

2021/1

2021 SUMMER ISSUE

ASPAB

THE OFFICIAL NEWSLETTER OF
THE AUSTRALASIAN SOCIETY FOR PHYCOLOGY
AND AQUATIC BOTANY

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Credits

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Contact us for questions or if you want to contribute content:

MAREIKE BABUDER

mareike.babuder@pg.canterbury.ac.nz 

THIRU SOMASUNDARAM 

tsomasundaram@deakin.edu.au 



Cover image credits: Nicole Miller

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Kia Ora

Letter from the editors

by Thiru Somasundaram



Dear members,

We are pleased to meet you again, through our "Summer Newsletter" for the year 2021, however well in to Autumn just after Easter celebrations due to unexpected delays. It is refreshing to see that the research business has started to pick-up pace with easing COVID-19 restrictions in Australia and New Zealand. I would say, the much-anticipated spring has arrived, after a long, dark, and icy winter. With this changing research climate, phycology and aquatic botany research in our region has started to bud new leaves. We have tried to bring some of these research news to your attention in this issue.

As the official newsletter of ASPAB, this issue bears the president's report, financial report ending in June 2020, membership reports and details of the award winners at ASPAB's 35th annual meeting organized virtually for the year 2020.

The member profile section of this issue is adorned by some of the amazing research work carried out by Dr Christopher Cornwall, a Rutherford Discovery Fellow at the Victoria University of Wellington. A couple of PhD students have provided their research updates for this issue. A review of the book "With a little Kelp from our friends" by Catia Freitas has been added as a new section in this issue. We are encouraging future contributions to the "Book Review" section by students and ECRs and nominations to the member profile section from our senior members. As usual publications list and details of ASPAB board members are included in this newsletter.




We thank all your contributions and feedback. We keep improving our work because of you.

Thank you



WHATS NEW?

In this issue of the ASPAB newsletter, we have included hyperlinks twitter IDs and emails of authors, researchers, and office bearers' Twitter IDs and emails to make it easy for members and readers to contact them easily. These IDs and emails are retrieved from publicly available sources on the internet through google queries. A "share to Twitter" link is provided at the end of each original content to make it easy for readers to share the content of this newsletter in their Tweets. While sharing, the official Twitter account of ASPAB i.e. [@ASPABites](#) Twitter handle will be automatically tagged.

Icon	Description
	Twitter ID of researchers/personnels
	Email address opens in outlook or other default email app
	Opens as a tweet containing prompted text for tweeting and may require log in to your twitter account.

Submit your contributions to the next ASPAB Newsletter by 15th August 2021

We welcome research updates from students, post-doc research fellows, heads of laboratories/research groups; introductions to new researchers, team members and students; announcements of recent achievements, awards, milestones, promotions and retirements; announcements of field courses, meetings, workshops, webinars, seminars and conferences; announcements of job opportunities, technical positions, Honours/Masters/PhD student positions; book reviews of interesting books related to ASPAB; and publications from Jan 2020, obituaries or any other items of interest to the membership

Thiru Somasundaram
tsomasundaram@deakin.edu.au



The President's report

Dr. Alecia Bellgrove



The President



We are now well into 2021, and our Newsletter editors have brought us another fantastic issue of the ASPAB Newsletter with reports from our first ASPAB Virtual conference in November last year, research news and stories, a jobs board, book review section, upcoming conferences and some new ways to get social in the phyco/botanical way.

2020 was a challenging year for many of us, which saw us all adapt to new ways of living and working. The 'rise of Zoom' has made it easier for the ASPAB committee to meet virtually on a more regular basis, and enable us to work better together for you, our society members. However, with the travel bans in place in 2020 and early 2021, it has meant that we have not awarded any Joanna Jones Student Travel Awards, although we hope to be able to do so in the second round of 2021. (Students, remember you have to be a financial member for 12 mths prior to application, so make sure your membership is current!). 2020 also drove us to host a virtual conference, which was a fantastic success with over 60 delegates, two fantastic plenaries from emerging leaders in phycology and aquatic botany and a brilliant program of short talks organised by our team of student/ECR conference organisers.

It is exciting for ASPAB that the long-awaited Australia – New Zealand travel bubble has just been announced, paving the way for us to hopefully be able to meet in person again soon. At this stage we are planning to host a face-to-face ASPAB conference from the 24 – 25th November at the Department of Biodiversity, Conservation and Attractions in Perth this year, but we are obviously keeping a close eye on the COVID situation and our state and Aust-NZ border restrictions and will call it with enough time to pivot to another virtual conference if necessary. The local organising committee will be John Huisman, Di Walker, Kieryn Kilminster and Frances D'Souza.

At the AGM in November last year (the minutes of which have been circulated via the ASPAB-list), we also discussed that our web manager, Dan Pritchard, has been working behind the scenes to transition our ASPAB website to a new platform that will be easier to maintain and update and will hopefully facilitate online membership payments. We are hoping to have this active for the start of the next financial year. We are also looking at ways to increase our communications through social media and attract new members to ASPAB, so tag us in your posts as relevant and let us know if you have any great ideas for a membership drive to kick-off in July.

You will have also received an email from me recently explaining that we have created an ASPAB ORCID list for the convenience of tracking publications of our members and other potential uses in ASPAB publications and the website. Here onwards, new members will be asked to provide their ORCID ID when they join ASPAB via an amendment to the membership application form. We would like to request that existing members, please [click this link](#) and it only takes a few seconds to add your ORCID ID to the list. Members without an ORCID ID (including students) are strongly encouraged to create one as it provides a unique identifier to distinguish your research outputs from others'. See <https://orcid.org/> for more info and to create your ID.

With the publication of this newsletter, we will start collecting stories etc for the second issue, which we plan to publish in December 2021, following the ASPAB conference in November. There will be an official callout for contributions in October, but please feel free to start dribbling things through to our newsletter editors, Thiru and Mareike, as they come to mind prior to that. I think you will agree that they are doing a fantastic job, but we can all make this easier for them by actively making contributions to the newsletter. I also take this opportunity to thank Ellyn for her contributions as a newsletter co-editor. Ellyn, has recently resigned to focus on completing her PhD.

Finally, I would like to congratulate our newest ASPAB graduate, Dr Erin Cumming, who's PhD thesis was recently passed by Deakin University. You will find the abstract from Erin's thesis in this issue. I look forward to congratulating more graduates in our next issue, so keep me posted!

So now grab a cuppa and sit back and enjoy this bumper issue of the ASPAB Newsletter.
Regards,

Alecia

Twitter: @DeakinSeaweed

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

Instagram: @aleciabellgrove



New Zealand Membership report

Dr. Judy Sutherland  

Treasurer & NZ Membership Secretary



Membership in New Zealand benefitted from the Wellington Conference in November 2019, our numbers are up slightly as a result. On 30 June 2020 we had **29 members in New Zealand**, including one international member.

Our student membership has decreased overall from 10 to 9. It's worth noting that students do move from the Student category to the Full Member category, so losing a 'student' doesn't always mean we have lost an ASPAB member. Student members are drawn from the Cawthron Institute, the Universities of Otago & Canterbury, and Victoria University of Wellington. It would be good to see some people joining from the University of Auckland. **The Travel Awards** are a significant benefit to students, and I think they make joining and remaining a member attractive.

Our three international student memberships have now lapsed, and we continue to have one International and two Honorary members (Vivienne Cassie Cooper, and Erasmo Macaya Horta).

Our Full Membership increased from 10 to 17, which is really pleasing.

Do remember to talk about ASPAB to people in your networks, word of mouth is by far the best way to attract new members.

Instructions for joining (and leaving) our email list (ASPAB-list) are on the **'Join'** page on our website. It is simple for people to manage their own subscriptions to the list, but I'm happy to help out anyone who is unsure. If people are not on the email list, they will not receive notifications of newsletters and renewal reminders (and other important and interesting emails) so it's really important that every member subscribes, and that they update their email address if that changes. If anyone is not sure whether they are subscribed or not, they should email me, and I can check.

Treasurers' Reports



Australian Chapter



Dr. Erin Cumming
Treasurer &
AUS Membership Secretary

During 2019-20, the Australian accounts showed a surplus for the year of \$3264.67. Our income consisted of membership fees and conference registration fees. One student travel grant was awarded in Australia 2019-2020. Expenses included student travel, student awards at conferences, Science and Technology Australia annual membership. Similar to New Zealand the surplus gives us more ability to fund student travel grants in the future and support sponsorship of upcoming meetings.

Australian funds are held both a Transaction account and also a Term Deposit account. Two people are required to authorize any payment from the Transaction Account. This will need to be discussed as one is unable to sign off on a regular basis. The Term deposit account is currently on a 6 monthly term deposit at a rate of 65% PA, with the next roll overdue on the 9th Feb 2021.

The final balance in the transaction account on 30 June 2020 was \$7089.01 and for the term deposit \$63,406.86.

New Zealand Chapter

During 2019-20, the New Zealand accounts showed a surplus for the year of \$2,557.94. Our income consisted of membership fees and conference registration fees. Since no student travel grants were awarded in New Zealand during 2019-2020, expenses, apart from a \$5 bank fee and PayPal fees (not itemised), consisted entirely of conference expenditure. This included the conference dinner, lunches and morning and afternoon teas, and food for the icebreaker.

The surplus gives us a little more of a financial cushion to fund student travel grants (when travel again becomes possible) and any other expenses the committee deems appropriate.

New Zealand funds are held in a single Society Cheque account, and two people are required to authorize any payment from the account. This year some funds are also held in PayPal.

The final balance in our accounts on 30 June 2020 was \$3412.16, consisting of \$3122.10 held in the ASB Society Cheque account and \$290.06 held in PayPal.



Dr. Judy Sutherland 
Treasurer &
NZ Membership Secretary

34th ASPAB Annual Meeting

THE FIRST VIRTUAL CONFERENCE



The team behind the scenes



Dr. Maren Preuss
Post-doc
Victoria University
of Wellington



Dr. Cecilia
Biancacci
Post-doc
Deakin University



Gaby Keeler-May
PhD candidate
University of Otago



Zoe Brittain
PhD candidate
Deakin University



- Alecia Bellgrove (Deakin University, Australia)
- Ellie Paine (UTAS, Australia)
- Jakob Schwoerbel (UTAS, Australia)
- Joe Zuccarello (Victoria University of Wellington, New Zealand)

At the beginning of September, last year postgraduates and early career researchers from Australia and New Zealand met over Zoom and formed the organization committee for the **first-ever virtual ASPAB conference**. Our initial meeting gave us a chance to get to know each other, discuss and decide on the important details for the conference - such as cost, date and duration, and the hosting platform. Many in the organizing committee had little experience with organizing a conference and no one knew exactly where to begin with something virtual. However, with recent conferences all being over to exclusively virtual platforms, we all had attended an online meeting in one way or another and knew what we did and didn't want the virtual ASPAB conference to be like. We really wanted the conference to be engaging and interesting ("what if no one turns up or registers?") and fortunately, we were able to keep those worries at bay and decided that no matter what, we would try our best to make this new format a success! We are also fortunate that those of us who study and research phycology and aquatic botany already have a strong interest in the topics, so most of the initial work was figuring out how to publicize the conference to the correct interest groups. By the end of the first planning meeting, we distributed the tasks of writing up an informational flyer, email blast, and website/social media updates. Shortly after the conference was advertised and it was exciting to see the first abstract submissions and registrations coming through almost right away.

Next, we needed to confirm the two individuals that we would have as our plenary speakers. Once we came to a decision of who everyone wanted to invite, we were delighted that both **Ceridwen Fraser** (University of Otago) and **Stacey Trevathan-Tackett** (Deakin University) accepted our invitations as our plenary speakers.




Ceridwen (Crid) Fraser
University of Otago

With most of the logistics now sorted, we simply now just had to wait for the abstract submission and registrations to come in! Until the beginning of November, we were busy collecting and organizing incoming registrations and abstracts and answering emails. Once the deadline for abstract submission closed, we met once more to discuss the finer details - themes for each session. Like any good event, the weeks leading up to the conference were filled with some final last-minute changes. We ran a number of mock conferences to weed out any potential technical issues to ensure everything ran smoothly on the day of the

conference. We also had to make sure that all registered attendees had submitted the correct payment and received the correct Zoom link to be able to watch or speak. It was amazing when it finally all came together to see over 60 participants and listen to plenaries by two inspiring female scientists and 26 presentations (mostly from students)!

Overall, we are extremely proud of the way that the virtual conference turned out and happy to have been able to create a space that brought together so many wonderful students and researchers to share their work. We learned a lot from the planning process and working with each other. We got to work with our two treasurers Judy Sutherland and Erin Cumming and our webmaster Dan Pritchard and especially grateful to have received guidance during our Zoom meetings from our president Alecia Bellgrove and secretary Joe Zuccarello.

As intimidating as it might appear running a conference, it was, a very pleasant and rewarding experience, shared with a great team and a considerable representation of women.

Being part of the organizing committee was a great experience that I would highly recommend to any early research career. Thanks to ASPAB for trusting us to host this event and thanks to everyone who helped make the conference a success including all the participants. We are looking forward to seeing everyone at the **35th ASPAB in Perth** this year. 

Stacey Trevathan-Tackett
Deakin University



Student Awards

This year's student awards for best research presentations were awarded by the judges to the two Ph.D. students **Zoe Brittain** from Deakin University for her presentation titled "Seaweed, Indigenous knowledge and the Blue Economy" and **Ellie Paine** from University of Tasmania for her presentation titled "Implication of ocean acidification on the release of the dissolved organic carbon by seaweeds with various carbon uptake mechanisms", first and second places respectively.

1st
Prize

Indigenous Knowledge, Seaweed and the Blue Economy



Zoë Brittain

Thesis Overview

Academic Collaborators:

Alecia Bellgrove, David S. Jones, Prue Francis & Ruth Thurstan



Abstract


The Blue Economy is an emerging concept that relates to resources that can be found in marine and coastal environments. This more 'holistic' approach to ocean resource management is advocated as an effective way to tackle anthropogenic pressures currently damaging ocean systems, such as overfishing, pollution, and climate change, whilst simultaneously improving economic and social outcomes. Despite the term gaining widespread use, there remains contention around exact definitions and goals of the concept, with different actors often expressing conflicting and contradictory understandings. This has led to a number of criticisms, notably the inability of the Blue Economy to appropriately include the perspectives and values of certain social and cultural groups, such as Indigenous peoples. As part of the 'Blue Economy', seaweed and its related industries, in particular, are gaining growing attention, especially in Australia and Aotearoa New Zealand. In my Ph.D., I will be exploring the developing seaweed industry as a case study for wider discussions of the Blue Economy and its ability to appropriately include Aboriginal and Maori perspectives.



2nd
Prize



Abstract

Concentrations of dissolved carbon dioxide (CO_2) in the ocean are predicted to increase by 200% by the year 2100 due to anthropogenic activity, causing ocean acidification (Hurd et al., 2018). The response of seaweeds to increased CO_2 is difficult to predict but thought to depend on whether they are currently limited by dissolved inorganic carbon (DIC) and the mechanism by which they take up DIC. In natural seawater, DIC is primarily available as bicarbonate which cannot pass through the seaweed plasmalemma via diffusion; 65% of seaweeds possess mechanisms that aid its uptake, termed CO_2 concentrating mechanisms (CCMs) (Raven, 1991). However, 35% of seaweeds do not possess CCMs and solely use CO_2 as their source of DIC (non-CCM species). As DIC levels increase in the ocean, seaweeds that are currently limited for DIC may utilise this additional carbon for growth. Once DIC is assimilated into organic carbon via photosynthesis, seaweeds may release dissolved organic carbon (DOC) into the surrounding seawater depending on local environmental conditions such as light and nitrogen. Diaz-Pulido et al. (2020) found a greater DOC release with an increase in seawater DIC i.e. increasing ocean acidification. We designed an experiment to test the effect of ocean acidification on DOC release by three temperate seaweed species with differing DIC uptake mechanisms: *Hemineura frondosa* (Rhodophyta, non-CCM), *Lenormandia marginata* (Rhodophyta, CCM), and *Ecklonia radiata* (Ochrophyta, CCM). I will discuss the background for this experiment and the experimental design involved. 

Congrats!

Seaweed research produces results

BY SCION- JOINT MEDIA
RELEASE 14 DECEMBER 2020

Research on seaweed species found in abundance around New Zealand has led to the development and licencing of a promising new product.

The three-year research programme led by Scion set out to test the properties of different seaweeds, including *Undaria pinnatifida* and the commercially harvested, native species *Ecklonia radiata*. Two years into the project, researchers have already commercially licenced their first product – a nanocellulose hydrogel – to project partner AgriSea, a leader in the New Zealand Seaweed industry.



Image credits: KELLEY TANTAU/STUFF

Hydrogels are used in burn wound dressings, biomedical engineering applications, drug delivery, cosmetics, and in agriculture supporting plant health to name a few examples. The gels can absorb vast amounts of water (up to 1000 times their own weight) to form a jelly-like substance.

Project partner AgriSea sees promise in the seaweed nanocellulose hydrogels and will continue developing them for their growing range of seaweed-based products. Both partners are hugely excited to see this project move to commercialization so soon.

Seaweed-based hydrogels offer not only a potential new revenue stream for New Zealand aquaculture but also access to new high-value onshore and export markets. Seaweed-based hydrogels have been made before, but never from species that are growing around New Zealand in sustainably harvestable quantities. The methods used to make the new nanocellulose hydrogels are also significantly cheaper than those currently in use.

➤ Find the full article [here](#)



Image credits: LUCAS EVANS/SUPPLIED stuff.co.nz

TOGETHER FOR A SEAWEED-Y WELLINGTON

CURIOUS
MINDS
HE HIHIRI | TE MAHARA

MOUNTAINS
TO SEA
WELLINGTON



VICTORIA UNIVERSITY OF
WELLINGTON
TE HERENGA WAKA



What happens when a group of ASPAB seaweed scientists teams up with the local dive club, the city council, an environmental education trust, and the local community? Well, you have a wonderful partnership that promotes the importance of seaweed ecosystems, educates and celebrates the diversity and beauty of our precious underwater forests, and educates the local public and next-generation kaitiaki (guardians) about their vulnerability to climate change, pollution and overfishing.



www.mountaintoseawellington.org

www.taputeranga.org.nz



Roberta D'Archino from NIWA Wellington sharing her knowledge with the community.
Image credits: Te aho tu roa



Enthusiastic treasure hunt for the small tide pool critters and seaweeds.
Image credits: Mountains to Sea Wellington



Mareike Babuder (UC) and Chris Cornwall (UVIC) explain the importance of seaweed ecosystems.
Image credits: Mountains to Sea Wellington

Coastal People: Southern Skies

Newly founded CoRE supported with \$32.25m

A voyaging waka and Te Pae Māhutonga (the Southern Cross) are the symbols of the adventurous spirit of the new Otago-led Centre of Research Excellence (CoRE) Coastal People: Southern Skies (CPSS). CPSS was recently awarded just over \$32 million by the Tertiary Education Commission (TEC) in the latest CoRE funding round and is led by co-Directors Associate Professors Chris Hepburn and Anne-Marie Jackson. The use of Te Pae Māhutonga as one of the key markers for the CoRE reflects its role in **connecting the coastal people of the South Pacific** who together are facing a shared, yet uncertain, future in the face of environmental change. "The moana (ocean) is the thread that binds and connects the Pacific," Associate Professor Jackson says. "But that ocean is changing as a result of ocean warming and acidification, climate and sea-level rise, and these issues affect our identities, histories and well-being as coastal people."

“

CoREs focus on collaborative long-term work, and thousands of students, researchers and support staff across the tertiary sector will benefit from their activities over many years.

TEC chief executive Tim Fowler

”

In this context of a changing environment, CPSS's mission is to **connect, understand and restore coastal ecosystems through transformative research and local action**, with mauri ora (flourishing wellness) of coastal communities guiding its overall vision. The story of CPSS began 13 years ago, when Associate Professor Hepburn was a postdoc and Associate Professor Jackson a PhD student, during

shared weekly car journeys along a stretch of coast steeped in history to the small coastal settlement of Karitāne. Since then, together with their colleagues, they have taught and supervised thousands of students who learn how to work in partnership with local communities on issues of importance. One such initiative has been the creation of an annual East Otago Taiāpure Research evening that allows taurira who have conducted research in the Karitāne area to present their mahi to the local community under the mana of Kāti Huirapa ki Puketeraki.

Tangata Tiaki Brendan Flack, of Kāti Huirapa, reflects that **Puketeraki is a kōhanga**, a nursery, where students and researchers learn their craft, adding "they leave a piece of themselves here, and they take a piece of our place with them wherever they go." This successful community partnership approach will be the CoRE's platform that brings together world-leading multi-disciplinary research programmes involving more than 80 researchers across Aotearoa's universities, alongside other partners including iwi organizations, wānanga, NIWA, Te Toki Voyaging Trust and Coastguard Boating Education. "CPSS will support the voice and capability of coastal communities," Marine Science Associate Professor Hepburn says. "They are at the front-line and will provide the leadership we need as our oceans continue to change."

**Kōrero by Guy Frederick,
Sciences Communications Adviser University of Otago**



Co-Directors of the new CoRE Coastal People : Southern Skies, Marine Science Associate Professor Chris Hepburn and Māori Physical Education and Health kairangahau (researcher) Associate Professor Anne-Marie Jackson.

Find the full article [here](#)

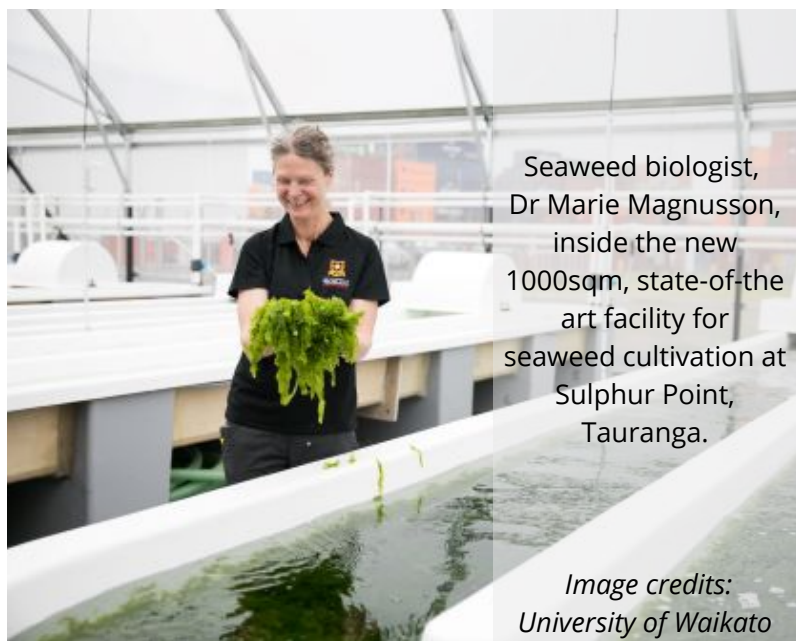
UNIVERSITY OF WAIKATO, NZ

AQUACULTURE ECONOMY A LUCRATIVE INDUSTRY FOR THE BAY OF PLENTY

19 November 2020

The Aquaculture economy in the Bay of Plenty has just received a significant boost with the opening of a brand-new facility in Tauranga.

The 1000sqm facility was officially opened by Senior Deputy Vice-Chancellor Professor Alister Jones and is the first in New Zealand to provide state-of-the art infrastructure for seaweed cultivation from nursery stages to grow-out and aims to deliver closed life-cycle aquaculture production of seaweed. [...]



Seaweed biologist, Dr Marie Magnusson, inside the new 1000sqm, state-of-the art facility for seaweed cultivation at Sulphur Point, Tauranga.

Image credits:
University of Waikato

From sea pest to salad, and more

Dr Magnusson says Tauranga's harbour is subject to recurring blooms of green seaweed (sea lettuce) and while the blooms are deemed a pest, this species of seaweed may hold the key to a lucrative industry in the Bay of Plenty.

I'm excited about the organic growth of opportunities for community outreach – from local high school science students to connections with local iwi.

Dr Marie Magnusson

"We're exploring ways of using sea lettuce to develop food and agricultural products," she says.

Dr Magnusson says macroalgae represent a largely untapped resource for materials and bioproducts that will enable sustainable diversification of New Zealand's aquaculture industry.

"We're researching commercial applications of seaweed and potential ways to use macroalgae and their extracts for agricultural, human and animal health, and materials science applications," she says.

"Aquaculture has a proud history in this part of New Zealand and this new impressive facility can help us take full advantage of future opportunities in this growing and high-value industry."

Seaweed is a huge multi-billion dollar industry in Asia - particularly red and brown seaweed, but the potential of green seaweed is yet to be fully explored and maximised. [...]

Find the full article [here](#).

New Partnership Poses Algae-Based Foods As Next New Wave For Australia

by *vegconomist*

February 24, 2021



Image credits: Flinders University

Flinders University of Southern Australia is to lend its scientific support to utilising innovative Australian marine bioproducts in plant-based foods. The move could pave the way for Australia to become a major player in the booming seaweed economy, as more and more food producers discover its myriad benefits.

The Centre for Marine Bioproducts Development at Flinders University has teamed up with Australian Kelp Products Pty Ltd to produce new seaweed-derived ingredients and functional food products for the vegan market. Australia's vast amount of coast holds a multitude of renewable bioresources, presenting a great opportunity to enter the international marine bioproducts market, which analysts predict to exceed USD \$92 billion by 2025. [...]

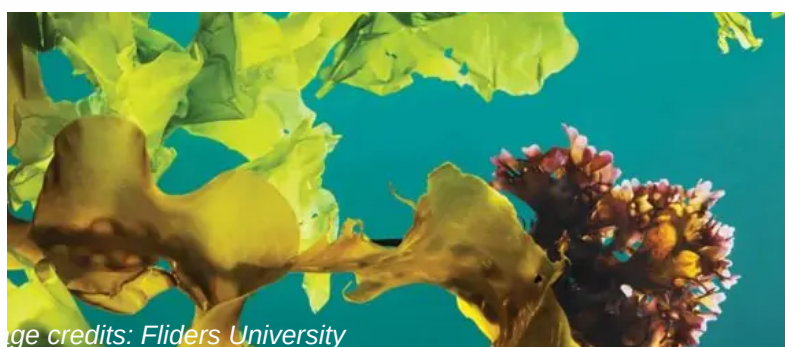


Image credits: Flinders University

Founder and Director of the Flinders CMBD, Professor Zhang, says that Australia holds a unique opportunity within its Exclusive Economic Zone – an area spanning ten million square kilometres of marine territory. “Australia has unique marine biological diversity,” he says. “Nearly 70% of our marine biota is unique to our region, and marine biotechnology builds on this natural asset.”[...]

“South Australia has almost 15% of the world’s recorded diversity for red and brown seaweeds, which are the most commercially valuable species. But we don’t have endless quantities to use for commercial production.

The good news is that experts predict that Australia’s pristine environment and strict regulatory practices put it in a prime position to become a major global player in the years to come.”

Professor Zhang

Find the full article [**here**](#).



LAKE TAUPŌ ALGAE RESEARCH SERIOUS FUN FOR STUDENT

EXPLORING NEW ZEALANDS 'GREEN BOTTOM LAKE'

CHRIS MARSHALL 10:58, FEB 09 2021 WWW.STUFF.COM



Te Riria Potiki has been mapping algae growth with an underwater drone as part of a Waikato University summer research project. Image credits: stuff.com

Worried she may be out of her depth working alongside the team of experienced scientists, Potiki, who grew up in Tūrangi and attended Tauhara College in Taupō, said everything had gone swimmingly.

It's good to get some experience in the science field and because it's lake Taupo where I'm from. - Te Riria Potiki

"They are all so nice, and we all bring different skills to the table. You gain a lot from these sorts of hands-on experiences in each other's worlds and I hope it's something I can continue in my career." The project is led by Professor Ian Hawes from the university's Tauranga campus as part of a collaboration with universities in the United States, and the Cawthron Institute into filamentous algal blooms in clean lakes. Often referred to as 'green bottom lake', the bloom is a problem all over the world.

A dream summer job has allowed Waikato University student Te Riria Potiki, 19, to virtually fly around underwater – for a good cause.

Potiki has spent the summer collecting data on algal blooms in Lake Taupō using an underwater drone every fortnight to take algae images at Whakaipo Bay.

Launched from the shore, and driven by remote control, the drone has a camera that can be hooked up to a mobile phone or i-pad so the pilot can watch in real time what's happening. "It's quite cool," said Potiki who watches the clips afterwards adding data to tables on the vegetation growing at different depths. The drone also records water temperature.

The project has allowed the Bachelor of Environmental Planning student to return home, be part of an important international research project into problems freshwater lakes are facing globally and gain valuable experience.



Algal blooms can cause asthma and hay fever attacks or skin rashes, stomach upsets, and, in some cases neurological effects, such as tingling around the mouth.

Image credits: stuff.com

Find the full article [**here**](#).



PhD Thesis



Developing seaweed production techniques for *Phyllospora comosa*


Dr Erin Elizabeth Cumming BSc(Hons) PhD



This thesis primarily investigates the feasibility of developing hatchery production techniques for the Australian native seaweed, *Phyllospora comosa*. The benefits of seaweed and seaweed cultivation within the literature are explored (Chapter 1) with insight into the state of seaweed aquaculture in Australia and the potential for industry expansion. The feasibility of culturing two native Australian kelp species that have generated commercial interest, *Phyllospora comosa* and *Ecklonia radiata*, in association with mussels, was assessed (Chapter 2).

Potential growout sites were investigated to identify the optimal location and depth for the seaweed. The aim of this chapter was to 1) assess the variability in physicochemical conditions across three pre-existing aquaculture zones (Clifton Springs, Mt Martha, Pinnacle Channel) located within the Port Phillip embayment, by comparing temperature, light, dissolved oxygen, salinity and pH across three depths (2 m, 5 m and 7 m) at different times; and 2) determine if *P. comosa* and *E. radiata* can successfully grow at the same three depths (2 m, 5 m and 7 m) during a 'downtime' in mussel production. This was assessed this was assessed by transplanting juvenile seaweed from natural populations to the Mt Martha lease site. Changes over time in the physicochemical environment of the aquaculture leases were not consistent amongst sites according to 3-factor PERMANOVA with a significant site x sampling time interaction. Despite these differences, there were consistent differences between depth, driven by different physicochemical variables, depending on the site and sampling time. Overall, Clifton Springs showed greater sample-to-sample variability (multivariate dispersion) than Mt Martha and Pinnacle Channel at both Time 1 and Time 2. Transplantation of juvenile (~20cm) *P. comosa* and *E. radiata* into the aquaculture lease at Mt Martha during the 'downtime' in mussel production in late spring of 2016 was not successful. Deterioration, mortality and loss of plants were evident after just 2-weeks post deployment, particularly at 2 m where light and temperature were highest, indicating this depth is most likely too shallow for deployment as heat/light stress hinders plant growth and survival. Optimal spawning conditions and early development of *P. comosa* were identified under laboratory conditions (Chapter 3). Germination success was tested across: Lunar phase (New Moon vs Full moon), Temperature (15°C, 18°C, 21°C), Light (35 $\mu\text{mol photons m}^{-2} \text{s}^{-1}$ vs 0 $\mu\text{mol photons m}^{-2} \text{s}^{-1}$) and Exposure (desiccated vs submerged).

Spawning of eggs and sperm was achieved in all treatments combinations. However, there were no consistent effects of lunar phase, light, temperature or exposure, with high temporal variability amongst treatment groups. Percentage germination after 24 h in static culture varied between 35-90 % and overall embryo mortality was high (> 65 %) after 7 days, but did not differ statistically among spawning cue treatments. The high mortality observed at day 7 did not appear to be linked to insufficient egg or sperm densities nor excess sperm (polyspermy). Overall, results indicated flexibility in spawning conditions, which is advantageous for integration into aquaculture. Next (Chapter 4), seeding success of *P. comosa* zygotes and germlings were compared among different twines varying in diameter and composition (nylon 1 & 3 mm), Kuralon (2 mm & 3 mm), Algae Twine TM (1 mm) in three separate experiments (A, B & C). Successful seeding of *P. comosa* zygotes occurred on all twines in all three experiments, but differences in length, percentage cover and densities varied among twine types across times, and between experiments. Germlings reached ~ 1-mm lengths by 9 weeks of age in Experiment A, but similar lengths were reached by 4 weeks in Experiment B. In Experiment C, germlings attained 1.7 mm by 12 weeks on all twines except hemp. Combined results demonstrate that whilst 2-mm Kuralon twine generally performed well, a range of twine types may be suitable for seeding and subsequent hatchery growth of *P. comosa* embryos, including the natural twine, hemp. Farmers may thus effectively base their choice of seeding twine on the cost of material versus environmental trade-offs of using natural versus synthetic twines. However, performance of the different twines at sea remain to be tested in future studies.

The information collected in chapters 2-4 was used to produce a preliminary industry handbook (Chapter 5). This preliminary handbook is the applied outcome of this body of work which is designed to keep the continued momentum and refinement of the culture conditions and aquaculture production of *P. comosa*. The final general discussion provides a broad-scale synthesis of the findings and significance of this body of work, with suggestions for future research directions (Chapter 6). 

Publications arising from this thesis:

Cumming EE, Matthews TG, Sanderson JC, Ingram BA, Bellgrove A (2020) Growth and survivorship of *Phyllospora comosa* (Phaeophyceae, Fucales) on different mariculture seeding twines in a hatchery setting. *Aquaculture* 523:735216. doi:10.1016/j.aquaculture.2020.735216

Cumming EE, Matthews TG, Sanderson CJ, Ingram BA, Bellgrove A (2019). Optimal spawning conditions of *Phyllospora comosa* (Phaeophyceae, Fucales) for mariculture. *J Appl Phycol*. <https://doi.org/10.1007/s10811-019-01788-8>

Congratulations



Using children's literature to teach marine science concepts

Cátia Freitas




Ph.D. candidate Deakin University



It is estimated that 70% of the Australian population lives within 50 km of the southern coastline and depends upon the ecological and economic benefits provided by the unique marine ecosystem of the Great Southern Reef (GSR). However, this temperate reef system is still relatively unknown and threatened by climate change and rapid and unsustainable coastal development.

The key to protecting the GSR is to raise awareness and educate towards its conservation and this awareness should start in early education as children represent the future ocean stewards who will make important decisions regarding the marine environment and its resources. One approach in this direction is the use of children's literature as an educational tool to teach about marine science. Using quality children's literature may enhance a child's connection with the ocean and help develop positive attitudes towards science.

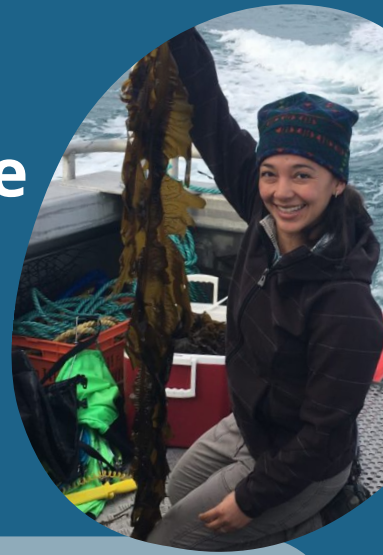
In this regard, this research project will explore how children's picture books focused on the biodiversity of the temperate marine environment of the southern coast of Australia can be used to increase ocean literacy in primary schools. 



Cátia has always had a passion for the ocean, for books and for storytelling. After completing her marine biology degree, she had her first experience as a marine educator in primary schools and quickly found her love for teaching young children about the ocean. Her goal was always to communicate science in a way that was meaningful and easy to understand. Back then, she decided to write a book for kids that could help her with this task and this experience taught her that children's books are one of the most powerful educational resources that can be used to enhance student's knowledge and connection with the ocean. This is the reason that led her to start a Ph.D. at Deakin University where she will be investigating the use of children's picture books to teach marine science concepts under the supervision of ASPAB members Dr Prue Francis and Dr Alecia Bellgrove and children's literature expert Dr Paul Venzo.

Growing connections and building community while removing invasive kelp in southern New Zealand

Gabrielle R. Keeler-May  
Ph.D. candidate University of Otago



Kia ora! It's been just over 18 months since I began my Ph.D. journey at the University of Otago, and if moving to the southern hemisphere wasn't enough to flip my world upside-down, the pandemic certainly did. That probably rings true to most of you reading this as it may be hard to remember what life was like 'pre-COVID-19.' It's been a strange time to begin my Ph.D., but I'm fortunate that many people here have done their best to make me feel like whānau in New Zealand. Outside of the ASPAB whānau, I am especially grateful for the members of my lab group with Associate Professor Chris Hepburn and Otago's Marine Science Department. Arriving to a new place with very few familial connections is one of the most difficult things I have ever done, but so far, it has been the most rewarding. I also want to acknowledge that I receive strong support and funding from Ngāi Tahu through the Te Tiaki Mahinga Kai partnership, the American Association of Underwater Scientists, Environment Southland, and Refine Holdings Co. and would not be able to successfully do my research without their contributions.

My research has taken me to some amazing locations so far. When I first proposed my research project, it was with the intention to work in Fiordland, but it turned out even better than expected as I was able to expand my research to include Rakiura and the East Otago Taiāpure. I've been able to work alongside some of New Zealand's best marine scientists and scuba dive in extraordinarily pristine marine habitats. The main reason I wanted to come to Otago for my doctorate was to work in *Macrocystis pyrifera* kelp forest, just like the ones I used to dive in Monterey. Even in a new place, diving and researching here feels like home to me.

Prior to coming to Dunedin, I was a biological restoration technician for a non-profit in California where we removed endless fields of the invasive crystalline iceplant, *Mesembryanthemum crystallinum*, and replanted native shrubs for nesting seabirds. This work was one of the foundations of my interest in invasive biology and what led me into my current Ph.D. research. It was then that I began to understand the importance of habitat-building species and the species that rely on them. For my research here in Dunedin, I was able to combine my skills with underwater diving research with my interest in invasive and restoration biology to turn it into a project that I'm passionate about. →



Image credits: Gaby Keeler-May



The aim of my doctorate is to assess the impacts of the invasive kelp, *Undaria pinnatifida*, in the rocky subtidal kelp forests of southern New Zealand. I'm building on previous work that has looked at the physiology and ecology of the invader and another student's masters project that first looked at ways to manage its spread along the natural coastline.

Currently, I am quantifying its current density in southern subtidal populations compared to when it was initially introduced over 30 years ago. I'm also developing methods to more efficiently manage the growing invasive populations through large-scale removal efforts. Through continual monitoring of sites that have undergone removal, I plan to be able to understand the impact of control programmes on the southern subtidal populations.

I also intend to compare invasive and native seaweed community contributions to the biomass of kelp forest ecosystems, evaluate the distribution and expansion of *Undaria*, especially in areas of recent introduction, and determine the impact of *Undaria*'s ability to resettle and recruit following removal manipulations.

This type of restoration work takes a profound amount of time and resources, but the best part of my current work is the growing number of people who are willing to spend their time helping me with this mahi. I literally wouldn't be able to remove the tonnes of *Undaria* that we have over the past two field seasons without immense time and assistance from others and am forever indebted to every individual who has worked alongside me. The importance of collaboration and teamwork is not lost on me and I know wouldn't succeed without those who have helped me along the way. Science is truly a collaborative field and I love that I'm working on a project where I get to engage with so many other students and researchers. I've had multiple opportunities to contribute to work that began before I arrived and will continue on after I've completed my doctorate. I'm proud to be part of it all and deeply humbled that I am able to participate in this work, day after day.

I hope that wherever you are, you too are finding the time to connect and work with each other, in a world where things seem very unfamiliar, disconnected and strange, it is more important than ever to make sure to find time to reflect on the work you are doing and find gratitude for those who help you with it. Thank you all for allowing me to represent the students of ASPAB for another year, I'm looking forward to connecting with you all more in the future!



Undaria pinnatifida- has established in many parts of New Zealand over the last 20 years.

gaby.keelermay@postgrad.otago.ac.nz

ASPAB MEMBER PROFILE

Dr Christopher Cornwall



From the tropics to the temperate rocky reefs of New Zealand

Chris is a Rutherford Discovery Fellow at Victoria University's School of Biological Sciences and leader of the Understanding theme of the Centre of Research Excellence, Coastal People: Southern Skies.

His group seeks to understand both the larger scale ecological impacts of climate change on temperate rocky reefs and tropical coral reefs, as well as the mechanisms underpinning these effects. His core research focuses on coralline algal and coral calcification mechanisms, seaweed inorganic carbon uptake, and carbonate production of reefs. He uses a mix of traditional eco-physiology, ecology, geochemistry, meta-analyses and modelling to answer these questions. His collective research utilizes data from over 260 locations in the Pacific, Indian and Atlantic Oceans, with a heavy focus on New Zealand and Australia.

Resistance to climate change

His recent work seeks to determine how traits that better enable resistance to different climate change stressors are promoted, and the physiological mechanisms via which they operate. Ecological theory dictates that plasticity is often promoted in populations from more variable environmental conditions.

RUTHERFORD DISCOVERY
FELLOW, VICTORIA
UNIVERSITY OF
WELLINGTON



christopher.cornwall@vuw.ac.nz



Image credits: Chris Cornwall





Image credits: Chris Cornwall

**find out more
about the work
he conducted in
Australia's
north-west**



click [here](#).



Image credits: Chris Cornwall

However, his recent work demonstrates that this is not quite correct for traits that promote resistance to ocean acidification, and that only exposure to consistently low pH over multiple generations can enable resistance to ocean acidification in coralline algae, irrespective of the pH variability in their natal habitat. Recently funded work now extends to determining the genetic mechanisms that promote these traits (e.g. transgenerational acclimation or changes in allele frequency). He also works at numerous high CO₂, low O₂ and high temperature sites: determining the characteristics of which of these extreme reefs could be a window into the future using geochemical and molecular techniques.

Reef growth

Chris' last post-doc was with the ARC Centre of Excellence in Coral Reef Studies. Part of that position involved measuring the carbonate production (i.e. growth) of extreme reefs, improving methods in reef growth measurements,

and providing global-scale predictions regarding how climate change could impact coral reef growth. He was also a Chief Investigator on an ARC Discovery grant assessing carbonate production on coralline-dominated platforms. He is currently working on improving estimates of the contribution of seaweed to reef growth, and also estimating how temperate biogenic reefs will fare under climate change.

Multiple stressors & experimental design

Chris's work attempts to improve research design and implementation using some of the information gained over the >50 laboratory manipulation experiments he has conducted. Current theoretical and practical work involves improving trade-offs between logistics and power in multiple generation experiments and employing more efficient designs to test future scenarios of change in marine species.





A podcast hosted by marine educators and scientists with vast expertise in Sargassum and Coastal Communities

The podcast interviews scientists, entrepreneurs, managers, community project leaders, government officials, artists, fishermen, people working in the tourism sector, and others on how they experience Sargassum, a floating alga that has caused severe problems when beaching in the wider Caribbean and West Africa. Each interviewee will tell us of solutions or new knowledge they came up with while dealing with Sargassum.

To listen and subscribe to the podcast go to [audio-only](#) or [video](#).



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With a Little Kelp from Our Friends

The Secret Life of Seaweed: History, Culture, and Environment

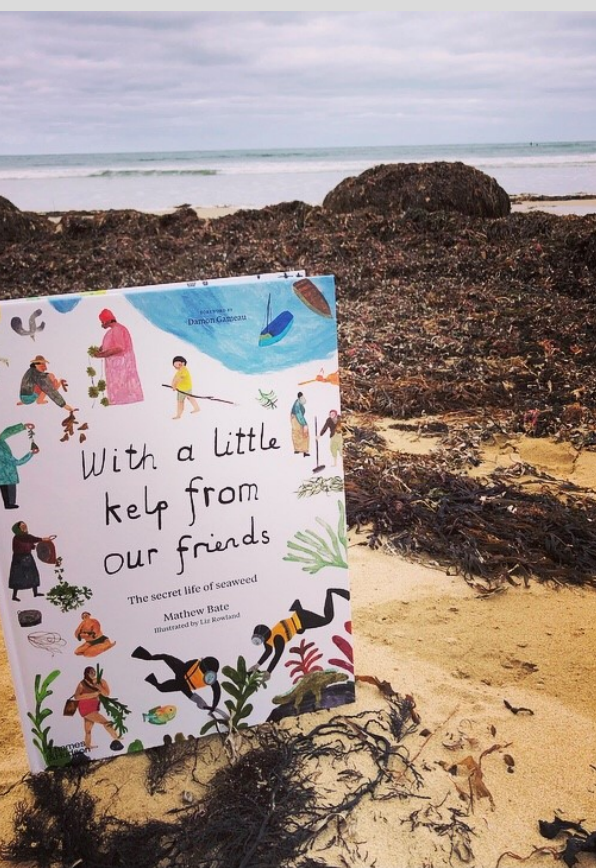
by: *Mathew Bate & Liz Rowland (Illustrator)*

A children's book that everyone will love to read.

Every page of the newly published non-fiction children's book "With a Little Kelp from Our Friends" written by Mathew Bate and illustrated by Liz Rowland, instantly takes the reader on an exciting journey of seaweed secrets to unveil. From how seaweed play a major role in regenerating marine ecosystems to how it benefits people nutritionally, culturally, and ecologically, this book is populated with plenty of fascinating details about the stunning potential of these amazing organisms. The illustrations are beautiful and captivating, let alone the fact that no matter how many times one looks at the same page, it is almost guaranteed to note something new.

This is a fantastic educational resource not only for children but literally to anyone who wonders why seaweed are so special and how they can 'kelp' us live more sustainably. The best part? The adventure does not end when you finish reading it - in addition to the enjoyable and educational activities offered in the last pages, it only takes a walk along the beach to have a glimpse of some of the sexy seaweeds and (re)connect with the natural world.

Review and photo by Cátia Freitas



THE EDITORS

5

The Top 5 Instagram follower tips from your editors



1

@seaweed_gardens

Growing Gardens in the Sea of Beautiful BC and Cultivating Seaweed Appreciation Worldwide



2

@australian_seaweed_institute

We are dedicated to building a sustainable, climate-positive seaweed industry in Australia to support thriving oceans and coastal communities.



3

@josieiselin

Photographer, designer, and book builder. Ocean enthusiast and seaweed lover. The Curious World of Seaweed is my most recently released book.



4

@greatsouthernreef

Fringing 8,000 km of Australia's southern coastline, the Great Southern Reef is an interconnected ecosystem and home to thousands of unique species

5

@broome_seagrass

Mapping the health of Roebuck Bay over time via its most powerful bioindicator: seagrass.

2021-2022

CONFERENCES

MARCH

ICABB 2021 : International Conference on Algae Biotechnology and Biofuels

Sydney, Australia
March 29 - 30, 2021

MAY



The 7th **Congress of the International Society for Applied Phycology** will be streaming ONLINE from **May 14 2021** and will then become available 'on demand' until the 13th August 2021. Follow information on the congress [webpage](#)

SEAWEED FOR HEALTH VIRTUAL CONFERENCE
17-19 MAY 2021

Seaweed for Health

JUNE

International Conference on
Algal Biomass, Biofuels & Bioproducts

14-16 June 2021

ONLINE
LIVE &
ON-DEMAND

JULY



The **75th PSA Annual Meeting** for 2021 will be **virtual**. They will meet on 4 days spread across two weeks: **July 13, 15, 20, and 22**, from approximately 11AM to 3PM EST. They will host the same exciting symposia, workshops, and poster sessions as usual, but the meeting is **FREE** for members. [Registration](#) and abstract submission deadline is **May 1 2021**

SEPTEMBER

SEAGRICULTURE 2021 switched to an online format

10th International Seaweed Conference

15-16 September 2021

Register now!

NOVEMBER



35th Annual ASPAB Conference is being planned for **November 2021** in **Perth, WA**. We are hoping for an in-person conference if travel restrictions are lifted. Dates, conference venue, and registration details will be confirmed ASAP and communicated to the membership via the ASPAB-list and social media channels.

DECEMBER

ALGAEUROPE 2021

07-09 DECEMBER 2021

ROME - ITALY

2022

FEBRUARY

SEaweeds IN A CHANGING WORLD

**24TH INTERNATIONAL SEAWEED
SYMPOSIUM**
13 - 18 FEBRUARY 2022

Hobart | Tasmania | Australia | Online

AUGUST



**World Seagrass Conference & International Seagrass Biology
Workshop**

WSC2022 & ISBW14

Signs of Success Annapolis, MD 7 - 12 August, 2022



MEMBERS

PUBLICATIONS

Albert, G., Hepburn, C.D., Pajusalu, L., Paalme, T., Pritchard, D.W., Martin, G., (2020) Could ocean acidification influence epiphytism? A comparison of carbon-use strategies between *Fucus vesiculosus* and its epiphytes in the Baltic Sea. *Journal of Applied Phycology* 32, 2479–2487. <https://doi.org/10.1007/s10811-019-01953-z>

Bellgrove A , Nakaya F , Serisawa Y, Matsuyama-Serisawa K, Kagami Y, Jones PM, Suzuki H, Kawano S, Aoki, MN (2020) Maintenance of complex life cycles via cryptic differences in the ecophysiology of haploid and diploid spores of an isomorphic red alga. *J Phycol.* 56: 159-169 [doi:10.1111/jpy.12930](https://doi.org/10.1111/jpy.12930)

Bellgrove A, Aoki M (2019) Attachment strength differs amongst life-history stages of an intertidal, isomorphic red alga. *Phycol Res.* [doi:10.1111/pre.12407](https://doi.org/10.1111/pre.12407)

Cumming EE, Matthews TG, Sanderson JC, Ingram BA, Bellgrove A (2020) Growth and survivorship of *Phyllospora comosa* (Phaeophyceae, Fucales) on different mariculture seeding twines in a hatchery setting. *Aquaculture* 523:735216. [doi:10.1016/j.aquaculture.2020.735216](https://doi.org/10.1016/j.aquaculture.2020.735216)

Garbary D.J., D'Archino R., Flack B., Hepburn C.D., Nelson W.A, Pritchard D.W. & Sutherland J.E. (2020) First record of *Bonnemaisonia hamifera* (Bonnemaisoniales, Rhodophyta) in the South Pacific, from the South Island of New Zealand, *New Zealand Journal of Marine and Freshwater Research*, 54:2, 167-176, <https://doi.org/10.1080/00288330.2019.1661260>

Graham J. Edgar, Antonia Cooper, Susan C. Baker, William Barker, Neville S. Barrett, Mikel A. Becerro, Amanda E. Bates, Danny Brock, Daniela M. Ceccarelli, Ella Clausius, Marlene Davey, Tom R. Davis, Paul B. Day, Andrew Green, Samuel R. Griffiths, Jamie Hicks, Iván A. Hinojosa, Ben K. Jones, Stuart Kininmonth, Meryl F. Larkin, Natali Lazzari, Jonathan S. Lefcheck, Scott D. Ling, Peter Mooney, Elizabeth Oh, Alejandro Pérez-Matus, Jacqueline B. Pocklington, Rodrigo Riera, Jose A. Sanabria-Fernandez, Yanir Seroussi, Ian Shaw, Derek Shields, Joe Shields, Margo Smith, German A. Soler, Jemina Stuart-Smith, John Turnbull, Rick D. Stuart-Smith (2020). Establishing the ecological basis for conservation of shallow marine life using Reef Life Survey. *Biological Conservation* 252:108855

Ierodiaconou, Daniel, Wines, Samuel, Carnell, Paul, Tinkler, Paul, Blake, Allan, Young, Mary, Carey, Jan, Howe, Steffan and Pocklington, Jacqueline (2020). An enhanced Signs of Healthy Parks monitoring program for Victoria's Marine National Parks and Marine Sanctuaries: Point Addis Marine National Park., Parks Victoria Technical Series 114, Melbourne, Vic.

MEMBERS

PUBLICATIONS

Jacqueline B Pocklington (2020). A method for safely removing the invasive kelp *Undaria pinnatifida* (Harvey) Suringar. The Victorian Naturalist 137(6):246-251.

Keerthanan, S., Gunawardane, C., Somasundaram, T., Jayampathi, T., Jayasinghe, C., & Vithanage, M. (2021). Immobilization and retention of caffeine in soil amended with *Ulva reticulata* biochar. J. Environ. Manage., 281, 111852. doi: 10.1016/j.jenvman.2020.111852

Kinoshita-Terauchi N, Bellgrove A, Shiba K, Inaba, K (2020) Flagellar motility during sperm chemotaxis and phototaxis in fucalean algae. Eur J Phycol doi:10.1080/09670262.2020.1767307

Miller, A.D., M.A. Coleman, J. Clark, R. Cook, Z. Naga, M.A. Doblin, A.A. Hoffmann, C.D.H. Sherman and Bellgrove, A. (2020) Local thermal adaptation and limited gene flow constrain future climate responses of a marine ecosystem engineer. Evol Appl doi:10.1111/eva.12909

Nguyen, H.T.T., Pritchard, D.W. & Hepburn, C.D. Nitrogen and phosphorus ecophysiology of coralline algae. J Appl Phycol 32, 2583–2597 (2020). <https://doi.org/10.1007/s10811-019-02019-w>

Pajusalu L., Albert G., Fachon E., Hepburn C.D., Kotta J., Liversage K., Paalme T., Peterson A., Pritchard D.W., Põllumäe A, Torn K. & Martin G. (2020) Ocean acidification may threaten a unique seaweed community and associated industry in the Baltic Sea. J Appl Phycol 32, 2469–2478 (2020). <https://doi.org/10.1007/s10811-019-01935-1>

Siobhan R. Vye, Stephanie Dickens, Leoni Adams, Katrin Bohn, Jade Chenery, Nicola Dobson, Ruth E. Dunn, Hannah S. Earp, Megan Evans, Charlotte Foster, Hannah Grist, Ben Holt, Sue Hull, Stuart R. Jenkins, Peter Lamont, Sarah Long, Nova Mieszkowska, Justine Millard, Zoe Morrall, Kathryn Pack, Hannah Parry-Wilson, Jacqueline Pocklington, Jane Pottas, Leonie Richardson, Abigail Scott, Heather Sugden, Gordon Watson, Victoria West, Debbie Winton, Jane Delany, Michael T. Burrows (2020) Patterns of abundance across geographical ranges as a predictor for responses to climate change: Evidence from UK rocky shores. Diversity and Distribution 26(10): 1357– 1365.

Twigg, I. M., F. Baltar, J. R. Hall, and C. D. Hepburn. (2020) Revealing hydrogen peroxide as an external stressor in macrophyte-dominated coastal ecosystems. Oecologia. <https://doi.org/10.1007/s00442-020-04690-0>

Twist B.A., Kluibenschedl A., Pritchard D.W., Desmond M.J., D’Archino R., Nelson W.A., Hepburn C.D. (2020) Biomass and species richness relationships in macroalgal communities that span intertidal and subtidal zones. Mar Ecol Prog Ser 654:67-78. <https://doi.org/10.3354/meps13496>



Notification of cancellation

JOANNA JONES STUDENT TRAVEL GRANT - March 2021

“Due to limited travel and conference cancellations, the **2021 March** round of the Joanna Jones Student travel grants is cancelled. The August round is still going ahead”



THE ASPAB Board



President

Alecia Bellgrove



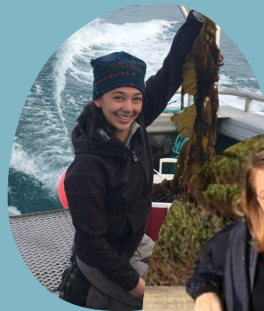
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