

**2021/2**

2021 SUMMER ISSUE

# ASPAB

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

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## Contribution

Thanks Jo, John, Alecia, Joe, Judy, Manoj, Dan, Maren, Mareike, Gaby, Joana, Neth, Nam, Huia, Srijan, and Zoe.

**Contact editor** for questions or if you want to contribute content:

The editor (Newsletter)

Australasian Society for Phycology and Aquatic Botany

Thiruchenduran (Thiru) Somasundaram 

tsomasundaram@deakin.edu.au 

Cover image credits: Gabrielle Keeler-May *more on The ASPAB Cover Story*

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# Letter from the editor

Dear ASPAB members,

Once again we have reached the end of a fine year of ASPAB activities. This is that time of the year when we review our years activities, sum-up reports, settle businesses and get ready for a fresh start in a new year. This newsletter too brings you official reports for the year 2021, ASPAB conference 2021 review, research stories during 2021, introduction to newly formed ASPAB committee 2022 and opportunities for those who are seeking a new beginning.

This issue's member profile section features one of the fine scientist in our society and the president(elect) of ASPAB committee (2022), Dr Manoj Kumar, University of Technology, Sydney. New committee members too, has shared their short-bio for the interests of our readers. While wishing good luck for the new committee, I thank the previous committee for their contribution to the society. Especially, Mareike and Ellyn for their editorial contributions.

I also thank members and non-members for their contributions. I want to emphasize that ASPAB newsletter provides you a venue to share your research stories that are otherwise hidden behind your publications. It is true that stories inspire minds both young and old alike. I encourage our readers to actively engage with their peers, potential students and supervisors through sharing their research stories through ASPAB Newsletter.

I wish you good luck and a happy and successful new year 2022.

Thiruchenduran

# The President's report

Dr. Alecia Bellgrove  

The President



Despite our greatest hopes for 2021, the COVID-19 pandemic has continued to prove challenging and limit our abilities to travel for research and conference purposes, both nationally and internationally for Australian and NZ members of ASPAB. This has meant that, for a second year in a row, we have been unable to fund student travel through the Joanna Jones Student Travel Awards. However, we are hopeful that the end is nigh for travel restrictions and that we will be able to once again support student travel in 2022. With this in mind, I will take this opportunity to remind students that to be eligible for these travel awards you must have been an ASPAB member for at least 12 consecutive months prior to application (so perhaps a timely reminder to check that you are currently paid up for the 2020-21 financial year). We anticipate being able to offer two rounds again in 2022 with the first due March 31st and the second round by August 31st.

Our website manager, Dan Pritchard, has spent a lot of time and effort researching platforms to transition our website with the opportunity to streamline some of our processes such as incorporating online membership renewals to make it easier for us all to maintain our memberships from year to year. We thought we had a solution ready to implement prior to the beginning of this financial year but then we realised there was a major stumbling block associated with receiving membership dues in two currencies (i.e. Australian members currently pay into the Australian transaction account in AUD and NZ and other members pay into the NZ bank account in NZD). This unfortunately means that we have now had to start investigating more customised (and therefore expensive) options or alternatively to reconsider the way we manage ASPAB funds and payments. This is an ongoing discussion that will hopefully be resolved in the new year. We appreciate your patience, and I would like to particularly thank Dan for the amazing work he has done behind the scenes on this task.

Travel restrictions have also meant that both the Science Meets Parliament (SMP) event and our annual conference have once again been conducted in the virtual sphere. However, unfortunately we did not have anyone self-nominate to represent ASPAB at the SMP hosted by Science and Technology Australia. Each year we are able to nominate two Australian members to attend this event, in which you are provided with training in how to effectively communicate with politicians and then given a unique opportunity to put the training into practice during a meeting with a current MP in a small group of delegates from other member scientific societies.



I strongly encourage all Australian members to consider nominating for this event in 2022 (which again we anticipate will once again be held in Canberra). ASPAB can provide a partial contribution to the cost of attendance for delegates and a letter of support to assist in leveraging additional financial support from your institution.

Maintaining an active membership base from year to year continues to be a challenge for us, not because people are not interested in the society, but perhaps because everyone is busy, renewal reminder emails can often get lost in the inbox abyss and our renewal system is arguably not as easy/streamlined as it may be. Whilst we are working towards making this as easy as possible, we would appreciate it if all on the ASPAB list could 1) check your email to see if you have received a recent renewal reminder, 2) check in with the Australian or NZ treasurer to check your current membership status and renew if required. Receipts should have been issued to all current financial members for 2020-21 by the end of November, so please get in contact with the relevant treasurer/membership manager (Aust or NZ) if you have not received yours by then. (Conference registrations receipts will also be issued by this date). I would also like to continue to encourage all members to continue promoting ASPAB membership to your colleagues, peers and students as appropriate. By growing our membership base and increasing our active engagement we can become a more dynamic and vibrant society for all.

The ASPAB committee has continued to meet via Zoom during 2020-21 to work towards progressing our society and I would like to take this opportunity to thank all of our committee members for the work they have done for ASPAB. I would also like to particularly thank both our virtual conference organising committee (led by Maren Preuss and Joe Zuccarello) and our newsletter editors, Thiru Somasundaram and Mareike Babuder, for their respective efforts in bring forth opportunities for us to communicate what's happening in each of our little corners of phycology and aquatic botany. And finally, I would like to thank the entire membership for the opportunity to once again represent you as President of ASPAB. It is always an honour, but it is a role I will be stepping down from in the coming year. And as we rapidly head towards the end of 2021, I wish you all a safe and happy summer and holiday season, with some time to relax and unwind with family and friends.

Best wishes  
Alecia Bellgrove  
President

# Treasurer's Report

## The Australian Chapter

Dr. Alecia Bellgrove  

Acting Treasurer (Australian chapter)

ASPAB Australian Treasurer's Report

1 July 2020 - 30 June 2021

Australian funds are held in two Bendigo Bank accounts (a transaction account and a term deposit), and two people are required to authorize any payment from the account. We currently have 3 signatories on the account but 2 of these will be changed over following the election of the 2021-2022 ASPAB Executive committee, with the third maintained for continuity.

During 2020-21, the Australian accounts showed a surplus for the year of **\$1,830.12**. Our income from the virtual conference was significantly less than that of previous face-to-face located conferences.

Our transaction account income consisted of membership fees and conference registration fees. We did not award any student travel grants (due to COVID travel restrictions) and there were no bank fees or website fees paid. As such, expenses consisted solely of Science and Technology Australia membership and Student awards for conference presentations.

Our term deposit account income consisted of interest (significantly reduced from previous years: 0.65%pa for first 6mths decreasing to 0.45%pa in second half of year). The current interest rate is 0.25% for a 6 month period with maturity 9 Feb 2022. Expenses for this account existed of resident withholding tax.

The final balance in our accounts on 30 June 2021 was **\$72,325.99**, with \$8504.96 in the transaction account and \$63,821.03 held in the term deposit. These funds will give us the capacity to support ASPAB student travel grants, when travel to conferences is possible again, as well as the potential to support other initiatives that advance the mission of ASPAB.

Annual renewal of memberships continues to be a challenge (although our 2021-22\* are currently on the increase with a membership renewal drive prior to the virtual conference). The opportunity for online membership renewals and a more concerted membership drive will hopefully see membership numbers and engagement continue to increase.



**Paid-up Australian members were as follows:**

	2015-6	2016-7	2017-8	2018-9	2019-20	<b>2020-21</b>	2021-22*
Full	34	21	28	20	17	<b>18</b>	24
Student	33	21	23	16	15	<b>10</b>	14
Retired	4	2	3	3	2		2
Life	2	2	3	3	3	<b>3</b>	3
	<hr/> 73	<hr/> 46	<hr/> 57	<hr/> 42	<hr/> 37	<hr/> <b>31</b>	<hr/> 43

Alecia Bellgrove  
ASPAB President and acting Australian Treasurer  
22 November 2021



# Financial Report

## The Australian Chapter



### ASPAB AUS Financial Report 2020-2021

Income & Expenditure				
	2020-21	2019-20	2018-19	
<b>INCOME</b>				
Membership fees	\$1,175.00	\$1,150.00	\$1,475.00	
<b>Term deposit interest</b>	\$414.17	\$779.82	\$689.50	
Conference income	\$760.00	\$1,880.00	\$1,282.11	
<b>TOTAL INCOME</b>	<b>\$2,349.17</b>	<b>\$3,809.82</b>	<b>\$3,446.61</b>	
<b>EXPENSES</b>	<b>2020-21</b>	<b>2019-20</b>	<b>2018-19</b>	
Student travel grants	\$0.00	-\$150.00	\$0.00	
Bank fees	\$0.00	\$0.00	\$30.40	
Website annual fee	\$0.00	\$0.00	-\$143.47	
Student awards	-\$350.00	-\$210.00	-\$150.00	
Science and Technology Australia Membership	-\$169.05	-\$185.15	-\$182.85	
Transfer to NZ account			-\$999.80	
<b>TOTAL EXPENDITURE</b>	<b>-\$519.05</b>	<b>-\$545.15</b>	<b>-\$1,445.72</b>	
<b>OVERALL SURPLUS/DEFICIT</b>	<b>\$1,830.12</b>	<b>\$3,264.67</b>	<b>\$4,892.33</b>	
<b>Transaction account</b>	<b>2020-21</b>	<b>2019-20</b>	<b>2018-19</b>	
633-000 15489180				
<b>Bank balance 1 July</b>	\$7,089.01	\$4,604.16	\$3,253.17	
Income	\$1,935.00	\$3,030.00	\$3,446.61	
Expenditure	-\$519.05	-\$545.15	-\$1,445.72	
<b>BANK BALANCE 30 JUNE 2021</b>	<b>\$8,504.96</b>	<b>\$7,089.01</b>	<b>\$4,604.16</b>	
<b>Term Deposit</b>	<b>2020-21</b>	<b>2019-20</b>	<b>2018-19</b>	
633-000 155151806				
<b>Bank balance 1 July</b>	\$63,406.86	\$62,966.41	\$61,937.54	
Income	\$780.27	\$830.55	\$1,940.22	
Expenditure	-\$366.10	-\$390.10	-\$911.35	
<b>BANK BALANCE 30 JUNE 2020</b>	<b>\$63,821.03</b>	<b>\$63,406.86</b>	<b>\$62,966.41</b>	
<b>Total</b>	<b>\$72,325.99</b>	<b>\$70,495.87</b>	<b>\$67,570.57</b>	



# Treasurer's Report

The New Zealand Chapter

Dr. Judy Sutherland    
Treasurer (New Zealand Chapter)



ASPAB NZ Treasurers Report  
1 July 2020 - 30 June 2021

During 2020-21, the New Zealand accounts showed a surplus for the year of \$1,295.00.

Our income consisted of membership fees and conference registration fees. Since no student travel grants were awarded in New Zealand during the year, expenses consisted only of PayPal fees. ASB removed bank fees for not-for profit accounts, saving us \$5 over previous years.

This year I have itemized income and expenditure on our PayPal account, since more people are using this to pay both memberships and conference fees. This facility allows people to pay by credit card, which is often easier for them.

New Zealand funds are held in an ASB Society Cheque account, and two people are required to authorize any payment from the account. Funds are received into PayPal and sometimes held there for a while until the Treasurer transfers them (minus fees) to the ASB account.

The final balance in our accounts on 30 June 2021 was \$5234.91, all of which is held in the ASB Society Cheque account. These funds will give us the capacity to support ASPAB student travel grants, when travel to conferences is possible again.

Judy Sutherland  
ASPAB NZ Treasurer  
20 November 2021

# Financial Report

## The New Zealand Chapter

### ASPAB NZ Financial Report 2020+21

#### Income & Expenditure

INCOME	2021-21	2019-20	2018-19	Note
Membership fees (NZ)	\$1,070.00	\$700.00	\$750.00	Fees for coming year paid before June 30
Membership fees pre-paid (NZ)	\$0.00	\$0.00	\$50.00	
Transfer from Australian accounts	\$0.00	\$0.00	\$982.00	
Conference Registrations	\$225.00	\$8,595.06	\$0.00	2019-20 Paypal fees (\$140.02) already deducted from Registrations; includes \$290.06 held in PayPal
<b>TOTAL INCOME</b>	<b>\$1,295.00</b>	<b>\$9,295.06</b>	<b>\$1,782.00</b>	
<b>EXPENSES</b>				
Student travel grants	\$0.00	\$0.00	\$1,500.00	
Bank fees	\$0.00	\$5.00	\$5.00	
Conference Expenditure	\$0.00	\$6,732.12	\$0.00	
<b>TOTAL EXPENDITURE</b>	<b>\$0.00</b>	<b>\$6,737.12</b>	<b>\$1,505.00</b>	
<b>OVERALL SURPLUS/DEFICIT</b>	<b>\$1,295.00</b>	<b>\$2,557.94</b>	<b>\$277.00</b>	
<b>Current financial position at 30 June 2020:</b>				
ASB Society Cheque account 12-3066-0228909-000				
<b>Bank balance 1 July</b>	<b>\$3,122.10</b>	<b>\$854.22</b>	<b>\$577.22</b>	
Income	\$1,295.00	\$9,295.06	\$1,782.00	
Expenditure	\$0.00	\$6,737.12	\$1,505.00	
Transfers from Paypal	\$817.81			
<b>BANK BALANCE 30 JUNE 2020</b>	<b>\$5,234.91</b>	<b>\$3,412.16</b>	<b>\$854.22</b>	2019-20 figure includes Paypal - now recorded separately
ASPAB PayPal account				
<b>Paypal Balance 1 July</b>	<b>\$290.06</b>	<b>\$0.08</b>		
Income	\$550.00			
Paypal fees	-\$22.25			Paypal transactions itemised for 2020-21
Transfers to ASB account	-\$817.81			
<b>PAYPAL BALANCE 30 JUNE 2020</b>	<b>\$0.00</b>	<b>\$290.06</b>	<b>\$0.08</b>	
<b>TOTAL FUNDS ON HAND 30 JUNE 2020</b>	<b>\$5,234.91</b>	<b>\$3,702.22</b>	<b>\$854.30</b>	



# 35th ASPAB Annual Meeting

## THE SECOND VIRTUAL CONFERENCE

We are a team of students, Early Career Researchers, and a lecturer from Kiwi and Kangaroo land, who rather than being fascinated by any of these amazing land animals, have fallen in love with aquatic ecosystems. After last year's first online ASPAB conference, we hoped to meet in Perth for the 35th ASPAB conference. Unfortunately, things did not change, and we made the very tough decision to move the 35th ASPAB annual meeting to an online platform.

Most of the preparations for the planning and organizing of this year's ASPAB conference were performed through email exchanges and built on the experience gained from hosting the online ASPAB conference in 2020. The organizing committee meeting, which was held in mid-October on Zoom, allowed us to meet each other and divide and discuss the conference's tasks. We knew that the main challenge was to actively engage with the participants, and to make sure that everything ran smoothly before and during the conference. We decided to provide a FREE conference for all members to facilitate participation and encourage new members to join the society. In order to engage with the audience and provide an interesting and diversified program, we opted for pre-recorded 3-minute lightning presentations and a random order of talks, rather than presenting them by topic. In addition, we also agreed to host an online social event for students and ECRs in a fun and informal way. All attending students and ECRs were able to meet and chat with often new people in randomly changing breakout rooms. Besides the challenges that a virtual conference brings, we believe that overall, the conference format and program were interesting and engaging for participants.

The organizing committee was mostly divided into groups of 2 members responsible for various tasks. These included circulating the conference announcements, creating the abstract booklet and the conference schedule, checking the pre-recorded videos submitted and providing on the day support. Additionally, communicating and managing the workflow between the participants, the ASPAB committee and ASPAB conference organizing committee played an important role in our effective planning process. Teamwork and collaboration made everyone's tasks easier, and the overall outcome was a highly successful conference. Due to the late announcement of the conference and to increase the visibility of students and early career researchers, this year's conference did not include any plenary talks.

As for any conference, success can be measured by the number of talks and the level of participation, hence an effort was made to involve and attract as many speakers as possible using different channels (colleagues, ASPAB-list, etc.). After circulating conference advertisements for a few days, we started to quickly receive the first abstract submissions and registrations. In addition, the deadline for abstract submission was extended in order to increase the participant numbers.

A total of thirty-one talks were given, many from students, but also early career researchers. We were excited to see a large number of people join the Society. These lightning talks were played to over fifty participants in a two half-day conference. Of course, to make sure it was a smooth and successful conference, we launched some mock tests to avoid technical issues prior to the conference.

After a little technical issue at the beginning of the first day, thanks to careful preparation, we overall had a wonderful virtual conference. The pre-record videos allowed presenters to sit down and enjoy their talks together with the other participants and free from "speaker stress" which is common in in-person meetings. The combined Q&A sessions gave participants the opportunity to participate and learn new things about various topics. It appears that we know a lot about the physiology and biology of marine algae and plants, more than most of us knew!

Being involved in the planning committee gave us the possibility to learn and develop new skills, teamwork involving collaborating and sharing duties, as well as communicating skills. We now have a much clearer idea of what is involved in organizing a conference and how hard it can be to organize a successful one.

Finally, we would like to express our sincere thanks to the ASPAB committee, who trusted us to host this great event and really appreciate the participation and collaboration of everyone who has helped make the conference a success, especially all the participants and their interesting talks. A special thanks to Alecia Bellgrove and Dan Pritchard for their support of the conference registration process. And a big welcome to the many new ASPAB members. We are looking forward to seeing everyone, this time hopefully in person, at the 36th ASPAB conference 2022.



# Conference Planning Team

## 35TH ASPAB ANNUAL MEETING - VIRTUAL CONFERENCE



Dr Cecilia Biancacci, Post-doc, Deakin University, Australia  
(c.biancacci@deakin.edu.au)



Namrata Chand, PhD candidate, University of Otago, New Zealand  
(namrata.chand@postgrad.otago.ac.nz, twitter: @finding\_nammy)



Dr Pranali Deore, Post-doc, University of Melbourne, Australia  
(pranali.deore@unimelb.edu.au)



Duong M. Le, PhD candidate, University of Otago, New Zealand  
(ledu7263@student.otago.ac.nz)



Marisa Pasella, PhD candidate, University of Melbourne, Australia  
(m.pasella91@gmail.com)



Dr Maren Preuss, Post-doc, Victoria University of Wellington, New Zealand  
(Maren.Preuss@vuw.ac.nz, twitter: @marenpre)



·Joe Zuccarello, Victoria University of Wellington, New Zealand  
(Joe.Zuccarello@vuw.ac.nz)

# Student Prize Winners

## 35TH ASPAB ANNUAL MEETING - VIRTUAL CONFERENCE

Amirreza Zarekarizi  
University of Otago  
zaram365@student.otago.ac.nz)

### Seasonal variation of stress response and fucoxanthin accumulation in nine species of brown seaweeds

Amirreza Zarekarizi, Linn Hoffmann and David J. Burritt  
Department of Botany, University of Otago, Dunedin, New Zealand

Seaweeds in the intertidal zone are exposed to stressful environmental conditions, and their primary cellular response is oxidative stress. The main defense mechanisms against oxidative stress in seaweeds and plants are antioxidant compounds and reactive oxygen scavenging enzymes. These systems act alone or together to decrease the level of reactive oxygen species (ROS). Therefore, higher concentrations of antioxidants and increased activities of reactive oxygen scavenging enzymes have been recognized after exposure to stress or connected with stress tolerance. Fucoxanthin (Fx), a major carotenoid in brown seaweeds, has a fundamental role as an accessory light-harvesting pigment. Fx also acts as a robust antioxidant compound and has an essential role in photoprotection against excess light. My results show that Fx content in New Zealand brown seaweeds is species and season-specific. The general seasonal trend of pigment contents showed an inverse correlation with the seasonal patterns of irradiance and temperature. Under low temperature and irradiance conditions in winter, Fx concentrations increased and reached the highest level in late winter and early spring. In contrast, the Fx concentration decreased during summer and autumn and had the lowest levels in March. In contrast to Fx, the result showed a positive relationship between the activity of superoxide dismutase (SOD), the primary enzyme involved in stress response, and light intensity, and the maximum enzyme activity was recorded was in January. This result suggests that Fx acts more as an accessory pigment than antioxidant compounds in brown seaweeds.

# Student Prize Winners

## 35TH ASPAB ANNUAL MEETING - VIRTUAL CONFERENCE

Aleluia Taise  
Victoria University of Wellington  
taise.aleluia@gmail.com)

Responses of *Caulerpa* with different distribution ranges to warming

Aleluia Taise, Erik Krieger, Sarah Bury, Giuseppe C. Zuccarello and Christopher E.  
Cornwall

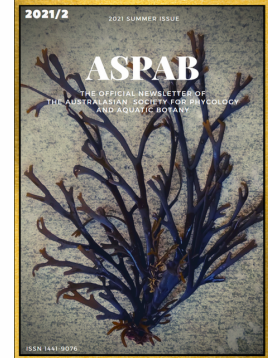
School of Biological Sciences, Victoria University of Wellington

Projected future ocean warming (OW) threatens to change the distribution of seaweeds in New Zealand and globally. Concurrent with OW, extreme weather events such as marine heatwaves (MHW) are predicted to increase in frequency and magnitude in the future that could have major implications for marine ecosystems. Two of the most common *Caulerpa* species in New Zealand, *C. brownii* and *C. geminata* could have different responses to warming because of their distribution, which crosses over in Wellington. However, *C. geminata* has a more northerly distribution (cold edge) while *C. brownii* has a southern distribution (warm edge). Here, we tested the effects of OW on growth, photo-physiology and dissolved inorganic carbon utilization by *C. brownii* and *C. geminata* in a manipulative laboratory experiment. Four temperature treatment levels simulating present day, IPCC predictions for future OW (+2.8°C), present day plus a +2.8°C MHW, and OW + 2.8°C MHW, were used to grow the organisms. We found there was an interaction between MHW presence/absence, time and OW, where at the warmest mean temperature, both species responded much more negatively to the effects of MHWs. We also show that *C. brownii* is more sensitive to warming than *C. geminata*.



# The Cover Story

This issue's cover image was contributed by Gabrielle R. Keeler-May, (Gaby) a Ph.D. candidate at the University of Otago. Gaby represented ASPAB student membership for the New Zealand chapter at our last ASPAB committee. Amongst several images sent by Gaby this one was picked by the editor for aesthetic value.



*Xiphophora gladiata*



"These seaweeds were all collected during scuba surveys in October 2021 within the Otakou Mātaihai (located in the Otago Harbour, near Dunedin, New Zealand). I made these collections for my Ph.D. research and as part of an ongoing project with Ngāi Tahu. Our team is aiming to compare the differences in the native and invasive seaweed biomass across multiple customary protected areas (CPAs) throughout southern New Zealand this spring/summer. These surveys will provide baseline information to local iwi and hapū and help with management and control of the invasive kelp, *Undaria pinnatifida*." - Gaby

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

# South Australian seaweeds and their potential role in neuroprotection, gut health and ACE-2



Srijan Shrestha  
PhD Candidate, University of Adelaide

Brown seaweed (Phaeophyceae) polyphenolics such as phlorotannins are ascribed various biological activities. Of these seaweeds, *Ecklonia radiata* is found abundantly along South Australian coastal regions; however, it has not been explored for various biological activities relative to any component phlorotannins. My current research focuses to explore and characterize the potential role of South Australian seaweeds as neuroprotective and anti-inflammatory agents. We are collaborating with the Centre for Marine Bioproducts Development (Flinders University) for this project. Our group screened various seaweed species and found *Ecklonia radiata* extract the best amongst all for neuroprotection. Extraction and fractionation of the seaweed was done with various methods and solvent systems. Different solvent soluble fractions were assessed for their ability to protect neuronal cell lines against oxidative stress and amyloid beta. We used HPCPC, HPLC, MS, and NMR spectroscopy to isolate and identify the active compounds in the *E. radiata* extract. Anti-aggregatory potential of the extract and the active compounds were assessed via transmission electron microscopy. Further, we seek answers from molecular docking and dynamic studies for the possible mechanism of action and the binding site information. I have published three articles from this project so far.

Additionally, I was looking for the potential use of extract and polyphenols on gut health (barrier tissue integrity) via measuring TEER in Caco2 cell line. Currently, I am working on the potential use of extract and phlorotannins in regulating the ACE-2 expression in various cell line. We hope that our work would significantly contribute to the development of new therapeutics and nutraceuticals from the seaweeds.



Author - Srijan Shrestha

I am a third-year Ph.D. student in the Department of Pharmacology at The University of Adelaide. I hold a Bachelor of Pharmacy degree from Tribhuvan University (Nepal) and a registered pharmacist by profession. I completed my Master's degree from Pukyong National University (Busan, South Korea) in 2018 focusing on the polyphenols from terrestrial and marine plants that have the potential to become future therapeutics for diabetes and Alzheimer's disease.

I have published 13 articles in peer-reviewed journals, including ACS, RSC, Elsevier, MDPI, and Springer. Being brought up in the Himalayas of Nepal where people preferred using traditional medicinal plants to treat various disease always made me wonder (in childhood) about the healing power of nature and the curiosity paved my way to find the answers in nature.

Email: [srijan.shrestha@adelaide.edu.au](mailto:srijan.shrestha@adelaide.edu.au)

LinkedIn: [www.linkedin.com/in/srijanstha003/](https://www.linkedin.com/in/srijanstha003/)

(Image credits Srijan Shrestha)



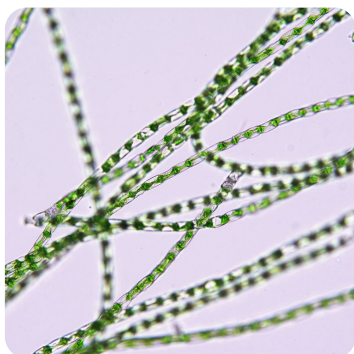
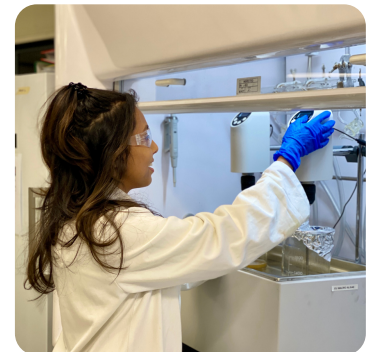
# Development of biomaterials from sustainably produced macroalgae feedstocks



Nethmie Jayasooriya  
PhD Candidate, University of Waikato

Kia ora! I am a Ph.D. Candidate at the University of Waikato based in beautiful sunny Tauranga, New Zealand. I moved to New Zealand from Sri Lanka in 2019 to pursue my Master's degree in chemistry. Once I finished my Master's degree, I had the opportunity to join this fantastic bunch of enthusiastic scientists at the Coastal marine field station. Mainly, I am thankful for my super awesome supervisors Dr. Christopher Glasson, Dr. Marie Magnusson, Dr. Rupert Craggs, and Dr. Channel Gavin, for their support! Being away from home for almost 3 years has never been easy since COVID-19, as all immigrants could relate to. But, I must say it gets a little better when you are surrounded by a genuinely caring and supportive team. I couldn't have chosen a better place to do my Ph.D.!

When I first started my Ph.D. a year ago, I saw immense possibilities ahead of me as it included versatile research skills. My research is on developing cellulose biomaterials from freshwater macroalgae feedstocks grown in small-scale wastewater treatment plants in New Zealand. The macroalgae feedstock produced during phycoremediation is an excellent source of nutrients and fibre. Therefore, the ultimate goal is to utilize the leftover biomass produced during phycoremediation to produce socially acceptable bioproducts.



Currently, I am working on extracting cellulose from *Oedogonium sp.* grown in primary effluent using different treatments to determine the quality of cellulose. Simultaneously, a biostimulant rich in phytohormones and proteins will be produced along the cellulose extraction process. The findings will provide the basis for developing a cascading biorefinery process to remove excess nutrients, extract cellulose, and a biostimulant as the end products. Moreover, this will prepare the groundwork for my next investigation of isolating nanocellulose to employ in biocomposites.



At present, there is substantial global interest in developing sustainable biopolymers. My research will advance the field of algal cellulose from New Zealand native species and contribute to the material science community in developing sustainable polymers in the future. Additionally, my research will contribute to species selection for small-scale wastewater treatment plants in Aotearoa, New Zealand, providing a pathway to complete utilization of algae biomass from bioremediation biomass. Plus, one thing I love about my research is that I could contribute at least a little to help make our environment a better place at the end of my Ph.D.!

Acknowledgments: National Institute of Water and Atmospheric Research (NIWA) funding through the Ministry of Business, Innovation and Employment (MBIE) Endeavour Grant (C01X1912: Halving Rural and Maori wastewater treatment costs)

(Image credits Nethmie Jayasooriya)





# *Seaweed fodder trials as a part of – Building Climate Resilience in farming enterprises in South West Victoria.*



Geoff Rollinson

Landcare Coordinator, Heytesbury District Landcare Network

Funded through the Australian Government's future drought fund, the Building Climate Resilience project is building on foundation activities including trials on 20 farms and extending research and innovation to 10 more farms, for a total of 30 in the Heytesbury District.



The project aims to establish a viable community of practice. It involves testing and then adapting practices to suit the environments and management regimes on a range of farm types. It also focuses on building soil carbon as a key strategy for climate resilience and includes other measures for microclimate modification.

Innovations include several new tillage systems, diverse multispecies cover crops adapted to particular seasons, soil additives including compost and biocarbons, strategic planting of shelter belts, livestock fodder supplements and effluent treatment methods.



Deakin University Warrnambool is engaged with the research components, in particular coordinating fodder trials testing the value of seaweed and biochar in reducing enteric fermentation (cow burping). The resultant pool of knowledge will form a basis for future farm practices in the region.

Another feature activity is seeking to increase the carbon content of agricultural soils as an effective means of building drought resilience. Carbon rich soils retain soil moisture and have been described as acting as virtual underground water tanks. These soils can provide farms with resilience to climate change induced drought, reducing run-off that would exacerbate climate induced flooding, as well as mitigating the impacts of climate change induced bushfire.

At the same time, soil carbon can substantially increase productivity, with existing research suggesting a potential tripling of dry matter yield from carbon rich soils.

There are several farming innovations that can build soil carbon, and these have been trialled by HDLN in South-West Victoria. Another more immediate strategy to build soil health and carbon levels is to adopt diversified seed mixes for pastures and cover crops.



In this new project we are drawing on our project knowledge bank to support 30 other farmers in adopting these soil carbon initiatives, with tailored solutions being developed for each farm to fit with their soil types and management regimes. Outcomes of the project activities will be known in August 2022.

Author - Geoff Rollinson

Geoff Rollinson is currently working as the Landcare Coordinator for Heytesbury District Landcare Network, located in south west region of Victoria, Australia. He is currently focused on delivering on-ground works in the natural resources management (NRM) sector in this community-based, not for profit organisation which is funded mostly through government and corporate investment.

Further information: Geoff Rollinson HDLN  
0427 983 755  
[geoff@heytesburylandcare.org.au](mailto:geoff@heytesburylandcare.org.au)

Climate Resilient Farms is funded by the Australian Government Future Drought Fund's Natural Resource Management (NRM) program. Partners include Deakin University, Agriprove, Camperdown Compost, Focus, Corangamite Shire, Corangamite CMA, Healthy Farming Systems, Triple R Biochar and Biofuel Innovations.

(Image credits Geoff Rollinson)



# An undergrad in the field: learning and discovering algal diversity in New Zealand



Huia Webby

Email: [huia.webby@vuw.ac.nz](mailto:huia.webby@vuw.ac.nz)

Instagram: [Phyco\\_adventurer](https://www.instagram.com/phyco_adventurer/)

([https://www.instagram.com/phyco\\_adventurer/](https://www.instagram.com/phyco_adventurer/))

On the weekend of the 5th of November, a group from Victoria University of Wellington (New Zealand) headed off on a research trip to the East coast of the North Island, about 3-4 hours North of Wellington. Specifically to Akitio Beach and Castlepoint. This group included Joe Zuccarello, Maren Preuss, as well as Shanea Walford, a Master's student and myself: an undergrad. I was invited along as I am currently undertaking a summer research project on the species diversity of red algal parasites in New Zealand, supervised by Maren Preuss.

We left campus Friday morning and arrived at Castlepoint in rather dismal weather around 11:30am. The visibility was slim; with wind and patchy rain. However, the tide was low and beautiful beds of predominantly the red alga *Adamsiella* were accessible, as well as algae-covered rocks. Many varieties were in their reproductive stages, which was cool to see. Though we were primarily searching for red algal parasites, some of which appear approximately the same colour as their hosts; so it was often difficult to pick out parasites from reproductive structures by eye; and collecting parasite samples was challenging. Also frustrating was that the rocks were rough; so not ideal for the growth (or removal) of the crusting algae (*Apophlaea*) Joe was searching for. Despite all this, we did find some fascinating algae.



Left: Predominantly *Adamsiella* beds on the beach below the Castlepoint lighthouse. Right: Rocks with variety of attached algae in reproductive state.

After drying off, we travelled inland for lunch, then back out to the coast via a long windy road to Akitio beach. We spent the afternoon examining, identifying, and bagging up the collected samples around the kitchen table of our accommodation.

When we first arrived at Akitio Beach, the tide was in with no rocks visible, leading me to initially wonder if there would be any available habitat for algae to attach to, or if they had been covered by sand since the last research trip. But to my relief, the tide went out beautifully around midday on Saturday, exposing the large flat reef area immediately in front of our accommodation. This rocky shelf was home to a wide range of algae, as well as some scattered patches of seagrass. Once again we suited up in wet weather gear and went out collecting. Despite the depressing weather, several locals were also out in the rain taking advantage of the low tide to collect seafood.



*Dasyclonium* under  
dissecting microscope

We did find a diverse range of red algal parasites on different hosts including *Lophurella*, many of which still need to be properly described. We also found the beautiful *Dasyclonium* (see picture) on different algae species such as *Plocamium*. As we picked our way back across the rocks to the beach, I happened to pick up a particularly scrappy piece of *Plocamium* that had washed up, which ended up being infected by parasitic red algae.

In summary, the trip turned out relatively successful. The weather didn't prevent us from getting out and plenty of fascinating algae samples were found. I now feel a little more confident identifying algae in the field and I'm sure we will have a very interesting time analysing the samples back in our molecular lab. I'm definitely looking forward to future collection trips!

(Image credits to Huia Webby)



# ASPAB Committee 2022

AUSTRALASIAN SOCIETY FOR PHYCOLOGY AND AQUATIC BOTANY



## The president

Dr Manoj Kumar  
Climate Change Cluster, Faculty of Science  
University of Technology Sydney (UTS)

*I'm a marine biologist and a research fellow at University of Technology Sydney (UTS). I am leading seaweed research group at UTS with primary interest in seaweeds aquaculture, ecophysiology, micropropagation, and algal biorefinery prospects. I first attended ASPAB meeting in 2010 as a PhD student and have been associated with ASPAB as a general member, newsletter editor and Vice president over the last couple of years. I am excited to be a president for ASPAB and looking forward to work with new ASPAB committee to promote ASPAB's vision, mission and overall direction.*



## Vice –president

Dr John Huisman  
Curator  
Western Australian Herbarium

*I'm an algal (seaweed) taxonomist and currently the curator of the Western Australian Herbarium. My primary interest is in the red algae, but I dabble in most groups. I first joined ASPAB in 1980 (gulp!) and was president from 1994-97.*



## Secretary

Prof. Joe Zuccarello (Giuseppe C. Zuccarello)  
School of Biological Sciences  
Victoria University of Wellington

*I am Joe Zuccarello, still secretary of the society. Working on seaweed diversity and teaching courses. Been a phycologist a long time and interested in aiding the society, as much as possible.*



# ASPAB Committee 2022

## AUSTRALASIAN SOCIETY FOR PHYCOLOGY AND AQUATIC BOTANY



### **Treasurer & Membership Secretary (AUS Chapter)**

Dr Cecilia Biancacci  
Post doctoral research fellow  
Deakin University

*I am a Postdoctoral Research Fellow at Deakin, Warrnambool (Victoria). I am interested in seaweed and invertebrate aquaculture, biochemical analyses and nutritional composition of seaweeds. This is my first year as treasurer, but I have been involved in helping to organize the conference last and this year. I am excited to be part of the committee and I am looking forward to meeting (hopefully) all of you in person at the next meeting.*



### **Treasurer (NZ Chapter)**

Dr Judy Sutherland  
Regional Manager – Wellington  
National Institute of Water & Atmospheric Research Ltd (NIWA)

*I'm a molecular biologist and regional manager at NIWA in Wellington. My field of interest is molecular systematics of NZ macroalgae. I've been NZ treasurer for a few years now, and am grateful Dan has taken over NZ memberships.*



### **Website Manager and NZ Membership Secretary**

Dr Daniel Pritchard  
Senior Research Fellow  
University of Otago

*I have just started a job with the University of Otago as a senior research fellow, with a climate-change focused coastal research group (Coastal People Southern Skies). I am a seaweed ecophysiological (and I guess hydrodynamic modeller) by training, though in recent years I have also been working more widely in coastal fisheries and environmental monitoring.*

# ASPAB Committee 2022

## AUSTRALASIAN SOCIETY FOR PHYCOLOGY AND AQUATIC BOTANY



### **General member (AUS) and Preceding president**

Dr Alecia Bellgrove

School of Life and Environmental Sciences

Faculty of Science, Engineering and Built Environment

Deakin University

*Alecia leads the DeakinSeaweed Research Group at Deakin University with a focus on research that 1) Informs development of a sustainable seaweed industry for southeastern Australia; 2) Seeks to understand the ecology of seaweed-based ecosystems and how to protect them, and the ecosystem services they provide, into the future; and 3) Educates the marine science leaders of the future*



### **General member (NZ)**

Dr. Maren Preuss

Postdoctoral Research Fellow and Principal Investigator

Te Kura Mātauranga Koiora | School of Biological Sciences

Te Herenga Waka | Victoria University of Wellington

*I am Postdoctoral Research Fellow/Principal Investigator at Victoria University of Wellington, New Zealand. I am interested in biodiversity, evolution and parasite-host interactions in red algae. This is my second year as general board member and I have helped with the last two virtual conferences. Really enjoy attending ASPAB meetings and looking forward to the next in-person one.*



### **Student Representative (NZ)**

Namrata Chand

PhD Candidate

Department of Marine Science

University of Otago

*I am a second year PhD student with the department of Marine Science, Uni of Otago. My research focus is on soft sediment macroalgal communities and its ecophysiology. I am really excited to be the student rep for ASPAB and look forward to working with you all.*

# ASPAB Committee 2022

AUSTRALASIAN SOCIETY FOR PHYCOLOGY AND AQUATIC BOTANY



## Newsletter Editor (AUS)

Thiruchenduran Somasundaram

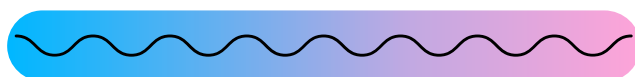
PhD Candidate

School of life and environmental sciences

Deakin University

*I am Thiruchenduran(Thiru) Somasundaram, an analytical chemist (started off with biochemistry of food products during my first year (2003) of BSc in a fine summer at a beautiful city called Buttala in Sri Lanka) currently assessing nutrients and toxicants in seaweeds and their carry over effects in dairy cows' milk and excretion and establishing limits for feeding seaweeds to cows (Yes measuring methane too using my self made sensing device). Seaweeds have been one of my subjects of analysis for the last 5 years at home (Sri Lanka) and in Australia. Other areas I have gained experience include nutrient and toxicological assessment of fish and fisheries products, developing processing methods and equipment for natural products preservation, nano-encapsulation of nutrients and compounds, dairy cow nutrition, and deep learning using Python.*

*I am currently reading my Doctor of Philosophy degree at Deakin University. My hobbies include developing RaspberryPi circuit boards and programming for internet of things and I am trying to use some of these devices in my research as well. My research always have revolved around nutrients, toxicants bioactive molecules and metrology.*



# ASPAB Member Profile

**DR MANOJ KUMAR**  
**UNIVERSITY OF TECHNOLOGY SYDNEY**



Dr. Manoj Kumar is a mid-career researcher and a former ARC-DECRA awardee in the Climate Change Cluster (C3), University of Technology Sydney (UTS) who is at the forefront of his discipline. Kumar's research activities have been focused on a globally relevant topic – resilience of marine plants and algae including seaweeds, seagrasses and microalgae under global climate change and anthropogenic pressure, using cutting-edge systems biology based 'omics' approaches.

He is currently engaged in seaweed research on micropropagation, breeding, seaweed-based bioplastics, platform chemicals, their supply chain and sustainability.

Kumar is the recipient of Thomas Davies Research Award - Australian Academy of Sciences. He was presented twice Australia- China Young Scientists Exchange Award – Australian Academy of Technology and Engineering (ATSE; 2018 and 2019). With over \$2.0 million in external funding secured since his PhD completion (since 2012), Kumar is currently leading seaweed research at UTS funded by philanthropic organization (Julius Baer Foundation, JBF; Switzerland) to develop a zero waste, green and sustainable technology for seaweed biomass processing for bioplastic production in a biorefinery perspective. His research is also supported by Fisheries Research and Development Corporation (FRDC) to develop innovative tools of seaweed micropropagation for elite germplasm production and breeding. He is also engaged with several startups, entrepreneurs, and industries through GREEN LIGHT program at UTS and providing research support and guidance on seaweed aquaculture, and seaweed processing for products developments in a green and sustainable manner.

Kumar is the recipient of several prestigious postdoctoral fellowships including Blaustein Fellowship (Israel), JSPS fellowship (Japan), FONDECYT Fellowship (Chile) and ARC-DECRA (Australia). He has published (>45) high impact research articles and book chapters and co-supervised 6 PhDs and several honors students. His knowledge and expertise in marine algal research are held in high regard internationally, as evidenced by his regular invitations to visit internationally renowned research teams and present his research at leading institutions in the field of marine science in Italy, Germany, Korea, Chile, Japan, India and China.

He recently edited a book entitled “Systems Biology of Marine ecosystems” (Springer Publishers). He is the Guest Editor for the journal *Frontiers in Marine Science* (Switzerland) and an active member of several societies including International Plant Proteomics Organisation (INPPO), International Seaweed Association (ISA), Phycomorph and Australian Society of Phycology & Aquatic Botany (ASPAB). Kumar has been actively associated with ASPAB as a general member, newsletter editor and Vice President over the last couple of years.

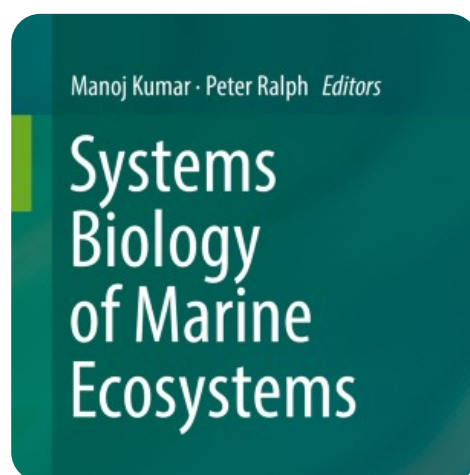


Image: Springer

He is excited to be a President for ASPAB and looking forward to work with new ASPAB committee to promote ASPAB's vision, mission and overall direction.

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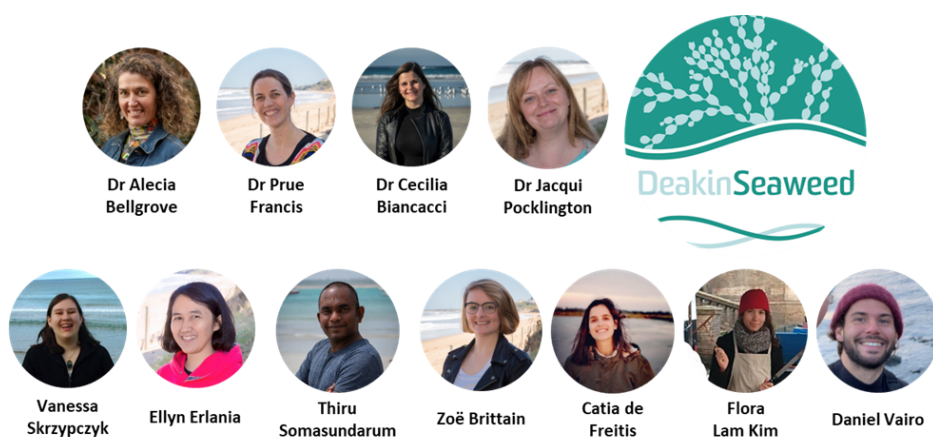
Dr Manoj Kumar  
Climate Change Cluster, Faculty of Science  
University of Technology Sydney (UTS)  
Ultimo, Sydney, NSW 2007, Australia  
Phone: +61 02 9514-7275  
Email: [manoj.kumar@uts.edu.au](mailto:manoj.kumar@uts.edu.au)



# Lab/Research Group Updates

## DEAKIN SEAWEED RESEARCH GROUP

What's happening in the DeakinSeaweed Research Group?



### Cecilia Biancacci: Seaweed Solutions for Sustainable Aquaculture CRC-P

I am a postdoc research fellow on the project Seaweed Solutions for Sustainable Aquaculture CRC-P, a collaboration between industry (Tassal Group Ltd and Spring Bay Seafoods) and research partners (University of Tasmania and Deakin University), that aims to define viable seaweed aquaculture and an IMTA partnership model that brings together salmon, shellfish, and seaweed production. The project focuses on the cultivation of *Macrocystis pyrifera*, *Ecklonia radiata* and *Lessonia corrugata* and includes three Working

Packages (WP). These focus on 1) seaweed cultivation and optimization of biomass quality (WPs 1 & 2) and assessing the sustainability of the IMTA model proposed (WP 3). I am involved in WP1 and WP2, particularly looking at optimizing seaweed cultivation and at how the biochemical composition of the cultivated seaweed varies according to cultivation conditions such as site, season, species, etc.





The analyses that we do within the DeakinSeaweed group include proximate composition, antioxidant, fatty acid, and ICP-MS for mineral and metal profiling, also in collaboration with colleagues at our Burwood campus and Queenscliff Marine Science Centre.

The results of this project will help us understand the variation in the quality of the cultivated biomass, support targeted improvement for commercial applications, and inform the viability of diversification in the seaweed farming sector in Australia.

### **Ellyn Erlania: Understanding the contribution of seaweed to Blue Carbon sequestration**

Understanding the role that seaweeds play in carbon sequestration is a controversial hot topic in global blue carbon research, and the focus of my PhD project. The debate is centred around: (1) whether carbon assimilated by seaweeds, which primarily grow on hard substrata, can accumulate and be stored in marine sediments for millennia, (2) how frequently and abundantly this may occur, and (3) what species are the key carbon contributors.



To address these questions, we must know a) how to identify and discern seaweeds from other carbon contributors such as microalgae and angiosperms (seagrass, mangroves, saltmarshes, as well as terrestrial plants that very likely enter marine ecosystems), and b) how to independently quantify the amount of seaweed carbon stored in marine sediments to provide an estimate of the contribution of seaweeds to blue carbon sequestration. Through multi-disciplinary and multi-institutional collaborations, my PhD project aims to develop reliable biomarkers (combining molecular (environmental DNA/eDNA) and biochemical (fatty acids & fatty-acid-specific isotope) markers) and quantify the extent of seaweed-derived carbon sequestration in both coastal and oceanic carbon sink.

My most recent progress is applying the eDNA markers that we have developed to interrogate coastal sediments samples along the southwest coast of Victoria and offshore oceanic sediment cores from around Tasmania for evidence of seaweed-derived sequestered carbon. This technique has enabled us to distinguish seaweed from microalgae and angiosperms within these sediments, with species-level identification in many cases. We are in the process of publishing some of the exciting results from this work. However, quantifying seaweed-derived carbon in sediments is still a work in progress that hopefully can be accomplished early in 2022. Finally, I am expecting that my project may address some of the blue carbon debates around seaweed carbon contribution.

### **Cátia Freitas: What I learned from my 3MT thesis competition experience**



The first time I heard about the 3MT thesis competition, I immediately thought that this was something I wanted to do, but the less confident part of me would always find reasons not to. It was not until Prue Francis (my primary supervisor) encouraged me to participate, that I decided to give it a try. That was the beginning of this great journey. My goals were to improve my communication and presentation skills and overcome the fear of public speaking, which is especially important in my field of research, marine science education. Preparing it pushed me to be creative and allowed me to practice what I preach as for my PhD I am investigating the power of stories and storytelling to teach young children about the underwater world. I used the

same approach and created my own story to engage people's imagination, help them to connect with my research, and therefore the ocean, by bringing marine science to life. It took me days to write my script, hours to practice the oral presentation, and a lot of attempts to record the final presentation. But in the end, I won a lot more even before being selected winner of the 2021 3MT thesis competition at Deakin. It gave me the opportunity to hear about the fascinating research being conducted by the other participants, my project got a lot of visibility, and I feel much more confident to speak in public and explain my work to a non-specialist audience. I am also very grateful for all the support received from my family, friends, and from my supervisors, who were tireless in guiding and encouraging me throughout the competition. To everyone considering participating, I can only encourage you to do so.



Find your story, keep it simple but meaningful, and let people know why you care so much about what you do. In my opinion, there are only valuable lessons to learn and good moments to keep from this experience. You can see my entries to the 3MT competition and the Visualise Your Thesis (in which I was the runner up for Deakin) on this link:

<https://aleciabellgrove.wordpress.com/2021/08/25/congratulations-to-catia-freitas/>

## **Flora Lam Kim: Commercial potential of novel seaweed antioxidants from Australian fucoids**

I am a PhD research student working on the commercial potential of novel seaweed antioxidants from Australian fucoids. During my masters research at Deakin, we found very high phenolic contents and antioxidant activities in the intertidal fucoid *Hormosira banksii*. Australia is known to be subject to very high UV radiation, exacerbated by the depletion of the ozone layer. Seaweeds that grow in the intertidal zone are thus



particularly exposed during low tides. The aim of this PhD is to characterise and understand the drivers of the antioxidant potential of intertidal and shallow subtidal brown seaweeds of Australia, including *Hormosira banksii*, *Cystophora torulosa*, *Durvillaea potatorum* and *Phyllospora comosa*, that have high exposure to environmental stressors and potential as edible/exploitable seaweeds. My PhD is in collaboration with colleagues from France (University of Western Brittany) and Japan (Tohoku University), allowing a comparison of antioxidant activities of Australian fucoids with other fucoids that are commercially

exploited in these countries. While Australian fucoids have been scarcely investigated for their antioxidant potential, we expect that these seaweeds could have very promising antioxidant properties because of the high UV exposure in Australia and, potentially, the strong wave action of the Southern Ocean.

## Thiru Somasundaram: The seaweed scavenger

The research potential of seaweeds are limitless, ranging from molecular to mega scales. Materials of seaweed origin can be fed into chemical reactions, like radical scavenging, or biological reactions that inhibit the proliferation of human carcinoma cells. In molecular applications, a handful of samples collected randomly from a pristine habitat is sufficient for several batches of experiments. However, my research involves feeding seaweeds to a larger biological experimental units called cows. Yes, the sensitivity of this experiment is at the macro-scale. My PhD project is investigating the effect of supplementing dairy cow fodder with a mixed seaweed supplement on the resulting health of the animals, milk production and quality, and potential methane reductions. Cows eat up to 3% dry matter of their live weight. For instance, a cow weighting 600kg will eat 18kg feed (DW) per day.



Thus, a large amount of seaweed is needed to be fed to the experimental cows daily for a month to detect any potential impacts. This means, I need tonnes of seaweeds for an entire batch of cows. We have been able to source some of the required seaweed biomass from seaweed aquaculture and commercial wild-harvest operations, but not all species we are interested in are currently available. Fortunately, every week tens of thousands of kilograms of seaweeds wash ashore on southwest Victorian beaches. I took advantage of this environmental phenomenon and collected 1000 kg of fresh

storm-cast *Phyllospora comosa* from beaches around Warrnambool and Port Fairy over a 5-month period. Some days are dry and some days are wet as in the photo above. The most interesting part of being a seaweed scavenger (picture on the right) on a popular beach is talking to people about my research and petting their canines. This is just a fraction of my PhD story if you want to know more, please follow me on twitter: @Sthiruchenduran.





**Wishing you a Merry Christmas  
& a Happy New Year !**





# New Opportunities

PHD POST-DOC EMPLOYMENT EVENT PUBLICATION

## Coastal Marine Ecosystems Research Centre

The Coastal Marine Ecosystems Research Centre (CMERC) at the Central Queensland University has 2 competitive PhD scholarships to work on Queensland native macroalgae.

CMERCs' goal is to undertake proactive applied research to develop practical solutions to the challenges faced by coastal and marine ecosystems. The successful candidates will be based at the CQUniversity's Gladstone Marina Campus and will have the opportunity to work directly with both industry partners and Traditional Owners.

In a partnership with the Australian Seaweed Institute, the project "Seaweed biofilters to protect the Great Barrier Reef" aims to develop a network of native macroalgae to improve water quality along the Queensland coast while creating a circular economy.

The project "Sustainable harvest of *Asparagopsis taxiformis*", in partnership with FutureFeed, will investigate and propose sustainable harvesting techniques of natural populations of this highly demanded red seaweed.

Gladstone is at the heart of the southern Great Barrier Reef, a small town full of opportunities with beautiful sea life at its doorstep and the CMERC team is looking forward to welcoming you!

If you're interested, find out more information and apply at:

Seaweed biofilters to protect the Great Barrier Reef

<https://www.cqu.edu.au/courses/future-students/scholarships/offerings/phd-elevate-scholarship-cquniversity-and-australian-seaweed-institute-partnership>

Sustainable harvest of *Asparagopsis taxiformis*

<https://www.cqu.edu.au/courses/future-students/scholarships/offerings/phd-elevate-scholarship-cquniversity-and-futurefeed-pty-ltd-partnership>

Feel free to get in touch with any enquiries: [j.ferreiracosta@cqu.edu.au](mailto:j.ferreiracosta@cqu.edu.au) / [emma.jackson@cqu.edu.au](mailto:emma.jackson@cqu.edu.au)

Information Dr Joana Ferreira Costa

Photo credit: Rory Mulloy



# New Opportunities

## PHD POST-DOC EMPLOYMENT EVENT PUBLICATION

### **BELSPO project HabitANT**

Three research positions (2 fully funded PhD fellowships, 1 PhD or Post-doc) in 'Late Quaternary evolutionary dynamics of Cyanobacteria and eukaryote biota in Antarctic lakes'

Ghent University and the University of Liège are recruiting two PhD students who will be engaged in the recently started project HabitAnt: 'Past and future habitability in Antarctic lakes: succession, colonization, extinction, and survival in glacial refugia', funded by BELSPO BRAIN-BE. The project also includes the Royal Institute of Natural Sciences (Brussels) where the invertebrates will be studied by a research assistant (PhD or postdoc level).

### **Context**

Coupled climate and Earth-system models predict increased temperatures and altered precipitation patterns in vast regions of Maritime and coastal Continental Antarctica. These changes will likely result in more extensive glacial melt and the expansion of ice-free areas, increasing connectivity between regions, and changes in their hydrology. These projected environmental changes are expected to cause biotic homogenization between regions. Recent studies demonstrated that terrestrial and lacustrine biota in the Antarctic are more globally distinct and biogeographically structured than previously believed, due to the long-term survival and diversification of taxa in isolated glacial refugia. Hence, it is to be expected that biotic homogenisation will significantly increase the risk of extinction of endemic species and the spread of invasive species.

The students' work will be organized to design two (or three) complementary PhD theses. They will use fossil DNA in lake sediment cores, and develop molecular phylogenies of focal taxa to study the processes that contributed to the present-day diversity of organisms in Antarctic lakes. The processes studied include the long-term persistence of biota in glacial refugia, and extinction, colonization, diversification and biological succession in response to past climate and environmental changes.

Please follow the links below for more information on the two individual PhD fellowships:

[PhD on the diversity, ecology and evolution of micro-eukaryotes](#) (Ghent University)

[PhD on the diversity, ecology and evolution of Cyanobacteria](#) (University of Liège)

Note that the position at the RBINS will be advertised in 2022.

For more information, contact Prof. Elie Verleyen ([elie.verleyen@ugent.be](mailto:elie.verleyen@ugent.be))

# New Opportunities

## PHD POST-DOC EMPLOYMENT EVENT PUBLICATION

**Investigating ways to improve consumer acceptance, protein digestion and nutrient availability of seaweeds**

### **Overview**

We are seeking two enthusiastic and highly motivated PhD candidates to join a research team investigating ways to improve the consumer acceptance, protein digestion and nutrient availability of seaweeds. The project is co-led by the University of Otago and AgResearch. Scholarships are available through the University of Otago.

### **About the project**

Seaweeds have the potential to be important “future foods”, but seaweeds are generally considered less digestible than many of the foods that we consume at present. For example seaweed proteins are less digestible than animal proteins, which could result in poorer nutrient availability. The main objective of this project is to investigate methods to enhance the digestibility and nutrient availability of seaweeds, and to understand the relationship between structure and nutrition. This knowledge will support the development of seaweed-based “future foods”.

### **How to apply**

Applications should include a full CV and the names/contact details of at least two referees. Applications should be sent (preferably by email) to:

Dr Katja Schweikert

Email [katja.schweikert@botany.otago.ac.nz](mailto:katja.schweikert@botany.otago.ac.nz)

### **Further information**

For more information on the projects, please contact:

Dr Katja Schweikert

Email [katja.schweikert@botany.otago.ac.nz](mailto:katja.schweikert@botany.otago.ac.nz)

or

Dr Santanu Deb-Choudhury

Email [santanu.deb-choudhury@agresearch.co.nz](mailto:santanu.deb-choudhury@agresearch.co.nz)

# New Opportunities

## PHD POST-DOC EMPLOYMENT EVENT PUBLICATION

### Victoria University of Wellington

Even with carbon emission-reduction commitments the world is facing an average 3.5°C temperature rise. The promotion of kelp-derived blue carbon sequestration is emerging as an exciting opportunity to ameliorate climate change. This project will test the sequestration potential of kelp in the Aotearoa New Zealand context, where rich kelp beds and adjacent deep submarine canyons provide a unique ability to produce kelp biomass that can be exported to the deep sea.

You will be part of a project aiming to quantify the accumulation of kelp-derived carbon in deep-sea environments in the vicinity of natural kelp beds. This will be achieved using a range of techniques; stable isotope biomarkers as well as environmental DNA (eDNA), combined with radiocarbon dating and data on sediment-laden flows and accumulation rates. Kelp degradation experiments will be conducted to test the applicability of molecular and isotopic tools for identifying and quantifying kelp carbon contributions to marine sediments. By determining carbon concentrations, age and biological source, this project will establish for the first time, a relationship between coastal kelp-biomass and the quantity and longevity of kelp-derived carbon sequestration in offshore sediments.

Key attributes/skills/qualifications that are required: 1) Master's degree or an equivalent in a related discipline; 2) experience in molecular biology and some bioinformatic analysis; 3) IELTS overall band of 6.5 (not required if your degree is from a country where English is the first language); 4) ability to communicate clearly and work as part of a team. Experience working with macroalgae would be an advantage but is not essential. Holding of a current driving licence (or the ability to obtain a driving license) valid for use in New Zealand would be an advantage.

Applications in the first instance should be made directly to Prof Joe Zuccarello (VUW) or Dr Scott Nodder (NIWA) by December 15th 2021 (or sooner) and include a cover letter outlining why you want the PhD position (really important), full CV, academic transcripts, an example of your scientific writing, and the names/contact details of two people who can act as academic references (there is no need to request any reference letters be sent at this stage).

# New Opportunities

## PHD POST-DOC EMPLOYMENT EVENT PUBLICATION

**Investigating 'cross-talk' between pathogenic *Vibrio* and phytoplankton, and implications for human health under climate change. NERC GW4+ DTP PhD studentship for 2022 Entry, PhD in Biosciences.**

This project is one of a number that are in competition for funding from the NERC Great Western Four+ Doctoral Training Partnership (GW4+ DTP). The GW4+ DTP consists of the Great Western Four alliance of the University of Bath, University of Bristol, Cardiff University and the University of Exeter plus five Research Organisation partners: British Antarctic Survey, British Geological Survey, Centre for Ecology and Hydrology, the Natural History Museum and Plymouth Marine Laboratory. The partnership aims to provide a broad training in earth and environmental sciences, designed to train tomorrow's leaders in earth and environmental science. For further details about the programme please see <http://nercgw4plus.ac.uk/>

For eligible successful applicants, the studentships comprises:

- An stipend for 3.5 years (currently £15,609 p.a. for 2022/23) in line with UK Research and Innovation rates
- Payment of university tuition fees;
- A research budget of £11,000 for an international conference, lab, field and research expenses;
- A training budget of £3,250 for specialist training courses and expenses

The closing date for applications is 1600 hours GMT Friday 10 January 2022. Interviews will be held between 28 February and 4 March 2022. For more information about the NERC GW4+ DTP please visit <https://nercgw4plus.ac.uk>



# New Opportunities

## PHD POST-DOC EMPLOYMENT EVENT PUBLICATION

### **Computational Biogeochemical Modeling of Marine Ecosystems (CBIOMES) project**

We are recruiting post-doctoral research associates to work on the Computational Biogeochemical Modeling of Marine Ecosystems (CBIOMES) project. CBIOMES is an interdisciplinary, multi-institutional project funded by the Simons Foundation to better understand the biogeography of marine microbes and quantify the relationship between microbial biogeography and elemental cycles using a combination of modelling, statistical analyses of lab and field data, and laboratory experiments. We seek post-doctoral fellows to work on one of the following projects:

1. Developing new approaches to modeling microbial biogeography. Projects will employ computationally-intensive statistical analyses of time-series data to develop species distribution models, characterize microbial niches, and quantify microbial traits. Goals include improved descriptions of species traits and niches, intercomparison of model output and observational data, and new efforts to connect empirically derived phytoplankton traits with model parameterizations.
2. Developing new approaches to modelling phytoplankton growth. Projects will new experimental work to develop and test macromolecular-based models of phytoplankton growth.
3. Conducting culture work on biochemically important marine phytoplankton (diatoms, dinoflagellates, coccolithophorids, Phaeocystis, various photosynthetic picoeukaryotes) to quantify the inter-relationships between phytoplankton growth, macromolecular, and elemental composition. We are also interested in integrating physiological and biochemical data with transcriptomic data.

Detailed projects will be developed in collaboration with each successful applicant.

Researchers will join Dalhousie University in the Oceanography or Mathematics and Statistics departments to work with Dr. Zoe Finkel and Dr. Andrew Irwin. There will be opportunities to interact with collaborating groups at MIT, University of Washington, and the Simons Foundation. Researchers will participate in collaboration meetings and workshops.

To apply, submit a PDF with a cover letter, curriculum vitae, statement of research interests, and contact information for three referees by email to [zfinkel@dal.ca](mailto:zfinkel@dal.ca) or [a.irwin@dal.ca](mailto:a.irwin@dal.ca). We will review applications as they are received.

# New Opportunities

## PHD POST-DOC EMPLOYMENT EVENT PUBLICATION

### **Marine Aquaculture Lead – Love Rimurimu**

The Aquaculture role is a vital role in the project, focused on setting up successful hatchery techniques and processes for different seaweed species, trialling and monitoring re-seeding efforts and working alongside researchers from NIWA and Victoria University to develop scalable methodologies for regeneration. We need a self-starter with a passion for the marine environment, a keen interest in this emerging area and the capacity to lead the technical and practical components of the restoration. Phase one of the project will take place in the only seaweed-aquaculture permitted farm in Wellington in Mahanga Bay. Mahanga Bay Sea Vegetables are a new company who are looking to develop their seaweed farm and business opportunities in the seaweed sector. Their currently undeveloped farm will be the site of initial trials, and there will also be a hatchery area at Ocean Blue (in central Wellington) to set up and maintain.

The role will be funded by the Love Rimurimu Restoration project (administered by the Mountains To Sea Wellington Trust) and it's funders, and findings will be shared to help others achieve similar projects. Mahanga Bay Sea Vegetables are a key industry partner in the project and will gain know-how and collaborate closely with the team, whilst helping to provide a location for trials and hatchery requirements. We are building long-term partnerships and collaborations that will help everyone's knowledge grow, and will also help sustain the project into other regions and into the future. Continued success will be supported by these key relationships and you will work closely with the wider team throughout the project.

Project Website: [www.loverimurimu.org](http://www.loverimurimu.org)

For more information or to apply please send a CV, a Cover Letter and two relevant referees detailing your interest in the project and how your skills align with the role by 26 NOVEMBER 2022 to:

Zoe Studd  
Executive Director  
Mountains To Sea Wellington Trust  
Email: [zoe.studd@mtsw.org.nz](mailto:zoe.studd@mtsw.org.nz) or [kiaora@loverimurimu.org](mailto:kiaora@loverimurimu.org)  
Ph 021 707 881

# New Opportunities

## PHD POST-DOC EMPLOYMENT EVENT PUBLICATION

### Macroalgal Biotechnology and Applied Phycology

The journal Phycology is currently running a Special Issue entitled “Macroalgal Biotechnology and Applied Phycology”. We are acting as Guest Editors for this Special Issue and invite you to submit a paper.

The scope of this special issue includes but is not limited to:

- Commercially useful products
- Macroalgal culture techniques and advances
- Macroalgal aquaculture and ocean farming
- Macroalgal bioremediation
- Macroalgal biorefinery
- Macroalgal biomass processing
- Closing life cycles and seaweed hatcheries
- Diversification of species for aquaculture and strain selection
- Disease and contamination control and treatment
- Environmental tolerances and effects on growth
- Genetic advances and applications, including selective breeding techniques

For further information, please follow the link to the Special Issue Website at:

[https://www.mdpi.com/journal/phycology/special\\_issues/Macroalgal\\_Biotechnology](https://www.mdpi.com/journal/phycology/special_issues/Macroalgal_Biotechnology).

The submission deadline is 31 May 2022. You may send your manuscript now or up until the deadline. Submitted papers should not be under consideration for publication elsewhere. We also encourage authors to send a short abstract or tentative title to the Editorial Office in advance (Alice Guan <[alice.guan@mdpi.com](mailto:alice.guan@mdpi.com)>).