergraduate internships. After being given permission by the School of Geography I needed to come up with a research subject. A gap in knowledge was identified and my research question developed.

Zygnematophycean or glacier algae are an integral part of the glacier ecosystem. They grow on the bare ice surface. Due to their high pigmentation they considerably reduce albedo, thereby leading to higher melt in areas where a bloom is found. It has been shown that they are one of the main drivers in the observed increased glacial runoff on the West Greenland Ice Sheet. They sequester atmospheric CO_2 as well as modifying other nutrients such as nitrogen and phosphorous. By modifying these, and making them more bioavailable, they can be a valuable nutrient and organic carbon source to ecosystems downstream. Their importance in the global nutrient and carbon cycles is not yet fully understood. Improving understanding around the factors influencing glacial algal bloom development as well as the size of the blooms has the potential to help quantify their biogeochemical impact at regional as well as global scales.

I decided to investigate the meso-scale patterning of glacial algal blooms on high-Arctic glaciers. This involves sampling glacier ice and the abundance of glacier algae. As well as abundance, physical characteristics of the glacier itself such as aspect, slope and tempera-

Polar landscape in summer



Chain of glacier algae (*Ancylonema nordenskioldii*) imaged under a microscope.

Map of Ny Alesund and Kongsfjorden fjord, also included are the sampling sites (source: https://toposvalbard.npolar.no/)

ture were recorded in an attempt to determine whether these are the first order controls determining where glacier algae bloom. Following the field and lab data collection, secondary data such as meteorological records will be used to complement the primary data sources. The final aim for the project is to create a species distribution model based on first order controls and model where the blooms should grow. If successful, this model could be used in other parts of the world such as the Alps, where a wealth of glacial abundance data is already available. Ultimately a model such as this could help in determining the role of mountain glaciers, whether polar or temperate, in the global carbon cycle.

The expedition was based in the British Arctic Station in the research village of Ny Ålesund located on the south side of Kongsfjorden at 79N. This is found on the archipelago of Svalbard, in the North-West of the largest island, Spitsbergen. Prolonged visits to this village are limited primarily to workers or scientists conducting research in this area. The village is surrounded by mountain glaciers to its south, the Kongsfjorden fjord to its north and huge water terminating glaciers to the east at the end of the fjord. The region is also home to one of the largest polar bear communities in the world. For this reason, every person who wishes to complete fieldwork outside of the village must go through rifle training and when in the field one person out of two must be armed with a hunting rifle and flare gun. The constantly changing glacial environment also means that meteorological conditions can deteriorate rapidly. The glaciers we were working on were safe enough to not require harnesses or a rope however caution is always needed on glaciers.

The aim of the field trip was to collect samples of ice every 50 metres along two transects covering as much of the glacier width as was safely possible. Each transect was at a different altitude. This was done on 3 glaciers with different physical characteristics. The three glaciers chosen were: Vestre Brøggerbreen, Feiringbreen and Austre Brøggerbreen. Feiringbreen is located on the northern side of the fjord and so is accessed by rib boat followed by a hike over the moraine to the glacier. It is marked by a blue cross on the map above. The other two are situated on the south side of Kongsfjorden and so can be accessed by bike and foot from Ny Ålesund. Austre Broggerbreen is marked with a green cross and Vestre Broggerbreen by a red cross. All of these glaciers are land terminating and deemed safe enough for fieldwork to be carried out on their surface. The three glaciers vary in their aspect and exposure, making them ideal for the research idea in question. The sampling was completed in 4 days during July 2023, due to weather constraints and a few nearby polar bear sightings. 2 days were spent on Vestre Brøggerbreen and 1 respectively on Feiringbreen and Austre Brøggerbreen. Several of the polar bears use Austre Brøggerbreen as a passageway to the next fjord and so care needed to be taken to avoid crossing paths. Overall, two transects of samples were taken at each glacier, which provided enough data to conduct the study. These samples of ice were then melted overnight in the British Arctic Station lab and then fixed in 1.5 mL Eppendorfs for chilled (4C) transport back to Bristol. Here they were to be imaged for cell abundance to gain an understanding of the 'spread' of the algal bloom over the glaciers sampled.

Both on the glacier and in the cell abundance data, low algal abundance was observed. This could be due to the

samples being taken relatively early in the melt season and the blooms not having time to establish themselves properly. It may also be that the glacier algae populations on these glaciers are always low, it is difficult to know for certain but this survey is the first of its kind on these 3 glaciers. Further fieldwork in the next several years would be required to assess this properly. It was assumed that the south facing glacier (Feiringbreen) would have a larger bloom than those facing north, however, this glacier had the lowest glacial abundance. This is probably due to a combination of factors; firstly there may simply have been too much UV radiation exposure for the algae to develop. The elevated sun exposure leads to more melt which may have contributed to the low algal abundance by flushing the cells away before a bloom of any significant size could develop. Feiringbreen also has much steeper aspect then the two other glaciers, which may explain this surprising finding. This means that it is harder for the algal cells to stay in the same location as they are more easily taken down the glacier by meltwater. Nutrient availability may have differed slightly on each glacier leading to varying abundance as one or several nutrients limit the bloom growth. The elevation of the transects was ruled out due to all the transects being around the same altitude. This surprising finding will be analysed further once the species distribution model has been developed.

I would like to thank Dr Chris Williamson and the BPS for this amazing opportunity as well as Dr Jaz Millar, Emily Broadwell and Maddy Lewis for their help in Svalbard and the lab. I would also like to thank the British Arctic Station and in particular the station leader Iain Rudkin for having me.

Field sampling.

Sunscreens in the Marine Environment

Submitted by: Anneliese Hodge[1,2]*
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BPS Award Number: 2023_BPS_0284
Supervisory Team: Frances E Hopkins[1], Mahasweta Saha[1], Awadhesh N Jha[2]
Plymouth Marine Laboratory, Prospect Place, The Hoe, Plymouth, Devon[1]
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Have you ever thought about the fate of the sunscreen product you apply to your skin before going for a sea swim, or a snorkel at your favourite beach? The components added to sunscreen products to block or absorb the ultraviolet (UV) radiation, known as UV filters, have recently been dubbed chemicals of emerging concern due to their widespread use and global distribution and have been deemed highly persistent by EU REACH Directives. UV filters are active compounds that can be either mineral based (such as titanium dioxide or zinc oxide), or chemical based (such as oxybenzone or octocrylene). Chemical UV filters are the most widely implemented in sunscreens and are often used in combination with each other to protect against a wider spectrum of UV radiation.

However, these compounds are entering the marine environment at an increasing rate - through a variety of pathways, either directly (from water-based activities such as swimming), or indirectly via domestic (home showering or washing towels that have been used to dry sunscreen-coated skin) and industrial effluent. Unfortunately, traditional wastewater treatment technologies do not have the capacity to remove UV filter compounds from effluent, and thus, UV filters are prolific in marine and freshwater bodies. Chemical UV filters have been reported in 95% of wastewater effluents and 86% of surface waters globally, demonstrating the sheer extent of these pollutants. UV filters have also been found to be transported via major oceanic currents to both Arctic and Antarctic waters, a considerable distance from anthropogenic sources.

Many UV filters combine well with fats and lipids, which makes them easy to accumulate within living organisms and have the potential to cause a variety of ecotoxicological effects. Whilst current research on the ecotoxicological effects of these compounds is limited, studies to date have shown that UV filters have the potential to cause coral bleaching, endocrine disruption, and DNA mutations amongst many other harmful effects. Owing to this, in some locations such as Hawaii and Key West Florida, certain UV filter compounds (oxybenzone and ethylhexyl methoxycinnamate) have been banned in sunscreen formulations. However, progress is still to be made in the UK and the EU as these compounds are still legal up to 6% in the sunscreen product mass.

Very little research has been conducted on UV filter and sunscreen pollution in temperate waters. Therefore, our research aims to highlight the effects that UV filters pose to marine organisms, including marine macroalgae, which in turn will aid in the awareness of UV filters as pollutants. We must develop our understanding of the interactions these chemicals have with the marine environment and provide both manufacturers and governments with the science to aid businesses in making the right informed decisions about the composition of their products and the subsequent effects on marine life.

Travel Bursary Reports

The British Phycological Society Annual Winter Meeting University of Reading

Submitted by: Anneliese Hodge[1,2]*
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BPS Award Number: 2023_BPS_0284
Supervisory Team: Frances E Hopkins[1], Mahasweta Saha[1], Awadhesh N Jha[2]
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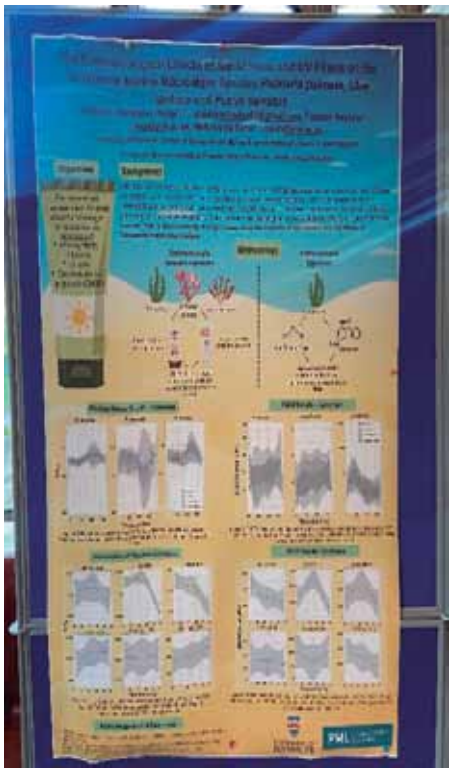
In January 2024, I was given the opportunity by the British Phycological Society (BPS), by means of a travel bursary and abstract acceptance to present my Master of Research (MRes) work at the BPS Annual Winter Meeting held at the University of Reading.

I provided both an oral and poster presentation on my research investigating the ecotoxicological effects of sunscreens and UV filters on temperate marine macroalgae. The poster session had a very friendly and encouraging atmosphere and it was a pleasure to have insightful discussions about my own and other attendees' research. Each morning would begin with a Keynote speaker, followed by a schedule of other presentations within various topics/fields of phycology research. Watching these presentations was a valuable opportunity to learn more about presentation techniques to aid in the development of my own public speaking skills. It was also highly engaging to learn about the diverse array of impactful research that is currently being conducted by other BPS members. There was a lot of variation in presentation style and topic which made for a well-rounded meeting schedule, and there was ample opportunity to network and learn more about others' research interests and backgrounds. I met many students, academics and individuals in industry who hold a passion for phycology, and I thoroughly enjoyed listening to the diverse subjects and themes from not only the presenters, but also other attendees through conversation.

I was delighted to have the opportunity to communicate my own research, highlighting the effects of sunscreen and UV filter pollution in the marine environment and the associated effects on marine organisms. Whilst I was very nervous for my first ever oral presentation, I feel that BPS provided a well-suited atmosphere to begin my journey within science communication. I am thankful to BPS for providing me with the travel grant that allowed for me to attend the Winter Meeting, and I would also like to thank my supervisors for their continued support throughout my MRes and now also the start of my PhD.



Travel Bursary for the BPS Winter Meeting 2024

Submitted by: Maxine Canvin
Email: maxcan@mba.ac.uk | Twitter: @MaxineCanvin
BPS Award Number: 2023_BPS_0282_MC

Early in the year, I attended the British Phycological Society Winter Meeting 2024 hosted at Reading University with the generous support of the BPS Travel Bursary. Throughout the conference, a wide range of exciting phycological research was presented, from glacial microalgal blooms in Switzerland to the biodiversity benefits of macroalgal farming in the UK.

With its reputation as a friendly and welcoming conference, the BPS Winter Meeting provided the perfect opportunity for me to present my PhD research for the first time. As part of the Manton Prize Session, I held a 15-minute presentation on my work in the first 2 years of my PhD, titled "Quantifying Rates of Growth, Erosion and Dislodgment of Cultivated Kelp in the UK". Here I was able to discuss the accumulation and loss of carbon associated with kelp farming and its implications for climate change mitigation through carbon sequestration. In short, kelp farming in the UK likely sequesters a small proportion of captured carbon at present, however, many other climate change mitigation co-benefits support the expansion of the industry. Questions from attendees provided an insightful opportunity to discuss my work further and supported productive networking both between sessions and at the conference dinner held at the Narrow Boat.

This was my first BPS Meeting and my first time presenting, and as such I was surprised and pleased to receive the Manton Session runner-up prize for best student presentation. The conference has boosted my confidence in sharing my work with the scientific community, allowed me to forge connections with phycologists from all over the UK and cemented itself as a 'must-attend' for early career, algae-loving researchers.

The British Ecological Society Annual Meeting 2023

Submitted by: Jordi Sola
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BPS Award Number: 2023_BPS_0283

Participating in the British Ecological Society Annual Meeting 2023 (BES 2023; Belfast, Northern Ireland.) provided a platform for presenting my Ph.D. research findings to a diverse audience of ecology experts. Over three years, I collected data to examine how heterogeneity influences interactions within a rocky shore community, specifically focusing on the grazing effects of macroalgae and their role in shaping community stability. Presenting these findings to experts in community ecology theory was a great opportunity to highlight the significance of macroalgae, limpets, and rocky shore experiments in understanding community dynamics.

BES 2023 encompassed more than just the presentation, offering a venue for engaging with various talks and plenaries. Exposure to a wide range of ecological topics broadened my perspective and allowed me to place my research within a larger context. Plenaries provided insights into contemporary

ecological issues, including rewilding, land use perspectives, and the challenges of fostering global nature recovery in the context of biodiversity decline.

The event also featured workshops and social activities that offered opportunities for skill development and networking with fellow early career researchers. Workshops covered practical aspects such as the use of AI tools like ChatGPT, navigating grant applications with BES, and engaging in discussions about career paths with established researchers. Sessions with Special Interest Groups and various activities around the ICC Belfast venue facilitated continuous interaction throughout the event.

I extend my gratitude to the British Phycological Society for their travel bursary, which significantly contributed to making this experience possible. Looking ahead, I anticipate participating in next year's gathering, eager to build on the insights gained and connections established during this eventful experience at BES 2023.

Discovering Down Under: Discussing Algae's Potential at the SBA2023 in Perth

Submitted by: Julanie Rogers Stapelberg
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BPS Award Number: 2023_BPS_0281

The Synthetic Biology Australasia #SBA2023 Conference held from the 14th to the 17th of November in Perth was enlightening and engaging. Set against the picturesque backdrop of the University of Western Australia and the Swan River, it gathered experts to discuss the latest advancements in synthetic biology.

This conference's focus on themes like "Synbio Tools" and "Future Plants and Foods" directly resonated with my algae research. It offered insights into current industry trends and a platform to increase the visibility of my work within the synthetic biology community, supporting my commitment to the green bio-economy. I had a blast presenting my PhD project, "Unlocking a sweet future: optimising microalgae, Chlamydomonas reinhardtii, to produce super-sweet proteins".

Seeing the focus on addressing global challenges was inspiring, and I could deepen my understanding of the synthetic biology landscape, including its prospects and current directions. It also presented a unique chance to understand local regulations and policies specific to Australasia. The event allowed me to identify areas where my research intersects with others, opening doors for future collaborations.

There were ample opportunities for networking and idea exchange, including our conference dinner at a local brewery in the Swan Valley. Of course, the trip would only be complete with visiting Rottnest Island, home of the quokka. They are a furry, friendly marsupial found only in Western Australia, and luckily, two hopped over to me to say hello!

The conference struck an ideal balance between scientific thoroughness and cultural discovery. I extend my heartfelt thanks to all the organisers, my supervisor and my funding bodies: the British Phycological Society and the Microbiology Society. I look forward to future collaborative discussions that aim to enhance the global bio-economy.

The Molecular Life of Diatoms 7: From the smallest scales to life in the oceans

Submitted by: Antonia Otte
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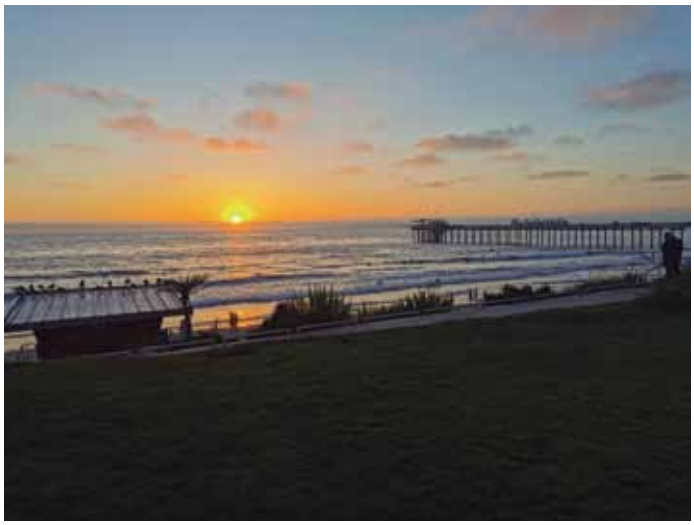
BPS Award Number: 2023_BPS_0228

Thanks to the award of a student travel bursary by the British Phycological Society, I was able to attend the 'Molecular Life of Diatoms 7' from July 16th to 20th 2023, in San Diego. Since I travelled to San Diego a day early, I got the opportunity to explore La Jolla, where the conference was held and where seals and sea lions enjoy themselves on the beaches and cliffs.

The conference started Sunday night with a reception dinner at the J. Craig Venter Institute in La Jolla. My supervisor, Thomas Mock, introduced me to many PIs and other researchers already on that first night, and it was exciting for me to meet the people whose publications I read and cite every day.

On Monday, the conference started at the Scripps Institution of Oceanography Seaside Forum, with the first talks on Biomineralization and Silicification. Since this topic does not link directly to my work, I learned many new aspects on diatoms and diatom research. Coffee breaks and lunches were held outside the forum overlooking the La Jolla Shores Beach and the Scripps Pier, a wonderful location and view, and one lunch we even saw dolphins swimming by! In the afternoon, talks were about Ecology and Biogeochemistry, and the first poster session was a great opportunity to network with other PhD students who also research genetic factors that contribute to diatom diversity and evolution, related to my own research. To me, the highlight of that day was the

The sea lions at La Jolla Cove.



View from the Scripps Institution at the ocean and the Scripps Pier

Photo credit: Thomas Mock

keynote talk by Manu Prakash, who talked about the physics of sinking cells in the oceans. The day ended with drinks at the Institute, where I got another opportunity to discuss their research with the speakers of the day.

Tuesday started with more talks on Biogeochemistry, and the afternoon session was on Evolution, Genomics and Genome Biology. All the talks were highly interesting, and I took many notes on methods and aspects of research that I want to read on further about, for instance on other factors that can contribute to phenotypic diversity like non-coding transcripts or epigenetic modifications.

My own talk was in this session, and I was both very excited and nervous when walking up to the front. With the help and results from Reuben Gilbertson, who's project is overlapping with mine, I had prepared my talk on 'the role of mitotic recombination in the evolution of diatoms'. It was a great experience to be able to present whilst still being in the first year of my PhD and not having many results yet from my own work.

Later that day, the topic was Molecular Ecophysiology, and the second poster session was held. In the evening, I went out for dinner in La Jolla with others from the conference and even though everyone was very tired, had a few more discussions with other PhD students and Postdocs who also presented that day.

The next morning started with very well-presented research on Biotechnology, Technical Development and Tools, for instance by Maria Feofilova who brought a knitted frustule to illustrate the arrangement of the pores. After that, Thomas Mock led a special session on the 100 Diatom Genomes Project. Afterwards, genetic tools that support diatom research were discussed and it was helpful to get a comprehensive overview on the available online tools in diatom research, which I will use in the future.

I used the free afternoon that day to have lunch and go swimming in the nearby ocean with other conference members. On Wednesday evening, the conference banquet was held at the Harbour of San Diego on the Steam Ferry 'Berkeley'. We got to see a great sunset and enjoy a local jazz band playing whilst eating and networking.

The conference ended on Thursday with talks on Molecular Ecophysiology and the Poster Award lightning talks. The day after the conference, I met with others I met at the conference and tried my luck at surfing!

Attending MLD7 was the first opportunity for me to discuss diatom research with others from outside my own lab and get new perspectives on the methods that I use. To hear what others in the community work on inspired me and I arrived back home with many new ideas for my own project. I would like to thank the BPS again for the support with the travel grant and the BBSRC who support me with a research training support grant.

From Genes to Glaciers: Exploring Marine Microbiology in the Swiss Alps

Submitted by: Eleanor (Ellie) Murphy
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Email: ellmur@mba.ac.uk | Twitter: @ellieamurphy
BPS Award Number: 2024_BPS_012

The Gordon Research Conference (GRC) 'Marine Microbes' was held in June 2024 at the Eurotel Victoria in Les Diablerets, Switzerland. I was very lucky to receive a travel bursary from the British Phycological Society to support my attendance at this conference. Several of my colleagues from the Marine Biological Association and I travelled by train to the conference to join almost 200 delegates from around the world. The journey from Plymouth to Les Diablerets totalled over 12 hours on the train, which we really enjoyed.

The theme of the conference was 'Linking Genes, Rates, and Biogeochemistry in Marine Microbiology'. There were numerous interesting talks from a range of invited speakers, and a poster session every afternoon. There were several sessions that I particularly enjoyed, one of which was 'Microscale Interactions and Global Consequences'. This session highlighted the incredible impacts that single-celled organisms can have on the marine environment. Additionally, whilst being outside of my field of study, 'Marine Animal Microbiomes' was a very interesting session. The invited speakers provided some refreshing and exciting insights into the complexity of this field and emphasised that the molecular and phylogenetic techniques that we are using on marine microbes can be applied in many different contexts. As a result of the ta-

lks, I had new and exciting ideas about not only the implications of my current research but also what kinds of research I might pursue following completion of my PhD.

At this GRC conference, only invited speakers were able to give oral presentations, but the poster sessions provided a great opportunity for early career researchers to present their research. I presented a poster titled 'Unravelling the mystery of density-dependent calcium signalling in the diatom *Phaeodactylum tricornutum*', as well as giving an oral flash presentation to briefly introduce and encourage people to visit my poster. In this chapter of my thesis, I am exploring the idea that diatoms are able to sense the surrounding culture density and adjust their responses to certain stressors dependent on cell density. I had some really positive and interesting conversations with many of the scientists who visited my poster. I gained insight into how best to present this chapter, and what experiments I might carry out to make my arguments even stronger. Poster sessions are always my favourite part of a conference, and I was able to explore the diverse range of topics within marine microbiology through the posters of other researchers.

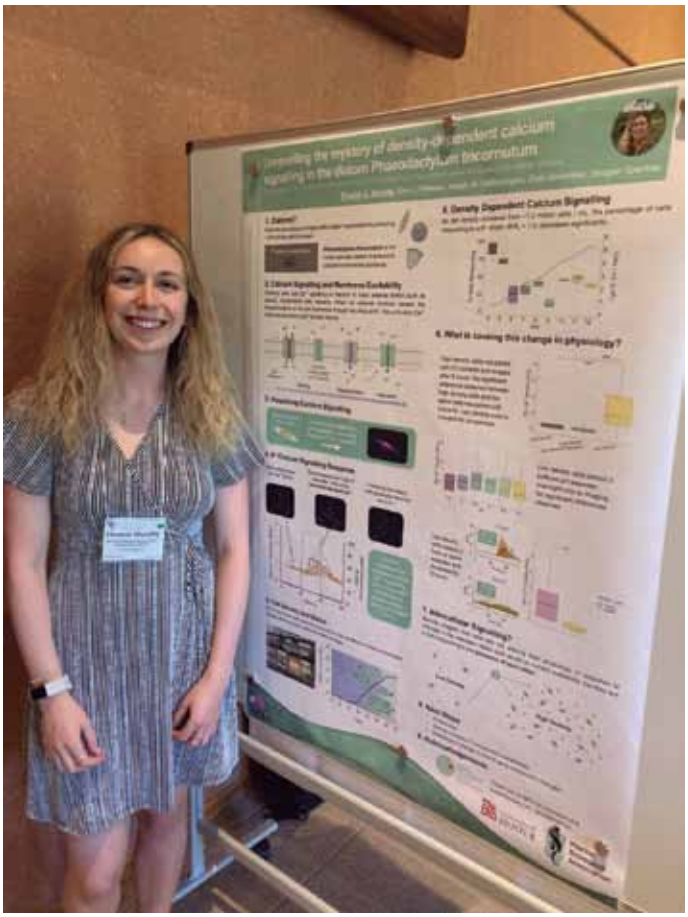

Photo by Courtney Swink (Marine Biological Association)

I was able to spend time expanding my professional network and reconnecting with researchers that I have met at previous conferences. We were also given a period of free time each afternoon to explore the area and enjoy time with colleagues. I had never been to Switzerland before, and it was a beautiful country to visit. The Alps provided the opportunity for hiking, lake swimming and even to visit a glacier. On the clearest day, large group of researchers went up to a glacier at 3000m, where we had incredible views of the snowy mountains and even managed to do some sledging! It was great to be able to spend time outdoors adventuring with many of the researchers that I had met during the conference.

Thank you to GRC for organising such an exciting conference with a really welcoming atmosphere. I would also like to thank BPS again for this travel bursary. This conference has been such a valuable experience, especially so close to the end of my PhD studies.

The Federation of European Phycological Societies

Submitted by: Jason M Hall-Spencer
Professor of Marine Biology, Universities of Plymouth (UK) and Tsukuba (Japan

At the excellent British Phycological Society Annual meeting, held at the University of Reading in January 2024, I was invited to write this article about the Federation of European Phycological Societies as I have taken on the role of the British Phycological Society's FEPS representative from Professor Geoffrey Codd.

I thank Geoff on behalf of all the BPS membership for helping to develop FEPS, then serving as the first FEPS President (2007-2010) and continuing to represent the BPS as the Society's representative on the FEPS Council from 2010 to 2022, with the annual approval of the BPS Council. He formally proposed the Founding of FEPS at the conference dinner of the 4th European Phycological Congress (EPC4) in Oviedo, Spain in 2007. One of the first actions of the newly formed FEPS was to assume responsibility for the organisation for EPCs to provide continuity and to fill in needs/gaps/opportunities between these conferences. FEPS was initially based in London because the first Treasurer of FEPS, Prof. Elliott Shubert, lived and worked in London (at the Natural History Museum). In 2023 Yvonne Němcová set up FEPS as a registered charity in Prague/ Czech Republic. A new FEPS constitution had been adopted, but as it was originally written and approved in Czech it will need to be translated to English and then published on the new FEPS website https://www.feps-algae.org/.

The Federation of European Phycological Societies aims to:

- To provide a forum for all European phycological societies and individuals with an interest in phycology
- To enable, promote and enhance algal (including cyanobacterial) research, education and other activities,
- To increase public awareness of the importance of algae and cyanobacteria, and
- To contribute to public debate and policy issues involving these organisms throughout Europe.

I was nominated as the BPS Council Representative to FEPS in 2023 and noted the following points from the August 2023 Council meeting held in Brest, France at EPC8 that might be of interest. All FEPS Council Members were in attendance: Peter Kroth (President); Yvonne Němcová (Treasurer); Dagmar Stengel (Secretary); Line Le Gall; Elżbieta Wilk-Woźniak; Lucas Perez; Annick Wilmotte; Sotiris Orfanidis (online); Cecilia Totti (online); Zrinka Ljubesic (online); Svetislav Krstic (online).

FEPS sponsored three student cash prizes (total €1520) at EPC8. The main organisers were Drs Solene Connan and Philippe Potin and the programme chairs were Drs Inka Bartsch and Wiebe Kooistra. Krakau in Poland is expected to be the venue for EPC 9 in 2027.

FEPS is phasing out individual membership and will be limiting membership to those that are members of another European Phycological Society. Phycologists will therefore be encouraged to join national societies so that they may become integrated into the phycological community more effectively. If you are a member of one of the following societies, you are automatically a member of FEPS and €1 per year of your membership fee goes to them:

- British Phycological Society represented by Jason Hall-Spencer on FEPS Council
- Czech Phycological Society Yvonne Němcová FEPS Council rep.
- French Phycological Society Line Le Gall FEPS Council rep.
- German Phycological Section Peter Kroth FEPS Council rep.
- Hellenic Phycological Society Sotiris Orfanidis FEPS Council rep.
- Phycological Section of the Croatian Botanical Society Zrinka Ljubesic FEPS rep.
- Phycology section, Belgian Botanical Society Annick Wilmotte FEPS Council rep.
- Phycological Group of the Italian Botanical Society Cecilia Totti FEPS Council rep.
- Polish Phycological Society Elżbieta Wilk-Woźniak FEPS Council rep.
- Spanish Phycological Society Lucas Perez FEPS Council rep.
- The Macedonian Diatom Society Svetislav Krstic FEPS Council rep.

I hope this was a useful update and look forwards to representing BPS as your FEPS Council Representative.

FEPS Council members at the 8th European Phycological Congress, Brest, France.

Great Seaweed Diversity at St Andrews: The BPS Seaweed Field Meeting August 2023

Submitted by: Martin Wilkinson[1] & Clare Scanlon[2]
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The BPS held seaweed field meetings annually from its foundation in 1951 until 1980 to record species, particularly on rich shores. Results contributed to the Atlas of Seaweeds of Britain and continue to contribute to biodiversity and Red Data List assessments. A Checklist and Atlas of the Seaweeds of Britain and Ireland was published in 2003 and in revised edition in 2006 (Hardy & Guiry, 2003, 2006). After a long hiatus, when this particular style of field meeting was not held, they were resurrected in 2013. The St. Andrews meeting was held in 2023 after being deferred for two years due to Covid. For those not staying at home or with friends or family, university halls of residence provided very convenient and comfortable accommodation.

A group of 14 was hosted by Prof. David Paterson and Dr. Emma Defew at the new Scottish Oceans Institute in St.Andrews from the 2nd to the 6th August. The meeting was run under the auspices of both the BPS and MASTS (the Marine Alliance for Science & Technology Scotland), and participants came from as far afield as Plymouth and Orkney. Dr.Helen Blackler, one of the founders of the BPS, had researched seaweeds at the then Gatty Marine Lab in St.Andrews for many years from 1947 until her death in 1981. She collated her own records for the St.Andrews area with those of other workers from the 19th and 20th centuries in Laverack & Blackler (1974). From the sites in Laverack & Blackler, three were chosen that could be studied within walking distance of the Oceans lab. These are shown in Fig.1, and the participants in Figs.2 and 3. We had selected a week of very good low tides (Figs.4 and 5), and enjoyed fine weather.

Species were recorded as listed in the last published checklist (Brodie et al, 2015). Some names have since been updated, e.g. on Algaebase, but we elected, for the most part, to use that most recent formal checklist.

Results

The species totals for the three sites are shown in Table 1, alongside the totals extracted from Laverack & Blackler for the same sites. They show comparable species numbers, and that St.Andrews has very rich shores. For comparison, Table 2 shows the totals of seaweeds found at various shores on previous BPS field meetings in Scotland. Again, St. Andrews comes out as having very rich shores. Only one shore over all those field meetings has a species total greater than one of the St. Andrews sites. That shore was at Dunbar in the Eastern Border Counties in 1972. Interestingly Dunbar is directly opposite St Andrews across the mouth of the Firth of Forth suggesting that this is generally a seaweed-rich area. Results from the BPS trip to Shetland in 1962 are not included in this comparison, as it was clear that the intent was to travel to the largest number of shores rather than produce full species lists. The full list of species found at St Andrews in August 2023 is given in Table 3.

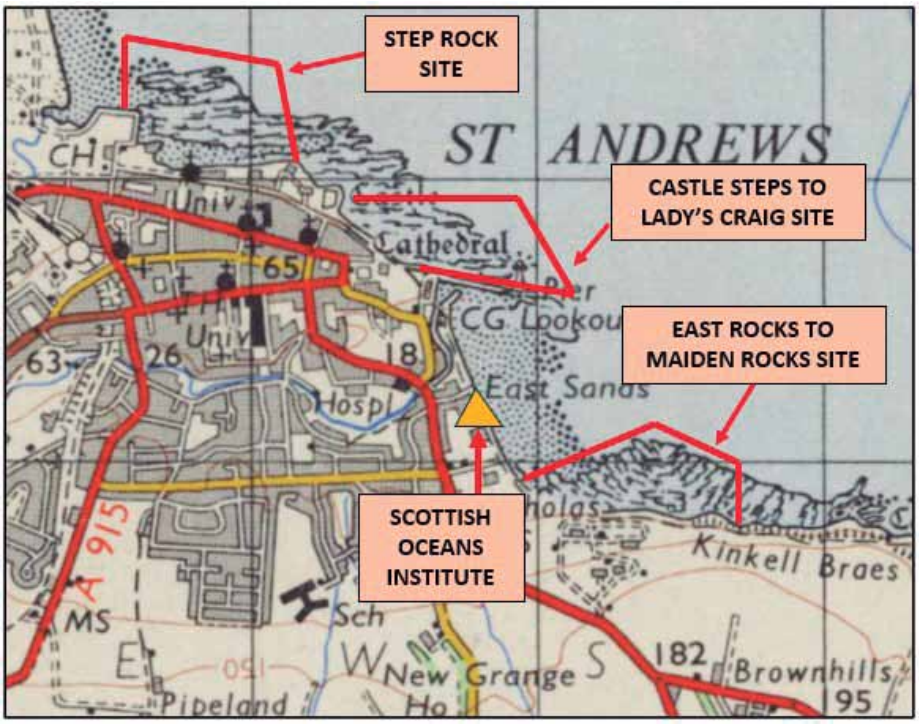

Figure 1. The three sites sampled on the shore at St. Andrews in relation to the laboratory. Based on Ordnance Survey map (7th series 1969).

Figure 2. Participants at the Step Rocks site (photo courtesy of Dave Paterson)

Figure 3. Participants in the laboratory at the Scottish Oceans Institute (photo Dave Paterson).

Figure 4. Low tide exposes much shore seen here with the historic cathedral ruins in the background (photo Dave Paterson)

Figure 5. The large extent of shore between the pier and the historic castle ruins on a good low tide (photo Dave Paterson)

Discussion

So, has St. Andrews changed over time? Blackler listed a combined total of 176 species (updated to presently accepted taxonomic nomenclature), very similar to our total of 171. Totals for each of the 3 sites were broadly similar. However, they were not all the same species: 47 of ours were not listed by Blackler and 54 of hers were not recorded by us. This is not considered to be significant. A similar pattern of occurrence was found by Wilkinson and Tittley (1979) at the nearby shores at Elie when comparing their records with those of Traill from 1889. They suggested that in the absence of major environmental change species richness is broadly constant, but species composition varies as ephemeral species come and go from year to year. The major zone-forming species were all present, as in Blackler's lists, and we saw no loss of major zone-formers as has happened elsewhere in Europe (Yesson et al. 2015)

Three of our participants were collecting specimens for molecular verification for the Darwin Tree of Life project at Plymouth Marine Lab. As well as 25 seaweed species they added 8 invertebrates to their collection. Frustratingly, one sought-for invertebrate escaped and could not be found again.

New records

Both *Fucus spiralis* and *Fucus guiryi* were found. The latter had not been previously listed there but was likely there previously, but not then recognised as a separate taxon from *F. spiralis*. New species for the area were *Caulacanthus okamurae*, *Neosiphonia* (*Melanothamnus*) *harveyi*, *Dasysiphonia* (*Melanothamnus*) *japonica* and *Osmundea oederi*.

Table 1. Totals of seaweed species found by us compared with Blackler's data										
Seaweed Species totals*	Species totals for the 3 shores from field meeting and Blackler						Combined totals for the three shores			
	Step Rock		Castle Steps to Lady's Craig		East Rocks to Maiden Rock		Total found in present survey	Total species in Blackler's list	Species found only by us	Species only in Blackler's list
	BPS 2023	*Blackler*	BPS 2023	*Blackler*	BPS 2023	*Blackler*				
Green	**37**	*24*	**35**	*36*	**30**	*29*	**52**	42	17	8
Brown	**34**	*36*	**31**	*33*	**37**	*42*	**46**	60	9	23
Red	**45**	*43*	**55**	*59*	**56**	*50*	**73**	74	21	23
Total	**116**	*103*	**121**	*128*	**123**	*121*	**171**	176	47	54

* Nomenclature based on Brodie *et al* 2015

Table 2. Totals of seaweed species found on shores at BPS field meetings in Scotland								
Year	**1971**	**1972**	**1973**	**1975**	**1976**	**2015**	**2017**	**2023**
Area	**Lewis & Harris**	**Eastern Border Counties**	**Orkney**	**Grampian**	**Galloway**	**Cumbrae**	**Orkney**	**St.Andrews**
Mean	90.8	106.2	84.6	81.4	78.4	100.0	93.7	120.0
Max	106	115	99	105	94	107	101	123
Min	50	97	46	55	60	90	86	116
No. of shores	6	6	5	8	7	3	3	3

Conclusions

St.Andrews has very rich shores when compared with other sites in Scotland and indeed most shores in the rest of the U.K.. Species richness does not appear to have changed significantly over time.

We would like to continue to organise such field meetings, and would ask BPS members to suggest good areas. Sites need to be reasonably close to a laboratory where samples can be worked up with access to compound and stereo microscopes. It would also be helpful if any previous records exist for the area.

Acknowledgements

We are grateful to Prof. David Paterson and Dr. Emma Defew of St.Andrews University and MASTS for excellent lab facilities at the Scottish Oceans Institute as well as the local knowledge of their staff, not to mention the fudge doughnuts. Participants who all contributed well to the species collection were Martin Wilkinson, Juliet Brodie, Clare Scanlan, Laura Bush, Rosie Foster, Katie Beaton, Jane Pottas, Andrew Want, Fiona Ware, Patrick Adkins, Freja Azzopardi, Rebekka Uhl, Marianne Wamser, Mafalda Isidro, Andrew Blight, Emma Defew and David Paterson.

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Table 3. The seaweed species recorded at St. Andrews in 2023 in comparison with previous records listed by Helen Blackler.

Names entered in green are taxa found by us in the present survey but not listed as previously present by Blackler. Names entered in red are taxa recorded by Blackler but not found in the present survey. Names entered in black were found both in our present survey and in Blackler's previous records.		Step Rock		Castle Steps to Lady's Craig		East Rocks to Maiden Rock	
Currently accepted name	Name used by Blackler	**2023**	*Blackler*	**2023**	*Blackler*	**2023**	*Blackler*
GREEN SEAWEEDS							
Acrosiphonia arcta	*Acrosiphonia arcta*	**1**	*1*	**1**	*1*		*1*
Blidingia marginata		**1**		**1**		**1**	
Blidingia minima	*Blidingia minima*	**1**	*1*	**1**	*1*	**1**	
Bolbocoleon piliferum	*Bolbocoleon piliferum*	**1**					*1*
Bryopsis plumosa	*Bryopsis plumosa*	**1**	*1*		*1*	**1**	*1*
Chaetomorpha ligustica	*Chaetomorpha capillaris*	**1**		**1**	*1*	**1**	
Chaetomorpha linum	*Chaetomorpha linum*	**1**	*1*				*1*
Chaetomorpha melagonium	*Chaetomorpha melagonium*	**1**		**1**	*1*	**1**	*1*
Chlorochytrium cohnii	*Chlorochytrium cohnii*			**1**	*1*	**1**	*1*
Cladophora albida	*Cladophora albida*		*1*	**1**	*1*	**1**	*1*
Cladophora hutchinsiae				**1**			
Cladophora laetevirens	*Cladophora laetevirens*				*1*		*1*
Cladophora rupestris	*Cladophora rupestris*	**1**	*1*	**1**	*1*	**1**	*1*
Cladophora sericea	*Cladophora sericea*	**1**		**1**	*1*	**1**	*1*
Codium fragile ssp. *Atlanticum*	*Codium fragile* ssp. *atlanticum*	**1**		**1**	*1*		
Codium fragile ssp. *Fragile*		**1**					
Derbesia tenuissima		**1**					
Epicladia flustrae	*Epicladia flustrae* var. *flustrae*			**1**		**1**	
Epicladia perforans	*Entocladia perforans*				*1*		*1*
Epicladia philipsii		**1**					
Eugomontia sacculate		**1**		**1**		**1**	
Gayralia oxysperma	*Monostroma oxyspermum*		*1*				
Gomontia polyrhiza	*Gomontia polyrhiza*	**1**		**1**	*1*	**1**	*1*
Halochlorococcum moorei		**1**				**1**	
Monostroma grevillea	*Monostroma grevillei*		*1*		*1*		*1*
Ostreobium quekettii	*Ostreobium quekettii*				*1*		
Percursaria percursa	*Percursaria percursa*	**1**	*1*	**1**	*1*		
Phaeophila dendroides	*Phaeophila dendroides*		*1*		*1*		*1*
Prasiola calophylla		**1**		**1**			
Prasiola crispa	*Prasiola crispa*				*1*		
Prasiola stipitate	*Prasiola stipitata*	**1**	*1*	**1**	*1*	**1**	*1*
Pseudendoclonium dynamenae		**1**		**1**		**1**	
Rhizoclonium riparium	*Rhizoclonium riparium*	**1**	*1*	**1**		**1**	
Rosenvingiella polyrhiza	*Rosenvingiella polyrhiza*	**1**			*1*		*1*
Rosenvingiella radicans		**1**					
Ruthnielsenia tenuis				**1**		**1**	
Spongomorpha aeruginosa	*Chlorochytrium inclusum*			**1**			
	Spongomorpha aeruginosa	**1**	*1*		*1*		
Syncoryne reinkii		**1**		**1**		**1**	
Tellamia contorta	*Tellamia contorta*	**1**		**1**	*1*	**1**	*1*
	Tellamia intricata				*1*		*1*

Table 3. (continued). The seaweed species recorded at St. Andrews in 2023 in comparison with previous records listed by Helen Blackler.

Ulothrix flacca	*Ulothrix consociata*		*1*				*1*
	Ulothrix flacca	**1**	*1*	**1**	*1*		*1*
	Ulothrix pseudoflacca		*1*		*1*		*1*
Ulothrix implexa						**1**	
Ulothrix speciosa	*Urospora speciosa*		*1*			**1**	*1*
Ulothrix subflaccida				**1**			
Ulva clathrate	*Enteromorpha clathrata*		*1*	**1**			
	Enteromorpha ramulosa		*1*		*1*		*1*
Ulva compressa	*Enteromorpha compressa*		*1*	**1**	*1*	**1**	*1*
Ulva flexuosa		**1**		**1**		**1**	
Ulva intestinalis	*Enteromorpha intestinalis*	**1**	*1*	**1**	*1*	**1**	*1*
Ulva lactuca (U. fenestrata)	*Ulva lactuca*	**1**	*1*	**1**	*1*	**1**	*1*
Ulva linza	*Enteromorpha linza*	**1**	*1*	**1**	*1*		*1*
Ulva prolifera	*Enteromorpha prolifera*	**1**	*1*	**1**	*1*	**1**	*1*
Ulva torta	*Enteromorpha torta*	**1**					
Ulvaria splendens	*Monostroma fuscum*		*1*	**1**	*1*	**1**	*1*
Ulvella lens	*Ulvella lens*				*1*		*1*
Ulvella leptochaete	*Ectochaete leptochaete*			**1**	*1*	**1**	
Ulvella scutate	*Pringsheimiella scutata*				*1*	**1**	*1*
Ulvella viridis	*Entocladia viridis*		*1*		*1*	**1**	
Ulvella wittrockii	*Ectochaete wittrockii*	**1**			*1*		
Umbraulva dangeardii		**1**		**1**			
Urospora penicillormis (U. bangioi-des)	*Codiolum gregarium*		*1*		*1*		
	Urospora penicillormis	**1**	*1*		*1*		*1*
Total green species using Blackler's taxon names			*28*		*39*		*32*
Total green species using check-list (2015) names **37**		*24*	**35**	*36*	**30**	*29*	
BROWN SEAWEEDS							
Acinetospora crinite		**1**		**1**			
Alaria esculenta	*Alaria esculenta*					**1**	
Ascophyllum nodosum	*Ascophyllum nodosum*	**1**	*1*	**1**	*1*	**1**	*1*
Asperococcus bullosus	*Asperococcus turneri*					**1**	*1*
Asperococcus ensiformis		**1**				**1**	
Asperococcus fistulosus	*Asperococcus fistulosus*	**1**	*1*	**1**	*1*	**1**	*1*
Battersia racemose	*Sphacelaria racemosa*		*1*				
Chilionema ocellatum	*Chilionema oceolatum*						*1*
Chorda filum	*Chorda filum*	**1**		**1**		**1**	*1*
Chordaria flagelliformis	*Chordaria flagelliformis*	**1**	*1*	**1**	*1*	**1**	*1*
Cladostephus hirsutus		**1**		**1**		**1**	
Cladostephus spongiosum	*Cladostephus spongiosus*	**1**	*1*	**1**	*1*	**1**	*1*
Colpomenia peregrina	*Colpomenia peregrina*					**1**	
Desmarestia aculeata	*Desmarestia aculeata*					**1**	
Desmarestia ligulate				**1**		**1**	
Desmarestia viridis	*Desmarestia viridis*			**1**		**1**	
Dictyosiphon foeniculaceus	*Dictyosiphon foeniculaceus*		*1*		*1*	**1**	*1*

Dictyota dichotoma	*Dictyota dichotoma*			**1**		**1**	
Ectocarpus fasciculatus	*Ectocarpus fasciculatus*	**1**			*1*	**1**	*1*
Ectocarpus siliculosus	*Ectocarpus siliculosus*	**1**	*1*	**1**	*1*		*1*
Elachista flaccida	*Elachista flaccida*		*1*				
Elachista fucicola	*Elachista fucicola*	**1**	*1*	**1**	*1*	**1**	*1*
Endodictyon infestans	*Endodictyon infestans*				*1*		
Eudesme virescens	*Eudesme virescens*	**1**	*1*	**1**		**1**	*1*
Fucus ceranoides	*Fucus ceranoides*			**1**			*1*
Fucus guiryii		**1**		**1**			
Fucus serratus	*Fucus serratus*	**1**	*1*	**1**	*1*	**1**	*1*
Fucus spiralis	*Fucus spiralis*	**1**	*1*	**1**	*1*	**1**	*1*
Fucus vesiculosus	*Fucus vesiculosus*	**1**	*1*	**1**	*1*	**1**	*1*
Fucus vesiculosus f. *linearis*	*Fucus vesiculosus* f. *linearis*	**1**				**1**	
Halidrys siliquosa	*Halidrys siliquosa*	**1**	*1*	**1**	*1*	**1**	*1*
Himanthalia elongate	*Himanthalia elongata*	**1**				**1**	
Hincksia granulosa	*Giffordia granulosa*	**1**			*1*	**1**	*1*
Hincksia hincksiae	*Giffordia hincksiae*		*1*				
Hincksia sandriana	*Giffordia sandriana*		*1*				
Hincksia secunda	*Giffordia secunda*	**1**	*1*				
Isthmoploea sphaerophora	*Isthmoploea sphaerophora*		*1*		*1*		
Laminaria digitata	*Laminaria digitata*	**1**	*1*	**1**	*1*	**1**	*1*
Laminaria hyperborea	*Laminaria hyperborea*	**1**		**1**	*1*	**1**	*1*
Laminariocolax tomentosoides	*Laminariocolax tomentosoides*						*1*
Leptonematella fasciculata	*Leptonematella fasciculata*				*1*		
Leathesia marina	*Leathesia difformis*	**1**	*1*	**1**	*1*	**1**	*1*
Litosiphon laminariae	*Litosiphon pusillus*		*1*				*1*
Mikrosyphar porphyrae	*Mikrosyphar porphyrae*						*1*
Myrionema magnusii	*Myrionema magnusii*						*1*
Myrionema strangulans	*Myrionema strangulans*		*1*		*1*	**1**	*1*
Myriotrichia clavaeformis	*Myriotrichia filiformis*		*1*				*1*
Pelvetia canaliculate	*Pelvetia canaliculata*	**1**		**1**	*1*	**1**	*1*
Petalonia fascia	*Petalonia fascia*		*1*		*1*		*1*
Petalonia filiformis	*Petalonia filiformis*		*1*		*1*		*1*
Petroderma maculiforme	*Petroderma maculiforme*			**1**	*1*	**1**	
Phaeostroma pustulosum	*Phaeostroma pustulosum*						*1*
	Spongonema tomentosum	**1**					*1*
Pilinia rimosa	*Waerniella lucifuga*		*1*				
Protohalopteris radicans	*Sphacelaria radicans*				*1*		
Punctaria plantaginea	*Punctaria plantaginea*	**1**	*1*				*1*
Punctaria tenuissima	*Punctaria tenuissima*	**1**	*1*				*1*
Pyliaella littoralis	*Pilayella littoralis*	**1**	*1*	**1**	*1*	**1**	*1*
Ralfsia verrucosa	*Ralfsia verrucosa*	**1**	*1*	**1**	*1*		*1*
Saccharina latissimi	*Laminaria saccharina*	**1**		**1**		**1**	
Scytosiphon lomentaria	*Scytosiphon lomentaria*	**1**	*1*	**1**	*1*	**1**	*1*
Sphacelaria cirrose	*Sphacelaria bipinnata*		*1*				*1*
	Sphacelaria cirrosa	**1**	*1*	**1**	*1*	**1**	*1*
Sphacelaria fusca	*Sphacelaria fusca*		*1*	**1**	*1*	**1**	*1*

Table 3. (continued). The seaweed species recorded at St. Andrews in 2023 in comparison with previous records listed by Helen Blackler.

Sphaceloderma caespitulum	*Sphacelaria caespitula*						*1*
Sphacelorbus nanus	*Sphacelaria britannica*	**1**	*1*	**1**		**1**	*1*
Stictyosiphon tortilis	*Stictyosiphon tortilis*		*1*		*1*		
Streblonema parasiticum	*Streblonema parasiticum*				*1*		
Symphyrocarpus strangulans	*Symphyrocarpus strangulans*						*1*
Ulonema rhizophorum	*Ulonema rhizophorum*				*1*		*1*
Total brown species using Blackler's taxon names			*37*		*33*		*44*
Total brown species using check-list (2015) names **34**		*36*	**31**	*33*	**37**	*42*	
RED SEAWEEDS							
Acrochaetium endozicum	*Acrochaetium endozicum*						*1*
Acrochaetium secundatum	*Acrochaetium secundatum*	**1**	*1*		*1*		*1*
	Acrochaetium virgatulum				*1*		*1*
Acrochaetium sparsum	*Acrochaetium sparsum*	**1**		**1**			
Aglaothamnion hookeri	*Callithamnion brodiaei*		*1*		*1*		
	Callithamnion hookeri	**1**	*1*	**1**	*1*	**1**	*1*
	Callithamnion polyspermum				*1*		
Aglaothamnion sepositum	*Callithamnion arbuscula*			**1**	*1*		
Ahnfeltia plicata	*Ahnfeltia plicata*	**1**		**1**	*1*	**1**	
Bangia fuscopurpurea	*Bangia fuscopurpurea*	**1**	*1*	**1**	*1*		*1*
Bonnemaisonia asparagoides	*Bonnemaisonia asparagoides*		*1*		*1*		
Bonnemaisonia hamifera						**1**	
Callithamnion tetragonum	*Callithamnion tetragonum*				*1*		
Callophyllis laciniata	*Callophyllis laciniata*						*1*
Catanella caespitosa	*Catanella repens*	**1**	*1*	**1**	*1*	**1**	
Caulacanthus okamurae						**1**	
Ceramium botryocarpum		**1**		**1**		**1**	
Ceramium diaphanum	*Ceramium diaphanum*						*1*
	Ceramium strictum		*1*				*1*
Ceramium gaditanum	*Ceramium flabelligerum*		*1*	**1**	*1*		
Ceramium pallidum						**1**	
Ceramium secundatum				**1**			
Ceramium shuttleworthianum	*Ceramium shuttleworthianum*	**1**			*1*	**1**	*1*
Ceramium virgatum	*Ceramium pedicellatum*				*1*		
	Ceramium rubrum	**1**	*1*	**1**	*1*	**1**	*1*
Chondrus crispus	*Chondrus crispus*	**1**	*1*	**1**	*1*	**1**	*1*
Choreocolax polysiphoniae	*Choreocolax polysiphoniae*		*1*		*1*		
Coccotylus brodiaea	*Phyllophora brodiaei*				*1*		
Coccotylus truncates		**1**		**1**		**1**	
Colaconema daviesii	*Acrochaetium daviesii*	**1**		**1**		**1**	*1*
Colaconema infestans	*Acrochaetium infestans*			**1**		**1**	
Corallina officinalis	*Corallina officinalis*	**1**	*1*	**1**	*1*	**1**	*1*
Cordylecladia erecta				**1**			
Cryptopleura ramose	*Cryptopleura ramosa*			1			

Cystoclonium purpureum	*Cystoclonium purpureum*	1		1	1	1	1
Dasysiphonia japonica						1	
Delesseria sanguinea	*Delesseria sanguinea*	1		1	1	1	
Dilsea carnosa	*Dilsea carnosa*			1	1	1	
Dumontia contorta	*Dumontia incrassata*	1	1	1	1	1	1
Erythrodermis traillii	*Phyllophora traillii*	1	1	1			
Erythrotrichia carnea	*Erythrotrichia carnea*	1	1	1	1	1	1
Furcellaria lumbricalis	*Furcellaria fastigiata*				1		1
Gelidium crinale	*Gelidium crinale*						1
Gelidium pulchellum	*Gelidium pulchellum*			1	1	1	
Gelidium pusillum	*Gelidium pusillum*					1	1
Gloiosiphonia capillaris	*Gloiosiphonia capillaris*		1				
Halurus flosculosus	*Griffithsia flosculosa*	1	1	1	1	1	1
Harveyella mirabilis	*Harveyella mirabilis*		1		1		
Heterosiphonia plumosa	*Heterosiphonia plumosa*					1	
Hildenbrandia rubra	*Hildenbrandia prototypus*	1	1	1	1	1	1
Hypoglossum hypoglossoides	*Hypoglossum woodwardii*			1			
Laurencia obtuse	*Laurencia obtusa*				1		1
Lithothamnion glaciale	*Lithothamnion colliculosum*			1	1	1	1
Lomentaria articulata	*Lomentaria articulata*	1	1	1	1	1	1
Lomentaria clavellosa	*Lomentaria clavellosa*		1	1		1	1
Mastocarpus stellatus	*Petrocelis cruenta*					1	
	Gigartina stellata	1	1	1	1	1	1
Melobesia membranacea	*Epilithon membranaceum*				1		
Membranoptera alata	*Membranoptera alata*	1		1	1	1	
Neosiphonia harveyi						1	
Osmundea hybrida	*Laurencia hybrida*	1	1		1	1	1
Osmundea oederi						1	
Osmundea osmunda		1		1		1	
Osmundea pinnatifida	*Laurencia pinnatifida*	1	1	1	1	1	1
Palmaria palmata	*Rhodymenia palmata*	1		1	1	1	1
Peyssonelia rubra	*Peyssonelia rubra*		1				
Phycodrys rubens	*Phycodrys rubens*	1	1	1	1	1	1
Phyllophora crispa	*Phyllophora crispa*	1	1	1	1		1
Phyllophora pseudoceranoides	*Phyllophora membranifolia*	1		1	1		1
Phymatolithon calcareum	*Lithothamnion polymorphum*						1
Phymatolithon lenormandii	*Lithothamnion lenormandii*	1	1	1	1	1	1
Plocamium lynbyanum	*Plocamium cartilagineum*	1		1	1	1	1
Plocamium maggsiae		1		1		1	
Plumaria plumosa	*Plumaria elegans*	1	1	1	1	1	
Pneophyllum confervicola	*Melobesia minutula*				1		
Polyides rotunda	*Polyides rotundus*	1		1	1	1	
Polysiphonia brodei	*Polysiphonia brodiaei*		1		1		
Polysiphonia elongate	*Polysiphonia elongata*		1		1	1	1

Polysiphonia fibrate	*Polysiphonia fibrata*	**1**			*1*		*1*
Polysiphonia fibrillose	*Polysiphonia fibrillosa*				*1*		*1*
Polysiphonia fucoides	*Polysiphonia nigrescens*	**1**	*1*	**1**	*1*	**1**	*1*
Polysiphonia nigra	*Polysiphonia nigra*	**1**				**1**	
Polysiphonia stricta	*Polysiphonia urceolata*		*1*		*1*		*1*
Porphyra dioica		**1**				**1**	
Porphyra linearis	*Porphyra linearis*		*1*		*1*		*1*
Porphyra purpurea	*Porphyra purpurea*	**1**	*1*	**1**	*1*		*1*
Porphyra umbilicalis	*Porphyra umbilicalis*	**1**	*1*	**1**	*1*	**1**	*1*
Porphyrostromium ciliare	*Erythrotrichia ciliaris*		*1*				*1*
Ptilota gunneri	*Ptilota plumosa*			**1**	*1*		
(Neo)Pyropia leucosticte	*Porphyra leucosticta*	**1**	*1*	**1**	*1*	**1**	*1*
Rhodochorton purpureum	*Rhodochorton purpureum*		*1*	**1**	*1*	**1**	*1*
	Rhodochorton purpureum f. *globosa*		*1*		*1*		*1*
Rhodomela confervoides	*Rhodomela confervoides*	**1**	*1*	**1**	*1*	**1**	*1*
Rhodophysema elegans	*Rhodophysema elegans* var. *polys-tromaticum*						*1*
Rhodothamniella floridula	*Rhodochorton floridulum*	**1**	*1*	**1**	*1*	**1**	*1*
Rubrointrusa membranacea	*Audouinella membranacea*			**1**			
Spermothamnion repens	*Spermothamnion repens*		*1*			**1**	
Spermothamnion strictum	*Spermothamnion strictum*				*1*		
Stylonema alsidii	*Goniotrichum alsidii*		*1*	**1**			*1*
Titanoderma pustulata	*Lithophyllum pustulatum*				*1*	**1**	*1*
Vertebrata lanosa	*Polysiphonia lanosa*	**1**	*1*	**1**	*1*	**1**	*1*
Vertebrata thuyoides						**1**	
Total red species using Blackler's taxon names			*45*		*64*		*53*
Total red species using check-list (2015) names		*43*	**55**	*59*	**56**	*50*	
Total brown species using check-list (2015) names		*36*	**31**	*33*	**37**	*42*	
Total green species using check-list (2015) names							
45							
34							
37		*24*	**35**	*36*	**30**	*29*	
	overall total	**116**	*103*	**121**	*128*	**123**	*121*

Images of a selection of the newly recorded species from 2023 St. Andrews field course. From left to right, top: *Umbraulva dangeardii, Alaria esculenta, Osmudea osmunda,* bottom*: Cladophora hutchinsiae, Porphyra dioica.* Photo credit: M.D. Guiry; www.algaebase.org

Elizabeth Jane Dyke Poore (1818-1884)

Submitted by: David Charles Rayment.

In the ancient City of Rome and adjacent to the Pyramid of Gaius Cestius, there is a burial ground where the ashes of the poet Shelley are interred and where the body of the poet Keats now sleeps. Another burial which took place there, in August 1803, was for the lesser known Edward Poore of North Tidworth and Figheldean in Wiltshire, England. He was the maternal great uncle of Edward Dyke, the father of the phycologist Elizabeth Jane Dyke Poore, whose seaweed specimens are housed at the Cryptogamic Herbarium in the Botany Department of the Natural History Museum (BM), Kensington, and it is through this Edward Poore that Elizabeth gets her surname.

When Edward Poore died most of his estate was inherited by Edward Dyke, the son of William Dyke and his wife, Elizabeth. She was the daughter of George Webb Poore, the brother of the aforesaid Edward Poore. In December 1803 a Whitehall notice dated December 5 appeared in the London Gazette to say that the King has been pleased to grant Edward Dyke Esq "His Royal Licence and Authority that he may assume the Surname of Poore, and bear the Arms of Poore in Addition to those of Dyke, and that such Surname and Arms of Poore may be so taken and used by his Issue pursuant to an Injunction contained in the last Will and Testament of Edward Poore …..". Thus, in December 1803 Edward Dyke had changed his name to Edward Dyke Poore and Dyke Poore could be used by any future children he may have.

Nearly a decade later, the then Edward Dyke Poore married Maria Christiana Pakenham, a daughter of John Henry Pakenham by his first wife. They were married by license on 20 February 1812 at St Pancras in London. Maria's father was of Grafton Street, Fitzroy Square, and he was buried in the family vault at St Giles, Camberwell in 1826. Edward and Maria, however, had four children: Arabella Maria (1813-1879), Edward (1814-1874), William (1815-1861) and Elizabeth Jane (1818-1884). All the children were baptised in the parish church at North Tidworth, Wiltshire, on the eastern edge of Salisbury Plain, close to the border with Hampshire. Elizabeth's date of baptism was June 10, 1818. The family home was at Syrencot House in the parish of Figheldean, a short distance west of Tidworth.

Edward and his immediate family relocated to Bath, Somerset, before taking up residence at St Helier on the island of Jersey. On the night of the 1851 census Elizabeth, her sister Arabella, and their mother were at 1 Cleveland Place, Roseville Street. Maria was the Head of the household and her occupation was shown to be "Landed Proprietor". Edward, for whatever reason, appears on a list as being on the island at the Jail House and House of Correction. Edward, however, had qualified as a magistrate in 1820 and later became a Justice of the Peace for Wiltshire, so he may not have been an inmate!

At the time of the 1861 census Elizabeth and Arabella were at number 31 Roseville Street. Their occupation shows both were in receipt of annuities. Their mother had died on 17 March 1856. She was buried on the 26th of the same month and her age at death is given somewhat precisely as "74 six months and a half". Elizabeth's father died three years later, on 24 March 1859, at the age of 77. Edward was buried on March 30 at St Saviour, the same last resting place as Maria. It must have been a difficult few years for Elizabeth as her brother, The Right Honourable Archdeacon William Dyke Poore, died at Antigua soon after in 1861. He had arrived on the island from St Kitts at the end of January 1859, so his stay there was of short duration. Even so, flags on the island buildings and the ships in the harbour were at half-mast on the day of his funeral.

It would appear to be in the early 1860s, however, that Elizabeth began to flourish as a seaweed collector. The phycologist Isabella Gifford (1825-1891) writes in the Journal of Botany (1871): "In 1862 I received from Miss Dyke Poore S. griffithsiana, from Jersey, with what appeared to be tetrasporic fruit. I sent the plant to the late Professor Walker Arnott of Glasgow, who confirmed my opinion." Also, a contribution of "58 species of Algae from Jersey, collected by Miss Poore" was acknowledged in the 1863 Accounts of the British Museum.

Elizabeth also appears to have corresponded with the Guernsey born Mary Ann Mauger (Cowan) who assisted Samuel Octavia Gray with his British Sea-weeds: An Introduction to the study of the Marine Algae (1867). When referring to the provisionally named Dasya cattlowisae (Dasya cattlovisae), named after Mary Cattlow and found at St Aubin's Bay, Jersey in 1858, Gray writes: "I am indebted to Mrs William Mauger for the loan of two fine specimens, collected in Jersey by Miss Dyke-Poore…..". John Edward Gray FRS, on page 260 of The Annals and Magazine of Natural History (March 1862), when referring to Codium bursa writes: "Miss Dyke Poore has kindly sent me two specimens growing together at the base". Elizabeth is also mentioned by Charles James Blasius Williams (1805-1889) when addressing the British Association for the Advancement of Science at Belfast in 1874. He says she had "found as many as 230 species on the shores of Jersey". A report of the meeting was published in the Belfast News-Letter, but an error in the text prompted Williams to write to the editor of the newspaper on 26 August (published August 29): "Sir – In your report of

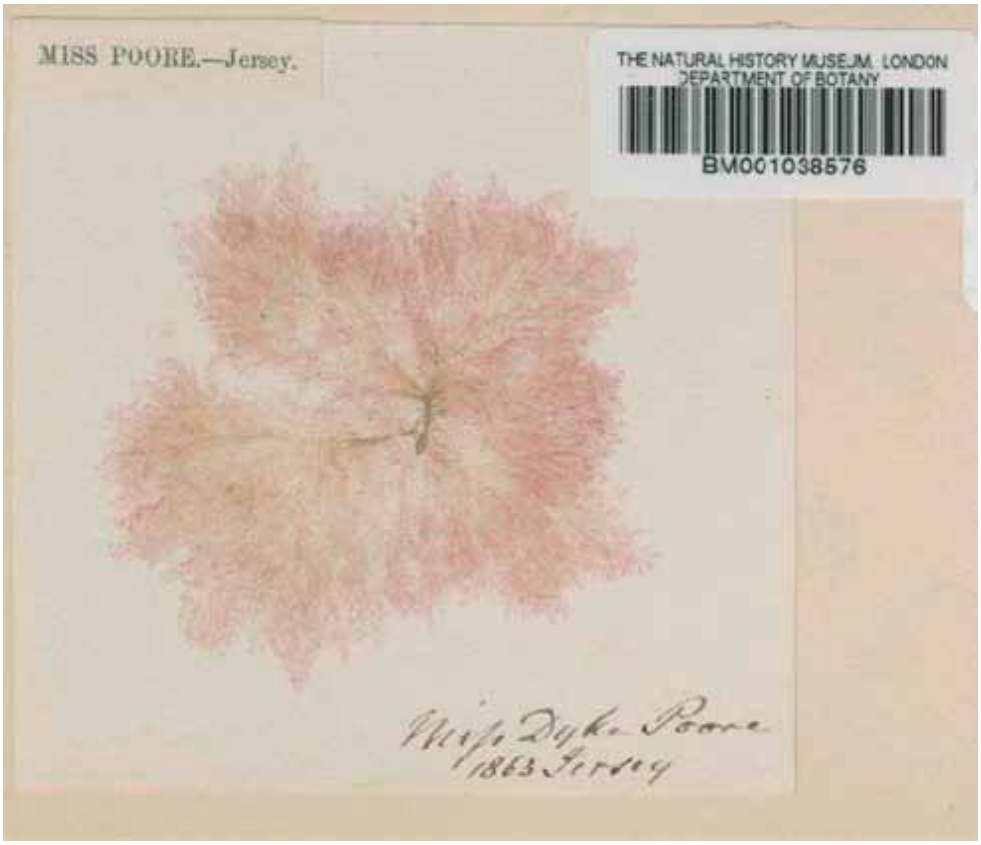

Image of *Callithamnion corymbosum* (Smith) specimen collected by Elizabeth Dyke Poore and held in The Natural History Museum collection.

the proceedings of the department of zoology and botany, on Tuesday, in relation to the algae of Jersey, it is stated that the beautiful specimens which I exhibited were prepared by a lady in Dublin. This is incorrect. They were preserved and arranged by Miss Dyke Poore, 31, Roseville Street, Jersey; and it is only just that she should have the credit of the success which she has attained in this delicate process, and which obtained the thanks of the section".

A few months earlier Elizabeth's only surviving brother died at his Syrencot House. Edward Dyke Poore junior died on 11 April 1874. On 2 April 1840 he had married his cousin Frances Maria Williams at Frenchay, near Bristol. She was the daughter of the Reverend James Williams of Matherne in Monmouthshire and Caroline, the daughter of William Dyke, thus Caroline was Edward senior's sister. Frances died on 16 April 1873 age 65. Edward became very despondent after her death and avoided everyone he could.

Just over five years after Edward's death it was more bad news for Elizabeth; she lost her sister with whom she had lived all her life. Arabella died on 27 May 1879 and, like her parents, was buried at St Saviour. With all her siblings now gone, Elizabeth appears on the 1881 census on her own, except for her housemaid who also appeared as a servant on the 1851 census. Lydonia Long, who was six years older than Elizabeth, must have served her well, having been first employed by Elizabeth's parents and then staying with the family after their death. She had been employed by the Dyke Poores for at least thirty years.

Elizabeth Jane Dyke Poore passed away on 21 July 1884 at the age of 66. In the year of her death Charles Williams published his Memoirs of Life and Work in which he recalls that 1874 Belfast meeting: "I was anxious to show in the natural history section a fine collection of seaweeds from Jersey, which had been beautifully preserved and displayed by an old patient and friend of mine; a lady confined to a couch by paralysis of her lower limbs, but who had acquired such skill and dexterity in the preparation and preservation of the marvellous colours and diversified structures of these algae as to command the admiration of all. The President of the association, Sir Joseph Hooker PRS, expressed the thanks of the section to Miss Poore for her successful work in this area of botany."

Elizabeth now sleeps on the island of Jersey with her parents and sister at St Saviour. She was buried on July 25. The dedication of this paraplegic lady to the world of seaweed collecting during the nineteenth century is truly admirable, especially considering her medical condition. Elizabeth's legacy lives on, nearly 140 years after her death; and today some of her collected specimens can still be found at the Natural History Museum (BM). No doubt they are looked after with the same love, care and attention, as did the lady who collected and prepared them all those years ago.

UPCOMING EVENTS

Fifth Asian Pacific Congress of Protistology (APCOP-V)
4-6th November 2024
University of Queensland, Brisbane

Asian Pacific Congress of Protistology (APCOP-V) is the new branding for the 5th edition of the Asian Congress of Protistology (ACOP), to be held for the first time in the Southern Hemisphere. This event is held every three years, championed by regional societies of Japan, South Korea, and China, which are affiliated with the International Society for Protistologists, the world's leading professional society in the discipline. Our society members based in the Asian Pacific region and beyond represent over 1,000 scientists who study the biodiverse protists across a myriad of disciplines. Unique in 2024, APCOP-V will be held jointly with the Annual Meeting of the Australasian Society of Phycology and Aquatic Botany (ASPAB), to stimulate engagements and expand our community to researchers of seaweeds and seagrasses.

APCOP-V will facilitate multidisciplinary crosstalks among participating international researchers, academics, and professionals from various career stages. This congress will broadly focus on multidisciplinary protist research thematic areas - omics and microbiome, symbiosis and halobiont, parasites and infection, model organisms, systematics, taxonomy and evolution, microscopy and cell biology, algal blooms, ecology and physiology. Contact conference@protist-au.org for more information.

UPCOMING EVENTS

13th International Phycological Congress
June 8 to 13, 2025
Panglao, Bohol, Philippines

The International Phycological Society (IPS), established in 1960, is committed to advancing the field of phycology by fostering the dissemination of phycological knowledge and promoting global collaboration among phycologists and related organizations. Incorporated as a non-profit public benefit corporation in the State of California, USA, the IPS serves as a vital platform for international cooperation in the study of algae. Every four years, the IPS convenes the esteemed International Phycological Congress, bringing together experts and enthusiasts worldwide to explore cutting-edge developments in algal research.

In celebration of this spirit of collaboration, the Philippines led by the Marine Science Institute of the University of the Philippines-Diliman is hosting the 13th International Phycological Congress from June 8 to 13, 2025, in the picturesque setting of Panglao, Bohol. Situated amidst the stunning landscape of Panglao Island, alongside its counterpart municipality Dauis, Panglao is renowned for its vibrant diving spots and luxurious tourist resorts. The name *Panglao*, thought to have originated from its former designation Panglawod, meaning "to the open sea", or perhaps derived from *panggaw*, a local term for a traditional fishing tool, encapsulates the island's rich maritime heritage and natural beauty.

Important Dates:

- August 1, 2024 – Call for abstracts open
- January 15, 2025 – Call for abstracts closes
- January 16, 2025 onwards – Notification of abstract acceptance
- January 16, 2025 – Early registration opens
- April 30, 2025 – Early registration closes
- May 1, 2025 – Regular rate registration starts until onsite

Registration and conference details:

https://ipc2025.science.upd.edu.ph/

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 absolutely 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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