

The Phycologist

The Newsletter of the British Phycological Society

Editor: Dr Amanda Burson

Homepage: <http://www.brphycsoc.org/>



University of Nottingham
UNIVERSITY OF NOTTINGHAM

The Hilda Canter-Lund Prize



Starlike propogules of an undescribed species of *Hydroneis*

John Hulsman 2020 - These are the propogules of the red algal genus *Hydroneis* which grow into new thalli when detached from the parent plant. This image was taken on a dissecting from the parent plant. This image was taken on a Nikon Eclipse 80i microscope with a Nikon DS-F3 camera. Nikon Eclipse 80i microscope with a Nikon DS-F3 camera. Several images were taken at using bright field illumination. Several images were taken at different focal planes and stacked in Adobe Photoshop 2020. The specimen was collected from Cape Peron in Western Australia and the image shows two propogules on a branch. The scale represents a tenth of a millimetre.



Cystocarp Central

Tiffany Stephens 2017 - The string of spheres along the secondary axis (or stem) in the photo are structures containing female reproductive cells of the red seaweed, *Bonnermannstonia densa*. It was collected whilst SCUBA diving around semi-exposed reefs between 5m and 10m in depth near Victoria, British Columbia, Canada, and photographed using a dissecting microscope, with an Olympus DP20 camera. For scale, the prominent branchlet in the center-right is 1.5 mm long.

69th
Annual General
Meeting

Manton Prize
Winners

Kathleen Mary Drew

Number 100- Spring 2021

The British Phycological Society is a registered Charity no. 246707 - *The Phycologist* is a registered publication - ISSN 0965-5301

2021

British Phycological Society

COUNCIL OFFICERS

PRESIDENT
PROFESSOR JASON HALL-SPENCER (2020-2022)

PRESIDENT ELECT
PROFESSOR JANE LEWIS (2020-2022)

IMMEDIATE PAST PRESIDENT
PROFESSOR GRAHAM UNDERWOOD (2020-2022)

VICE PRESIDENT OVERSEAS
PROFESSOR MARIANA CABRAL DE OLIVEIRA (2020-2022)

SECRETARY¹
FRANCIS BUNKER (2020-2023)

TREASURER²
DR NICKY SLEE (2021-2023)

MEMBERSHIP SECRETARY³
DR HILARY REDDEN (2016-2023)

JOINT EDITOR IN CHIEF OF THE EUROPEAN JOURNAL OF PHYCOLOGY
PROFESSOR JULIET BRODIE
PROFESSOR CHRISTINE MAGGS

EDITOR IN CHIEF OF APPLIED PHYCOLOGY
PROFESSOR JOHN BEARDALL

EDITOR OF THE PHYCOLOGIST⁴
DR AMANDA BURSON

ORDINARY MEMBERS OF COUNCIL
(3-YEAR TERM OF OFFICE)

DR MAHASWETA SAHA (2019-2022)
DR JEAN-LUC MOUGET (2018-2021)

DR JOE TAYLOR (2019-2022)
DR BRENDA PARKER (2018-2021)

CHRISTINE CAMPBELL (2018-2021)
DR DANIEL FRANKLIN (2020-2023)

WEBMASTER⁵
DR ANDREW DAVIES

STUDENT REPRESENTATIVE⁶
HANNAH KEMP AND ELEANOR WOOD

FEDERATION OF EUROPEAN MICROBIOLOGICAL SOCIETIES (FEMS) REPRESENTATIVE
DR ANNE JUNGBLUT

FEDERATION OF EUROPEAN PHYCOLOGICAL SOCIETIES (FEPS) REPRESENTATIVE
PROFESSOR GEOFFREY CODD

Secretary¹
Estuary Cottages,
Bentlass, Hundleton,
Pembroke,
Pembrokeshire
Wales SA71 5RN

secretary@brphycsoc.org

Treasurer²
Dr Nicky Slee
University of Essex
School of Life Sciences
Colchester Campus
Colchester, CO4 3SQ

treasurer@brphycsoc.org

Membership Secretary³
Dr Hilary Redden
The Fibre Lab
77 Davidson Drive
Aberdeen AB16 7QS

membership@brphycsoc.org

Editor of The Phycologist⁴
Dr Amanda Burson
University of Nottingham
School of Geography
Sir Clive Granger Bldg
Park Campus
Nottingham NG7 2RD

editor_phycologist@brphycsoc.org
Tel: +44 (0)1158466071

Webmaster⁵
Dr Andrew Davies
University of Rhode Island
Department of Biological Sciences
Woodward Hall
9 East Alumni Avenue
Kingston, RI 02881, USA

webmaster@brphycsoc.org

Student Representative⁶
Hannah Kemp
University of Nottingham
Hanna.Kemp@nottingham.ac.uk

Eleanor Wood
Scottish Association for Marine Science
Eleanor.Wood@sams.ac.uk

I'm happy to present the 100th issue of *The Phycologist*. We have a nice mix of all the things we come to expect to find in an issue. There is the important business of the annual general meeting minutes and council reports as well as some very nice student contributions from the Irene Manton prize winners. There are also contributions remembering phycology's past through a celebration of Kathleen Mary Drew and the obituary of Trevor Norton. This year marks an unusual one as the 69th annual meeting was held online. While this was new and presented some challenges, I think all involved agreed it was a success. Early career and student membership is up and our student representative council members are more enthusiastic than ever; all boding well for the next 100 issues of *The Phycologist* and the British Phycological Society. Please enjoy!

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

Editorial	3
69th Annual Meeting	4
AGM Minutes	6
Irene Manton Prizes	8
Culture Collection of Algae and Protozoa	13
The Hidden World of Algae	15
Adventure with a BPS Foldscope	17
A Phycological Excursion to the University of Malaya Botanic Garden	19
Student Bursary Report	21
Zygospore of <i>Cosmarium venustum</i> var. <i>hypohexagonum</i>	22
Kathleen Mary Drew	21
Trevor Norton - Obituary	26
Instructions for Contributors	28

69th Annual Meeting of the British Phycological Society with Protistology UK

4th - 8th January 2021

Submitted by: Eleanor Wood Eleanor.Wood@sams.ac.uk

I am a second year PhD student at SAMS in Oban working with Xanthella Ltd and funded by IBioC. I am also one of the BPS student representatives. There was a new take on the BPS conference this year, being online rather than an in-person event. Despite this, the team at Nottingham did a fantastic job and made the event really friendly and easily accessible. Consequently, there was the highest ever number of delegates registered, 259, 52% of which were students and early career researchers.

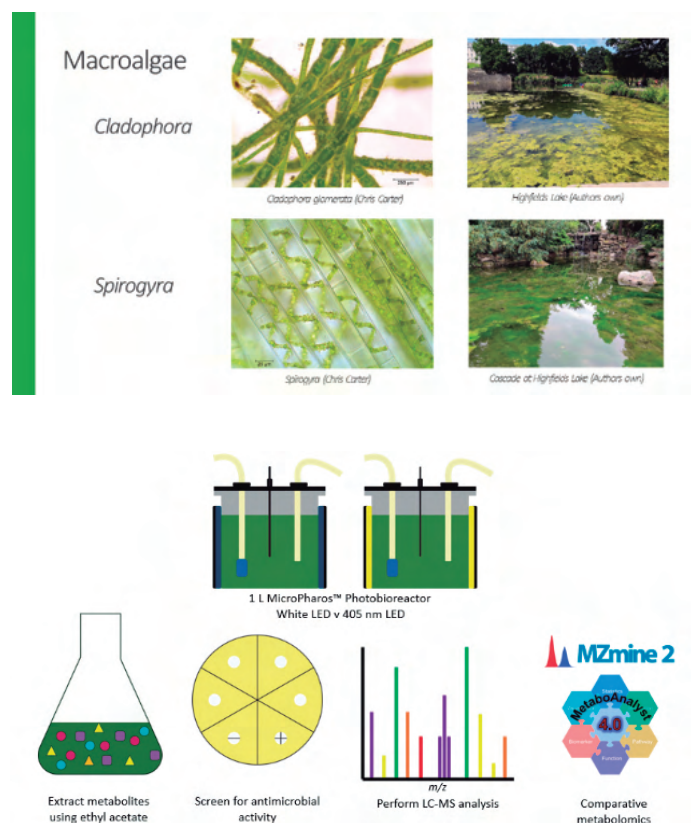
The conference began with a student showcase which consisted of eight different talks. A highlight, for me, was hearing Hannah Kemp discuss her PhD research about 'Bloomin' blanket weed' and the effects of nutrients on such blooms as well as the impacts on local industries. This session was followed by the student and early career researcher mixer session which went very smoothly. We began with some general questions using Mentimeter and then moved over to a platform called Gather Town. This was new to me and turned out to be an effective way of meeting people. You can move around the town and stop at certain stations e.g. 'Microalgae' or 'Freshwater'. If someone else is in the zone your webcam is activated so you can chat to other delegates. I spoke to many other students and it was really interesting to hear the variety of research that is taking place among the members in the society.

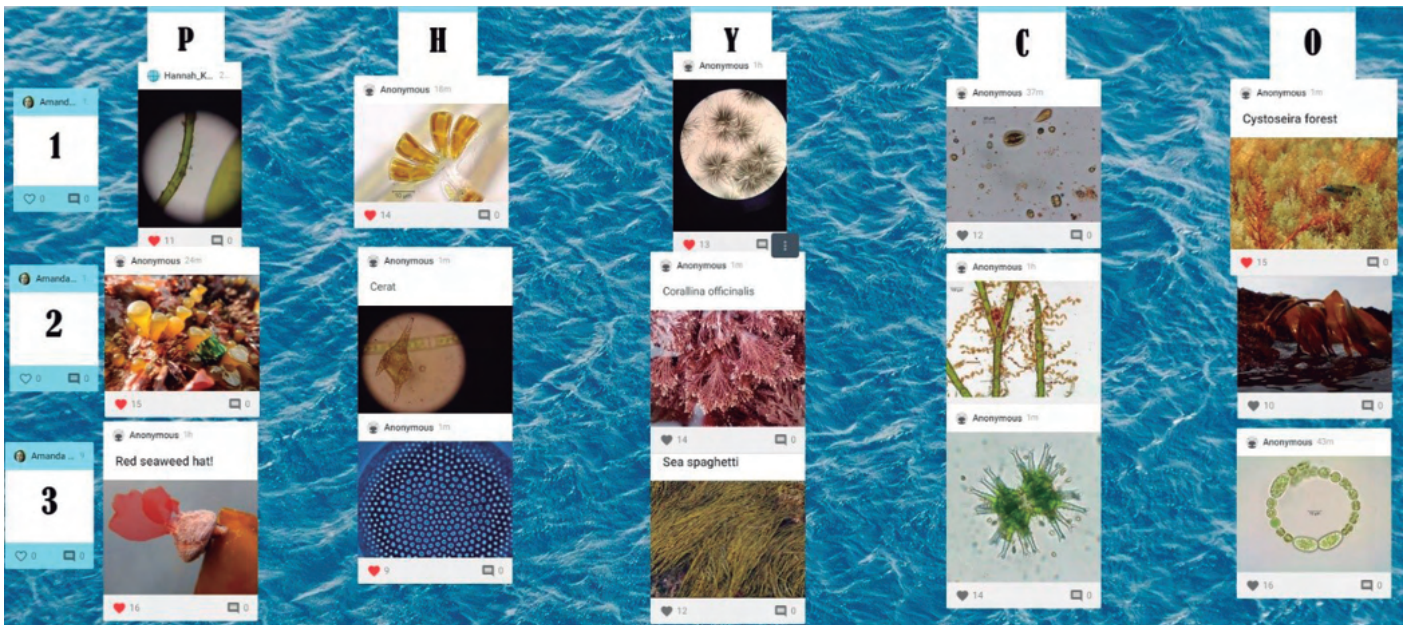
Day 2 began with a plenary lecture from Professor Lawrence Carvalho which was very engaging. He discussed monitoring of cyanobacteria in UK lakes. It was surprising to learn that there is no mandatory HAB monitoring except in ten official bathing sites, but even in those cyanobacteria levels are not measured. However, the app 'Bloomin' algae' offers a solution, allowing the general public to report blooms by submitting photos which scientists can then identify. He also discussed AquaWatch which uses satellite images to measure chlorophyll a, phycocyanin and scums to detect cyanobacterial blooms.

Next was the Applied Phycology session where two invited speakers Professor Rob Field and Professor Alison Smith presented their research. There were also five other speakers that provided really intriguing talks across a wide range of topics from electrochemical biosensors to population genomics. In the evening I presented my poster. The session worked brilliantly, with each presenter in their own Teams channel where others could drop in to ask questions. I had some great conversations with some enthusiastic phycologists during this session and it provided me with some additional ideas and inspiration for my research.

I really enjoyed Alison Hughes' talk on Day 3 that detailed the effect of 405nm blue light on the metabolism of *Nannochloropsis* by LC-MS analysis. The blue light did not have an effect on growth rate but did enhance lipid and carotenoid profiles in the algae and increased anti-microbial activity. This work demonstrates the potential for natural product development from microalgae.

On Day 4 there was a General Phycology session followed by Algae in the Cold. Juliet Brodie led the day with her talk on Charophytes. This was the second mention of iridescent bodies in macroalgae during the conference, a phenomenon which I had observed in the field before but not known what the cause was. Janina Brakel also gave an informative talk about genetic diversity and the Global Seaweed Star project. Later, Matt Davey informed us about green and red algal snow blooms in Antarctica. In the afternoon, the main social event took place – Phycobingo! This was very well planned by Amanda Burson and I had a great time being one of the bingo callers! It was organised through 'Padlet' and everyone had the opportunity to upload their own algal photographs which were then voted for by everyone that was playing. There were some incredible photos of seaweeds and microalgae from around the world. The photo below shows the winning photo of each square which was assigned an algal theme.





On the final day, there was another General Phycology session followed by the Protistology UK – BPS joint session. Chris Yesson gave an insightful talk about the loss of kelp along the West Sussex coastline. There is a by-law in progress to prevent trawling 4kms from these shores which will hopefully get approved this year and allow the re-generation of kelp in this area. I was also intrigued by Imogen Smith's talk about the variety of algal species that develop as biofilms on plastic. She used HPLC pigment analysis to identify different algal groups that established on different plastic materials that were placed in a lake over a six week period.

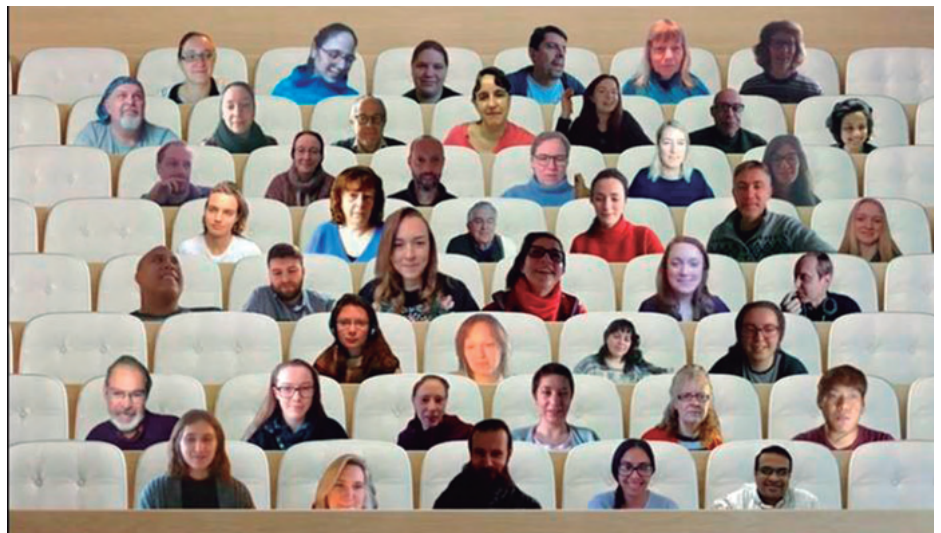
The conference was concluded with an outreach lecture from Dr. Anne Jungblut. Anne discussed her research on the microorganisms that exist in Antarctica. She showcased some amazing 'mini tropical forests' consisting of layers of different coloured algae depending on pigmentation. It was fascinating to see the abundance of life in barren looking landscapes. She also showed her comparative results on modern day vs 100 year old microbiome samples collected by Captain Scott during his Discovery expedition.

I would like to thank the BPS committee and the conference organisation team at Nottingham for a fantastic conference. I look forward to seeing you all next year!



What next?

- Byelaw approved in 2021?
- Continue surveys to monitor changes
- Aided restoration?



69th Annual General Meeting

Via Microsoft Teams, hosted by Nottingham University

15:30 to 17:30 Tuesday 5th January 2021

Meeting Agenda

1. Apologies for absence

Jean Luc-Mouget

John Beardall

2. Announcements

Christine Campbell from the Scottish Association for Marine Science based in Oban has been awarded an MBE (Member of the Most Excellent Order of the British Empire) for services to marine science. Her dedication has been central to the success of the National Culture Collection for Algae and Protozoa which underpins academic and industrial research into algae. Christine has also made a significant contribution to the British Phycological Society, including conference organization and serving as a member of the BPS Council.

Emeritus Professor Geoffrey Codd has been awarded an MBE for services to water quality. Long involved with the British Phycological Society in multiple roles over the last several decades including as President (2007-2009), Geoffrey's research has been instrumental in better understanding toxic cyanobacterial blooms, particularly their toxins (production, properties, health effects and control). His laboratory at Dundee University has undertaken cyanobacterial toxin analysis and toxicity assessment for several national water authorities, environmental and health agencies, for the risk management of water resources and associated activities. Geoffrey wishes to mention that the high level of expertise which led to the UK's position as a world centre in cyanotoxin research and risk management, centred at the University of Dundee, was developed with the essential contributions of his former postgraduate students, technicians and postdoctoral colleagues from throughout the UK and around the world, and that these continue.

3. Minutes of the 67th AGM, January 2019, SAMS, Oban

The minutes were approved by the AGM (proposed Amanda Burson, Seconded Hilary Redden).

4. Matters arising

There were no matters arising from the minutes that aren't going to be dealt with at this meeting.

5. Reports from Elected Officers

(Reports are available at <https://brphycsoc.org/annual-general-meeting/>)

a. Secretary (Francis Bunker)

The secretary's report was delivered.

b. Acting Treasurer – co-opted (Nicky Slee)

Nicky Slee lodged her report and also gave a PowerPoint presentation which provided a clear visual presentation of BPS finances to the membership. The year 2017 to 2018 accounts were presented to the AGM and approved by 49 votes. These accounts are to be submitted to the Charity Commission and will be visible on their web site. The 2019 accounts are currently in preparation. The AGM also approved the moving of accountants from FEB Chartered Accountants, Belfast to LM Griffiths in Haverfordwest by over 50 votes. The AGM approved a change of the accounting year end from the end of September to 5th April (in line with the tax year) by 58 votes.

c. Membership Secretary (Hilary Redden)

The membership secretary's report was delivered.

d. Student Representatives (Hannah Kemp and Eleanor Wood)

A very positive student representative report was delivered.

6. Reports from the Editors and Webmaster

(Reports are available at <https://brphycsoc.org/annual-general-meeting/>)

a. Joint Editors of the *European Journal of Phycology* (Chris Maggs and Juliet Brodie)

Chris Maggs presented the Joint Editor's report.

b. Editor in Chief of Applied Phycology (John Beardall)

Juliet Brodie presented the Chief Editor's report from John Beardall and announced plans for a special issue on sustainable development to co-incide with the UN SDG initiatives and Earth Day in 2022 (see item 10 later).

c. Editor of *The Phycologist* (Amanda Burson)

The editor's report was delivered to the membership together with an appeal for articles for the up and coming 100th issue. Articles should be delivered by March 1st 2021.

d. Webmaster (Andy Davies)

The webmaster's report was delivered. Andy Davies is going to work towards increasing the speed of the web site in the coming year.

7. Elections (Francis Bunker)

a. Election of Ordinary Member of Council 2021

Despite an advertisement going out to the membership in the autumn issue of the *Phycologist*, there were no applications to join council and because of this, no elections were held. Council will consider co-opting Ordinary members in line with the Constitution, clause 11. The following people have been co-opted to Council for the forthcoming year:

Jessica Adams (Aberystwyth University)
Pippa Moore (Newcastle University)
Esther Hughes (Marine Biological Association of the UK)

b. Election of Treasurer

Following the departure of Maeve Edwards as treasurer, Nicky Slee was co-opted by council in July 2020 to be acting treasurer until new elections could be arranged. An advertisement for the position of treasurer was published in the autumn issue of the *Phycologist*.

Nicky Slee was proposed by Jason Hall-Spencer and seconded by Jane Lewis and there were no other applications. Therefore, Nicky Slee is elected Treasurer of the Society for a 3-year term of office. The AGM gave a vote of thanks to Maeve Edwards for all the work she has done for the society

8. Change of independent examiner

Following challenges in working with the current BPS-approved accountants based in Belfast, Council want to move to a new accountancy firm. The AGM is asked to retrospectively appoint the new firm to prepare and be the independent examiner of the year end 2018-2019 accounts and appoint them as our independent examiners for the 2019-2020 accounts.

i. Vote to authorise move of accountants to LM Griffiths (in Pembrokeshire) for the year 2018-2019.

This was approved in 5 b above.

ii. Vote to authorise move of accountants to LM Griffiths (in Pembrokeshire) for the year 2019-2020 accounts.

The AGM approved this by 55 votes.

9. Election of an Honorary Member

Due to the sad passing away of Dr. Linda Irvine, there is a new vacancy for an Honorary Member. Council wish to

recommend Prof. Matt Dring as the new Honorary Member.

Vote on Honorary Member recommendation.

The election of Matt Dring as the new Honorary Member was approved by the AGM by over 50 votes. Following this announcement, Matt thanked the membership for this honour.

10. Taylor & Francis announcement of exciting new publication and Prize Draw

Taylor & Francis announced plans for the forthcoming special issue of *Applied Phycology* to coincide with the UN Sustainable Development Goals and Earth Day which is 22nd April 2022. See <https://sdg.iisd.org/events/international-mother-earth-day-2022/> for further information. Articles must be submitted by 13th June 2021. Taylor & Francis also announced that there would be 'some wavers on publishing charges'.

11. Hilda Canter-Lund Prize Draw

Suzanne McGowan undertook a 'live' prize draw for prizes donated to the conference:

Aisha O'Connor won a copy of the book *Field Guide to Sharks, Rays & Chimaeras of Europe and the Mediterranean* - donated by Wild Nature Press. Henrietta Thomson won a print of a diatom photograph taken by Martyn Kelly. D. J. Wistoni won a prize of a print donated by Dan Franklin.

12. Subcommittee reports

Reports from the sub-committee's listed below were presented to the AGM and can be seen on the BPS web site.

- Awards and Training Committee (Graham Underwood)
- Biodiversity and Conservation Committee (Martin Wilkinson)
- Algal Outreach Committee (Martyn Kelly)
- Algal Applications Committee (Gill Malin)
- Natural History Museum Representative (Juliet Brodie)

13. Federation Reports

The federation reports listed below were presented to the AGM and can be seen on the BPS web site.

- Federation of European Phycological Societies (FEPS) (Geoff Codd)
- Federation of European Microbiological Societies (FEMS) (Anne Jungblut)
- Royal Society of Biology (Graham Underwood)

14. Future Annual meetings

Dates for forthcoming winter meetings are as follows: Swansea University, January 2022. University of Newcastle-Upon-Tyne, January 2023

Irene Manton Prize Winners

Winning Presentation:

Developing photosynthetic biomineralized engineered

Submitted by: *Prantar Mahanta Tamuli* prantar.tamuli.19@ucl.ac.uk
Bio-Integrated Design, University College London

The path that has led me to conduct research in phy-cology is an unusual one and winning the prestigious Irene Manton prize has been one of the most pleasantly unexpected events in my life. Its significance begs me to contemplate on how this came to be, what it means personally and how I must direct my future steps. And I hope to express some of these personal thoughts in this small reflection.

I am an architect by training. But I had chosen to pursue architecture not so much because I am fascinated by buildings but because of the potential that good design presents to create powerful change in the world. I happen to have had the chance to come under the influence of a respected architect from the city during my high school years who showed us how scientific principles can be applied by design to create a sustainably built world and I was awestruck. For the first time I became aware of the environmental perils that our modern society creates and how design interventions can passively, but fundamentally, alter the impact human civilization has on the environment. It is with this strong belief in design (but perhaps a little naive at that time) that I decided to study architecture. But during my study years, and later in practice, I understood that because design is an applied field, it majorly relies on adopting scientific developments from other fields. It is then that I happen to come across the Bio-Integrated design master's program at UCL, an interdisciplinary course between the Dept. of Biochemical Engineering and the Bartlett School of Architecture and directed by the renowned professor Marcos Cruz and Dr. Brenda Parker. It is a one of a kind master's program focusing on active scientific research dealing with biotechnology, digital computation, and advanced fabrication specifically for architectural design. To push the idea of sustainability a step further, it proposes the revolutionary premise that nature and biology should not just be an inspiration, but they should become the means by which we design our world; and this became the philosophical foundation for my research with Cyanobacteria.



Figure 1. Growing and observing my cyanobacteria on the windowsill during lockdown.

living material with filamentous blue green algae

I was properly introduced to algae and cyanobacteria in the first term of my study (2019) by my mentor Dr. Brenda Parker, who is an ardent advocate of these incredible photosynthetic organisms (she is also the person who urged me to join the BPS way before I had even started my research). Being an animal and plant lover at heart, I was instantly fascinated by these microscopic life forms. My curiosities multiplied many folds when I understood that these are the representatives of the first ever primordial life forms to have ever come into existence into this world (and probably in the entire universe until discovered otherwise). And that they are responsible for the atmosphere which supports all other life forms today. All sorts of questions arose in my mind, scientific as well as philosophical. And when I stumbled upon the phenomenon of Stromatolites, the living biomineralized rock formations made by cyanobacteria communities, the most important question was, how can we adopt this phenomenon to create a new kind of architecture?

But just as I had begun to formalize my research agenda and experimental plans, we were hit with one of the most significant events in the recent history of mankind, the COVID-19 pandemic. The onset of the first lockdown was so sudden and chaotic that no plans made any sense anymore. Just to give a brief idea, on Friday the 13th of March 2020 it was suddenly announced to us that the university will be closed indefinitely until further notice and we were to gather whatever research material we could from the lab for our own purposes and leave. In a daze, I tried to grab hold a couple of the culture samples, some growth media, a bit of the essential chemicals and a few basic paraphernalia like plates and tubes. And that is all. My research, therefore, in the subsequent months became an emergent phenomenon rather than a strictly planned one. And under the circumstances, growing the Cyanobacteria by the windowsill of my bed, there is only one thing I could truly do, endlessly watch, and observe it grow (Fig.1). So, through the underlying global uncertainties and personal struggles, I began to wonder how it would grow if I tweaked some aspects of the media or added some other physical component in it. And it did begin to respond, in seemingly complex ways in the beginning but as time passed by, the patterns became clearer. But I needed more accurate ways of evaluating my observations and resources were limited. As they say, necessity is the mother of invention, my thesis supervisor Dr. Hannah Laeverenz Schlogelhofer, remotely helped

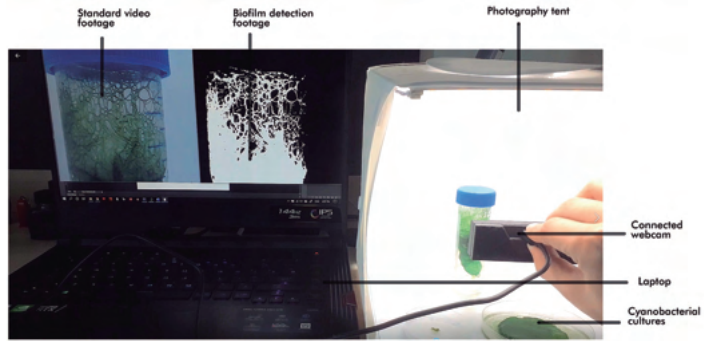


Figure 2 (above). Bespoke homemade set up for image analysis of cyanobacteria cultures during lockdown .

Figure 3 (below). Happy to be back to the lab for the first time after months of lockdown. Image credit: Brenda Parker.

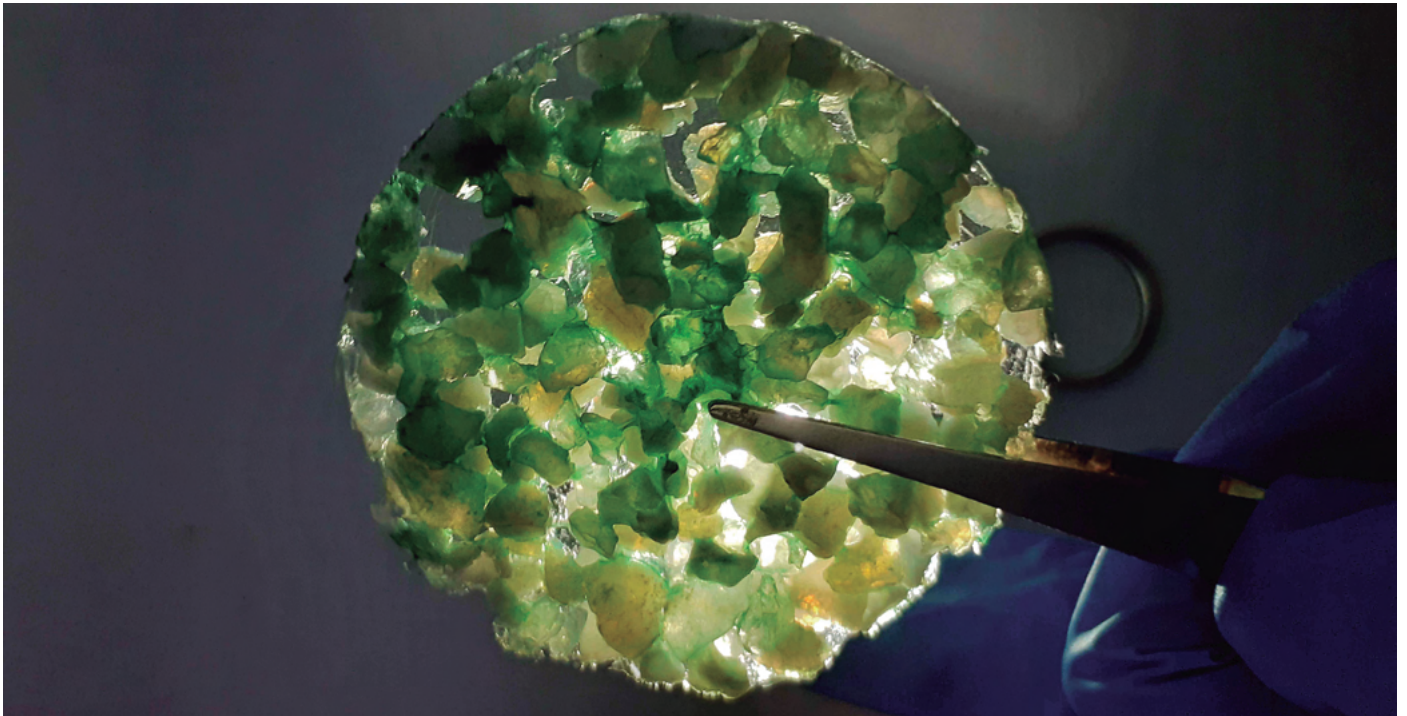


Figure 4. First prototype of the photosynthetic engineered living material grown in the lab.

me to script some bespoke computer vision programs that would enable me to analyze the observations I was making and evaluate them quantitatively. After a while it became more of a play, to gather equipment and materials I could buy off online and do random tests just to see how the Cyanobacteria would behave (Fig. 2). And to be honest, it is difficult to explain but I developed this sort of bond with it much like that we might have with our pets. It may be microscopic, but it responds in equally complex manners as higher forms and clearly has likes and dislikes regarding its environment. And it tries to tell us about itself, if we listen (rather look) carefully. And by the end of several months, I had many small culture flasks and petri dishes but technically since it multiplies by fragmentation, every culture came from one single mass of cells and I came to see it as one single distributed living organism in my room.

Many of these tests produced no important conclusion other than personal delight, but some produced extremely interesting unexpected results. When the lockdown was eased in the month of October 2020, I almost rushed to the lab to redo some of these experiments under my new project guide Anete Krista Salmane (Fig. 3). With the relatively better understanding of the behavior of Cyanobacteria and the literature on biomineralization, I had a vague hypothesis of how we could re-create the Stromatolite process but under different physio-chemical conditions. I only needed to conduct some of the previous tests in a more directed manner and under more controlled conditions. And within a span of 2-3 months, all the previous tests and observations snapped onto each other like small pieces of a puzzle and the hypothesis came true. There emerged a rigid, biomineralized, green living material that we could possibly use to construct carbon ne-

gative buildings for the future (Fig. 4). It was also around the same time that the call for abstracts for the annual BPS conference was made and my mentors urged me to submit an abstract to share the development. That is how everything came to be.

The conference was an extremely significant for me personally. Being from a non-scientific background, it was important for me to understand if the work that I was doing had any scientific validity. So being recognized by some of the most prominent Phycologists in the world felt good personally, but more than that it instilled a sense of hope that perhaps we could really move towards a future that is built by and designed with these photosynthetic organisms. It reinvigorated my teenage dream towards a more sustainable future. There is power in design alone but there is even more power in designing with living organisms. And it only strengthens me to keep going in this direction now. The conference was also one of the most intense experience of knowledge expansion I ever felt. The plethora of topics discussed, researches presented, and projects demonstrated opened my eyes to how truly vast this field of study of these organisms is. From understanding and predicting geological phenomenon to manipulating metabolic process of production of beneficial compounds to safeguarding ourselves and together life forms from toxic interactions. Phycology is a deep stream and structure of collective knowledge within us as a society and I believe such a platform is indispensable for this collective knowledge system to grow. And I now feel that there is a calling from this field that I must pursue and answer. I am deeply grateful to have been awarded the Manton prize and I sincerely hope to be an active and contributing member of the society in the years to come.

Winning Poster:

Within-lake variability of diatom community composition in the low-Arctic



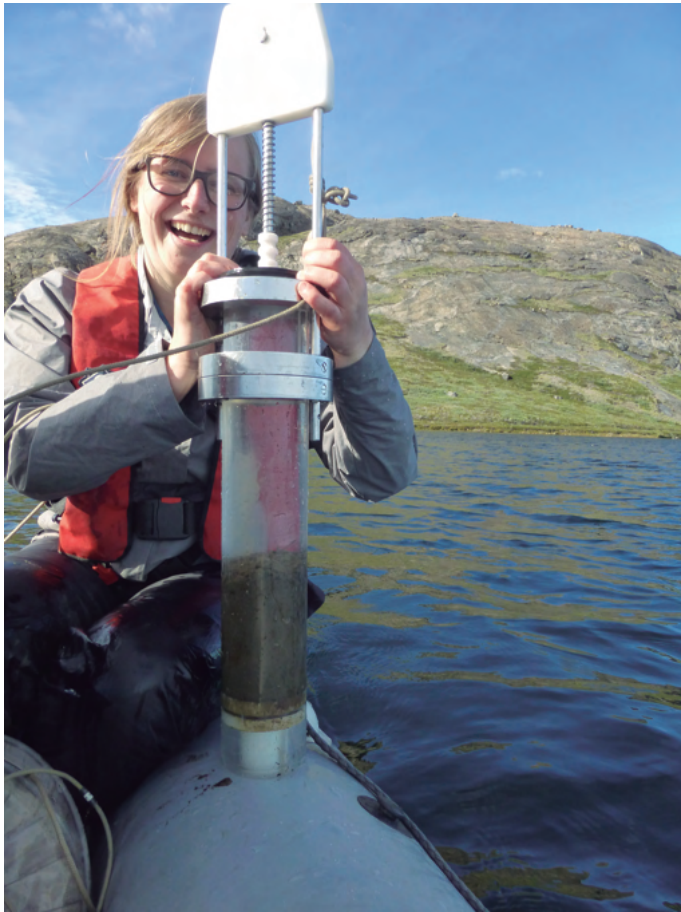
Submitted by: Keechy Akkerman
k.akkerman@lboro.ac.uk; Loughborough University

When I was first introduced to diatoms during a practical in my undergraduate biology, I was immediately fascinated by their beautiful structures and wide variety of applications. I was amazed by how something so tiny, could create such fine-scale detail. For my master's project I combined the application of diatoms with my main research interest in the (past) impact of human activity or climate on ecosystems. Countless hours of staring at diatoms through the microscope did not make me resent them, on the contrary, I could not get enough of them. I was therefore very lucky to be able to start a PhD in Loughborough, UK, that allowed me to continue staring at diatoms.

My PhD focused on integrating ecology into palaeoecology in three lakes in southwest Greenland. More specifically, with benthic production often exceeding planktonic production in arctic lakes, I analysed the benthic contribution to whole-lake production and how this is reflected in a single sediment core collected in the centre of the lake. For this, I considered data of several different temporal

and spatial scales: from within lake/live diatom community (small spatial scale, fine time resolution), to surface sediments (longer time-scale and greater spatial integration), to several short sediment cores within a lake (even longer time-scale), and finally to long central deep water sediment cores (integrating the longest time intervals and greatest spatial scale). A major aspect of this is the increasing influence of taphonomy, when going from within lake, live communities, to deeper water and older sediments.

I was excited to be able to present the results of the surface sediment data with a poster at the Annual Meeting of the British Phycological Society. The results indicate a clear shift in the diatom assemblage over a water depth gradient, and the highest diatom concentrations were found at water depths shallower than 10 m. This emphasises the importance of considering within-lake variability when interpreting whole-lake function based on a single, central sediment core.



The timing of the Annual Meeting of the British Phycological Society could not have been more perfect for me. With the meeting being held the week after I submitted my thesis, it felt like a welcome desert after a (very big) dinner (we all have a different stomach for the desert, right?). I really enjoyed the wide variety of topics presented at the meeting, even though phycology and protistology are pretty niche. The topics ranged from biodiversity to palaeo reconstructions, genetics, habitat studies, water quality, and much more. Despite the conference being online on teams, the organisation team did a really good job in keeping people engaged, making excellent use of space for networking and chat. Personally, the conference being online was a blessing, as I had to go to work in the mornings, but was now able to catch up with talks in the evenings.

I was particularly amazed by how well the poster sessions were run. I imagined it would be really difficult to engage people and talk about your poster during an online conference and I must admit, I did not know what to expect. It definitely exceeded my expectations, again *chapeau* for the organisation! By giving all the presenters a personal space, I was able to have multiple very interesting chats about my poster through written questions and video calls. And, as cherry on the cake of my already delicious desert, winning the Manton Prize for best student poster was an amazing surprise and honour! I am very grateful for everyone who contributed to both the poster and the brilliant conference, thank you!



Submitted by: Christine Campbell MBE Christine.Campbell@sams.ac.uk

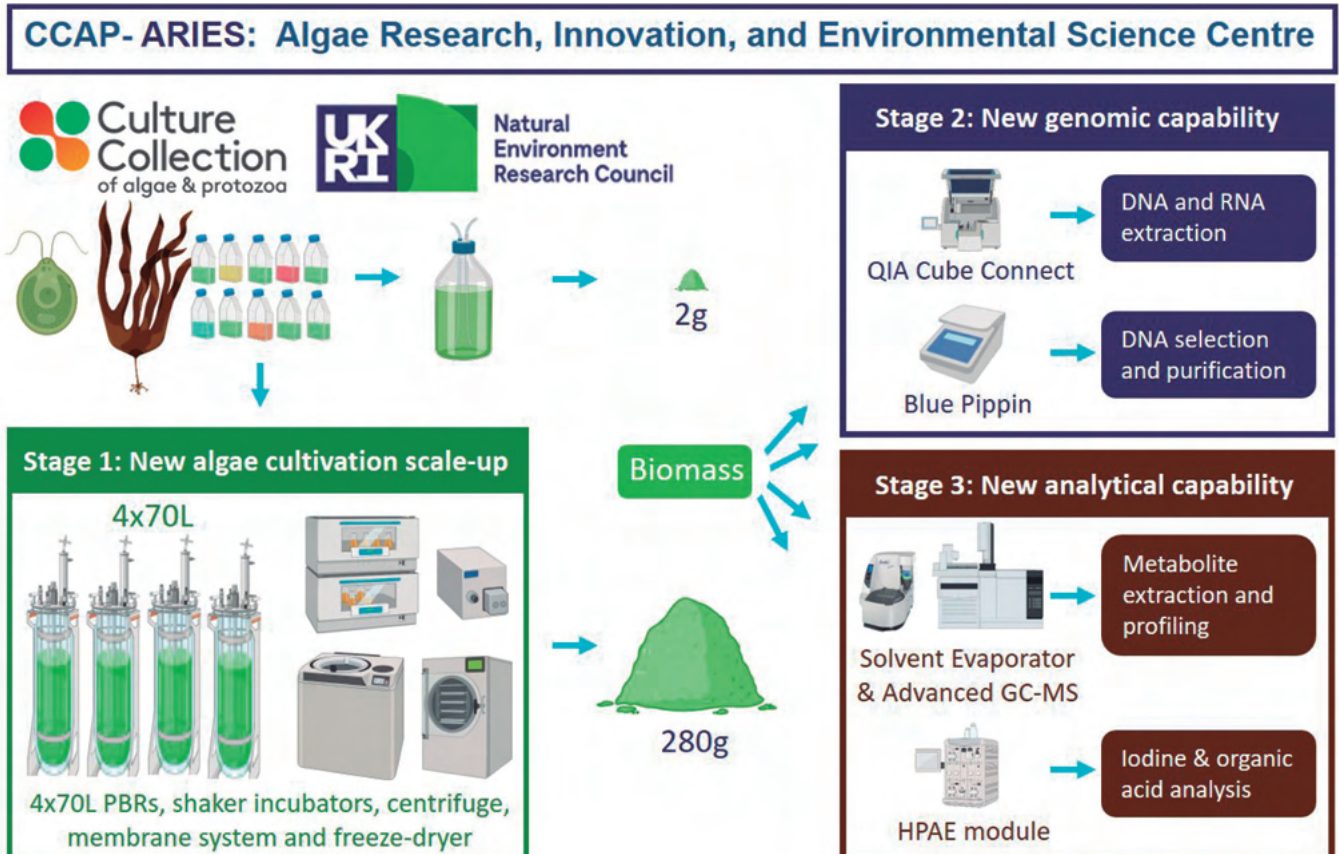
It has been a slow time in many respects as we live through the Covid-19 pandemic, however, CCAP has been moving along in several new directions.

In February 2021 our new website was launched. We have bright new branding, designed by SAMS designer Iona Harvey; the site is fully responsive, can be accessed by all mobile devices, and has a new easy to use shop (<https://www.ccap.ac.uk>). Also accessible is our unique new CCAP Bioinformatics Gateway (<https://www.ccap.ac.uk/ccap-tools>). Last year CCAP took advantage of the opportunity for additional funding from NERC and employed Fred De Boever, fresh from gaining his PhD with former supervisor Dr David Green, to design a new tool providing easy access to CCAP sequence data. There is a central platform allowing users to browse and access CCAP sequences, meta-data and results – view taxonomy, phylogenetic trees, or BLAST a sequence against CCAP database. Please visit the site and try out this very clever tool.

In the Gateway, the trees are built using single gene barcodes. However, increasingly, we are able to sequence

the entire genome of our strains. In CCAP we have been delighted to have contributed strains and their DNA to several genome projects: The Chinese 10KP (<https://db.cngb.org/10kp/>); a *Microcystin* genome project; a SAMS cyanobacterial microbiome project; for a commercial seaweed project; and we have submitted the first strains to the protist section of the Darwin Tree of Life Project (<https://www.darwintreeoflife.org/>).

A core deliverable for CCAP is to provide training to the users of our facility. This year our usual face to face training was not possible, so we instead offered an online training course. Over two and a half days in late February the CCAP team and associated SAMS staff offered short lectures on a wide range of algal topics, video demonstrations and Q&A sessions. A total of 60 international participants ranging from students to biotech professionals joined us and we plan to provide access to some of the key training videos via our website. We are grateful to the BPS for funding support, both directly and as bursaries for student members of the Society.



The CCAP team have been developing a quality assurance management system to cover our core activities over the last 5 years: writing SOPs, designing standard forms, keeping more transparent records. All agree that this has not been over-burdensome and has improved our efficiency and performance. Following a remote audit on the 1st March, our quality assurance system has been approved for ISO 9001:2015 accreditation.

CCAP ARIES Facility

In the middle of the lockdown we were successful in obtaining over £500K from NERC Services and Facilities capital funding to develop a new facility - **CCAP-ARIES: Algae Research, Innovation and Environmental Science Centre**. Due to be open in the summer of 2021, CCAP will offer a service to grow and harvest up to 300 litres of culture and analyse samples using metabolomics and genetic methods. We would welcome enquires from researchers

in the proposal writing stage and from algal biotechnology companies.

Finally, as you read this article I will have retired from my post having worked with CCAP for almost 35 years, however, I leave the Collection in the expert hands of Ceci Rad Menéndez and the very capable team. I hope to retain an active interest in all things phycological and will be contactable at my SAMS email address. Please keep in touch!



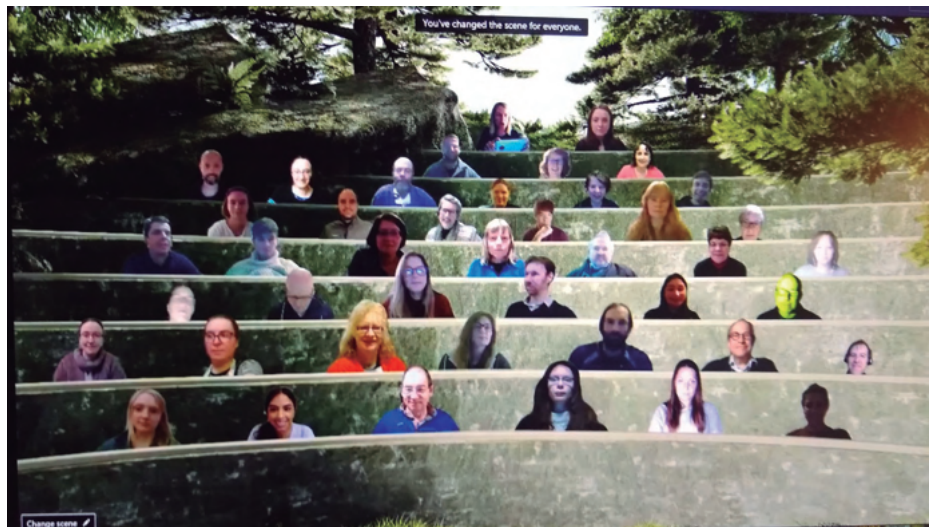
The Hidden World of Algae

Submitted by: Hannah Kemp Hannah.Kemp@nottingham.ac.uk

At the beginning of January, the University of Nottingham 'virtually' welcomed algal researchers and enthusiasts from across the world to the 69th British Phycological Society (BPS) 2021 Winter Meeting, held in partnership with Protistology UK. The online format was a big success with 259 delegates tuning in from 30 different nations and 6 continents! Some highlights from the week included: a public lecture about polar microbiomes from Anne Jungblut, talks by early career researchers covering such a diverse and interesting range of topics, and the conference social – algae bingo! I really enjoyed being part of the organising committee and we are all thankful that despite restrictions we delivered a conference experience where everyone could come together and enjoy sharing research.

When we started planning the conference, pre-pandemic, the suggestion was made to use the exhibition space around Highfields Lake for an outreach project. Little did we know 2020 was going to be the year of local daily walks, and an outdoor photographic exhibition about algae couldn't have been more perfect! The Hidden World of Algae exhibition has been put together with the aim of showcasing the beauty and global importance of algae, the practical applications of microscopic photography, and algae-based research at the University of Nottingham. The exhibition showcases photographs from the Hilda Canter-Lund photographic competition run by the British Phycological Society, which is open to anyone from microscopy hobbyists to professional scientists. These images are combined with pictures taken by students from the University's MSc in Biological Photography and Imaging, to make the largest outdoor exhibition of algae and seaweeds in the world.

As I took on the role of project lead, I was keen to include some of my own algae research. I am a 2nd year PhD student at the University of Nottingham



Top: Some of the delegates from BPS 2021.

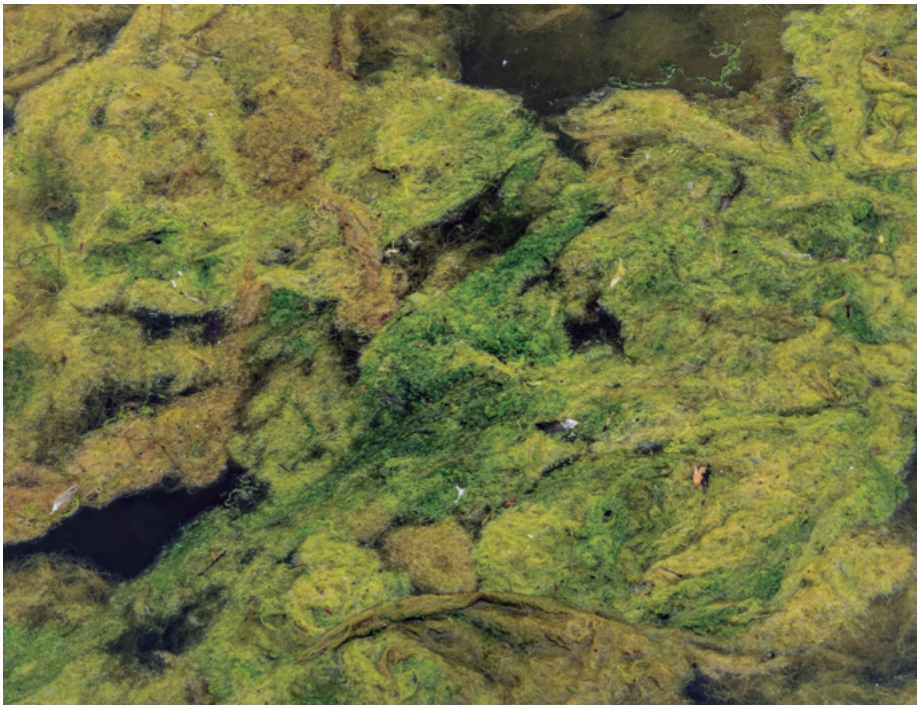
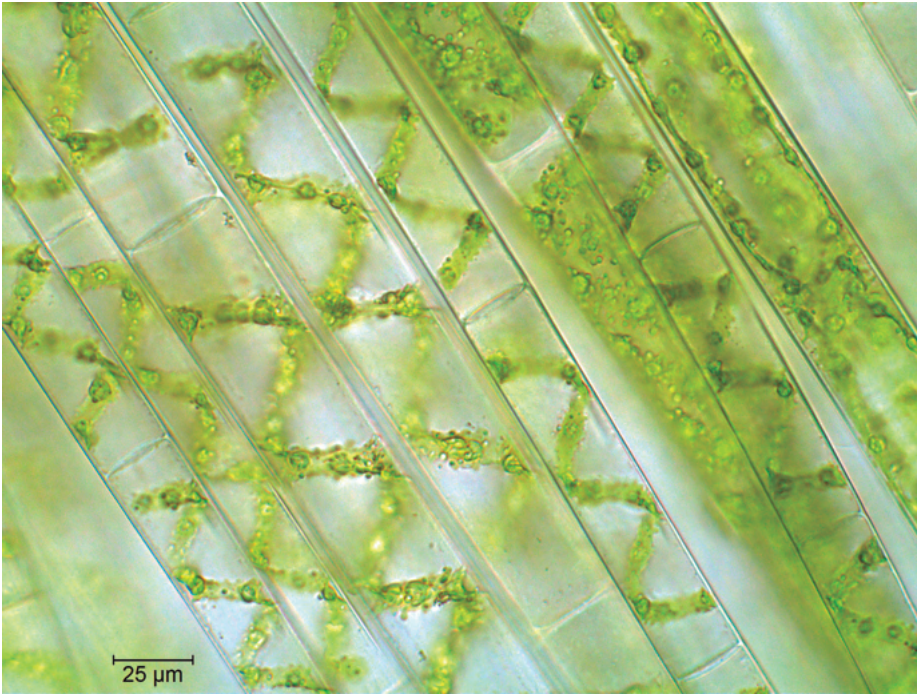
Below: Hannah and the exhibition board about bloomin' blanket weed!



researching blanket weed blooms in shallow freshwater lakes, in partnership with the National Trust. These nuisance blooms are caused by the excess growth of filamentous macroalgae. Over the summer of 2020, the lake on campus experienced prolific blanket weed blooms which of course I had to sample! The algae were photographed under the microscope by Chris

Carter, to be included in the exhibition alongside pictures taken of the blooms themselves by fellow student César Rodríguez.

If you are local to Nottingham the open-air exhibition is located in Highfields Park around the lake next to the University of Nottingham Campus. To maximise the number of people who could experience and enjoy this insta-



Top: *Spirogyra* with helical chloroplasts photographed by Chris Carter.

Below: *Cladophora* 'blanket weed' on the University lake photographed by César Rodríguez.

llation, I created an online virtual exhibition using the platform Artsteps. (<https://www.artsteps.com/embed/5fe1bfa5a050ec18e2e7077f/1280/720>) You can go on a guided tour by clicking the arrows on the screen or move around at your own pace using keyboard arrows in a makeshift outdoor exhibition space, perfect for a working-from-home break!

I would like to end with some acknowledgments to all the wonderful people that made this exhibition happen. Thank you to Stephen Galloway for designing the boards and all involved in the production – Martyn Kelly, Thomas Hartman and Suzanne McGowan. Thank you for the generous support from Lakeside Arts, the Nottingham City Council Parks and Open Spaces team, and James Parkinson with the Highfields Park Rangers for bringing the exhibition to life. The exhibition was made possible by Cascade: Funding transformative student projects thanks to donations from alumni and friends of the University of Nottingham. We would also like to acknowledge the British Phycological Society for funding.



A capture from the online virtual exhibition in Artsteps.

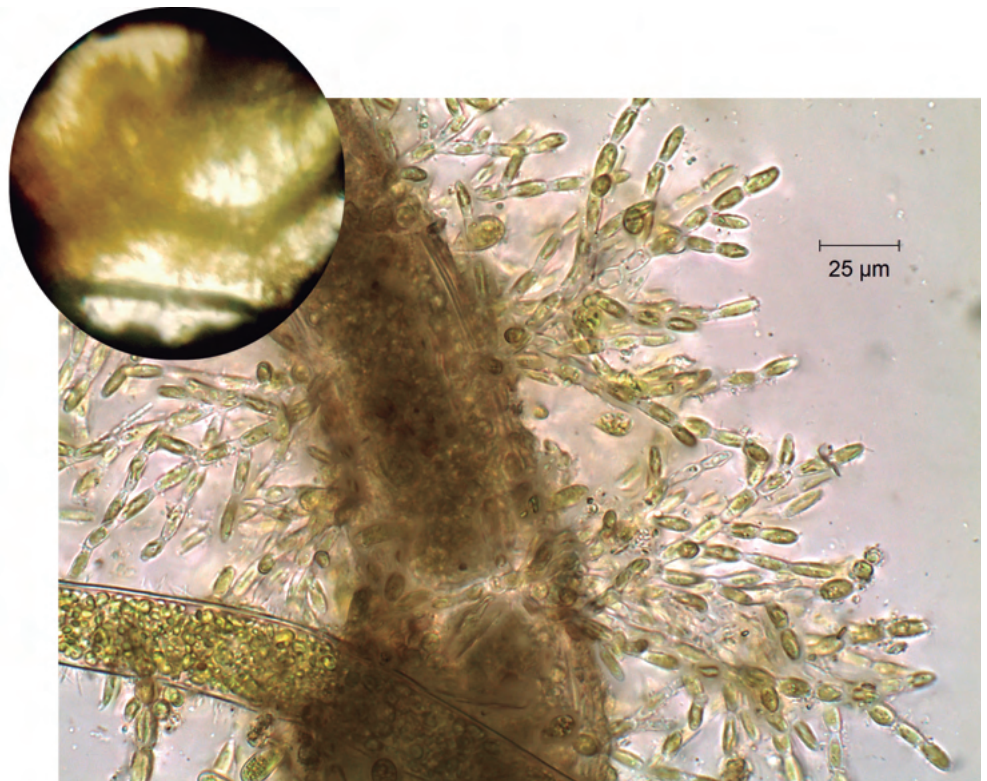
Adventure with a BPS Foldscope

Submitted by: Chris Carter

Chris.Carter@6cvw.freeuk.com; 6 Church View, Wootton, Northampton, NN4 7LJ

BPS members who took part in the January 2021 Nottingham conference will know of the organisers' efforts to arrange social activities in an on-line context. One of these was "Algae Bingo" in which a player uploaded microscope images that were intended to have been created with a novel self-assembled 'origami' cardboard microscope (with a little necessary glass and metal) that could be coupled to a mobile phone camera. The microscopes were sent out on request in good time. Sparing the reader too much detail of what was involved, I was eventually the proud owner of an assembled instrument and only needed a sample to practice on and check the focus and XY movement. Well, *Cladophora* had been one of the threads (sorry, themes) in the conference and we were lucky that our garden pond indeed had some therein-- so off I went to the pond with my cardboard construction ready. Nothing is simple in the algal world and the sample also contained duckweed roots and some nameless animal and fungal life. In triumph, I did eventually get an image but could see that the fuzzy edge of the duckweed root was a little weird even for the local ecology. So, in one sense defeated, I headed to a more conventional instrument to take another look.

The sample indeed had a layer of epiphytes that, just for once, were not diatoms. After some frantic page turning in *The Freshwater Flora* (sorry, I mean systematically working through the keys) it became clear that the epiphyte was likely to be *Phaeothamnion confervicola*. Not so long ago, *Phaeothamnion* was classed as a Chrysophyte alga: with golden chloroplasts in neatly branched



The original intriguing foldscope image alongside a conventional micrograph



Phaeothamnion filaments growing on a duckweed root showing basal cells (arrowed) and an empty cell (possibly a source of swimmers through a pore).



Cladophora strand with *Phaeothamnion* basal cells and examples of growing filaments

uniseriate filaments. Recent texts (see refs) describe how sequencing, ultrastructure and pigment analysis have led to it now being included in a new algal class, the Phaeothamnio-phycae.

The images below show the original Foldscope picture and, more conventionally, some details of the filaments and their attachment by a characteristic basal cell derived from a swarmer released from older filaments. A new year project will now be to find a swarmer in the pond. There were also some other mysterious dense clumps of green algal cells on the *Cladophora*.....but that is another story.....The Foldscope adventure will come out well.

References

- 1) Andersen, R.A., Potter D., Bidigare, R.R., Latasa, M., Rowan, K., O'Kelly, C.J. (1998) Characterization and phylogenetic position of the enigmatic golden alga *Phaeothamnion confervicola*: ultrastructure, pigment composition and partial SSU rDNA sequence. *Journal of Phycology* 34: 286–298
- 2) Carter CF, John DM, Wilbraham J (2016) AlgaeVision: Virtual Collection of Freshwater Algae from the British Isles. Version II. World Wide Web electronic publication. www.nhm.ac.uk/algaevision.html
- 3) M.D. Guiry in Guiry, M.D. & Guiry, G.M. 2021. AlgaeBase. World-wide electronic publication, National University of Ireland, Galway. <http://www.algaebase.org>; searched on 15 January 2021.
- 4) John, D.M., Whitton, B.A. & Brook, A.J., Eds (2011). The freshwater algal flora of the British Isles. An identification guide to freshwater and terrestrial algae. Second edition. Cambridge University Press
- 5) Kristiansen, J. & Preisig, H.R. (2001). Encyclopedia of Chrysophyte genera. *Bibliotheca Phycologica* 110: 1-260

A phycological excursion to the *University of Malaya* *Botanic Garden*

Christine Maggs^{1*}, Juliet Brodie², Fabio Rindi³, Kien-Thai Yong⁴ and Hui-Yin Yeong⁴

¹Queen's University of Belfast; ²Natural History Museum; ³Università Politecnica delle Marche, ⁴Universiti Malaya

* Article submitted by Christine Maggs



Photo of: Phaik-Eem Lim, Juliet Brodie, Christine Maggs, Gill Malin, Siew-Moi Phang

The 100th issue of *The Phycologist* is coming out as we are stuck in our own countries and regions during the Covid-19 pandemic, so our thoughts turn increasingly to previous happy visits to other countries.

The 8th Asian Pacific Phycology Forum took place in Kuala Lumpur, Malaysia on 9-13 October 2017, hosted by Phaik-Eem Lim in honour of Siew-Moi Phang, whose "retirement" was announced.

The conference included an outing to the fantastic University of Malaya Botanic Garden, Rimba Ilmu: a 70-hectare botanic garden with large-leaved and cauliflorous trees. Rimba Ilmu means "The Forest of Knowledge" in the Malay language. This botanic garden was established in 1974 and was based on a rain forest garden concept. It houses more than 1,600 living plant species, mostly from Malaysia and some selected plant species from other parts of tropical Asia, the Pacific islands, Australia, South America, Africa and Madagascar. As it rains very frequently during this season in KL, the Botanic Garden supplied us with large umbrellas.

The Botanic Garden is fully tropical, and many of the species have huge leaves, as demonstrated by Juliet!





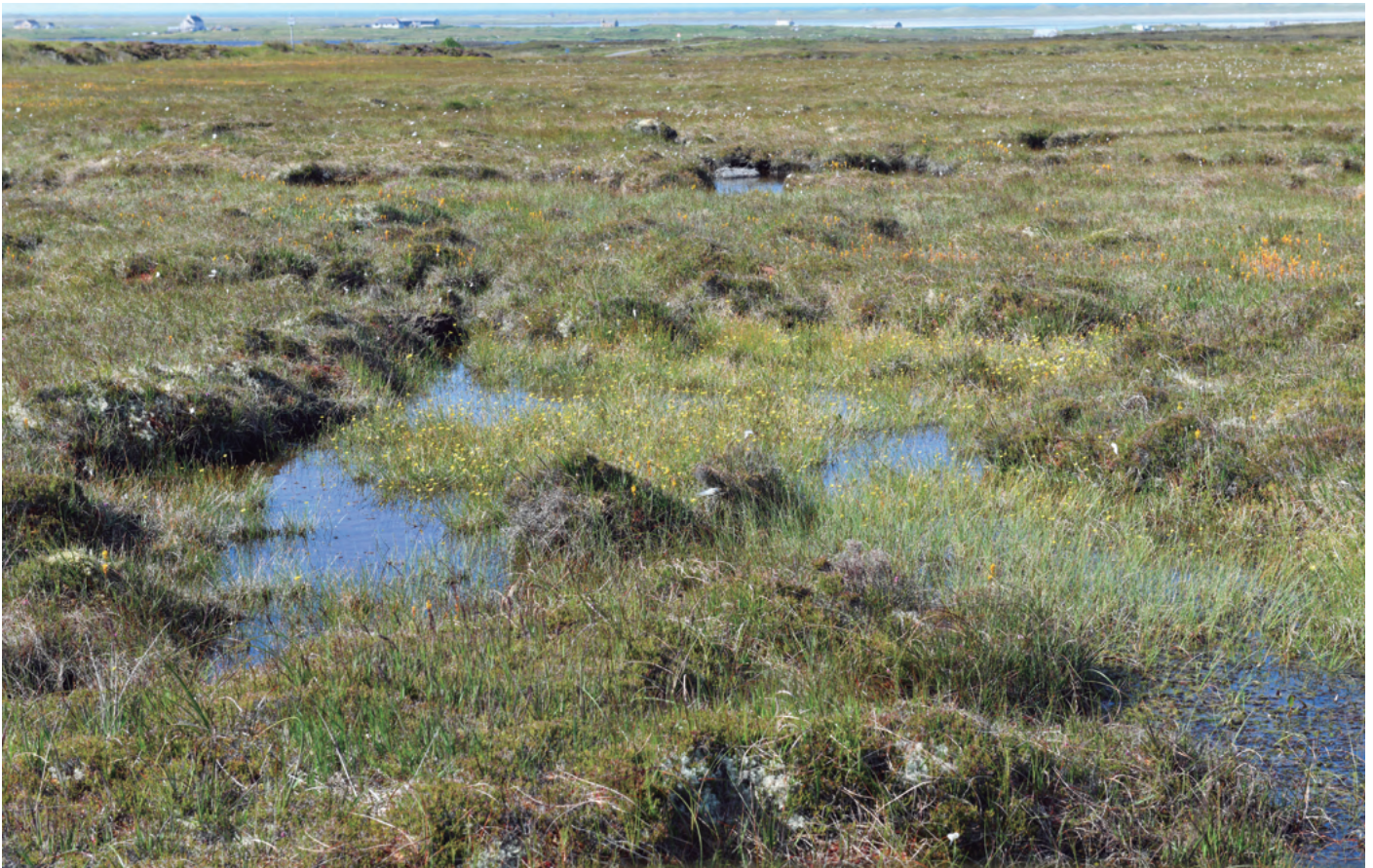
Cross-section of leaf with its superficial growth.

During the visit, our attention was drawn to large leaves of a range of species, which had extensive brown discolouration on them. This discolouration was more obvious in some parts of the Garden. It was considered by the Curator to be a disease, perhaps associated with the high temperatures that had been experienced recently.

We collected affected leaves and noted that the brown discolouration resembled some aerial green algae, forming a distinct layer on the upper surface of the leaf.

We consulted an expert in aerial green algae, Dr Fabio Rindi. He considered the alga to be a species of *Phycopeltis*, a genus of the Trentepohliaceae widespread in humid tropical regions. He noted that he had very rarely seen such abun-

Zygospore of *Cosmarium venustum*



Submitted by Chris Johnson. Email: johnson@ardivachar.co.uk; Website: www.outerhebridesalgae.uk

On 17 July 2020 I took a pressure water sample from a disused peat-cutting, with a dominant flora of *Ranunculus flammula*, located off the Committee Road, North Uist, Outer Hebrides.

The sample contained numerous specimens of *Cosmarium venustum*, which can display some variation in shape and size, and amongst them I spotted a zygospore.

I took several images at different focal depths and identified it as *Cosmarium venustum* from the associated simicells. In *A Monograph of the British Desmidiaceae* (West & West 1908) the authors note: 'Zygospore unknown.' As this was over 100 years ago and my reference works are limited, I sent an image to Koos Meesters for confirmation and to discover if zygospores have been found subsequently. He verified the identification and referred me to a zygospore drawing in *Die Gattung Cosmarium* (Krieger & Gerloff 1965). Koos noted it had long pointed appendages and that mine was immature. I contacted David Williamson to ask if he would send me a photocopy of

the image contained in the book and sent him a copy of the image of the zygospore I had found.

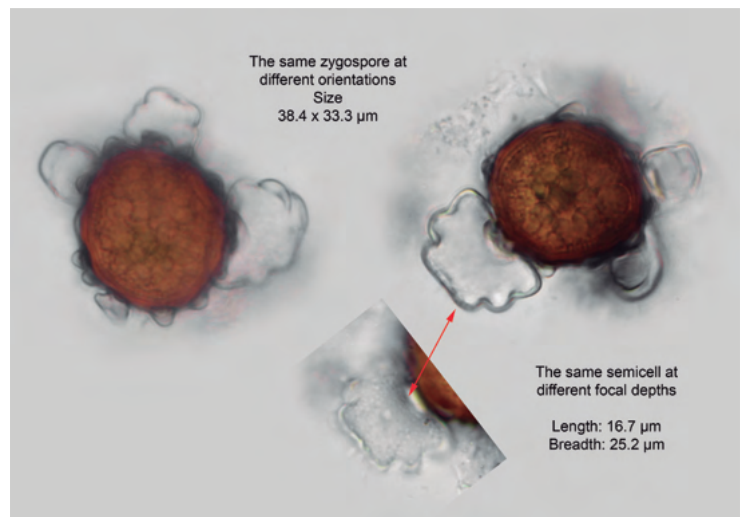
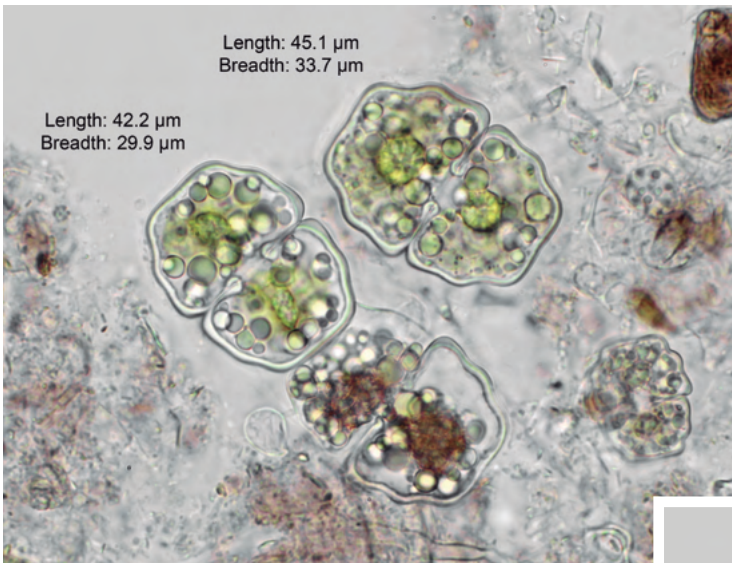
His reply was a surprise:

Thank you for your email concerning Cos. venustum. I note in Krieger & Gerloff (1965) that they say the zygote for the nominal is unknown. The same comment is made in Prescott et al. (1981) - the American Synopsis.

Having studied your photo carefully the cell looks like Cos. venustum var. hypohexagonum which is described in West & West 1908 as having tricrenate sides rather than undulate ones with thickenings at the base of the incisions. Krieger & Gerloff say the sides are sinuous and grooved. This variety has been found in the UK in what is now Cumbria.

The only drawing in K & G showing appendages (spines) is the zygospore of Cos. venustum var. excavatum but the only semicell shown is not like yours!

var. *hypoexagonum*



Your find has proved interesting and the zygote is likely to be a first record so a publication could be useful.

With well documented distinctions between this variety and the nominate and as the variety is currently accepted taxonomically, I propose to record it accordingly. A question still remains regarding the zygospore's maturity. One assumes this variety will not differ greatly from the one illustrated in Krieger & Gerloff but we may have to wait another 50 years to find out.

Method

A sample was taken and placed on a slide, without chemical additives, and a cover slip added. It was viewed initially with a x10 objective on an Olympus microscope. Once the spore was found I moved on to the x60 objective (the eyepieces are x10). A series

of images was taken at different focal depths and the coverslip nudged to try and gain different perspectives. The images were assessed and three taken for a small stack: the target was to emphasise on one image the pattern and distribution of the tubercles.

Acknowledgements

I would like to thank both Koos Meesters and David Williamson, both highly respected desmidiologists, for their help and advice.

References

- Krieger, W. & Gerloff, W. (1965) *Die Gattung Cosmariium*, Lieferung 2. J. Cramer, Germany.
- West, W. & West, G.S. (1908) *A Monograph of the British Desmidiaceae*, Volume 3. The Ray Society, London.

Kathleen Mary Drew

Celebrating a Remarkable Woman

Submitted by: Juliet Brodie

What could be more appropriate for the 100th issue of *The Phycologist* than a celebration of the lady who wrote 100 lines which changed the world. Kathleen Drew's discovery of the life history of *Porphyra umbilicalis*, published in Nature in 1949, was profound. In Japan, it saved the fishermen from starving and revolutionised the nori industry into the multi-billion dollar industry we know today. But that is only part of Kathleen Drew's story.

Kathleen Mary Drew (1901-1957) is known for her work on the red algae (Rhodophyta) and as the main founder of the British Phycological Society, but as I write this article on International Women's Day (8th March 2021), I am reminded that her life as a woman and a scientist at the time had its challenges.

Kathleen excelled at school and university, graduating with first class honours at Manchester University and after gaining an MSc becoming an assistant lecturer on the staff. She was also awarded a Commonwealth scholarship in 1925, one of the first women to do so, which took her to the University of California at Berkeley for two years. At that time, Kathleen had met Henry Wright Baker (1893-1969), a lecturer in mechanical engineering at Manchester University, and wanted to get engaged but her family did not approve. The deal with her parents was that if she still wanted to marry Henry when she returned from the US, then she could - and she did. However, because she married him, she had to give up her post at Manchester University as that was the rule for spouses at the time; although she was able to continue her work.

We owe the founding of the British Phycological Society primarily to Kathleen Drew with the support of her friend Dr. Margaret Martin. It was Kathleen's idea to bring together a group of British Phycologists for an informal meeting in Bangor in September 1951 and the BPS was founded in Edinburgh in July 1952. It is also of note that Kathleen Drew was the leading mem-



Memorial for Kathleen Drew; Image from Harris et al 2013; <https://doi.org/10.1002/bies.201300061>

ber of the Society's Marine Algal Checklist and Flora Committee who, with Dr Martin, proposed the Flora of British marine algae text. She died suddenly when she was preparing this book.

Despite Kathleen's death, the flora project continued and what could be more timely when celebrating Kathleen Drew and the 100th edition of *The Phycologist* than to announce that the fi-

nal volume in the series; "Fletcher, R.L. (2021). Brown Seaweeds: (Phaeophyceae) of Britain and Ireland. Pelagic Publishing, Exeter", is in press 70 years after the meeting in Bangor.

But I want to return to Kathleen Drew's remarkable impact on the story of nori. The significance of her work is recognised in Japan where she is revered as the 'The Mother of the Sea'.



Kathleen Mary Drew Image from Smithsonian Institution Archives

Just outside the city of Uto, Kumamoto Prefecture, there is a memorial to her and every year on April 14th, there is a remarkable Shinto ceremony to the woman who saved the poor nori fishermen and who is treated as a god. To this day, there is a remarkable depth of feeling that the fishermen still feel for Kathleen Drew, which was captured in the Radio 4 programme, *The Mother of the Sea*.

In the making of the radio programme a few years ago, I was asked whether there should be a statue to Kathleen Drew in Britain. In this time of toppling statues how do we consi-

der this question? Her contribution to science is without doubt and Kathleen was much more than that. In a tribute (Lund et al., 1958) she was described as someone who 'did everything well' had a 'lack of pretension, [and a] capacity for friendship', and who was described to me by Harry Powell, the first secretary of the British Phycological Society, as 'dignified, very formal, as good as could be.' I consider that she should be much better known in Britain and around the world and that we need to find ways to make this happen in whatever form that takes.

We have a lot to learn from Kathleen Drew as a woman, of her generosity, her legacy to the British Phycological Society and her meticulous work as a scientist. We also do well to remember that over 70 years on from Kathleen Drew's ground-breaking publication, when we can reach the deepest oceans and land a rover on Mars, there are still many algal life histories to be discovered on our planet.

Some further information

The mother of the sea. Radio 4 broadcast (First broadcast September 2014), <https://www.bbc.co.uk/programmes/b04g7rd5>

H. W. Baker, 'The story of nori in Japan', *British Phycological Bulletin*, 2 (1965), 497–500

Drew, Kathleen M. (1949). "Conchoceleis-phase in the life-history of *Porphyra umbilicalis* (L.) Kütz". *Nature*. 164 (4174): 748–749.

'Drew, Kathleen Mary (1901–1957)', *Oxford Dictionary of National Biography*, online edn, Oxford University Press, May 2010.

J.W.G. Lund , Margaret T. Martin , H.T. Powell , George F. Papenfuss , J. Feldmann , Mary Calder , Lily Newton , C.W. Wardlaw , E.M. Lind , Dorothy Brittain & Editha Jackson (1958) *Kathleen M. Drew D.Sc. (Mrs. H. Wright Baker) 1901 – 1957*, 1:6, iv-12, DOI: 10.1080/00071615800650021

G. Michanek, 'Kathleen M. Drew Baker (1901–1957)', *Prominent phycologists of the 20th century*, ed. D. J. Garbary and M. J. Wynne (1996)

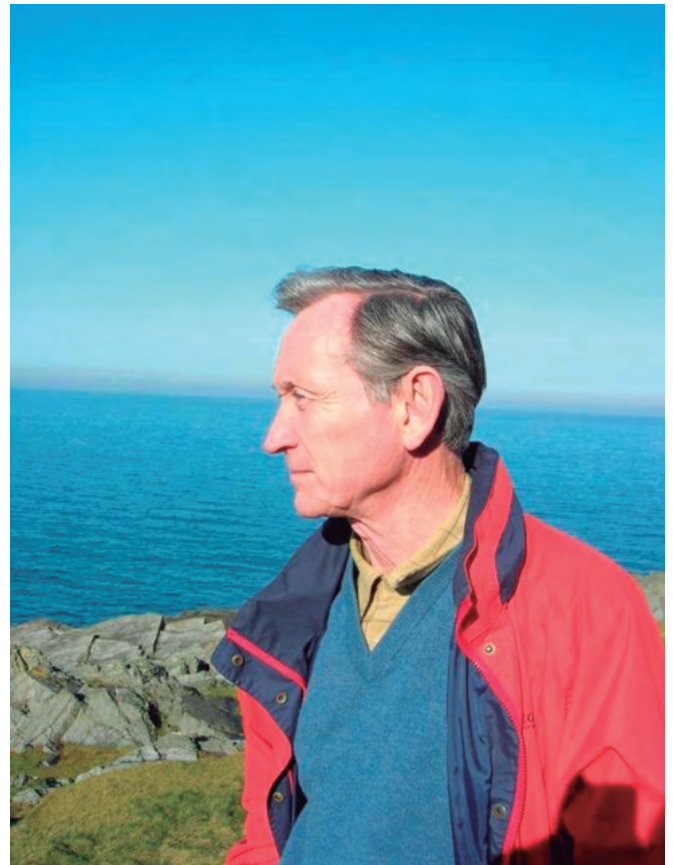
Obituary

Trevor Norton (1940-2021)

It is with great sadness that we record the passing of the eminent marine biologist and author Dr. Trevor Norton (Sheffield, 1940-Isle of Man, 2021), formerly Professor of Marine Biology at the University of Liverpool and Director of the Port Erin Marine Laboratory, Isle of Man (1983-2005). He was Lecturer at the University of Glasgow, Scotland (1966-1976), and later Senior Lecturer (1977-1981), and Professor (1982). He was President of the British Phycological Society (1989-90) and of the International Phycological Society (1992-94), and Council Member of the Marine Biological Association of the United Kingdom.

He was born July 28, 1940 in Sheffield, the son of Alan and Agnes Norton. According to himself, Trevor's speciality at school was failing examinations, but he was captivated by a six-part BBC television series *Diving to Adventure* (1956) in which the couple, Hans and Lotte Hass, roamed the Red Sea, the Caribbean and the Aegean in their three-masted schooner *Xarifa* and from then onwards his goal was to become a marine biologist. To everyone's surprise, he started to excel at examinations. He obtained a B.Sc. at the University of Liverpool in 1963 and a Ph.D. at the same institution in 1966. The subject of his Ph.D. was the biology of the annual kelp *Saccorhiza polyschides* supervised by Dr. Elsie "Bunny" Burrows (1913-1986)—whose patience he regularly and sorely tried—and involved sampling in the famous rapids (at full flow up to 3 m s^{-1}) at Lough Hyne (Ine), Co. Cork, Ireland, tethered by a rope. (She was always "Dr. Burrows" even to Trevor, and he was an exasperated "Mr. Norton!" to her.) He continued to collaborate with others on the ecology of Lough Hyne for many years. In the 1960s, he organised regular summer/autumn field excursions with members of the BPS to various phycologically poorly-known parts of Britain and Ireland to record marine algae for the BPS's "Mapping Scheme" (which he ran for many years), and for "Seaweeds of the British Isles" culminating in a survey of Co. Wexford in SE Ireland in 1970.

Capitalising on an innate ability to make a good story great, from the late 1990s he became the well-known author of popular works such as *Stars beneath the Sea: The Extraordinary Lives of the Pioneers of Diving* (Century London, 1999); *Reflections on a Summer Sea* (Century London, 2001); *Underwater to Get out of the Rain: A Love Affair with the Sea* (Century London, 2005). *Smoking Ears and Screaming Teeth* (Cornerstone London, 2011) is a celebration of early eccentrics who performed dangerous



Trevor Norton courtesy of Anna Webber, United Agents, London

experiments on themselves including the great Victorian scientist Jack Haldane who said that one should “never experiment on an animal if a man will do” and “never ask anyone to do anything you wouldn’t do yourself.” His most recent book was *Imagination and a Pile of Junk: A Droll History of Inventors and Inventions* (Hodder & Stoughton London, 2014), an “entertaining history with a seductive mix of eureka moments, disasters and dirty tricks.”

Trevor listed his hobbies as “Writing, photography, conversation, movies, climbing trees.”; to which he should have added ballet. Ann Skea, writing on the Eclectica website, said that the author’s “writing is often very funny and he describes some eccentric and funny characters, but he also writes poetically and lovingly about science.” She added: “He is exceptionally good at making such seemingly dull things as sponges and seaweeds into objects of fascination.”

Trevor’s summers at the Lough Hyne “giant rock pool” (a marine reserve since 1976) with such stars of the sea and academia as Jack Kitching and John Ebling were lovingly described in *Reflections on a Summer Sea* evocative of the early days of marine ecology when marine biologists actually spent less-than-comfortable summers getting wet, dirty and healthy:

His wife, Win (née Price), to whom we extend our sincere condolences, provided the illustrations for this and others of his books.

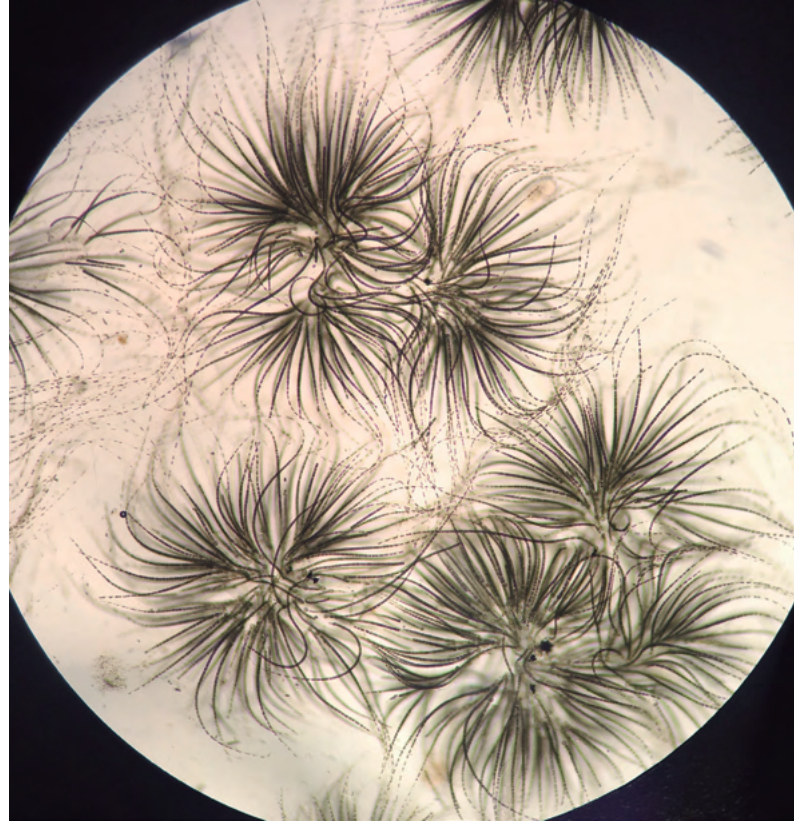
A list of Trevor’s publications can be found on [AlgaeBase](#).

Submitted by: [Michael D. Guiry](#)



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

Copy should be submitted to:

Dr Amanda Burson
University of Nottingham
School of Geography
Sir Clive Granger Bldg
Park Campus
Nottingham NG7 2RD

editor_phycologist@brphycsoc.org
Tel: +44 (0)1158466071

Deadlines are **March 1st** for the April issue, **September 1st** for the October issue.

Typesetting by Agnès Marhadour
Printed by Monument Press, Stirling, UK