



# Australasian Society for Phycology and Aquatic Botany

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## Editor's Corner

Kyatt Dixon



The ASPAB newsletter is back for 2009.

For those that missed the AGM in Wellington, the role of newsletter editor has been passed from Prue McKenzie, who has done a brilliant job producing high quality editions of the ASPAB periodical for the last two years, to myself, Kyatt Dixon. Based in the School of Botany at the University of Melbourne, I work primarily on the taxonomy and systematics of the crustose red algal family Peyssonneliaceae. I aim to continue the legacy left by Prue and thank her for her invaluable contribution to the society as newsletter editor and continued support as a committee member.

This issue contains a summary of ASPAB happenings for 2008, including a run-down of the AGM and joint APPF/ASPAB conference as well as a number of interesting research notes. In addition, there are forms for the renewal of society memberships (due 1<sup>st</sup> July) and application forms for student grants to travel to both ASPAB and international conferences. This year there are a number of excellent meetings convening in the broader Australasian region including the 9<sup>th</sup> International Phycological Congress in Japan and the annual ASPAB meeting to be hosted by Robin South and Posa Skelton in Fiji. There is certainly an exciting year ahead.

I warmly thank all those that provided material for this issue of the ASPAB newsletter and thoroughly hope that it is enjoyed by all members. I also welcome contributions to the next issue, to be published later this year.

## President's Message

Alecia Bellgrove



Welcome to the first ASPAB newsletter of 2009 and let me begin by thanking our new newsletter editor, Kyatt Dixon, for his wonderful production. I encourage you all to send contributions to Kyatt for the next newsletter later in the year.

I took over the presidency from Lindsey White in about May 2008 (see AGM president's report) and was re-elected into the role at the last AGM in Wellington in November. I am excited by the opportunity to continue to reinvigorate the Society and I am particularly encouraged by the growth in membership of the New Zealand chapter over the past year - keep it going! It is also pleasing to see that our number of student members is on the rise, for they are the future of our Society. So it is critical that we continue to get our students involved in ASPAB. The key to a vibrant Society is good communication between members and the ASPAB committee has been working hard over the past couple of years to improve communication (which we acknowledge has previously failed members). Phil Orr has done a great job in getting the ASPAB website up and running ([www.aspab.org](http://www.aspab.org)) and Erasmo Macaya has recently taken over as webmaster and is in the process of further reinvigorating the site and getting it up to date. I am sure Erasmo will be happy to take suggestions from you on further improving this site. Prue McKenzie has done a brilliant job over the past 3 years as our Newsletter Editor, delivering 2 issues per year to us all and we thank her for her efforts. Prue has now handed over to Kyatt who, judging by this edition, is set to only improve on the great efforts made by Prue. And finally, a third initiative in improving communication has been the development of the ASPAB list - an email list for members - by Judy Broom. Most members now seem to be joined up (contact Judy if you need to join) and I encourage all to use this list for exchanges of information relevant to our membership.

For those that were able to attend the Asia Pacific Phycological Forum, hosted by ASPAB, in Wellington in November 2008 I am sure that you will agree with me that it was a wonderful meeting. I would particularly like to thank the local organising committee for the fantastic efforts in putting together vibrant scientific and social programs. I also welcome the new members to our committee that were voted in at the AGM and thank all outgoing members for their contributions (see current committee details later in this issue).

Things are already moving along in the background for 2009. Robin South and Posa Skelton are actively involved in planning the next ASPAB meeting to be held in Fiji in November (so start planning to attend now - students see travel award applications in this issue). They are also planning an algal taxonomy workshop with Alan Miller and John Huisman which sounds great. The website is being redeveloped and will go live soon so keep an eye out there. We nominated two of our members (Fred Gurgel and Michael Borowitzka) to attend the Science Meets Parliament convention in Canberra and we look forward to hearing their reports back to the Society on this. And this is just the beginning. I welcome any suggestions from you all on how we may further enhance ASPAB over both the short- and long-term.



## Brief Biography of our President

Alecia completed a BSc (Hons) at Monash University in 1992. She spent some time travelling the globe and also working as an Environmental Scientist for Melbourne Water, particularly involved in assessing impacts of sewage effluent discharge into the marine environment. She returned to Monash to undertake a PhD in macroalgal recruitment dynamics under the supervision of Margaret Clayton and Gerry Quinn. This is when she first became involved in ASPAB. She graduated in 1998, and had a short fellowship at University of Melbourne with Barbara Downes examining hydropsychid (caddisfly) dispersal routes, before heading to Japan. She spent 2 years in Japan as a Japan Society for the Promotion of Science Postdoctoral Fellow and a further year there as a Foreign Research Fellow of the University of Tsukuba. Alecia was working with Masakazu Aoki, based at the Shimoda Marine Research Station in the idyllic hot spring and coastal resort town of Shimoda, ~3h from Tokyo.



ASPAB president Alecia Bellgrove



Masakazu Aoki

She returned to Australia in late 2001 to begin a lectureship in Marine Biology and Ecology at Deakin University, Warrnambool campus. Alecia has maintained close connections and collaborations with Japanese colleagues and returned to Japan several times for research since. Alecia's research in Japan continues to focus on trying to understand the dispersal dynamics of the important red alga, *Chondrus verrucosus*. Alecia's research in Australia also focuses on understanding the dispersal and recruitment dynamics of marine macroalgae, and the effects of anthropogenic disturbances such as sewage effluent discharge on these vulnerable life stages. She is particularly interested in key habitat-forming seaweeds such as *Hormosira banksii* and their potential roles as ecosystem engineers.



*Chondrus verrucosus* carposporophyte, Itado, Japan



Alecia with her son Shion

## Minutes of the 2008 ASPAB Annual General Meeting

Martina Doblin

The 2008 ASPAB AGM was held in Wellington, New Zealand on the 13<sup>th</sup> of November during the Vth Asian Pacific Phycological Forum. Twenty nine members were present.

11. Minutes of the last AGM were accepted as an accurate record.

12. Actions from previous meeting:

a. Alecia congratulated the local organising committee for doing a great job hosting the joint APPF/ASPAB conference.

b. Martina indicated the travel policy for students has changed. The key amendments are:

Grants will only be paid AFTER all the relevant criteria have been met (which includes providing receipts). There will no longer be any advances.

Applications will be considered throughout the year (rather than at two specific times) to support international (or national) travel.

We will pay half the airfare or AUD\$1000, whichever is the lower. Previously there was no specified limit.

Application should indicate whether the student has funding from their home institution to assist ASPAB committee in distributing funds. The committee thought this was helpful in determining how much support a student should be awarded.

c. The list serv has been set up, so people were encouraged to use it and contact Judy Broom with any issues: [judy.broom@otago.ac.nz](mailto:judy.broom@otago.ac.nz)



Student members Peter Martin (left) and Sven Ihnken (right) in Wellington. Image: K. Dixon

3. *Alecia presented the ASPAB President's report* (attached separately).

In summary:

Alecia has been the acting President since Lindsey White resigned from the position in May 2008.

Expenditure from ASPAB accounts is authorised through two signatures, not just one.

ASPAB membership is on the rise—everyone is encouraged to set up an automated payment for annual fees, due in July each year.

Wendy Nelson was made a Member of the New Zealand Order of Merit (MNZM) in the Queen's Birthday Honours list this year, for services to the marine environment.

The website continues to develop—please send materials to make the content dynamic and up to date. [www.aspab.org](http://www.aspab.org)

The ASPAB listserv is up and running—please use it as a primary means of communication to the membership.

The ASPAB committee thanks Prue McKenzie for her efforts as the newsletter editor. Prue will step down from the role in 2009.

4. *Treasurer's report* (Australian and New Zealand reports attached separately).

Keeping track of finances in each ASPAB Chapter was discussed. The Australian Chapter undertakes an annual audit, and a similar process will now take place in the NZ Chapter.

5. *Secretary's report*

The change in travel policy was the only major item to report (see 2b above).

Joe Zuccarello commented that applications should be viewed as competitive and not taken as given. There was general agreement that if funds were available, as many students as possible would be supported.

Judy Broom voted to accept all reports. Joe Zuccarello seconded.





6. *Election of new committee*

*President:* there were no other nominations from the floor.

*VP:* Judy Broom.

*Treasurer:* Joanna Jones (Australia); Tracy Farr (New Zealand)

*Secretary:* Martina Doblin

*Webmaster:* Erasmo Macaya

*Newsletter editor:* Kyatt Dixon

*Student member:* Jacqui Pocklington

*General members:* Prue McKenzie, Joe Zuccarello, Fred Gurgel

Margaret Gordon motioned that the list be adopted.

John Huisman seconded the motion.

John Huisman also reminded us that the constitution states that positions can only be held for a certain number of consecutive years before office bearers had to step down.

7. *Success stories*

Congratulations were extended to Prue McKenzie who graduated with her PhD, and once again to Wendy Nelson who was made a Member of the New Zealand Order of Merit.



Bruny Island rock platform, Tasmania, Australia. Image: M. Doblin



Taupiri Bay, Northland, New Zealand. Image: K. Dixon

8. *ASPAB 2009*

Two offers to host the next conference were discussed:

Fiji	Robin South & Posa Skelton
Townsville	Kirsten Heimann

November timing seemed to work for most people, as it is after the academic teaching year and well before the Christmas season. Fiji was the preference, mainly because Robin and Posa could host a conference in 2009 but not in 2010.

9. *Call for images*

There was a call for images from ASPAB members, not only to post on the web but to use in promotional material, potentially a phycological calendar or set of notecards. Images should be sent to Martina

[martina.doblin@uts.edu.au](mailto:martina.doblin@uts.edu.au)

10. *General business*

Vivienne Cassie Cooper, ASPAB's life member, was given a gift of appreciation for her efforts in continuing to attend ASPAB conferences. She graciously accepted her gift and said she would like to continue attending if her health permitted. ☺

## Treasurer's Report - Australian Chapter

Jo Jones

We actually made several grants to students and one to a representative to attend FASTS this year. With this and no conference profit the current account dropped but total assets did not because of interest from the deposit.

Again the cost of the Newsletter was nil mainly through the generosity of Deakin University.

In February 2008 the deposit account was reinvested for 12 months at 7.25%. Next time will presumably be different. These and last year's accounts have been audited and we are indebted to Dennis McHugh for doing them (meticulously). The New Zealand Chapter suffered a

loss this year so total ASPAB funds were reduced. Whilst we should be reasonably careful I think that we should not be frightened to be in deficit when the need arises. Funds accrued in recent years partly because few grants were made to students. They may be more needy in future.

### Membership

Paid-up members were as follows:

	2002/3	2003/4	2004/5	2005/6	2006/7	2007-8
Full	49	40	44	43	44	48
Student	12	5	7	15	22	24
	<hr/> 61	<hr/> 45	<hr/> 51	<hr/> 58	<hr/> 66	<hr/> 72

It is encouraging that the membership is creeping up.

### Income and Expenditure Statement (1.7.07 - 30.6.08)

	2006-7	2007-8
REVENUE		
Dues - full members	1455.70	1716.00
Dues - student members	308.00	286.00
Interest on current account	37.93	63.69
Conference profit	2845.62	0.00
	-----	-----
	4647.25	2065.69
	-----	-----
EXPENDITURE		
Incorporation fees	95.30	38.00
FASTS	251.98	275.08
Representative to FASTS Science meets Parliament	0.00	839.70
Website	388.75	166.80
Student grants or prizes	200.00	1653.50
Officers' expenses	0.00	0.00
	-----	-----
	936.03	2973.08
	-----	-----
Surplus	3711.22	-907.39

### Assets Statement

#### CURRENT ASSETS

Current Account	10650.89	9743.50
Term Deposit	35770.41	37295.14
	-----	-----
	46421.30	47038.64
	-----	-----
Total increase	5672.91	617.34

## Treasurer's Report - New Zealand Chapter

Tracy Farr

The New Zealand chapter underwent a turnaround on many fronts during 2008 calendar year. Control of a small portion of the chapter's finances was handed over to the current committee in May 2008, but with a lack of an accounting papertrail. It was subsequently revealed that the New Zealand chapter's nest egg had been misappropriated, and the majority of our funds lost to us; this was discussed at the Annual General Meeting in November 2008.

Our accounting record extends back to May 2008 when the current committee members gained control of the accounts.

This report therefore represents rather a clean slate in terms of reporting for previous years for both membership and finances. However, as 2008/09 has progressed with a substantial increase in membership as well as a reasonable profit from the Vth APPF in Wellington in November 2008, we look forward to continuing buoyancy and financial health, as well as good management, of the New Zealand chapter and its accounts.

We note that the profit from the Vth APPF was only finalised and paid into the ASPAB current account in March 2009, and that a proportion of this profit has still to be paid to the parent association, APPA; the amount of this payment to APPA is currently under negotiation.

We also note with grateful thanks the assistance of the Australian chapter in providing funds towards the Vth APPF in November 2008, to cover the shortfall left by the misappropriation of funds. This money was paid directly into the APPF conference accounts, and so does not appear in this balance sheet.

Due to the loss of funds suffered in 2008, the New Zealand chapter holds a single account, a current account, at this time. It is a Society Current Account which attracts no fees, but nor does it pay interest; three signatories are nominated, with two required to sign for any withdrawals. With a larger amount in the account, the local committee will consider placing this in an interest-earning account.

### Membership

Paid-up members as follows (2008/9 members as at 01 December 2008):

	2007/8	2008/9
Full	6	22
	5	12
Honorary life member	1	1
	12	35

### Income and Expenditure Statement (year to date, 20<sup>th</sup> March 2009)

#### REVENUE

	2007/8 (part year, May - June 2008)	2008/9 (current year, to 20Mar 2009)
Dues - full members	180	450
Dues - student members	70	100
Interest on current accou	0	0
Conference profit	0	6612.54
	250	7162.54

#### EXPENDITURE

Student grants or prizes	0	60
Bank fees	0	0
Conference expenses	0	0
Officers' expenses	0	0
	0	60

Surplus	250	7102.54
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### Assets Statement

#### CURRENT ASSETS

Current Account (ASB)	1813.12	8915.66
TOTAL:	1813.12	8915.66

TOTAL increase	250	7102.54
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## 5th Asian Pacific Phycological Forum/Annual ASPAB meeting, Wellington, New Zealand

Joe Zuccarello

The fifth APPF and annual APSAB meeting were held from 10-14 November 2008. The meeting was a great success and windy Wellington behaved itself. Over 230 registrants from over 20 countries attended (see cover image). The meeting was opened with a traditional Maori welcome and speech by Tumu Te Heuheu, Paramount Chief of Ngati Tuwharetoa, and introductions from the Presidents of the APPA (Asian Pacific Phycological Association) and ASPAB (Siew Moi Phang and Alecia Bellgrove, respectively). Several organisers (bravely) sang a beautiful waiata (Fig. 1). Scientifically many impressive papers were presented, and importantly many good contacts in the Pacific region made. The originators of the APPA have to be commended for their foresight. Although the region, and membership, spans from the cold north (Russia, Japan) to the cold south (New Zealand), phycologically we do share a lot - the unique conditions and evolutionary history of the algae, make collaborations more than normally productive.



Fig. 1. Conference organisers singing a waiata during the opening ceremony

Plenary lectures were given by Ik Kyo Chung (carbon sequestration in algae, an important aspect of algae in a changing world (the "theme" of the conference) that is getting a lot of mileage, and starting to get good research behind it), David Schiel (on the ecology of algal propagules, those so important stages of dispersal that shape communities, but are generally overlooked because of their diminutive size), Gwang-Hoon Kim (on the cell biology of wound responses, from how lectin-carbohydrate

interactions signal cell growth in *Griffithsia*, to how they produce cells from dispersed cytoplasm in *Bryopsis*!) and John Huisman, with an entertaining but 'rather depressing' talk on the state of algal taxonomy in Australia (and probably world-wide). There were nine mini-symposia from applied phycology to ecology to taxonomy, and several contributed paper sessions.



Fig. 2. Crid Fraser accepting her prize for best student taxonomy presentation

The highlights for me are always the student presentations. Well organized (puts us academics to shame), interesting research, and given with lots of enthusiasm. The highlights? Let the judges pick! There were 5 student prizes (and 5 student sessions). The two taxonomy prizes went to: first prize: Crid Fraser (New Zealand)(Fig. 2) on the phylogeography of *Durvillaea* rafting, the west-wind-drift does seem to effect the connectivity of southern hemisphere populations, and second prize: Lydiane Mattio (New Caledonia)(Fig. 3) on the taxonomy of *Sargassum* from the tropical Pacific, where a well integrated study fixed the taxonomic mess called "*Sargassum*" and reduced a lot of the names to synonymy.



Fig. 3. Lydiane Mattio accepting her prize for an outstanding presentation on the taxonomy of *Sargassum*





Fig. 4. Sven Ihnken accepting his prize for the best student physiology presentation

The prize for best physiology paper went to Sven Ihnken (Australia) (Fig. 4) on carbon acquisition in microalgae. Best Applied Phycology paper went to YY Kok (Malaysia) (Fig. 5) on the inhibition of Epstein-Barr viral proteins by algal extracts. The best ecology prize went to Sutinee Sinutok (Thailand) on the ecology of *Halimeda* in Phuket.



Fig. 5. YY Kok accepting her prize for the best Applied Phycology student paper

The poster sessions had plenty of very good posters (best poster prizes to Jenn Dalen and Wendy Nelson on the Rhodomeniales of New Zealand, and Tomofumi Shitara, H. Takahira, M. Hasei and Y. Hara (Japan) on yellow snow-the kind made by *Ochromonas*!) and plenty of time, and refreshments (solid and liquid!) to keep the whole thing going for a long time.

The catering was excellent all around, and the banquet has a good Pacific Island feel (Fig. 6).

## Icy adventures on the south seas

Sven Ihnken

Where the sun hits the ice, all of us are guilty, at least to some extent. Having it cool in summer, and warm in winter, driving our Holdens and Fords to and from work and Saveway, flying to lovely Wellington to talk to other phycologists, all affect the composition of gases in the air that we, and our much-loved algae, need for survival. Carbon dioxide, our well-known and mighty liked greenhouse gas is clearly heavier than most of the other components of air. As a result it has the tendency to work itself downward in a rather stupid



Fig. 1. An Adeline penguin. Maybe just asleep.



Fig. 6. A traditional Maori dance during the banquet

There were the obligatory AGM's and a new Council was voted in for the ASPAB (Fig. 7), and the new meeting set for Fiji this year! (University of the South Pacific). Lets hope we can all make it.



Fig. 7. The 2009 ASPAB council. From left to right, Fred Gurgel, Tracy Farr, Martina Doblin, Erasmo Macaya, Joe Zuccarello, Alecia Bellgrove, Kyatt Dixon, Judy Broom and Jo Jones.

The organization was flawless, and the 'real' organizers need to be commended, especially Erasmo Macaya for the beautiful graphics all around, Tracy Farr and Kate Neill for all the backroom shenanigans (!) and the student helpers (Alejandro, Alejandra, Andrea, Benjamin, Fiona, Joe, Peter, Tyler, Sebastian, Sergio).

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attempt to meet the source of gravity. Gravity, by the way, has been proven to be the major cause of belly development in males. The latter acts as a significant mid-term carbon sink and therefore competes with the North-Atlantic deep-sea water formation and the connected conveyor belt for CO<sub>2</sub> buffering capacity. Needless to say that the world's population is skyrocketing. So, no worries? Well, back to the gas. Surely CO<sub>2</sub> will go down. I guess that is what the author has agreed on. After deep contemplation on the matter, it



seemed reasonable to think that there must be more heavy gases at the bottom of the earth, floating above the thick ice-coat that covers the vast majority of another continent with a name that starts with an 'A'.

The mission seemed unavoidable, to search for CO<sub>2</sub> at, or somewhere near the southern tip of our quirky planet. Similar thoughts must have been processed in somewhat similar neocortexes. Some fellow humans must have gotten together and dwelled over how to nail a ship together that can take some inquisitive minds to the cold. The Australian Antarctic Division had rather detailed plans on what to look for, where to go to, and when to do so. One summer in Davis, Antarctica, 2250 nautical miles away from Perth (presumably south), and 3 hours behind Australian eastern standard time, to look for gases. Gases that cuddle with water... in the ocean. And on top of this, an exquisite, hand-selected group of highly competent and motivated scientists investigated the effects of CO<sub>2</sub> on all of the little things that are believed to live in the cold and violent southern ocean.

P 40 - Project 40 - efficiently abbreviates Andrew Davidson, Rick van den Eden, Paul "Thomo" Thomson, Karen Westwood, Lynsey Maher, Mitch Hollier and Sven Ihnken, the CO<sub>2</sub> detectives on the site of action.

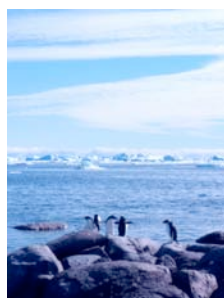


Fig. 3. Business as usual

But, stop. Take one step back. The *journey* is the reward. Or to put the card before the horse, boredom is one of mankind's worst habits. Peter Ralph must have looked out of his quay central Sydney office window and felt pity for those that have to stand 3 long weeks on the famous Aurora Australis, the aurora-red ship that was to shuttle the participants to the ice and back. Peter knows what we are talking about. After various trips on the ship, between the waves of the horse latitudes, crossing the roaring forties, furious fifties, and screaming sixties, after listening to the constant whistling sound of the ballast water tanks and spending hours embracing the toilet seat, he must have thought: "gee, lets give these fellas something to do". So he did. Yoshi Tazoe, Doug Craven, Mitch and myself were to spy on the fronts of the

southern ocean. Narrow belts where water masses meet and create conditions that allow phytoplankton to thrive. Thrive in comparison to the rather limited vast areas of the blue desert between these bands. In the belly of the ship, in the laboratory, algae were categorised according to their size, separated into three classes and mistreated with and without UV radiation of various kinds. Fluorescence measurements were the base of the investigatory procedure. Keyword PAM.

To my surprise I also found the PAM box in the station at Davis, on the continent. Over the last few years many people have patiently attempted to explain this magical machine to me and have miserably failed. That might be the reason that I had decided to put this instrument into the caring hands of Mitch, hoping that there were no other tools to play with and I could dedicate my precious time to investigating the resting behaviour of penguins and answer my lifelong question: whether or not polar bears eat both Emperor and Adeline penguins. Needless to say, Peter had opposing ideas and had stuffed a F3300 from Photon Instruments Systems into the parcel for us. Another fluorometer. Of course. When will I finally escape the breath of H. Kautsky and A. Hirsch? To be measured: Chlorophyll fluorescence, fast induction curves, OJIP kinetics, during the first second of exposure of the sample to strong light. Samples were to be taken from six 600 L mesocosm tanks, which were equipped with oxygen sensors, maintained at constant temperature inside a cooling container and adjusted to CO<sub>2</sub> levels up to 4 times the current CO<sub>2</sub> concentration found in the seawater. A great set-up, carefully planned and put in place with a lot of knowledge, experience and love for detail by the Antarctic Division. Lynsey adjusted CO<sub>2</sub> levels on a daily basis by slowly adding CO<sub>2</sub> saturated seawater to the enclosed tanks using a drip system very familiar from visiting relatives in hospital that failed to learn that fast motorcycles and windy roads might cause them some trouble. Karen was not afraid of putting her Wellington gumboots on to feed algae and bacteria



Fig. 2. I've been playing with dirty boys

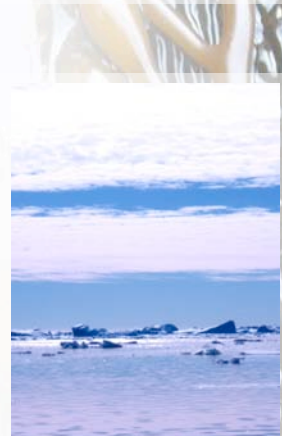


Fig. 4. They didn't allow me to go under water

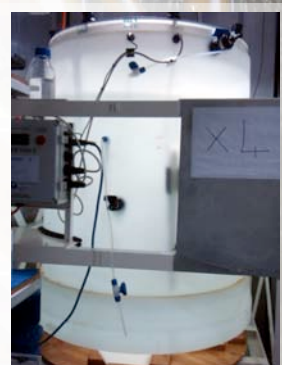


Fig. 5. A bio-bucket, one of six 600 L homes for a community <200µm. CO<sub>2</sub> levels were manipulated to 4x the current concentration





Fig. 6. One wouldn't think that this is a \$1 million lab

an idea of production rates. Phytoplankton reaction in various UV irradiation qualities was Mitch's area, and he kept the PAM running from early to late. The DNA in members of the tiny community was stained by Thomo and observed with a flow cytometer. Rick is going to be busy for the next year or so on the HPLC for having sampled so much, and Andrew will find the data of his grazer dilution experiments very valuable to the scientific community. Overall, a fine suite of analyses provided a huge amount of data to be processed.

The results of the experiments measuring the potential effects that we humans are having by elevating the atmospheric CO<sub>2</sub> concentration will be very interesting, and surely to be found on paper, sooner or later. After all, a great team has done a great chunk of work. Well done guys, thanks. As it is getting colder here at Davis, we are getting prepared to leave the brave winterers in peace and step back aboard the Aurora Australis to sail back to Hobart...towards civilisation, where one has to pay for her or his coffee and the mobile phone is brought back to life. Hello.

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## Phycuisine

Erasmo Macaya

In Chile the name "Cochayuyo" is given to *Durvillaea* blades and "ulte" to the stipes. Usually you can buy Cochayuyo from any supermarket, which are basically dried *Durvillaea* blades. The thalli are collected (in Chile *Durvillaea antarctica* only grows in the intertidal, and actually in the lower part where it is very dangerous to collect) then dried and sold in large bundles in the markets.

Here are two *Durvillaea* recipes:

### Charquican

#### Cochayuyo crudit 

Cooking Time: 15 minutes

Servings: 4 people

Ingredients:

- 50 g Cochayuyo seaweed (small pieces 2 cm long approx.)
- 3 tablespoons lemon juice
- 1 garlic clove, minced
- 1 tablespoon parsley, minced

Soak the seaweed for 10 minutes in hot water. Drain and dress with lemon juice, garlic and parsley. Serve cold.

- 6 medium potatoes, cubed
- 1 medium winter squash, cubed
- 1 medium carrot, chopped
- 1 cup peas
- 1 cup corn
- 1 can beef broth
- salt and pepper to taste
- 1/2 pound beef jerky, chopped
- 1 medium onion, chopped
- 3 tablespoons olive oil
- 2 cloves garlic, chopped
- 1 tablespoon paprika
- 1 tablespoon oregano
- 1 teaspoon cumin

Bring squash, potatoes, carrot, peas, corn and broth to a boil. Season with salt and pepper then simmer for 15 minutes. Saut  beef jerky and onion in oil for 5 minutes. Add garlic, paprika, oregano, cumin, salt and pepper, saut  for 3 minutes. Add beef mixture to vegetables, simmer for 15 minutes. Serve.



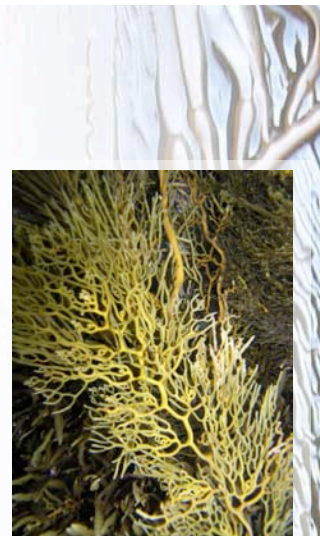
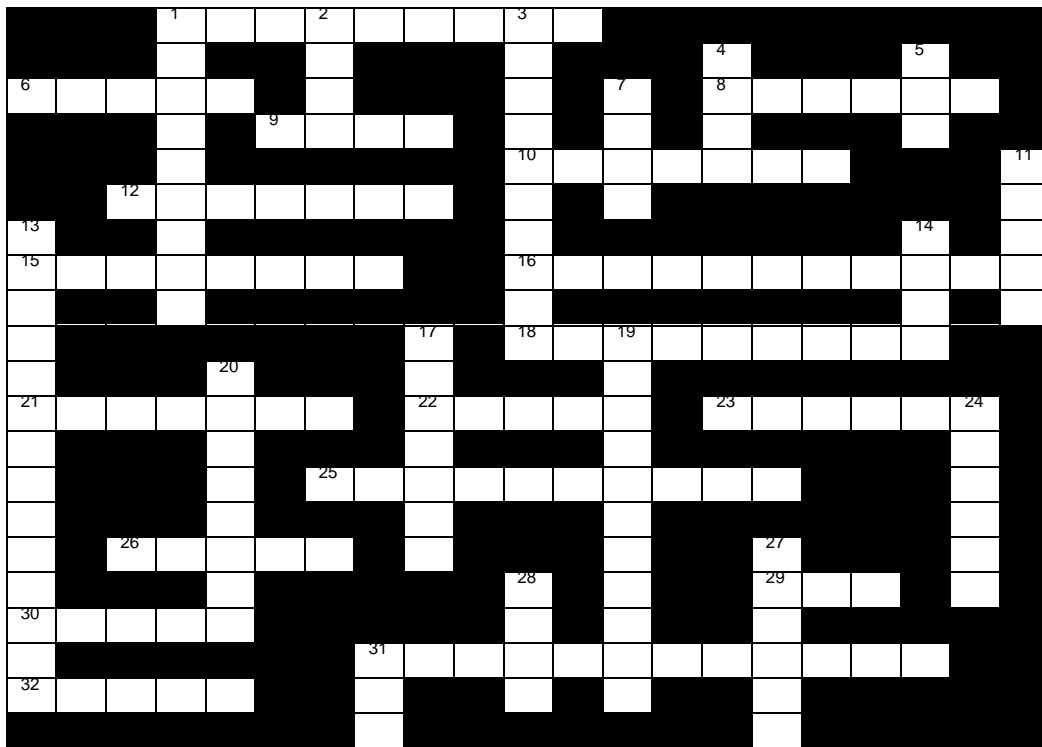
Bundles of *Durvillaea antarctica* (behind) prepared for sale in a Chilean market

So why eat *Durvillaea*? Well, during especially hard times, when beef was either unavailable or too expensive, people used a protein substitute for the beef: *Durvillaea*!! So it's called "Charquic n de Cochayuyo" (Cochayuyo's Charquican). Instead of using beef, small pieces of *Durvillaea* are added.



# Phyco Crossword

By Yola Metti and Alan Millar



## ACROSS

- 1 Chosen in the absence of a holotype
- 6 The taxonomic rank above species
- 8 Starch is often stored in them
- 9 *Macrocystis*
- 10 A classic introduction
- 12 Sometimes found in a gene
- 15 A calcified green alga
- 16 An endemic sporochnelean genus
- 18 A Mediterranean pest
- 21 *Batrachospermum* lives in these
- 22 Heterokontophyta
- 23 Gene jockies use this stuff lots
- 25 A brown displaying sympodial branching
- 26 A tiny part of a life history
- 29 A spacer region
- 30 Something students do lots of
- 31 That which all kids dream to become
- 32 Helpful with microscopic analyses

## DOWN

- 1 A rhodomeleacean genus diagnosed by apical pits
- 2 Tables predict each one
- 3 Used to describe an axis
- 4 An algal extract
- 5 Life's code
- 7 Rhodophyta
- 11 The most important organism on this planet
- 13 A clever chemical reaction
- 14 A cosmopolitan green alga
- 17 The most abundant enzyme on the planet
- 19 A golden pigment
- 20 A classic and important field of science
- 24 Upper-most part
- 27 Fats
- 28 A chloroplast gene
- 31 A reproductive structure

## Congratulations

Prue McKenzie's PhD thesis was recently passed and she will graduate on the 3<sup>rd</sup> April. Prue completed her thesis under the supervision of Dr Alecia Bellgrove and Dr Belinda Robson. Below is the abstract from her thesis and a list of current publications arising from her work. We congratulate Prue for her success and her important contribution to dispersal ecology of seaweeds.

### Potential for long-distance dispersal of *Hormosira banksii*

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### PhD Thesis Abstract

Fucoid macroalgae are generally characterised by limited dispersal of propagules. However, some species may be capable of longer dispersal distances via drifting, fertile thalli. Drifting, fertile thalli have long been suggested as the primary long-distance dispersal vector for many marine macroalgae, however, this suggestion has rarely been tested. Evidence of both short- and long-distance dispersal may lead to sufficient gene exchange to genetically homogenise populations over large geographic scales (hundreds of km).

*Hormosira banksii* is a habitat-forming, intertidal fucoid alga that has a broad distribution throughout Australasia. Whilst there is evidence of considerable morphological variation, *Hormosira* is currently considered a monospecific genus. Furthermore, there is no evidence of outbreeding depression over distances that may be expected from species with limited dispersal. Therefore, gene flow may be occurring between populations via drifting fronds. There is evidence that fronds of *H. banksii* may be capable of long-distance dispersal. For example, *H. banksii* has structures that may assist flotation. Thalli of *H. banksii* consist of fluid-filled vesicles, contrary to other fucoids where air bladders are small and/or exist only on part of the thallus. Furthermore, fronds of *H. banksii* are commonly observed in beach wrack around Australia and New Zealand. However, these observations are not conclusive, therefore the aim of this PhD thesis was to test the potential for long-distance dispersal of *H. banksii* via drifting, fertile fronds.

In *Chapter 2*, I examined the reproductive viability and longevity of floating fragments of *H. banksii*. Beach wrack surveys on both sandy beaches and rocky shores and field and laboratory experiments were conducted to test the model that long-distance dispersal is achieved in *H. banksii* via floating, fertile fronds. Fronds and fragments of *H. banksii* were capable of floating, although floating ability differed between 3 morphological ecotypes of *H. banksii*. I found high densities of beach wrack fragments evident during summer compared to autumn. The majority of beach wrack was found on sandy beaches compared to rocky-shores. Both male and female fragments were present in the beach wrack. Beach wrack produced high fertilisation rates and recruited successfully onto artificial panels. Furthermore, detached fronds were capable of releasing gametes up to 8 weeks after detachment. Therefore, floating fragments of *H. banksii* are reproductively viable for a sufficient period for effective dispersal among shores, however, the low densities of deposits on rocky shores may limit the dispersal potential.

In *Chapter 3*, I tested the model that long-distance dispersal of *H. banksii* is facilitated by weak attachment to the substratum and frequent dislodgement of fertile fronds, but will be influenced by thallus morphology and physical factors. The frequency of dislodgement was evaluated by monitoring dislodgement of *H. banksii* individuals over a 10-week period. Attachment force and strength of fronds of *H. banksii* were measured by *in situ* pull tests. Additional tests were conducted to determine whether thallus size or pull direction influenced attachment strength of fronds of *H. banksii*. Results suggest that dislodgement of vesicles and fronds was a regular event during the survey period and the mean attachment strength of fronds of *H. banksii* was generally weak (0.5 - 17 N). Furthermore, thallus size did not influence the force required to break fronds of *H. banksii* from the substratum, but the direction that fronds were pulled from the substratum did. Therefore, the results support the model that long-distance dispersal of *H. banksii* is facilitated by weak attachment to the substratum and frequent dislodgement of fronds.

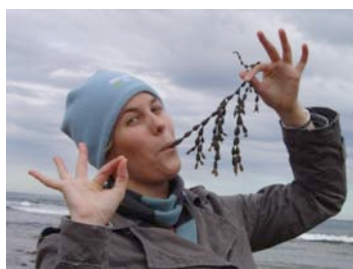


Given the evidence of potential for long-distance dispersal and support of the models tested in Chapters 2 and 3 from ecological experiments, extended examination with molecular studies were conducted in Chapters 4 and 5. The aim of Chapter 4 was to design and develop an inexpensive and effective method for DNA extraction from alcohol preserved brown algal tissue, following unsuccessful attempts using established protocols. A chelex resin method was modified to include an ultrasonic disruption step to aid in the successful removal of polysaccharides (herein ultrasonification-chelex method). DNA yields from *Hormosira banksii* and *Ecklonia radiata* were significantly higher using the ultrasonification-chelex method ( $> 80 \mu\text{g} / \text{mL}$ ) compared to either the CTAB method ( $16 - 23 \mu\text{g} / \text{mL}$ ) or the salting-out method ( $12 - 17 \mu\text{g} / \text{mL}$ ). Additionally, the DNA extracted from *H. banksii* using the ultrasonification-chelex method was more suitable for PCR amplification than from the other methods tested. The ultrasonification-chelex method was successful in extracting DNA from 4 species of brown algae and is recommended for use with other marine macroalgae with high polysaccharide content.

The aim of the Chapter 5 was to develop an enriched microsatellite library for *H. banksii*. Plasmid DNA was sequenced from 126 clones. There were 12 unique sequences containing microsatellites. Six of the 12 sequences were designed for PCR primers. PCR amplification only worked for 2 of the 6 primers developed. One of these was monomorphic, whilst analyses revealed polymorphism for the other locus. The polymorphic locus showed 3 different alleles from 34 individuals of *H. banksii*. The one polymorphic locus can potentially be used with other loci developed for *H. banksii* to examine the genetic differentiation over the broad distribution of *H. banksii*.



The subject of Prue's research, *Hormosira banksii*



Prue McKenzie

Together, the results suggest that floating, fertile fronds may be an important mechanism for facilitating long-distance dispersal of *H. banksii*. Data showed that fronds dislodge regularly, which may be facilitated by weak attachment to substratum. Once dislodged, fronds can potentially float for long enough and remain reproductively viable (up to 8 weeks) and therefore contribute to gene flow between populations. Nevertheless, the frequency of fronds reaching suitable habitat and contributing to gene flow between populations, or colonising new populations, may not be proportional to the total density of beach wrack. Like some terrestrial plants, *H. banksii* seems to have dual dispersal capabilities (short-distance dispersal of propagules and long-distances of floating, reproductive fronds). Dual dispersal capabilities may maintain the broad distribution of *H. banksii* and greatly simplify restoration efforts. Further development of molecular markers such as microsatellites should be conducted (including the polymorphic locus developed in this study) to test the genetic differentiation between populations of *H. banksii*. Molecular markers will further provide a means of understanding the links between life history characteristics, dispersal modes and gene flow/genetic differentiation.

#### Current publications

##### PhD research

McKenzie, P. F. and A. Bellgrove (2008). Dispersal of *Hormosira banksii* (Phaeophyceae) via detached fragments: reproductive viability and longevity. *Journal of Phycology* 44: 1108-1115.

McKenzie, P. F. and A. Bellgrove (in press). Dislodgment and attachment strength of the intertidal macroalga, *Hormosira banksii* (Fucales, Phaeophyceae). *Phycologia*

##### Honours research

McKenzie, P. F. and A. Bellgrove (2006). No outbreeding depression at a regional scale for a habitat-forming intertidal alga with limited dispersal. *Marine and Freshwater Research* 57: 655-663.

# Student Opportunities in Australian Marine Macroalgal Research

Fred Gurgel's Lab at the University of Adelaide is seeking Honours and PhD students who are eager to work on the molecular systematics, molecular ecology and biogeography of Australian macroalgae.

Broad research directions currently funded include: 1) DNA barcoding of SA macroalgae, 2) DNA sequencing of type and historical material, 3) phylogeography and population structure of macroalgal populations, 4) response of turf and crustose coralline algal communities to environmental and climatic changes, and 5) the Australian Census of Coral Reef Algae.

Additionally and more specifically, 2 PhD Fellowships are currently available:

**PhD 1: Phylogenetics and Phylogeography of Marine Benthic Algae of the Great Australian Bight: Biodiversity and the Relict Species Concept.**

Description: This study will use a range of molecular tools to: 1) provide a comprehensive and taxonomical updated survey of the marine flora of the head of the GAB and vicinity (the taxonomy + phylogenetic component), 2) test the hypothesis that the Bunda Cliffs acts as a barrier to gene flow between western and eastern GAB populations (population genetics component), and 3) test whether macroalgal species considered 'relicts' do indeed belong to ancient populations or whether they arrived recently hence should be defined as "long range dispersals" instead (phylogeography component). This study will involve offshore expeditions and extensive remote field work jointly with GAB Marine Park and the Alinytjara Wilurara National Resource Management staff.

Both PhD fellowships are open to Australian and NZ citizens and permanent residents only. Essential skills include: manual driving, snorkelling, SCUBA diving certifications (open water minimum) and good field work spirit. Desirable skills: molecular biology, 4WD.

For further information please contact Dr Fred Gurgel ([fred.gurgel@adelaide.edu.au](mailto:fred.gurgel@adelaide.edu.au)).

Applicants should send a brief letter of introduction, unofficial transcript and contact information for 1-2 references. Please indicate in your letter (i) degree sought, (ii) previous relevant experience(s), (iii) why you are interested in pursuing such a degree, and (iv) your interest in marine plants.



Diving at Heron Island

**PhD 2: Phylogenetics and Phylogeography of Co-distributed Marine Macroalgae Across Australia.**

Description: Perform a multi-marker, multi-species comparative phylogeographic study targeting macroalgal species with continuous and quasi-continuous distribution across the entire Australian continent (i.e. Great Barrier Reef, Ningaloo Reef, Great Australian Bight, Darwin, Perth, Adelaide, Melbourne and Sydney). A partnership between CReefs, DEH and the University of Adelaide.



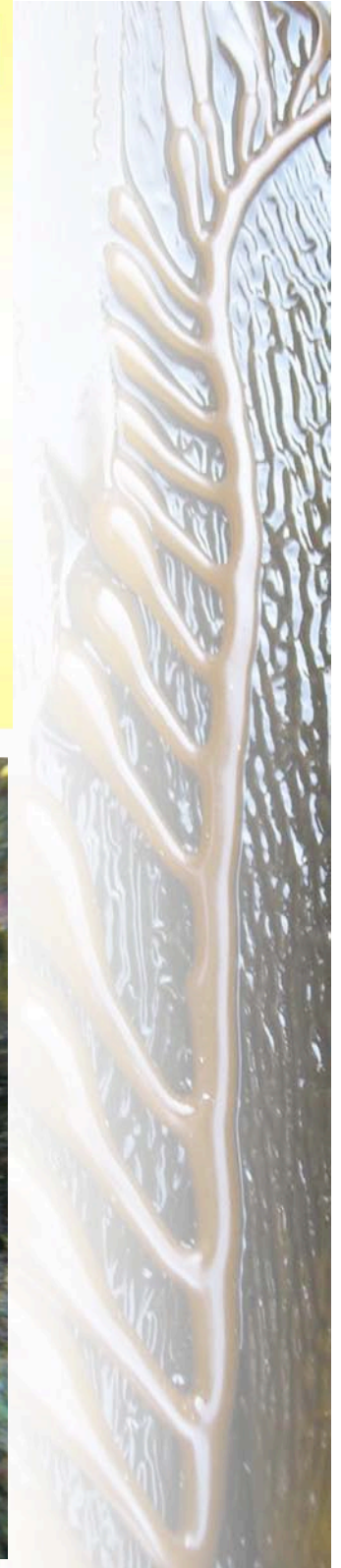
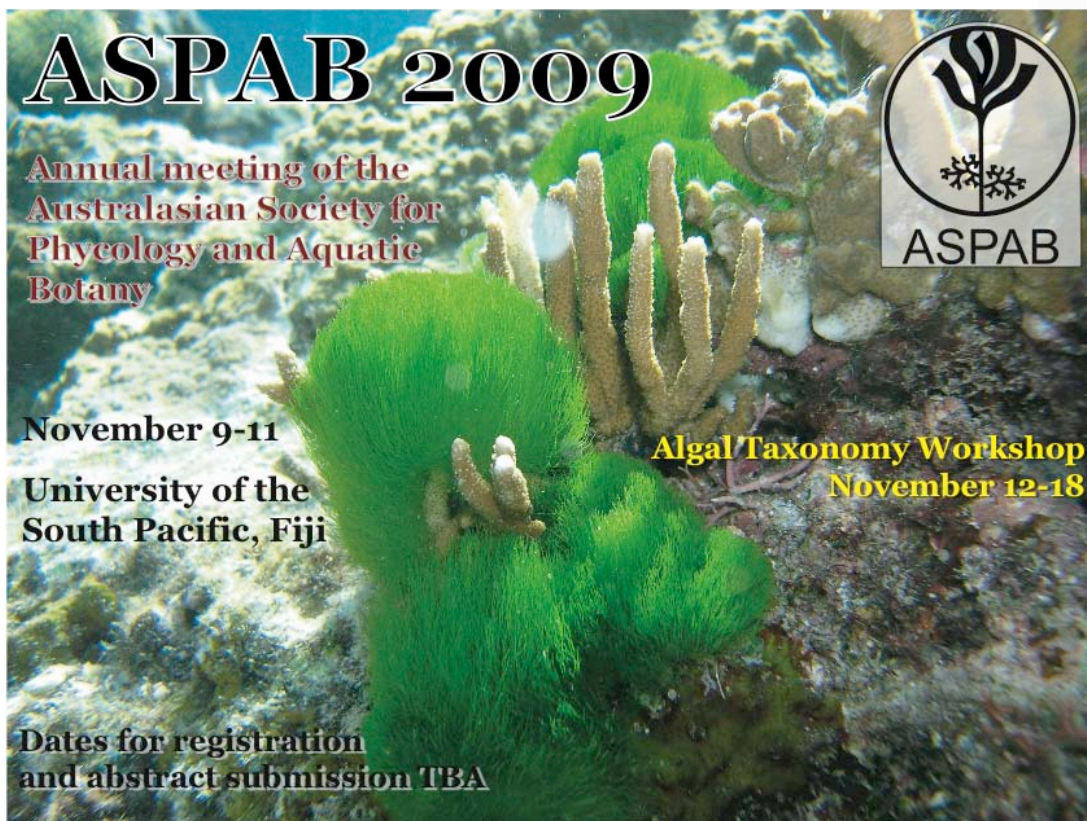
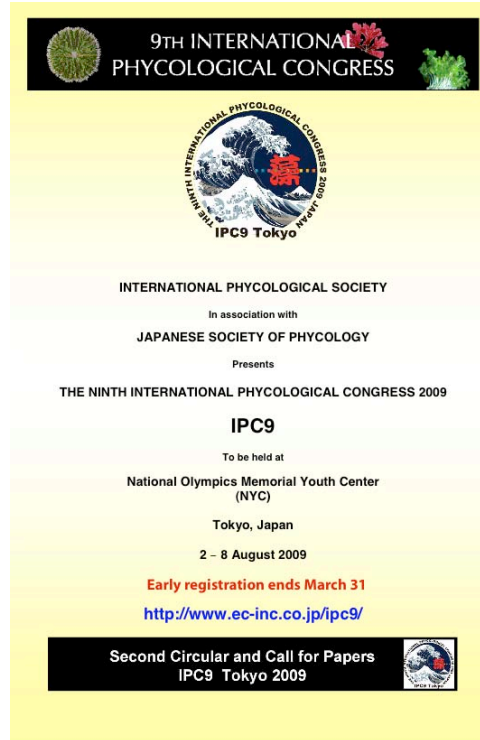
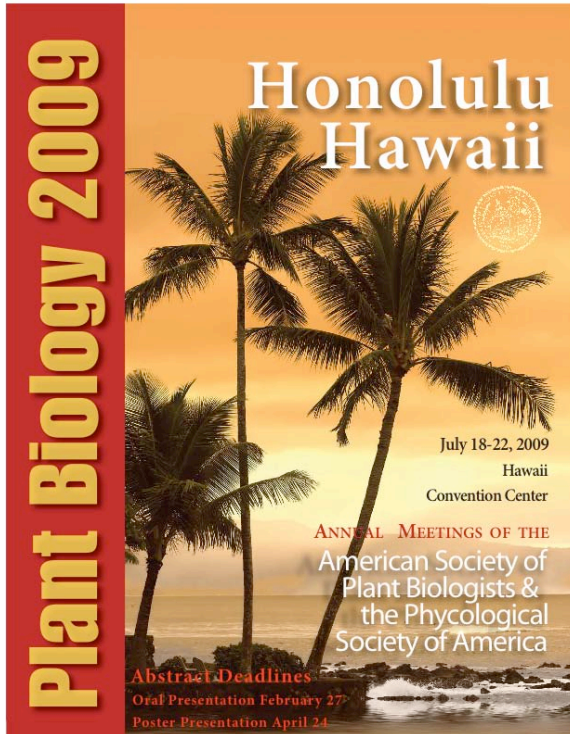
Low tide at Heron Island



The Great Australian Bight



## Upcoming congresses





## 2009 ASPAB Council

Position	Name	Email
President	Alecia Bellgrove	alecia.bellgrove@deakin.edu.au
Vice President	Judy Broom	judy.broom@stonebow.otago.ac.nz
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	Joe Zuccarello	joe.zuccarello@vuw.ac.nz
	Fred Gurgel	gurgel.fred@saugov.sa.gov.au



The 2009 ASPAB council. From left to right: Fred Gurgel, Tracy Farr, Martina Doblin, Erasmus Macaya, Joe Zuccarello, Alecia Bellgrove, Kyatt Dixon, Judy Broom and Jo Jones. (absent: Jacqui Pocklington and Prue McKenzie)



# **AUSTRALASIAN SOCIETY FOR PHYCOLOGY AND AQUATIC BOTANY**

## **APPLICATION FOR STUDENT TRAVEL GRANT TO ASPAB CONFERENCE**

Student name:

Are you a financial member of ASPAB?

Student Supervisor:

I \_\_\_\_\_ declare that the

\_\_\_\_\_ is a student at

\_\_\_\_\_

Student Address:

Title of presentation:

Cost for attending conference (please attach photocopy of receipt):

(send this form to the ASPAB Conference organizing committee)

**AUSTRALASIAN SOCIETY FOR PHYCOLOGY AND  
AQUATIC BOTANY**

**APPLICATION FOR STUDENT OVERSEAS TRAVEL GRANT**

**Conference, Workshop, Herbarium, Laboratory**

**Student name:**

**Are you a financial member of ASPAB?**

**Student Supervisor:**

I \_\_\_\_\_ declare that the

\_\_\_\_\_ is a student at

\_\_\_\_\_

**Signed:**

**Date:**

**Student Address:**



**Outline reasons why this travel grant is being requested (at least 250 words)**

**Title of presentations (Conference, Workshop):**

**Herbarium/Laboratory to be visited:**

**Dates of Conference, Workshop, Visit:**

**Cost of travel** (please attach photocopy of receipt):

Return to, with all accompanying documentation, ASPAB secretary

## MEMBERSHIP and RENEWAL

(For all members and applicants. Please return with membership application or renewal)

**Renewals are due 1 July**

This is a RENEWAL/NEW MEMBERSHIP

*(delete whichever does not apply)*

**Name:** Dr / Ms / Mrs / Mr \_\_\_\_\_

**Affiliation:** \_\_\_\_\_

**Postal Address:** \_\_\_\_\_

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**Preferred email address:** \_\_\_\_\_

**Tel.:** \_\_\_\_\_ **Fax.:** \_\_\_\_\_

For members from New Zealand, "I agree that my contact details may be used by the Australasian Society for Phycology and Aquatic Botany Committee and New Zealand convener for the purposes of communication with the Australasian Society for Phycology and Aquatic Botany Incorporated".

Signature of Applicant \_\_\_\_\_

Date \_\_\_\_\_

Current membership Fees:

	AUSTRALIA (includes GST) ABN 86 508 002 420	NEW ZEALAND
Full Member	A\$33	NZ\$30
Student Member	A\$11	NZ\$10

NZ Members, please send renewals to the NZ Convener, Tracy Farr.  
All other renewals should be sent to the ASPAB Treasurer, Dr Joanna Jones



Back page

## Crossword solutions



With love, from the seafloor - Algal card

Erasmomacaya

*Durvillaea antarctica*

Bull kelp

