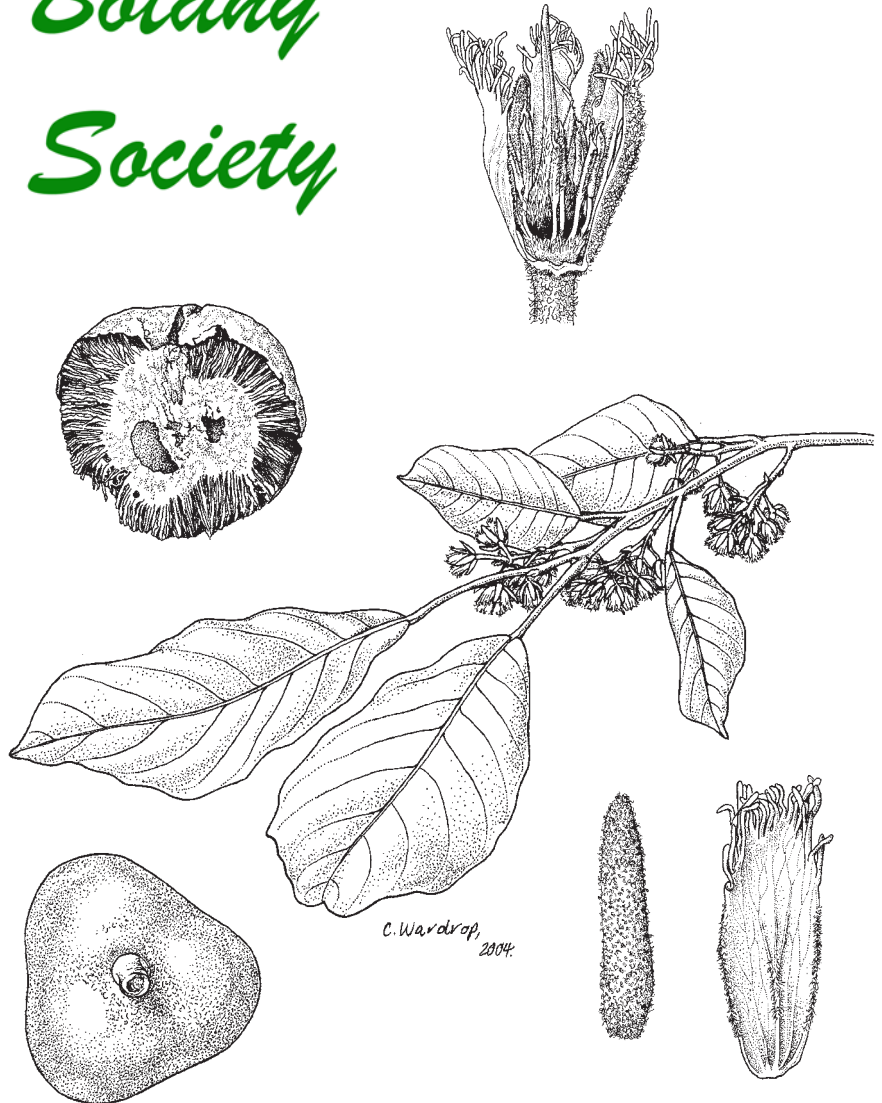


ASBS

*Australasian
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Society*



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AUSTRALASIAN SYSTEMATIC BOTANY SOCIETY INCORPORATED

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Sarah Mathews
Heidi Meudt
Joanne Birch
Katharina Nargar
Murray Henwood
Chair: Dan Murphy, Vice President, *ex officio*

Grant application closing dates

Hansjörg Eichler Research Fund:
on March 14th and September 14th each year.
Marlies Eichler Postdoctoral Fellowship:
on July 31st each year.

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Other constitutional bodies

Affiliate Society

Papua New Guinea Botanical Society

Advisory Standing Committees

Financial

Patrick Brownsey
David Cantrill
Bob Hill
Ad hoc adviser to Committee: Bruce Evans
Chair: Matt Renner, Treasurer, *ex officio*

Grants Policy

Gillian Brown
Alexander Schmidt-Lebuhn
Jen Tate (Council)
Peter Weston
Peter Wilson
Chair: Daniel Murphy, Vice President, *ex officio*

Web presence

ASBS Facebook Group

Viewable currently to any member of Facebook;
permission to post by application to administrators.

Administrators

Todd McLay, email: tmclay@unimelb.edu.au
Mike Bayly, email: mbayly@unimelb.edu.au

Cover image: *Elaeocarpus sedentarius* Maynard & Crayn.

Leafy twig with clockwise from top: open flower, petal,
sepal, proximal end of fruit, longitudinally sectioned fruit.
Artist: Catherine Wardrop (NSW).

With permission of CSIRO Publishing.

Publication dates of previous issue

Australas. Syst. Bot. Soc. Newslett. 174 (March 2018)

ASBS Web site: 4 Apr 2018. Printed version: 17 Apr 2018.

From the President

Dr Daniel Solander

Members will no doubt be aware of the approaching 250th anniversaries of Banks and Solander's botanizing of Aotearoa/New Zealand (2019) and Australia (2020) respectively. These anniversaries have generated a buzz of activity around the world in preparation for events to mark these anniversaries. Here in Australia, I recently had the pleasure of accompanying the Swedish Ambassador to Australia, New Zealand and the Pacific, Mr Pär Ahlberger, on a boat trip up the Endeavour River to 'retrace' one of the collecting expeditions that Banks and Solander undertook while waiting for the *Endeavour* to be fixed (having run aground on the Great Barrier Reef). He is passionate about Solander, to the extent that he has a Solander Garden in the embassy in Canberra! We discussed ways in which the role of Solander in the botany of Cook's momentous first voyage could be more widely promoted and celebrated. A few ideas are forming such as sponsorship of and/or participation in themed ASBS conference sessions in Wellington 2019 and Cairns/Cooktown 2020, and digitisation and transcription of Solander's unpublished manuscripts. I hope to be able to tell you all much more about these soon.

Vale John La Salle

The sudden passing of John La Salle, Director of the Atlas of Living Australia, a few weeks ago shocked and saddened the systematics community not only here in Australia but globally. To the

many public acknowledgements of this loss, I add mine here. My thoughts, and no doubt those of ASBS members, are with John's family and colleagues at this difficult time. John left an indelible mark on biodiversity science and public engagement, and won't be forgotten.

ASBS conference 2018 – 'Mind the Gap'

Registration is now open for the 2018 conference in Brisbane. It is shaping up to be a really great meeting. I strongly encourage all to register as early as possible. Further information is available in the article elsewhere in this volume (p. 32), and also from the conference website.

Web ref. <https://systematics.ourplants.org/>

ASBS conference 2019

Planning is under way for a joint Australasian Systematic Botany Society (ASBS) - New Zealand Plant Conservation Network (NZPCN) annual conference in Wellington in 2019. While dates have not been finalised it is likely it will be held in the week of 24 November. Council has made progress on establishing the administrative framework necessary for a joint conference of this kind through a Memorandum of Understanding. Heidi Meudt (ASBS Councillor and Wellington Chapter convener) is meeting regularly with NZPCN President Rewi Elliot, who is also Manager of Wellington City Council's wonderful Otari Native Botanic Garden and Wilton's Bush Reserve. Once the MoU is fully executed (hopefully soon!), Heidi and Rewi will be asking

Australasian Systematic Botany Society Inc.

Nominations for membership of the 2018–19 Council

In accordance with Section 13 of the Society's Rules, nominations are hereby called for membership of Council. Council consists of the following positions:

President, Vice-President, Secretary, Treasurer and two (2) Councillors.

Nominations must be received by the Secretary, Jennifer Tate at Massey University, Institute of Fundamental Sciences, Private Bag 11222, Palmerston North, New Zealand (j.tate@massey.ac.nz) before Monday 3rd September 2018.

Nomination forms can be obtained from the Secretary (j.tate@massey.ac.nz) or from the ASBS web site at www.asbs.org.au/council/2018-19_Council_Nominations_Web.pdf

Notes

- A member may be nominated simultaneously for any number of positions on Council but is ineligible to hold more than one position at one time.
- Interested members are encouraged to nominate for a position on Council.
- see President's Report p. 2.

members of both societies to nominate for various committees so we can begin organising together in earnest. If any ASBS members are keen to help or be involved, please get in touch with Heidi at (heidim@tepapa.govt.nz).

Research Grants

Applications for grants from the Marlies Eichler Postdoctoral Fellowship close on 31 July, while those for the Hansjörg Eichler Scientific Research Fund close on the 14 September. Details on eligibility and how to apply are available on the ASBS website. Members are strongly encouraged to make students and postdocs aware of these rich opportunities and to support them in their applications.

***Australian Systematic Botany* improves impact factor**

In the very recently released 2017 Journal Impact Factor measures, Australia's flagship systematics journal *Australian Systematic Botany* achieved an IF of 1.614, its highest ever. This compares very favourably to other relevant journals such as the *International Journal of Plant Sciences* (1.82) and *Systematic Botany* (1.24). This result is testament to the hard work of the Editor-in-Chief Dan Murphy and all of the editorial board (full disclosure: I am an associate editor), and of course to the plant systematics community which continues to value this excellent journal. This rise in status for the journal should encourage more, higher impact papers that will drive further ranking jumps in the years ahead. I encourage all members to consider *Australian Systematic Botany* and the equally excellent *New Zealand Journal of Botany* as worthy outlets for your research.

Membership

Unfinancial members are gently reminded to settle up as soon as possible. Hopefully some,

or many, will have paid before the end of the financial year. It is important for the Society, and the Treasurer's sanity, that members avoid falling unintentionally into arrears. If a member does not wish to renew, unthinkable though that is, a quick email to the Treasurer, Matt Renner would save him the effort of chasing a zephyr. A brief explanation would also be appreciated so that if the Society has failed the member in any way we can strive to improve our service in the future and hopefully win the member back!

Council elections

Members should note that the deadline for nominations for Council positions – 3 September – is approaching. The next Council will be substantially different from the current as several incumbents will not be continuing, namely Matt Renner (Treasurer), Dan Murphy (Vice-President) and I (President). Of course these are not the only positions that will be open: the incumbents of all Council positions are elected for one year so all positions become vacant at the end of each term.

Serving on Council is a rare pleasure. I can say without hyperbole that in my three years as President I have grown personally and professionally through the role. It has been great fun also. While at times busy, the opportunity to interact widely and deeply with the plant systematics community, and to in some small way make a contribution to the sustenance of our science, is profoundly satisfying.

I hope there are members out there that are considering putting their hand up – if so I sincerely hope you do. I'm sure all current and past Council members would be willing to talk to you about the benefits of Council service. Your friendly local ex-Council member can be found via the ASBS website (Web ref.).

Web ref. www.asbs.org.au/asbs/about.html

Darren Crayn

Australasian Systematic Botany Society Inc.

Notice of 2018 Annual General Meeting

The Annual General Meeting of the Australasian Systematic Botany Society Inc. will be held
at 5pm on Tuesday 4th December 2018
in the Auditorium of the Brisbane Botanic Gardens, Mt Coot-tha

The purpose of this meeting is to:

- confirm the minutes of the annual general meeting held on 28th November 2017 (see *ASBS Newsletter 173*: 2–19);
- receive reports from Council on activities of the Society during the preceding financial year;
- declare the results of the vote for membership of Council.

Milestone in biosystematics

Publication and launch of the *Decadal Plan for taxonomy and biosystematics in Australia and New Zealand 2018–2027*

Five and a half years after it was mooted at an ASBS meeting in Perth (Web ref. 1) the taxonomy and biosystematics Decadal Plan, promoting systematics across the whole of life in our region, was published on 27 April 2018 (Web refs. 2) and launched on the same day at Parliament House, Canberra. The gaps in knowledge vary across our biota, being great in some groups, huge in others! The decision to embrace the living universe through engagement with the whole biosystematics community and stakeholders has given the Plan a huge strength. For a user stakeholder view of the process, see Web ref. 3.

The following pages comprise a compendium of speeches given at the launch by representatives of our sponsors, the pre-eminent scientific organisations of Australia and New Zealand, and stakeholders. The Plan's Project Leader Kevin Thiele also assesses where we sit in the quest for greater recognition of the value and current status of this fundamental science. It has been widely agreed that we have reached an initial foothold in our quest – but that more work is needed to gain significant long-term investment by multiple Governments to assemble the biodiversity knowledge we need to make our world sustainable.

Media coverage has been extensive, coordinated by the Communications and Outreach team of the Academy of Science. Highlights of their recent summary of media responses included:

- As a result of media release (Web refs. 4), the Decadal Plan featured 784 times across social, online, broadcast and print media in Australia and overseas, including China, New Zealand and the United Kingdom. Online media coverage included *The Conversation*, *BBC*

News, *ABC News*, *The Guardian Australia*, *SBS News*, *NZ Herald*, *The Australian* and *news.com.au* (e.g. Web refs. 5–8).

- The video featuring David Attenborough on the Academy's social media platforms (e.g. Web ref. 2a) had been viewed over 196,000 times.
- On the Academy's website (Web ref. 2a) the Decadal Plan had been viewed 4,281 times, as a result of the comprehensive communications and media campaign for the launch of the plan.

The Academy's Communications team will continue to identify opportunities to re-share content to promote the Decadal Plan, as occurred on World Environment Day (Web ref. 9).

Web references

1. www.asbs.org.au/asbs/newsletter/pdf/12-dec-153.pdf. (See pp. 1–2, 6–7, 9–10, 21, 31–38).
2. a, <https://www.science.org.au/support/analysis/decadal-plans-science/discovering-biodiversity-decadal-plan-taxonomy>; b, <https://royalsociety.org.nz/what-we-do/our-expert-advice/all-expert-advice-papers/discovering-biodiversity/>
3. <https://www.ecansw.org.au/wp-content/uploads/2018/05/Consulting-Ecology-Volume-39-August-2017.pdf>. (See pp. 5–6).
4. a, <https://www.science.org.au/news-and-events/news-and-media-releases/plan-capture-australias-biodiversity>; b, <https://royalsociety.org.nz/news/attenborough-endorses-10-year-plan-to-describe-australasian-biodiversity/>;
5. www.scoop.co.nz/stories/SC1804/S00035/attenborough-endorses-10-year-biodiversity-plan.htm
6. <https://www.theguardian.com/environment/2018/apr/27/last-chance-to-study-and-name-australias-vanishing-species-scientists-warn-mps>
7. www.abc.net.au/news/science/2018-06-27/csiro-discovers-200-new-species/9907778
8. <https://theconversation.com/its-funny-to-name-species-after-celebrities-but-theres-a-serious-side-too-95513>
9. https://twitter.com/Science_Academy/status/1003755687006990337

Eds.

Australasian Systematic Botany Society Inc.

Hansjörg Eichler Scientific Research Fund

Applications close on 14th September 2018

We invite applications from members.

For eligibility and other information see the ASBS website
www.asbs.org.au/hesrfund/index.html

or contact Vice-President Dan Murphy (vicepres.asbs@gmail.com)

Our Decadal Plan – where to from here?

Kevin Thiele

Many of you will be aware that *Discovering Biodiversity: A decadal plan for taxonomy and biosystematics in Australia and New Zealand 2018–2027* (Web ref. 1) was launched at Parliament House in Canberra on 27 April.

The launch was a culmination of an enormous amount of work by many dedicated people around Australia and in New Zealand. The Decadal Plan Working Group, comprising 36 keen champions of taxonomy and biosystematics, helped test and shape ideas and ensure that the final plan was relevant, workable and visionary. The Advisory Committee, a small group of key leaders in our field, provided invaluable high-level strategic advice and direction. The Australian Academy of Science and New Zealand's Royal Society Te Apārangi provided substantial behind-the-scenes support, technical know-how, strategic advice, an all-important high-profile home and

context for the plan, and a beautiful supporting video clip (Web ref. 2) that was viewed nearly 200,000 times on the Academy's platform alone (not counting third-party views from news media sites such as *news.com.au* and *Guardian Australia*). The Ian Potter Foundation provided much-needed funding without which we would never have achieved all this.

And finally, of course, many of you, members of the taxonomy and biosystematics communities in Australia and New Zealand, and key stakeholders, provided crucial raw materials and a critical underpinning in the form of ideas, visions (and reality checks), support, and the all-important engagement that's essential in an initiative such as this.

I said above that the launch was *a* culmination. I chose the indefinite rather than definite article carefully. The launch was a milestone, and as

Fig. 1. The Decadal Plan Advisory Committee and speakers; from left: John Hooper (Brisbane), Judy West (Canberra), Wendy Nelson (Wellington), Kevin Thiele (Project Leader), Pauline Ladiges (the Academy), and Tom Trnski (Auckland) with copies of the Plan and banners of the sponsors, the Australian Academy of Science and New Zealand's Royal Society Te Apārangi.
Ph. Chris Hatherly



I reminded attendees of the launch, passing a milestone means that a mile (1.6 km) has been travelled and another one awaits.

No-one should be under any illusions that the Decadal Plan itself will change anything. I believe the plan, and the community consensus it represents, are necessary preconditions for real change. But clearly governments won't read the plan, see the errors of their ways, and start writing cheques. The plan gives us a background, a context, a statement of our value, a vision and a direction for change. We now need to advocate, promote and explain the need for that change, unceasingly, strategically, and effectively.

For that reason, one of the key recommendations of the Decadal Plan is the establishment of a pair of bodies, to be called perhaps Taxonomy Australia and Taxonomy Aotearoa, that will have carriage of the plan and will create the strategic media and advocacy profiles required to bring about change. The plan is a high-level vision, and needs to be underpinned by a series of nuts-and-bolts implementation plans. The plan achieved

an extraordinary and encouraging level of (short-lived) media attention, and this needs to become sustained media attention. And the plan brought our community and stakeholders together in a more integrated fashion than we've achieved in the past, and this needs to be turned into a longer term, effective engagement. In short, the plan maps out possibilities for change, and we now need to realise those possibilities.

So, the decade 2018–2027 has begun. I encourage all members of ASBS to remain engaged with the process we've set in motion, to support the bodies we establish to effect the plan, and to keep coming up with good and inventive ways to promote the importance of taxonomy and biosystematics to our stakeholders, our communities and our governments.

Web references

1. <https://www.science.org.au/support/analysis/decadal-plans-science/discovering-biodiversity-decadal-plan-taxonomy>
2. https://www.youtube.com/watch?v=_L_oh6yKvTo

Speeches at the Decadal Plan launch, Canberra on Friday 27th April 2018

Representing the Australian Academy of Science

Pauline Ladiges

I'd like to reiterate Kevin's acknowledgement of country, and pay my respects to the traditional custodians of the land on which we are meeting, the Ngunnawal people, and pay my respect to their elders and leaders past, present and future. I also acknowledge the Maori custodianship of New Zealand.

On behalf of the Australian Academy of Science, I welcome all of you attending this significant event to launch the Australian and New Zealand Decadal Plan for Taxonomy and Biosystematics. I thank, members of the Advisory Committee, and in particular members of the Working Group, many of whom are here today, who have put so much effort into developing the plan. The project to produce the Decadal Plan, and its implementation which lies ahead of us, was generously supported by the Ian Potter Foundation, the Council of Heads of Australasian Herbaria (CHAH), Council of Heads of Australian Faunal Collections (CHAFC), ABRS, CSIRO,

Atlas of Living Australia, the Commonwealth Department of Agriculture and Water Resources, New Zealand Land Care, Australian and New Zealand museums, scientific societies and a number of universities.

Two years ago, the Academy of Science and the Office of the Chief Scientist published a report that showed recent advances in basic biological sciences directly underpin at least \$46 billion of Australia's economic activity each year, as well as significant improvements in health and well-being.

Nobody here will need any convincing that the biological science of Taxonomy and Biosystematics is critical to our national interests, and that our region has been leading in the field over the decades. The realisation of the benefits of documenting our biodiversity requires world-class biological research expertise and infrastructure that can facilitate Australia and New Zealand's

Fig. 2 (over page). The colourful covers of the Decadal Plan founded on the artwork *Abundance* by North Queensland artist David Stacey. Identities of the organisms in the painting are listed on p. iii of the Plan.





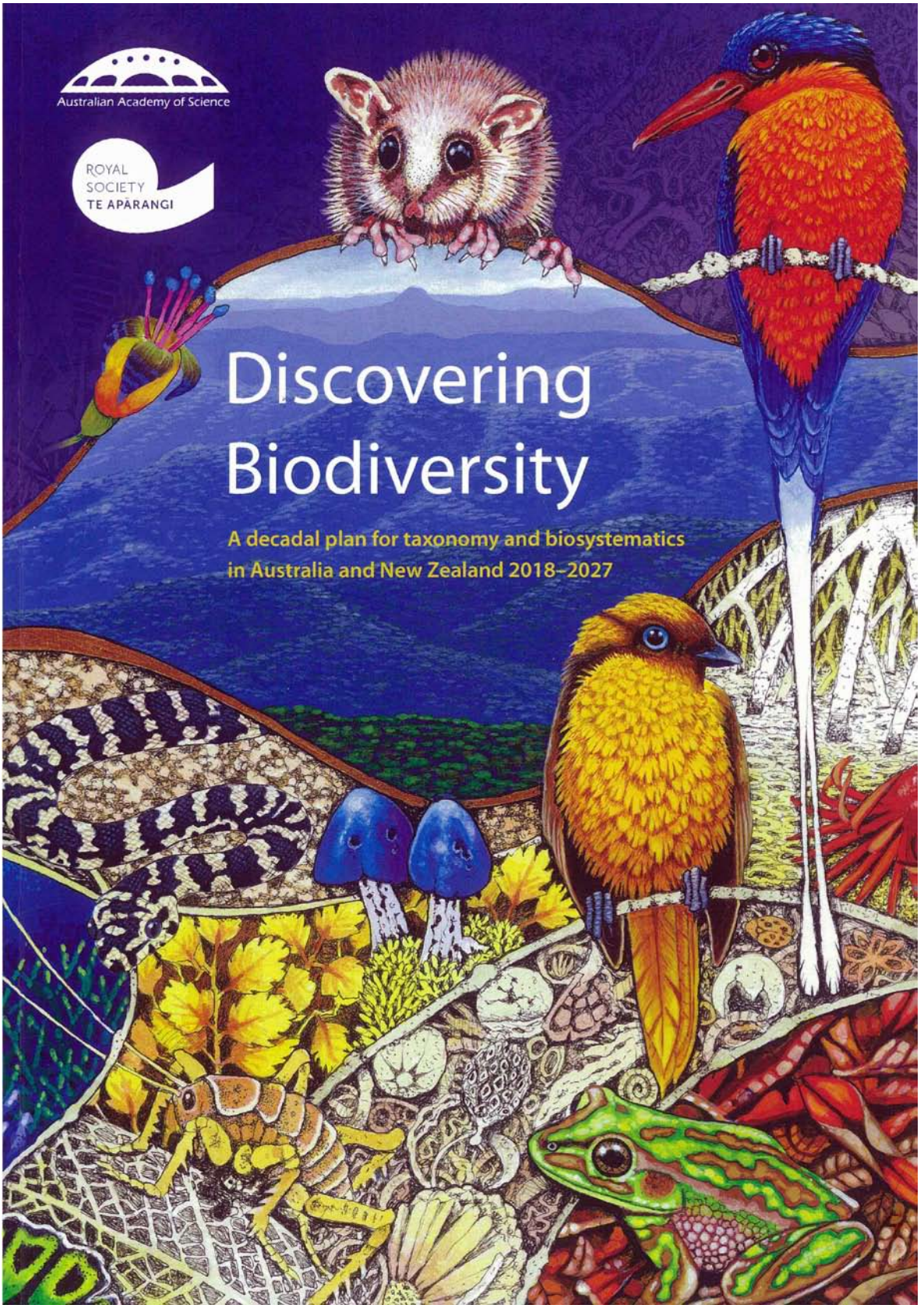
Australian Academy of Science



ROYAL
SOCIETY
TE APĀRANGI

Discovering Biodiversity

A decadal plan for taxonomy and biosystematics
in Australia and New Zealand 2018–2027



involvement in global biodiversity initiatives, and provide the technical and scientific training that is relied on for agriculture, biosecurity, human health, industries, conservation and public services.

As the Decadal Plan argues, Taxonomy and Biosystematics are undergoing a revolution, fueled by an urgency to address human impacts on the planet, the accelerating loss of biodiversity, and the movement of people across borders.

The Academy of Science is pleased to have worked with our New Zealand partner organization the Royal Society Te Aparangi to develop an agreed vision in the decade 2018–2027. Our biotas have deep evolutionary connections through Gondwana, and we have established working relationships through ABRIS, CHAH and other bodies. Our shared vision is to support, enhance and expand taxonomic capability. New methods, the ready availability of vast new data streams, and powerful computing for specimens are driving rapid change in capabilities and opportunities. The ambitious aim is to fully document our countries' biodiversity, deliver that knowledge through an on-line portal for end-users, and to ensure through education and training that we build expertise for the future.

I wish to say just a few brief words about the Australian Academy of Science and our role in supporting disciplines such as Taxonomy.

The Academy was founded in 1954 by a group of Australian Fellows of the Royal Society of London who saw the need for an Australian organisation that could act as an independent voice for science in Australia. Over the past 60 years, the Academy has been an avid supporter of both physical and biological sciences, and has elected to its Fellowship those scientists who have made the most significant contributions to their fields.

The Academy is the Australian member organisation of many international scientific bodies and societies, and has strong links with a network of over 150 Academies and Societies of science around the world. Globalised taxonomy is a clear imperative and our partnership with New Zealand for the Decadal Plan is a step in this direction.

In recent years the Academy, through its various National Committees, has supported the development of a number of Decadal Plans – for

example in Space Science, Agricultural Sciences, Mathematical Sciences, Geosciences, Physics and Chemistry and provides independent policy advice to governments.

The Academy is also strongly committed to STEM education and currently has three primary and secondary school programs for maths and science. Thus the Academy can play a role in delivering, as part of the National Curriculum, high quality classroom resources on biodiversity classification that will engage the young and lead to future taxonomists.

The plan's success will depend on the commitment of all key stakeholders to drive the necessary changes, on appropriate resourcing from a wide variety of sources, and on its strategic implementation, which is our next big step.

An Australian Government perspective

Judy West, Chair of the Advisory Committee

Importance of the Decadal Plan development process

The preparation of this Decadal Plan has involved many different sectors of the community. There has been wide community consultation through town hall meetings in most Australian capital cities and three in New Zealand, involving more than 400 people from scientists to policy makers and end users and the general public.

We have taken into account the feedback and ideas emanating from these discussions and other input from various fora around the country.

The Plan has coverage of Australia and New Zealand, and represents yet another productive collaboration between the two taxonomic and biodiversity communities.

We have tried very hard to make it an outward looking plan and not to simply propose a strategy for our own sector. The success of this Decadal Plan will partly rest with various communities, corporate and business sectors and all levels of government – all of whom are users of taxonomic information

Importance of taxonomy and biosystematics in policy

I work in the Federal Department of the Environment and Energy. Part of my team generate taxonomic information. And most of my colleagues in the Department use this sort of information in their work, although many may not realise that taxonomy is underpinning their decision making



Fig. 3. At the Decadal Plan launch, clockwise from top right: a, Project leader Kevin Thiele, with the Plan and the specially commissioned video by Sir David Attenborough. b, Kevin opening the proceedings. c, Working Group members Kym Abrams, Nerida Wilson and Katharina Nargar. Ph. a, b, Chris Hatherly; c, Nik Tatarncic.

Knowledge of Australia’s biodiversity, provided through taxonomy and biosystematics, underpins planning and decision-making across the Australian Government. Authoritative, up to date information on the classification, names, genetics, traits and characteristics of species and higher taxa is absolutely critical to government in managing and conserving our biodiversity.

However, the importance of this field of science and the fundamental significance of its outputs are generally invisible to end-users of species information, despite the fact that most biological and ecological knowledge relies on a foundation of data provided by taxonomy and biosystematics.

Taxonomic information is essential to government activities such as: protected area selection and management; regulation of biological trade; threatened species conservation; biosecurity and the management of invasive species; and understanding the impacts of environmental change on biodiversity.

The Australian Government’s principal piece of environmental legislation is the Environment

Protection and Biodiversity Conservation Act 1999 (EPBC Act). The EPBC Act protects Australia’s rare and threatened species and ecological communities through the process of listing. Listing is dependent on knowing that a species exists, that it has a scientific name, and how to distinguish the species from other, potentially closely-related (and possibly more abundant) species or from an unrelated species with similar appearance.

There is a dependence here on accurate taxonomic and biodiversity information.

For example, the endangered Mary River Turtle (*Elusor macrurus*), was a popular pet in the 1960–70s but it was not formally described as a species until 1994. Eggs were collected and sold to pet shops under the name *Elseya latisternum*, the Common Saw-shelled Turtle and hatchlings were known as the ‘Penny Turtle’. Due to overharvesting for the pet trade the population of breeding female Mary River Turtles plummeted by 95% between 1970 and 2000. The species was listed as endangered under the EPBC Act in

2008. An unusual feature of this turtle is that it breaths through its genitals, with gill-like organs within the cloaca – an evolutionary development of interest to science.

The message here is that misidentification can lead to overexploitation and a rapid decline in the target species; formal scientific description and listing under the EPBC Act leads to raising greater awareness and protection of the Mary River Turtle.

The fast and accurate identification of introduced and potentially invasive plant, animal and disease species is the key to effective biosecurity surveillance and border control. Furthermore, knowledge of the biology of invasive species and closely related Australian species, provided through the science of taxonomy and systematics, can underpin control, management and ultimate eradication of a pest or disease.

Lantana (*Lantana camara*), a native to Mexico, Central America, the Caribbean and tropical South America, provides us with a good example of a species becoming invasive in Australia after deliberate introduction. As far as can be determined individual plants of *Lantana* from central and northern South America were distributed to London in the 1800s and different flower colours and horticultural varieties were spread around the world for our enjoyment. In Australia *Lantana* has become a significant environmental weed for which more than 46 potential biological control organisms have been trialled to assist in management of the species. Recent genetic research using haplotype matching has shown that most of the biocontrol agents have been sourced from countries other than those from which our *Lantana* originated. Thus successful control methodologies are likely dependent on understanding taxonomic relationships between different forms of an invasive species.

In summary, I emphasise to you that the success and implementation of this Decadal Plan will be dependent on you. While the Advisory Committee and members of the Working Group will help to encourage support from corporate and business sectors, in reality the long term maintenance of biological collections and taxonomic work will rest with all levels of government. I strongly encourage you to raise awareness of the plan and to participate in ways to deliver on the targets.

**On behalf of the Royal Society of
New Zealand Te Apārangi
and New Zealand systematists**
Wendy Nelson

Tēnā koutou, tēnā koutou, tēnā tatou katoa

I acknowledge with respect the *tangata whenua* of this land – the first people to live in this place, and the many cultures, languages and systems of knowledge that have developed here over millennia. I acknowledge the many peoples and cultural strands that now make up Australia.

I bring thanks from New Zealand – from the Royal Society Te Apārangi, the systematics and taxonomic collections community – to our hosts, to the Academy, to all the people that have been involved in developing this plan, and for the generous funding support that has enabled the plan to be prepared.

Kevin

Whāia te iti kahurangi, ki te tūohu koe me
he maunga teitei

You took on a very important mission and you have not been deterred by the challenges – thank you for your commitment and energy. The goal of preparing this Decadal Plan was lofty and very close to many of our hearts, and we are very grateful for all that you have done to enable this to come to fruition.

I bring greetings from Ilse Breitwieser who is unfortunately unable to be here – she was involved in the very first discussions in 2012 in Perth about the need for a strategic and forward-looking plan to help guide both New Zealand and Australia into the next decade and beyond. I would like to take this opportunity to acknowledge all Ilse has contributed to the systematics community in Australasia.

All of us here, and the people who have contributed to the plan, we all share an understanding that transcends our national, cultural, scientific, discipline boundaries, we all recognize the need to be *kaitiaki* – guardians – of the living fabric of our planet, and we understand that our lives and the lives of those that follow us, depend on the *taonga* – the species, habitats and ecosystems – and the diverse and wonderful services we receive from microorganisms to megafauna and flora, from mountain tops to the ocean abyssal depths.

The Decadal Plan outlines the challenging and critically important agenda that we face. Our task,

to discover and document the biota on which we depend, is urgent, as is the need to develop new ways of investigating and making knowledge more accessible.

We need to be weaving different strands of knowledge together to build new pathways to address these challenges, in order that the science of taxonomy and systematics can more effectively contribute to global issues, and empower this and future generations – communities, decision makers, other scientists. These strands include:

- *mātauranga* – traditional knowledge systems – that provide important insights about biodiversity, built up through long and close association with the natural world;
- continued exploration – in NZ 80% of our native species are estimated to live in our large marine zone but only 1% of this has been surveyed;
- insights from all our diverse disciplines – from paleontologist colleagues helping us to understand the evolution of life through the stories that fossils reveal, to documentation of the living biota enabled by traditional and newly emerging technologies.

In New Zealand the Royal Society Te Apārangi initiated an Expert Panel in 2015 to examine the state of systematics and taxonomic collections in New Zealand. New Zealand has 29 biological collections with 12 million specimens held in 20 institutions around the country – museums, Crown Research Institutes (CRIs) and universities. The Royal Society report provided a detailed account of the state of the sector in New Zealand and made a number of recommendations. One of these was the need for a coherent approach across the sector to provide national coordination and strategic advice for the care of biological collections, research that is needed, and making the information widely available for end users.

With the support of the Chief Executives of CRIs museums and universities that care for biological collections, the New Zealand taxonomic community established the National Systematics and Taxonomic Collections Working Group in 2017. This is part of our pathway forward. The working group enabled us to canvass opinion and gather feedback from across the New Zealand systematics community on drafts of this Plan being launched today. Over the last three decades in New Zealand the support for biological

collections and the research undertaken on them has declined significantly, and this still needs to be addressed.

I have been very fortunate to be part of an initiative in New Zealand led by Tom Trnski and the Auckland Museum in partnership with Ngāti Kuri. Ngāti Kuri's rohe, their tribal lands and waters, include the Rangitāhua/Kermadec Islands, Manawatāwhi/Three Kings Islands, and the northern part of the North Island. This area is home to high endemism and biodiversity. Ngāti Kuri want an inventory of their biological *taonga* in order that they can live sustainably, and find ways to protect and to restore their environment, and identify opportunities for their young people.

The relationship established between Ngāti Kuri and the Museum has been very fruitful. We have recently returned from a BioBlitz held in late March at the very tip of the North Island where community and scientists worked together and learnt from one another – taxonomists and community collecting across many phyla, the children from remote country schools and their communities all involved, and with continuing education opportunities for their children being developed in partnership with the Museum staff.

As we look to the implementation of the exciting agenda of the Decadal Plan, there are important principles that are highly valued by Maori, so clearly displayed in our work alongside Ngāti Kuri, that I think we all need to embrace, and that will help to guide us, and these principles speak to relationships, respect and reciprocity.

Naku to rourou nau te rourou ka ora ai te
iwi

With your basket and my basket the people will thrive

Through this plan, joining our sector across national boundaries, we have opportunities to learn from one another, sharing best practice, and looking for ways to transform our scientific practices to meet the challenges of the coming decades.

A perspective from the taxonomy and biosystematics sector

John N.A. Hooper, Queensland Museum

I'm grateful to the Australian Academy of Science and the Royal Society of New Zealand for the opportunity to speak briefly about the current strengths and new opportunities for taxonomy

and systematics in the context of the Australian biota, the taxonomists and systematists who do the work, and the importance of having a Decadal Plan to guide, coordinate, and escalate species discovery in the future.

Australia, New Zealand, and Papua New Guinea's natural ecosystems, and the species that form them, are obviously unique in the world, containing a significant number of the world's 35 'biodiversity hotspots', and also Australia recognised as one of the seventeen 'megadiverse' countries, that is, countries containing 70% of the world's biota, but with only 10% of the world's surface area.

So, while it is recognised that Australia has the highest number of native species of reptiles and non-fish vertebrates, and the fifth highest number of native plant species, it is less well-known what proportion of our invertebrate species are endemic, and it is almost unknown how many species there are of the 11 Phyla of invertebrates that live on land – the so-called 'Other 99%'. And that's just the terrestrial species.

The combined oceanic jurisdictions of Australia and New Zealand, of about 11 million square kilometres of seabed area (a figure excluding our claimed Antarctic territories), contain the highest number of described species of all national jurisdictions, with approximately 46,000 species, in 31 Phyla, recorded at the end of the 2010 Census of Marine Life – but that number is certainly just a drop in the ocean. We still have no real idea of the magnitude of our marine biodiversity. For example, in the 1980s we knew of only about 1,100 species of sponges recorded in Australia and its offshore territories, and yet over the past 4 decades we have collected over 5,000 species, with over 3,000 of them likely to be new to science. My colleagues in New Zealand, have a similar challenge.

The recognition that these species may be new has been greatly enhanced by technological advances, such as molecular, chemical and imaging techniques, and also better deep-sea collection capabilities. But the task of converting these discoveries into Linnaean species still remains laborious. The Decadal Plan embeds the sentiment of E.O. Wilson, about the accelerating disappearance of species during this Anthropocene and the 'taxonomic impediment' – with still-huge gaps in our taxonomic knowledge, but with still

relatively small numbers of trained taxonomists to close the gap significantly. The Decadal Plan strongly advocates a coordinated, collaborative, multidisciplinary workforce that is capable of escalating species discovery, the taxonomic process, and their systematics in the future.

One of the challenges we, the Australasian taxonomic community continue to have is to acquire and maintain recognition from all our other communities (social, political, economic, environmental), of the critical value of species through their provision of pivotal ecosystem services, their unique genetic potential, and thus significant economic value. Another challenge, at least here in Australia, is the relatively poor, or in some cases non-existent, coordination amongst the many biodiversity discovery agencies, such as museums, herbaria, universities, biosecurity agencies etc. These alone are worthy aspirations to successfully implement the Decadal Plan, which of course is far more ambitious.

Over the past decade there has been some significant progress in raising the awareness and communicating these biodiversity values to all our communities, such as the rise of so-called Citizen Science, and the National Collaborative Research Infrastructure Strategy-funded Atlas of Living Australia, which is continuing to be adopted by many other jurisdictions. Nevertheless, the science that underpins these activities, to discover, differentiate and describe species, obviously very much depends on a competent and productive Australasian taxonomic workforce.

Over the past 40 years or so we have been fortunate, perhaps uniquely so amongst other nations, to have established and maintained the Australian Biological Resources Study, dedicated to supporting the discovery, description and naming of species, managing their nomenclature, and placing these into an evolutionary context through systematics. In addition, ABRs has been instrumental in its support for the training and mentoring of new generations of taxonomists, as the current generation hurtle towards retirement.

In the most recent ABRs census of the taxonomic community in 2016 it was recorded that 26% of the taxonomic workforce in Australia is now retired, yet still active in the species-discovery business. A successful Decadal Plan, recognised and supported nationally by both Australasian governments, will be vital to ensure there are new

generations of taxonomists to follow us, and can be mentored by retired, or near-retired, experts in their fields, to build a future competent taxonomic capability.

In summary,

- The Decadal Plan aims to garner significant support for core taxonomic activities, the workforce, and the taxonomic infrastructure.

- It aspires to enhance opportunities for understanding biodiversity, and supporting end-users of this taxonomic knowledge.
- And it advocates to change both the business of taxonomy and systematics in Australasia, and the perception of the importance and roles of these enabling disciplines, as underpinning all the other biological sciences.

Eichler research grant reports

Hybridisation between species of *Xanthorrhoea* in Yuraygir National Park revealed using a newly developed next-generation sequencing method

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Introduction

Xanthorrhoea, or grass trees, balga in Western Australia, yacca in South Australia (Asphodelaceae subfamily Xanthorrhoeoideae), are iconic and instantly recognisable components of the Australian flora, commonly found in heathlands, woodlands and dry sclerophyll forests. The last revision of the genus (Bedford 1986) recognised 28 species and five segregate subspecies, with the majority of species found in the south west of Western Australia and eastern New South Wales. *Xanthorrhoea* taxonomy can be challenging due to uniformity in vegetative morphology and the sporadic production of inflorescences, often after fire, limiting the number of useful characters available for species delimitation (Bedford 1988).

The first review of the genus, by Lee (1966), focused on the New South Wales taxa in an attempt to address difficulties in attributing populations to species. Hybridisation between taxa was considered to be a key factor inhibiting reliable identification and Lee believed that all NSW taxa, except *X. macronema*, were involved (Lee 1966).

The most extensive taxonomic treatment of the genus was performed by Bedford for the *Flora of Australia* (Bedford 1986) and his own PhD (Bedford 1988). For his thesis, Bedford was primarily concerned with addressing the

difficulty in identification of taxa found in eastern Australia. Bedford used various phenetic methods for 15 morphological characters to investigate three different populations in New South Wales, suggested to be hybrid zones by Lee (1966). Hybridisation was identified between *X. glauca* and *X. fulva*, as well as *X. johnsonii* and *X. fulva*, where species ranges overlapped.

In 2013, I was awarded an Eichler Research Grant to study the extent of hybridisation in *Xanthorrhoea* using genomic methods. The study site I chose was the Yuraygir National Park, as four species occur there (*X. macronema*, *X. johnsonii*, *X. latifolia*, *X. fulva*), and I previously had identified putative hybrids occurring in environmental gradients (Fig. 1). Another reason I chose Yuraygir was *X. macronema* is a morphologically distinct taxon relative to other eastern taxa and would provide a good indication of genetic differentiation between species. The remaining three species, are thought to be able to hybridise, but can be distinguished based on several morphological characters, such as leaf shape in cross-section, trunk dimensions, and inflorescence dimensions, and they typically occupy different habitats. In December 2013, I visited the hybrid sites at Yuraygir and collected material for DNA extraction and morphological assessment.

Hybridisation can act to produce morphological intermediates and blur species boundaries which

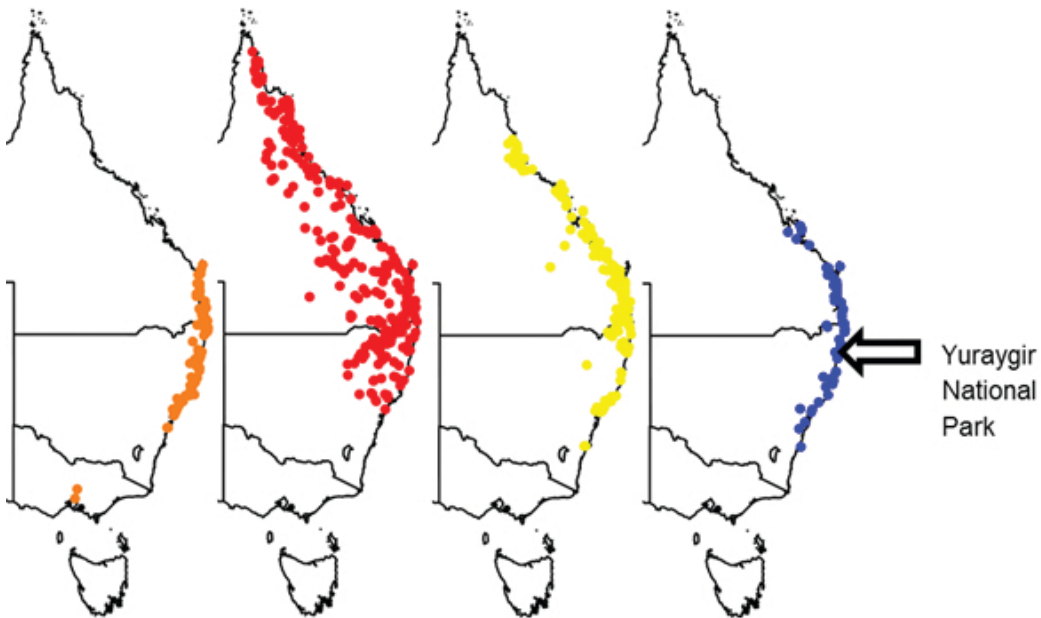


Fig. 1. Distributions of a) *X. macronema*, b) *X. johnsonii*, c) *X. latifolia*, d) *X. fulva*, with location of Yuraygir National Park study site

can cause difficulty in classifying populations to species and in identification (Soltis and Soltis 2009). In taxa such as *Xanthorrhoea*, where most morphological characters used for identification are continuous rather than discrete, and species can vary greatly for certain characters, the effect of hybridisation can exacerbate classification problems. In these cases molecular data can provide independent characters for assessing levels of differentiation or introgression between taxa, and provide a phylogenetic framework for drawing taxonomic conclusions. A genetic signature of hybridisation can be identified in the nuclear genome: recent hybrids should include allelic variation of both hybrids, with diminishing signal as the hybrid offspring back-cross to the parents. Nuclear data can be complemented by chloroplast DNA, which is maternally inherited.

High Throughput Sequencing (HTS) is revolutionising research in biology, including natural systems, via the large amount of sequence information obtainable for a reasonable price, and often with no prior information required. The most current widely-used method to generate large amount of data from throughout the nuclear genome is based on restriction-based sequencing, known as RAD (Davey *et al.* 2010) or GBS (Elshire *et al.* 2011). This method is similar to AFLPs (Vos *et al.* 1995) in that restriction

enzymes are used to reduce the portion of the genome scanned for variation, but differs in that the restriction based loci are sequenced rather than genotyped by size.

I had some experience using RADseq in *Xanthorrhoea*, but had several difficulties in producing good results due to plant compounds inhibiting DNA digestion by enzymes, and low sequencing coverage of RAD loci. To resolve these issues, I wanted to try and develop a method that did not include a restriction digestion and that might yield a smaller number of loci that could be sequenced using a lower capacity sequencing machine and thus reduce the cost of the research.

The Eichler grant allowed me to develop and trial MRMEseq (modified random marker enrichment sequencing). MRMEseq was based on RAPDs (Hadrys *et al.* 1992), a method that used short random oligonucleotides (10–15 bp.) to amplify random parts of the genome, and the resulting bands on a gel were scored to identify variation. RAPDs had several issues, most significantly the difficulty and uncertainty around assigning homology of random bands on a gel. However, by sequencing the amplified regions it would be possible to assign homology using sequence assembly, and use the sequence for phylogenetic and population genetic analyses. It is similar to the method ‘MIG-seq’, which uses ISSR primers

rather than RAPD primers to amplify loci from throughout the genome (Suyama and Matsuki 2015).

Methods

MRMEseq primers were designed to be between 10–20 base pairs in length and have 45% GC content. To reduce the effect of methylation on PCR amplification the oligonucleotides were designed to avoid bases in a CnG/CG pattern. All primers had Illumina adapter sequence added to the 5' end.

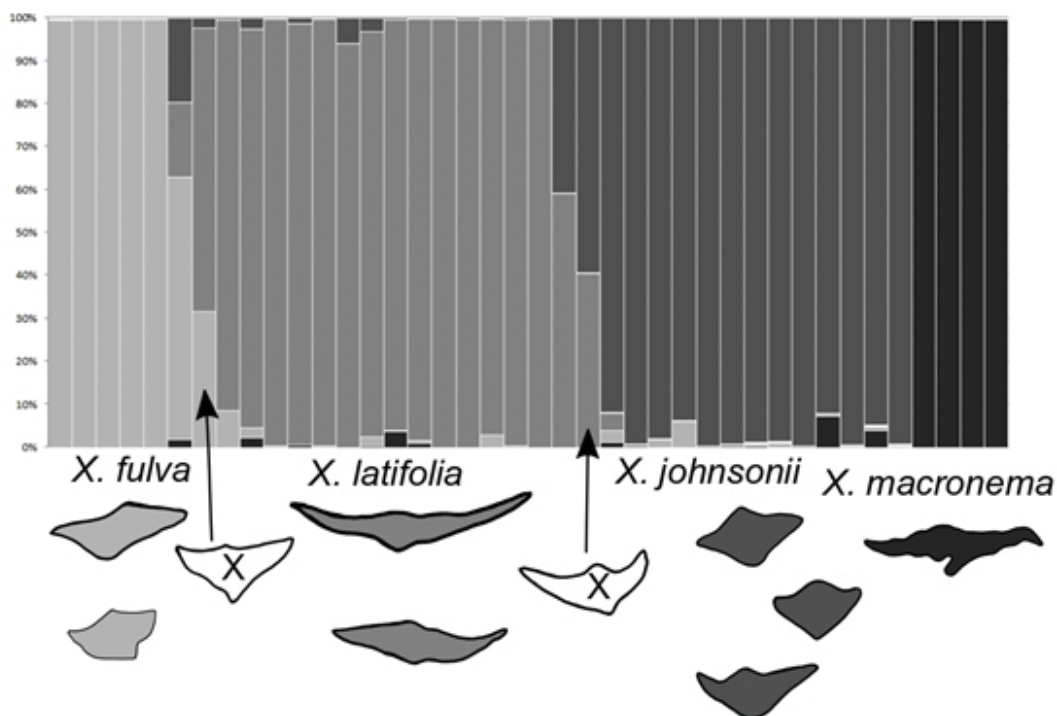
A set of 10 MRMEseq primer combinations were chosen for sequencing. These were amplified for each sample, then all samples were indexed and pooled together into a final sequencing library. Two chloroplast intergenic spacers were also amplified using an amplicon sequencing approach, and pooled for sequencing. The library was sequenced using a MiSeq Nano kit.

Sequencing produced 550,000 paired end reads for the MRMEseq library, and 27,000 paired end reads of the chloroplast amplicons. The MRMEseq reads were sorted into loci using the software ipyRAD (Eaton 2014, Web ref.). This resulted in 296 total loci (average of 134 loci per

sample) and a total of 1500 parsimony informative sites. The dataset was analysed using parsimony (PAUP), maximum likelihood (RAxML), network (SplitsTree) and Bayesian clustering (Structure). The different methods suggested similar results; the most illustrative is shown by the Structure results in Figure 2.

Structure assigns samples to ancestral populations (species), with each horizontal bar representing one sample, and this can indicate admixture between those ancestral populations in samples that have a mixed history. These results indicate that the samples I collected can mostly be assigned to one of the four taxa found in the national park, but several collections are likely of hybrid origin (these are shown as having two different shades of grey in the bar). *X. latifolia* appears to hybridise with both *X. fulva* and *X. johnsonii*, but there isn't a strong signal that the latter two species form hybrids. The images underneath the Structure plot are a representative selection of leaf cross-sections of the samples, including two hybrid samples. While the leaf cross-sections of the parent species are easily distinguishable, the hybrid cross-sections illustrate how hybridisation

Fig. 2. Structure analysis of the MRMEseq data. Species are shown below the graph with leaf shape cross-sections coloured according to Structure cluster. Hybrid leaf cross-sections are shown in white.



can complicate species designation.

The combined length of the chloroplast spacers was 627 bp., which resulted in a total of four SNPs. These SNPs resolved *X. macronema* as different from the other three species, but all other samples had identical sequences.

Discussion

The money from the Hansjörg Eichler Research Fund enabled me to develop a new next-generation sequencing for obtaining SNPs, and apply this method to determining whether hybridisation occurs between *Xanthorrhoea* species in Yuraygir National Park, and to what extent.

Identifying populations of *Xanthorrhoea* can be difficult at the best of times (large mature flowering populations), and it has been suspected that hybridisation between species is a potential confounding factor. Of the four species included in this study, *X. macronema* is the most morphologically and genetically distinct from the other three. Based on a phylogeny of the genus (currently unpublished), the sister species of *X. macronema* is *X. gracilis* from Western Australia. This species is easily distinguished in the field from other *Xanthorrhoea* species.

The results of this study indicate that hybridisation can occur at locations such as Yuraygir, where two or more species of *X. fulva*, *X. latifolia*, and *X. johnsonii* co-occur. When inflorescence characters are missing, which is not uncommon, identifying species based on leaf cross-sections is problematic. As the distributions of these three species overlap along the east coast of Australia (Figure 1), the occurrence and frequency of hybridisation should be accounted for when delimiting species.

MRMEseq is a useful tool for obtaining nuclear SNPs from throughout the genome at a smaller scale than RADseq or similar restriction based processes. Because it uses PCR primers rather than restriction enzymes it might be more broadly applicable to old herbarium material, groups which have secondary compounds that can inhibit enzymatic activity, or conservation based studies where the input DNA could be very low and the total cost to perform the study is limited. I have subsequently used the MRMEseq method to obtain data for phylogenetic reconstruction of all *Xanthorrhoea* species, a conservation genetics study on *Notolaea* with Gill Brown at Queensland Herbarium, and to investigate phylogenetics and

phylogeography of several *Eucalyptus* species.

A publication using MRMEseq to resolve the phylogeny of *Notolaea* is in preparation and will include details of the methodology. If you would like any information about the method please contact me at the email address above.

Acknowledgements

I thank ASBS for their support through the Hansjörg Eichler Research Fund. Dr Mike Bayly is thanked for his guidance during this research and my PhD. Emma Lewis assisted with field work. Stephen Doyle and Michael Amor at La Trobe University helped with sequencing.

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Web ref. <http://ipyrad.readthedocs.io/>

Articles

William Baxter (fl. 1792–1832), botanical collector

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William Baxter was in Australia in the 1820s where he made notable collections of pressed plant specimens and seeds mainly in localities on the south coast between King George Sound (WA) and Kangaroo Island (SA) (see George 2009: 286). He is commemorated in numerous Australian endemic taxa, including the monotypic genus *Baxteria* R.Br. ex Hook. (Dasypogonaceae) and, almost invariably with the epithet *baxteri*, in species of, for example, *Acacia* (although Bentham erred in coining *bagsteri*¹), *Banksia*, *Chrysocephalum*, *Grevillea*, *Hakea*, *Isopogon* and *Kunzea*. *Casuarina baxteriana* Miq. and the anagrammatic *Banksia biterax* A.R.Mast & K.R.Thiele (formerly *Dryandra baxteri* R.Br.) also honour William Baxter, who usually signed his name as “WillBaxter”.

Details are wanting for most of Baxter’s life. His place and date of birth are not known although he claimed to be 35 years old in 1827 (giving his year of birth around 1792), just as his place and date of death remain mysteries. La Comtesse

de Vandes engaged him to work in her garden in Bayswater, west of London, but in exactly what capacity is unknown (for discussion of this garden, see Nelson 2018a², 2018d). He was working there by the spring of 1818, according to Sabine (1822: 128) who described him as “gardener to the Comte [*sic*] de Vandes, at Bayswater”. Sweet (1828: tab. 56) also stated that “Mr. W. Baxter [was] formerly Gardener at the Comtesse de Vandes’ establishment ...”. At that time, Baxter could have occupied any or, in sequence, every position from a trainee apprentice to a fully trained gardener. What is reasonably certain is that he had left this situation by 11 May 1821 when he took passage on the *Royal George*³ which arrived in Port Jackson on Wednesday, 7 November 1821, to be greeted with a salute of 19 guns because on board were Major-General Sir Thomas Brisbane, the in-coming Governor of New South Wales, and Lady Brisbane (*Sydney gazette* 10 November 1821, p. 1).

¹ Herbarium specimens with printed labels on which “Bagster” was named as collector, detected (using the online herbarium database) in the herbarium of the Royal Botanic Gardens, Kew, include *Acacia bagsteri* K000791347, *Lechenaultia formosa* K000215272, *Paraserianthes lophantha* K000759569, *Petrophile teretifolia* K000736565, *Stylidium repens* K000741760 and *S. squamosotuberosum* K000060234 (on both these *Stylidium* specimens, Bagster deleted and Maclean added in manuscript). For an early correction of the erroneous name in *Acacia*, see Bosse (1849). A further note is in preparation.

² A revised version of this with a bibliography is to be published (2018) by the Essex Gardens Trust.

³ 487 tons, Captain William Powditch, with “a Poop, and ... fitted up with most superior Accommodations for Passengers”. There were nine cabin passengers and 14 steerage passengers (*Sydney gazette* 10 November 1821, p. 3). Bound for New South Wales “with liberty to touch at Madeira, and at Rio de Janeiro” (*Public ledger & daily advertiser* 6 April 1821, p. 1; *Bell’s weekly messenger* 14 May 1821, p. 7; *Lloyd’s list* 15 May 1821, p. 2), her departure was delayed until 18 May (*Sydney gazette & New South Wales advertiser* [hereafter *Sydney gazette*] 8 September 1821, p. 2).

This major contribution to knowledge of the itinerary of one of Australia’s most important early botanical collectors gives an insight into the less privileged class of free visitors to the infant colony of New South Wales, which encompassed the known parts of a whole continent, including, until 1825, Van Diemen’s Land. The events recounted occurred when there was a thirst for scientific and horticultural novelties from the colony (Nelson 1990). The British nursery trade was willing to subsidise collectors, and the scientific establishment to acknowledge their collections, sometimes by naming their discoveries after them. It would be easy to conclude that Baxter was a rogue, but Sydney was full of such characters: free and incarcerated. We are given evidence of established horticulturists and scientists willing, despite evidence of continued misdemeanours, to harvest rewards of Baxter’s passion for plants. Questions are answered: yet more are raised!

The author has strong associations with Australian plant systematics dating back to the early 1970s when he was based in Donald Walker’s Biogeography and Geomorphology Department at ANU. His PhD embraced southern Australian biogeography and a revision of *Adenanthos*, from which spawned clarification of Labillardière’s botanising in Western Australia and Tasmania. He has returned to Australia at least once, presenting a paper to the ASBS symposium on the history of Australasian systematic botany in 1988. A long-standing Editor of the Archives of Natural History, he was formerly horticultural taxonomist at the National Botanic Gardens, Glasnevin, Dublin.

Nelson E.C. 1990. ‘... and flowers for our amusement’: the early collecting and cultivation of Australian plants in Europe and the problems encountered by today’s taxonomists. In P.S. Short (Ed.) *History of systematic botany in Australasia*. (ASBS Inc.), pp. 285–296.

E.C.N.

First visit to Australia's southern coast, 1822–1823

Baxter was not named as one of the cabin passengers on the *Royal George* so, like his fellow passenger Richard Caves (or Cave), he had travelled steerage. Nothing further was reported about Baxter for ten months. A standard “Claims and Demands” announcement, repeated in several issues of the *Sydney gazette* (13 & 20 September 1822, p. 2), indicated that both Baxter and Caves intended leaving in the *Newcastle*⁴ for Kangaroo Island and King George Sound (“King George’s Town”). More than seven months elapsed before the *Sydney gazette* of Thursday, 8 May 1823 (p. 2), reported that

On Saturday last Arrived, after an absence of six month the schooner *Newcastle*. It is said, that the principal object of her voyage has been to procure plants and seeds from the islands in the Southern Ocean, intended for the Mother Country.

It seems that Baxter and Caves intended to set out again soon after returning to Sydney from King George Sound. However, although a “Claims and Demands” notice in the name of “Wm Baxter” was published on 22 May 1823 in the *Sydney gazette*, Baxter remained in or near Sydney, while Caves departed on the *Lusitania* for Hobart on 14 July 1823. The collections of pressed specimens and seeds from southern Australia had to be sorted, labelled and packed for transport to London, all of which would have occupied Baxter’s time.

Baxter provided some additional details of the recently completed voyage in a letter to Robert Brown, then the principal authority on Australian plants, written at Sydney on 15 July 1823⁵ (the day after Caves had departed). “I am Sorry to inform you”, he told Brown, “that my excursion [*sic*] to the South Coast has turned out quite the reverse to what I expected.” Westerly winds had greatly delayed the *Newcastle* so it did not reach King George Sound until 21 January and Baxter left the Sound on 17 February, a stay of less than four weeks.

⁴ Schooner, 25 tons, Master William Rooke (or Rook). According to the muster roll, the crew of five was mustered on 16 October 1822, and there were six passengers, including four Maori, “New Zealanders” (*Sydney gazette* 20 September 1822, p. 2).

⁵ BL Add. MSS 32440, f. 340.

... I have sent you very few specimens to what I expected every thing being out of flower, the pitcher plant [*Cephalotus follicularis*] was not come into flower when I was there except a few plants of it, I have sent you specimens of the grass tree [*Kingia australis*] you wishd for with ripe seeds & also specimens both dried & in spirits of the plant in flower[.] I have also sent you some new Banksias & Dryandra the large / blechnifolia or [p]teridifolia / Dryandra that I have markd Cape Arid grows 5 feet high & branche[s] in all derections so think that it is all most impossible to get in to the heart of it. this is quite a different plant from the other small dwarf one which grows beside it & never rises of[f] the ground but creeping like Banksia *grandis* repens with nothing out of the ground but leaves & flower besides you will see the /great/ difference in the Involucrum & seeds, I write you this because I think I remember you told me that Cunningham had found out that they were both one plant – the other small leaved one at Cape Arid lays flat on the ground & running several yards among the grass and other plants[.] Stylium I got none in flower which I am very sorry for but perhaps I can get back again & remain the year round[.] I shall grow most of my seeds here & if you want any specimens & shall dry ...

A list⁶, dated 1823, made by Brown of plant specimens “collected by Mr William Baxter at the south west coast of New Holland” (Edwards 1981: 162; Mabberley 1986: 276) yields some more contemporary information about where he collected and what plants then formed his herbarium. For example, Brown noted that *Dryandra mucronulata* was collected “between Mount Gardner & Mount Manypeaks”, that *D. pteridifolia* was found at Lucky Bay (along with *Petrophile phyllicoides*, and *Grevillea concinna*: see Brown 1830: 6, 18), while *D. nervosa* occurred “between Cape Pasley & Cape Arid A dense shrub 5 feet high” (see Brown 1830: 39): the latter evidently was the *Dryandra* “I have markd Cape Arid ...”. On Kangaroo Island Baxter collected *Grevillea ilicifolia* var. *dilatata*

⁶ NHM ms. B.74 (ix) (e) (for a catalogue of Robert Brown’s manuscripts in the Natural History Museum, London, see Moore and Beasley 1997).

(Brown 1830: 21), but whether he visited the Cape Arid area and Kangaroo Island before or after King George Sound, or both, is not clear. Among the Proteaceae specimens received by Brown from Baxter in 1823 were two indicated as having come from “Jarvis bay”. They were noted in Brown’s list as unnamed species of *Petrophile* and *Persoonia*: according to Brown (1830: 12–13), Baxter obtained *Persoonia caleyi* (now *P. mollis* subsp. *caleyi*) at Jervis Bay.⁷

Baxter’s letter of 15 July 1823 (see above) probably accompanied these specimens, and suggests that Brown had made specific requests before Baxter left England. This indication is supported by some of Brown’s subsequent comments. For example, regarding the “grass tree” named *Kingia*, Brown (1826) acknowledged Baxter’s specimens:

... at length Mr. William Baxter, whose attention I had particularly directed to this plant, found it, on the shores of the same port in 1823, both in flower and fruit. To this zealous collector, and to his liberal employer, Mr. Henschman [see below], I am indebted for complete specimens of its fructification, which enable me to establish it as a genus distinct from any yet described.

According to later published descriptions, the seeds gathered by Baxter in localities in southern Australia as far west as King George Sound which he did not keep himself in Sydney were consigned to Francis Henschman⁸, who was

⁷ This confirms Weston’s (1995: 99) suggestion that the Wilson’s Promotory location on the specimen of the *Persoonia* in BM, discordant with Brown (1830), could be “erroneous, being about 370 km south of the most southern population”.

⁸ Francis Henschman F.L.S., of Great Ormond Street, London, and of Homerton in Middlesex, was not accounted for in the 1841 and 1851 English censuses because he had moved to Fort Beaufort in South Africa where he died, aged 76, on 27 June 1853 (*Bell’s weekly messenger* 5 September 1853). His son, John, continued in the nursery trade (Burnby and Robinson 1983: 35; Desmond and Ellwood 1994), and also collected plants in South America, particularly orchids. Francis Henschman was proposed as a Fellow of the Linnean Society of London on 4 November 1823 and was elected on 20 January 1824. His seven supporters included the botanists A.B. Lambert, R.A. Salisbury and John Lindley. Unfortunately the ballot paper is damaged but probably reads: “Francis Henschman Esqr, /of Great Ormond Street / a gentlemen we[l] vers[ed] [in v]arious branches of Natural science, especially

the principal proprietor of a nursery and seeds business in Upper Clapton about 8 km north-north-east of the City of London. His sometime partner was John Bain Mackay⁹, with whom the business is most usually associated¹⁰. Seeds of *Correa pulchella* collected on Kangaroo Island germinated in 1824 (Sweet 1827a) while *Chorizema henschmanii* (named by Robert Brown) bloomed during April 1826 in the Clapton nursery (Lindley 1826), where “the greater part of [Baxter’s] ... rich harvest of new and rare plants ... are now growing” (Sweet 1827b).

Having decided to remain in the colony, Baxter was certainly in Sydney during the early (austral) spring of 1823 when he petitioned the governor for a grant of land. “The Memorial of William Baxter of Sydney...”¹¹, addressed to Sir Thomas Brisbane and signed by Baxter at Sydney on 20 September 1823, reads:

Most respectfully sheweth

That Memorialist arrived in this Colony in November 1821 in the ship Royal George for the purpose of making scientific researches in Botany and having since made up his mind of becoming a permanent settler in the Colony, he most respectfully solicits that your Excellency will be pleased to allot him a grant of Land suitable to the means he possesses of bringing the same into Cultivation;

Memorialist further begs leave to state, that these means will enable him to employ Thirty men of the Stores, and conformable to the present existing Government Regulations.

Your Memorialist therefore prays that your Excellency will be pleased to grant him such portion of Land together with

Botany & Horticulture ...’ (original ms in the Linnean Society of London) (Nelson 2018c).

⁹ John Bain Mackay’s application to become a Fellow of the Linnean Society of London was also supported by A.B. Lambert, and by Robert Brown. He was elected on 16 November 1824 and on his ballot paper he was described as “of the Belgrave Nursery Pimlico, a Gentleman well versed in the Study of Botany ...” (original ms in the Linnean Society of London) (Nelson 2018b).

¹⁰ Henschman’s business partnership with Mackay, which must post-date 1824 (see note 8 above), was formally dissolved in September 1830 (*London courier & evening gazette* 18 September 1830, p. 4).

¹¹ “Memorial of William Baxter of Sydney”: original ms in State Records of New South Wales (Fiche 3059; 4/1834A No. 16 p. 105).

such other Indulgences as your excellency
may seem meet and Memorialist as in
Duty bound will ever pray –

WillBaxter.

There is evidence that Baxter did receive a grant of land (see p. 27), and he also was assigned at least one convict tradesman – it is doubtful that he ever employed “Thirty men”. “Baxter, Wm. Sydney. Botanist” was named in a list of defaulters compiled a year later, on 30 September 1824, because he had failed to pay for the services of a sawyer named William Berriman (“Will^m Berryamin”¹²), who would either have been clearing trees on Baxter’s land or, perhaps, building a house.

Second visit to southern Australia, 1824

There were several men named William Baxter in New South Wales in the 1820s¹³, and he was also explicit on this (see p. 21); so making direct association between some newspaper announcements and the botanist is not always possible. However, a letter written to Robert Brown, dated “Sydney 5th July 1824”¹⁴, reported that Baxter had been back to the south coast:

I wrote you about twelve months ago, when I returned from King Georges Sound, which I hope you received with the specimens. Since that time I have been as far as Lucky Bay & even as far as the Sound in a Sealing vessel, but could not get into it owing to a gale of Wind comming [*sic*] when we were between Mount gardener & Bald head, I left the vessel at point Malcolm & walkd along the Coast to Thistles Cove with no on with me excepting a dog.

I have sent you some specimens along with this pr the Ship Midas¹⁵ Capt.

¹² Berriman was sentenced at Gloucester Assizes and transported on the *Speke* arriving at Sydney on 18 May 1821. For Baxter’s inclusion in the list of defaulters, see State Records of New South Wales (Reel 6061, 4/1778 p.265b; Fiche 3293, 5/3821.1 p. 1).

¹³ See, for example, State Records of New South Wales, Index to the Colonial Secretary’s Papers, 1788–1825 (Web ref. 1).

¹⁴ BL Add. MSS 32440, f. 365.

¹⁵ *Midas*, belonging to one Joseph Underwood, had arrived in Port Jackson on Saturday, 31 May 1823, but did not sail for England for more than a year, leaving on 10 July 1824 laden with “oil, skins, and sundries” (*Sydney gazette* 15 July 1824, p. 2). A hurricane forced her back into port with damaged

Thompson Commander which I hope you will receive safe, as there is one plant amongst them that I think you have not seen I found it in the neighborhood of Thistles Cove the leaves are something like *Dryandra armata* please to examine the seeds of it & let me know what you call it, you will ~~likewise~~ see some of the old flowers amongst the leaves which is also very like *Dryandra* ...

Baxter’s trek from Point Malcolm, on the coast at Israelite Bay, to Thistle Cove, was a distance of not less than 200 km (and probably much more if he followed the coastline). Whereas sealers were relatively frequent visitors to this coast by this time, no European is recorded as having walked such a distance there until John Eyre passed the same way in 1841.

This second visit to southwestern Australia is probably represented by collections of *Hakea laurina* and *H. pandanicarpa* (Brown 1830: 29) and *Grevillea* “?*pectinata*” (Brown 1830: 23), as well as *Banksia media* (Brown 1830: 35): Brown (1830) recorded their origins as “inter Cape Arid et Lucky Bay, 1824”. It is not known which sealing trip Baxter attached himself to, nor when he left and returned to Sydney. He may have travelled in several different sealing vessels, one possibility being the brig *Minerva* whose master was Duncan Forbes (see p. 27).

A further gap of more than a year exists in information about Baxter’s activities. On 25 September 1825, Baxter was in Sydney, for he wrote to William Jackson Hooker, then Professor of Botany at the University of Glasgow.¹⁶

Sir

I have not the Honor of personally knowing you and should not now have obtruded myself to your notice only in consequence of Mr Frazier [*sic*] the Botanist to the Governor of these Colonies having applied to me for specimens of various *Banksia*’s and *Dryandra*’s, stating they were for you, I supplied him with a good Collection, in which were two specimens of undescribed *Banksia*’s with a fruit attached to each, these I

bulwarks (*Sydney gazette* 22 July 1824, p. 2), and she resumed her voyage, via Cape Horn, on 18 August after repair (*Sydney gazette* 19 August 1824, p. 2). *Midas* reached the Thames on 2 January 1825 (*Sydney gazette* 28 April 1825, p. 2).

¹⁶ RBG Kew: Directors’ Correspondence volume 72, Australian Letters 1825–1833, f. 1.

entreated Mr Frazier to beg of you, not to permit being grown in the Garden, should he have sent such to you, I have to request you will oblige me in not allowing them to be grown, as I am engaged with a House I am very unwilling to injure

I am much mortified to find the Collection I purposely made for you has been in part given by Mr Frazier [*sic*] to the Botanist of the “Thetis” French Ship War¹⁷ (lately in the Harbor of Port Jackson) and I now respectfully beg to assure you that I shall feel much pleasure in attending to your wishes for supplying you with such specimens as Mr Frazier [*sic*] have kept back if you will favor me with a list of what you have received and should you wish for other specimens from the South West Coast of New Holland as far as King George’s Sound (which I have visited), I will supply them also

I likewise sent you a small moss I brought from Kangaroo Island and will be glad to know if it is New –

I have the Honour to be
Sir
Most respectfully
Your Hble Serv^t
Will Baxter

P. S. Please direct for me as above
Botanical Collector as there are two
William Baxters

In the mid-1820s, there were several professional botanists active in New South Wales. Charles Fraser (or Frazer) was the “Government Colonial Botanist” as well as Superintendent of the Botanic Garden in Sydney. Also active was Allan Cunningham, “King’s Botanist”. Both Fraser and Cunningham were occasionally attached to exploring expeditions. Cunningham had been to the west of the continent, including King George Sound, while on Philip Parker King’s coastal surveys, 1818–1822. Fraser was to visit the Sound in April 1827. Franz Wilhelm Sieber (1789–1844) arrived in Sydney on 31 May

¹⁷ *La Thétis*, Capitaine Hyacinthe de Bougainville. This vessel was in Port Jackson for almost three months, between 1 July and 21 September 1825, departing four days before Baxter wrote this letter to Hooker. The principal naturalist on that circumnavigation was Dr François-Louis Busseuil (1791–1835), surgeon of *La Thétis*; he may have been Charles Fraser’s contact.

1823 aboard the *Midas*¹⁵ (*Sydney gazette* 5 June 1823, p. 2) and remained for seven and a half months collecting in the hinterland of Sydney. Baxter was in Sydney at that time.¹⁸ Sieber left New South Wales on the *Berwick* on 13 January 1824 bound for the Cape of Good Hope (*Sydney gazette* 15 January 1824, p. 2). One other naturalist is known to have encountered Baxter in Sydney during this period, the geologist and biologist Samuel Stutchbury (1798–1859) who arrived on the Pacific Pearl Fishery Co.’s ship *Sir George Osborne* on 17 December 1825 and departed on the *Rolla* on 8 March following (Branagan 1996: 148; *The Australian* 9 March 1826, p. 4).

A letter from Baxter to Robert Brown dated 2 October 1825¹⁹, one week after Baxter’s letter to W. J. Hooker and like it addressed from 24 Georges Street, Sydney, again relates to the *Midas*’s cargo. Baxter apparently had received a letter from John Mackay with information about at least one of the plants he had sent.

By the ship “*Midas*”¹⁵ I had the pleasure to send you some specimens among which was a plant I found in the neighbourhood of Lucky Bay and which I took to be a new Genus, but Mackay writes me it is a *Dryandra* described before – the seed is widely different to any *Dryandra* I have ever seen & I shall be most happy to hear from yourself about it being very anxious to know what it is.

I shall feel very much obliged by your informing me if you have described the grass Tree from King Georges Sound, and also on what part of the coast you found *Dryandra falcata* as I cannot yet discover it.

Baxter collections cited by Robert Brown and dating from 1825 included *Banksia cunninghamii* (*B. spinulosa* var. *cunninghamii*) (Brown 1830: 35) and the previously mentioned

¹⁸ In his “Statement of Facts which can be corroborated by Evidence of respectable Individuals” (Colonial Secretary’s Papers 1788–1825 Reel 6056 [4_1764] p. 110), written in Sydney Gaol and dated 24 December 1823, Abraham van Brien stated that “In the early part of last Sept., I became (through Mr Baxter Botanist, then a fellow Lodger of mine) acquainted with Mr Sieber, residing in Phillip Street ...”.

¹⁹ NHM ms. B.74 (ix) (a); Moore and Beasley (1997: 268) omitted the date.

Persoonia caleyi, both localized as Wilson's Promontory. An undated collection of *Lambertia ilicifolia* (Brown 1830: 23) and an 1826 collection of *Hakea ulicina* (Brown 1830: 29) were also recorded from the peninsula which Baxter could have visited on any of his voyages to the southern and southwestern coasts.

However, Baxter was certainly still in Sydney at the beginning of February 1826: he went botanizing with Samuel Sutchbury and others on 6 February (Branagan 1996: 52, 148). Having received a letter from Robert Brown, he replied on 6 February²⁰:

It is with real pleasure I acknowledge the receipt of yours by Mr McCleay [*sic*] and I hope by the time this reaches you I shall be at King Georges' Sound where I intend remaining twelve months for the purpose of examining the whole of the coast as far as Lucky Bay and also to visit the mountains in Land [*sic*]

Mr Henchman has given me the names of the New Plants and I cannot but feel myself grateful and highly honored by you Sir (whose opinion I value in professional matters above all the World) in attaching my name to one of them. My ambition to promote the Science by any discovery will now be doubly increased and I shall be stimulated to a more close search in my pursuits in hope by my long intended stay at the Sound to send to you when next I write to Great Britain several new Genus's [*sic*] as well as species _ as I expect my collection will be very extensive it is more than probable I shall return with it.

Your directions in respect to *Kingia Australis* &^{cc} shall be strictly attended to.

I cannot rest satisfied about the plant I sent you by the ship *Midas* I think you have never seen the seeds of it – surely it cannot be a *Dryandra* I am afraid to speak being so young a Botanist or I should say it is a New Genus – which I trust it is – and as I am so very anxious about it belonging as it does to Proteaceae I sincerely hope you will be pleased to

favor me with your conclusion of its Character after your view of the seeds some of which are herewith sent enclosed ...

Third visit to southern Australia, 1826

The next published report of Baxter's activities traced was announcing his departure from Botany Bay on Thursday, 4 April 1826, in the cutter *Brisbane* "on a botanical expedition to the south west coast of New Holland. Passengers. Mr. Baxter botanist, and Mr. Robert Nicholls" (*The Australian* 8 April 1826, p. 3; *Sydney gazette* 12 April 1826, p. 2). The *Brisbane* only got as far as Jervis Bay²¹: "The sloop the *Brisbane*, which returned to port on Monday evening [24 April], was unable to reach the point of her destination, on the South-west coast, where she was proceeding on a botanical speculation" (*The Australian*, 26 April 1826, p. 3). Another report explained that the *Brisbane*, "belonging to Mr. Baxter, botanist, returned to port, after an unsuccessful attempt to get to the southward. She lost her boat and topmast" (*The Australian* 26 April 1826, p. 2). However, repairs must have been made and on 21 May, "The sloop *Brisbane*, belonging to Mr. Baxter, resumed her botanical voyage ..." (*The Australian* 31 May 1826, p. 3). It had clearly been planned to get Baxter to southwestern parts at the peak flowering season, rather than in summer, but whether Baxter owned the sloop is open to doubt (see pp. 24–25).

The next news of Baxter and the *Brisbane* came in late September 1826 when the schooner was reported in Tasmanian waters (*Hobart Town gazette* 30 September 1826, p. 2; and 7 October 1826, p. 2). The account raises more than a few questions, although it implies that Baxter had succeeded in reaching the southwest and that he had spent some weeks, if not months, there making a substantial collection.

SCIENCE.—The schooner *Brisbane*, of Sydney, which has saved the lives and part of the wreck of the schooner *James*, belongs, we understand, to Mr. Baxter, a scientific Gentleman, who has been employed prosecuting researches in Natural History, and making other discoveries to benefit mankind on the coasts and islands, since the month of May last.

²⁰ NHM ms. B.74 (ix) (b): Moore and Beasley (1997: 268) omitted the date. Brown (1830: 40) cited a letter from Baxter, dated 1826, but without a precise date it cannot be certain whether he was referring to this one, or an untraced one.

²¹ As noted (see p. 19), Baxter had already visited Jervis Bay and collected specimens there; these had reached Brown in 1823.

The vessel being small, only 20 tons, Mr. Baxter was compelled to leave three of his crew, with boats and stores, on New Year's Island, contiguous with King's, that he might proceed to Launceston with the wreck and crew. The interest we take in all scientific pursuits, and the evident sacrifice of his private advantage for the purposes of humanity which Mr. Baxter has evinced, call forth our warmest approbation; and we are confident that the local Government of both Colonies will be ready to lend every possible assistance to promote his pursuit of science—so truly noble and so national an object.

A somewhat different gloss on this story was later printed in the *Colonial times and Tasmanian advertiser* (13 October 1826, p. 3):

We have received accounts from Launceston, stating, that the schooner *Brisbane* has been seized, owing to the master or owner, Mr. Baxter, not being able to produce her register. Mr. B. has in consequence proceeded to Sydney in the brig *Lord Rodney*, with an intention to obtain legal advice. It is said that the *Brisbane* belongs to a Merchant in London, a Mr. Cave²², who sent her out to make researches in natural history, and other discoveries on these coasts.

In the same issue of the *Colonial times*, a lengthy letter signed by "James Corlette" (the inverted commas were used by the newspaper) was printed, giving other details and casting considerable doubt on the story of the wreck of the *James*, and Baxter's behaviour and actions. "Corlette" wrote that "I think it is my duty to give publicity to the affair personally ...", continuing:

Having arrived at New Year's Island, contiguous to King's Island, on the 3^d of September, for the purpose of trading with sealers for skins, &c. on the 4th I took the boat and two men, and went over to King's Island in search of the sealers, leaving in charge of the vessel the only remaining person, the mate, with the necessary injunctions. Towards the afternoon, I saw the sloop *Brisbane* arrive at

the anchorage, and Mr. Baxter had walked from the N. E. end of King's Island, where the sealers boats were detained on account of the strong tide ripple ...

During the night, it came on to blow a violent gale from the westward; the vessels lay in perfect security, and we continued to watch them until the 8th, being without victuals or any necessaries. On the 8th, we were surprised to see William Jones, mate of the *Brisbane*, who informed us, that in passing from the *Brisbane* to the *James*, he got drifted from the vessels over to King's Island.

"Corlette" thought the story "so inconsistent" and soon proved it wrong. He swam over to the *James* and "found her still holding together", but the breast-fast (a rope for confining the vessel) and cables had been cut and the decks "strewed with slops and other merchandize". In his cabin, he found his chest had been broken open and "plundered of every article, particularly the vessel's papers and £30 in cash". Returning to the *Brisbane*, he learned that Thomas Smith, master of the *Brisbane*, and his crew "had been drinking, and plundering the *James* all the time I was absent." Smith was intoxicated while Baxter "not understanding nautical affairs" had appointed him master. "I am sorry to say," continued "Corlette", "Mr. Baxter, he, and his crew, would go on shore, and get beastly intoxicated. ... Mr. Baxter was bound into Launceston for supplies, and did not break his voyage on my account."

Baxter took passage on the brig *Lord Rodney*²³ from Launceston on 7 October, landing in Sydney on 15 October. A few days later the *Sydney gazette* (18 October 1826, p. 3) published yet another version of the events connecting the *Brisbane* and the *James*:

On or about the 1st of October last, arrived ... in the River Tamar (Launceston) ... from a voyage of botanical research and discovery, the boat or vessel called the *Brisbane*, cleared out, from this port [Sydney], on repeated voyages, with nearly all the crew of the sloop *James* of this port, which vessel had become

²² There is a possibility this person was linked with Richard Caves who had travelled to New South Wales with Baxter in 1821, but the surname may simply be a coincidence.

²³ Captain J. C. Thompson, carrying wheat, wool, potatoes and some kangaroo skins (*Hobart Town gazette* 14 October 1826, p. 2; *The Australian* 18 October 1826, p. 2; *The Australian* 18 October 1826, p. 2; *Sydney gazette* 18 October 1826).

wrecked by drifting from her anchorage; humanity alone dictated to Mr. Baxter the propriety of this transaction, which, alas! involved him in a disastrous situation that cannot be retrieved, but by repeating of his exertions to obtain those useful collections of botanical research that may be offered again on such an attempt. In short, on the vessel's arrival at Launceston, with the unfortunates of the *James*, the *Brisbane* was seized, and every article on board forcibly taken from Mr. Baxter and the Captain, not even a change of clothes was allowed to either, and so remorseless was their conduct that without shoes or stockings were they driven from the vessel.

Reading between the lines, Baxter's valuable new collection of, presumably, pressed and dried plants and seeds from southwestern parts, probably including King George Sound, had been irretrievably lost, if not entirely destroyed, and there was no way to recover his investment of time and cash without another trip to his collecting localities. The costly repercussions of the encounter between the *Brisbane* and *James* would also land Baxter in gaol.

In *The Australian* of 25 October 1826 (p. 3), there was a paragraph about Baxter:

Mr. Baxter, the owner of the Governor Brisbane, on being disseized of his property, by the seizure of his vessel, sailed for this Colony immediately, and is among the late arrivals. He is of course, intending to show, by the injustice of the capture, his right to have the vessel restored to him. Perhaps the inter-position of the Government on suitable explanations being rendered, may be of some service.

Marriage, 17 January 1827, and insolvency, 1828

Surprisingly, on Monday, 17 January 1827, in Parramatta, the Scottish Presbyterian minister Dr John Dunmore Lang officiated at the marriage of Mary Jones to William Baxter (*The Australian* 17 January 1827, p. 3; *Sydney gazette*, 17 January 1827, p. 3). Lang has recently claimed the right to marry couples. According to the "Registers of convicts' applications to marry"²⁴, entry no. 267, Baxter was then aged 35. Mary

Jones, aged 36, had been sentenced a seven-year term of transportation at Lancaster Assizes and arrived in the *Morley* with 120 other women on 30 September 1820. According to the marriage announcement, she was "one of the legatees of the late Mr. Andrew Frazer [*sic*]", a wealthy baker of The Rocks, Sydney, who had died on 3 January 1827, a fortnight earlier. It was reported that Mary, who had been living with Frazier after he had separated from his wife Ellen (née Hatton) (*The Australian*, 6 January 1825, p. 4; *Sydney gazette*, 19 May 1825, p. 4), had been "left the bulk of [Frazier's] large property" (*Sydney gazette* 6 January 1827, p. 3).

A fortnight after his marriage, Baxter wrote a further letter to W.J. Hooker in Glasgow, thanking him for a letter, dated 8 May 1826, received on 11 January 1827²⁵. This letter provides information about Baxter's financial affairs and the broken arrangement with his original English backer, Francis Henchman:

... I am truly gratified that Specimens & Plants gave you so much satisfaction, & proved new to your Herbarium.

I was in hopes I should have had it in my power to have sent you a very large Collection of Specimens & plants with Seeds, / from the South & North West coasts of New Holland / but have to detail a long account of misfortunes which being unforeseen pressed heavier upon me, these prevented me.

When I left England I was under the auspices of Mr Henchman who promised me great things, that I should not want for any thing to enable me to prosecute my discoveries with Vigor. I therefore by his order drew upon him, & found no difficulty in getting the Bills discounted & immediately purchased a small vessel [evidently, the sloop *Brisbane*] on which I embarked with every prospect of success. Through a misunderstanding respecting the Register of the Vessel she was seized by the Government of Van Dieman's Land when I was obliged to abandon her & came up to Sydney to remonstrate with the Government there to get the Vessel given up, when I was informed by Messrs Icely & Hindson (the Merchants who

²⁴ NSW State Archives and Records (accessed online through www.ancestry.co.uk).

²⁵ RBG Kew: Directors' Correspondence volume 72, Australian Letters 1825–1833, f. 2

discounted my Bills) that they were returned dishonored. Picture to yourself my astonishment & surprize at such unheard of cruelty, to strike at the very root of all my prospects & expectations, & to mend the matter I was arrested & thrown into Prison for a paltry debt of Thirty pounds which being at the commencement of the season has been very prejudicial to me. However I hope still to weather the Storm, which has indeed been very boisterous & though many would have sunk under such a complication of disappointment & cross-providences I doubt not thro' the divine Blessings I shall rise like a Phoenix out of the fire, and as I now consider myself clear from my engagements with Mr Henchman I purpose to supply the whole trade & doubt not eventually I shall find it much more beneficial as my Connexions are so very extensive & respectable & the orders I have already received are very considerable. I am sorry to add Mr. McLeay has joined with the rest to persecute me from a misunderstanding which took place on his application to me for Specimens Plants & Seeds which from my original arrangements I could not with Honour furnish to him & I understand in the communication he has made to my friends at home he has animadverted very severely upon my conduct, but doubt not time will prove I am more sinned against than sinning.

I am happy to say I am now in possession of the information that Government will immediately give me up my Vessel, when I shall proceed immediately to the West Coast & shall be able shortly to add very considerably to your present collection.

It will give me sincere pleasure to further your views in the publication of the splendid work you have in hand by any assistance I can render you, in which I wish you every success. I shall forward you by the first vessel a large Collection of Specimens Plants & Seeds, which I hope will be found curious & rare, & consider myself highly honored by your accepting of them as further proof of my wish to further your views, & shall at all times consider the honor of communicating

with you a sufficient remuneration for any thing I may send you.

... P. S. As I am now about to go upon my own Hands in supplying the Trade generally with Seeds shall be obliged by your naming me to any of your Friends. W:B:

However, rather than being restored to Baxter, "That Fine Colonial-built SLOOP BRISBANE, registering 19 tons, four years old, and abundantly found in Stores of every description ..." was advertised for sale by Mr John Paul on 7 March 1827 (*Sydney gazette*, 1 March 1827, p. 1). While Baxter was expecting his situation to improve, his financial affairs were evidently precarious. On 7 March 1827 in the Supreme Civil Court, the master of the brig *Lord Rodney*, J.C. Thompson, brought a case to recover £50 from Baxter. Thompson was awarded £30.

In Sydney, Mrs Mary Baxter was charged by the police on 16 June 1827 with "most outrageously riotous and disorderly conduct" the previous night, "instigated, as was suspected, by the "green eyed" monster, on account of not having seen her husband for two or three hours before ...". She was "discharged with an admonition" because the man who complained was too drunk to give evidence (*Sydney gazette*, 20 June 1827, p. 3). Mrs Ellen Frazier, the widow, was also implicated in the drunken and disorderly occurrence.²⁶

At this time, Baxter was evidently well known in the colony. A commentator in the *Sydney gazette* of 13 March 1827 noted that he had been "deputed by some private individuals in England, for the purpose of sending home plants to supply the public with". Baxter, it was added, found "the speculation so lucrative, that he charters vessels to visit various parts of the coast, for procuring rare plants, which are disposed of in London at ten guineas a piece, as soon as struck." However, the reality was rather different. Baxter had lost his potential income at Launceston when he and his collection had been thrown off the *Brisbane* and he had also lost the vessel; whether he ever actually owned it must be doubted. By September 1828, it is clear, William Baxter was close to being declared

²⁶ For Mary Baxter, see G. Karsken, 1994 *The Rocks, Life in Early Sydney*. Melbourne. See also the novel by K. Williamson, 2003 *Women on the Rocks: a tale of two convicts*. Brisbane: she partly fictionalizes William Baxter as a convict.

insolvent, and proceedings were instigated in the Supreme Court to examine his affairs (*Sydney gazette*, 3 September 1828, p. 1).

Meanwhile, the *Hobart Town gazette* of 28 July 1827 (p. 5) reported the arrival from Sydney of the colonial sloop *Glatton*, carrying coal, timber, tobacco, cheese, oranges and lemons, with a passenger named William Baxter: “This vessel has had a tedious passage, having been put back twice by contrary winds and obliged to take shelter in Two-fold Bay”. The *Glatton* had been due to depart Sydney on Friday, 15 June, but was delayed until Thursday, 21 June. However, as noted before, there was more than one William Baxter in New South Wales at this time, and no evidence this was the botanist (see George 2009: 286). Specimens of *Hakea ulicina* β *angustifolia* Meisner (1857) (K, NY) attributed to Baxter and Twofold Bay may provide the proof that he was the person on the *Glatton*.

Fourth visit to southern Australia, 1828–1829

In “waiting upon” the Colonial Botanist, Charles Fraser, with whom he was well acquainted (see pp. 21–22), on 15 November 1828 (Maiden 1909), Baxter seems to have been trying to restore his fortunes. The date was probably not coincidental, for on the previous day Mary Baxter had issued a legal notice:

I hereby Caution any Person from paying into the Hands of WM. BAXTER, my Husband, any Money on Account of the Estate willed to me by ANDREW FRAZIER, deceased, or otherwise giving him Credit on the said Account, until the same be determined by Law. ... Nov. 14. 1828.

It was published in the *Sydney gazette* a few days later. Mary Baxter’s caution was most probably a riposte to her husband’s, published in the *Sydney gazette* on 3 October:

I hereby Caution all Persons from giving Credit to my Wife MARY BAXTER, as I will not hold myself responsible for any Debts she may contract after this Date. ... 1st Oct. 1828.

The inevitable conclusion is that Baxter married to gain access to the windfall from Frazier’s estate, but the marriage disintegrated acrimoniously.

At his meeting with Fraser (see Maiden 1909),

Baxter sought an agreement that would permit him to make another attempt to collect plants. The government would get half of everything he collected at “King George Sound and the adjacent country”, in return for allowing Baxter to send the other half to his customers in England, “the Government furnishing him with a regular ration and the necessary equipments such as Twine, Paper, Cases, &c, for the preservation of the collection”. Fraser’s memorandum to the Colonial Secretary, the Hon. Alexander McLeay, did not also stipulate that the government would provide transport, but Governor Darling promptly approved the offer and Baxter was in effect ordered to take a passage on the *Lucy Ann* “to sail on Sunday next” (Maiden 1909: 7). McLeay ended his letter with the admonition that Fraser will “take particular care to make such arrangements as will ensure the whole of Mr Baxter’s collections being sent in the first instance to the Botanic Garden of which you have charge.” McLeay’s instruction is interesting in the light of Baxter’s comment to Hooker²⁶ that McLeay “has joined with the rest to persecute me” – evidently McLeay did not trust Baxter, perhaps with good reason. He would surely also have been aware of the insolvency proceeding involving Baxter.

It was under these conditions that Baxter embarked again for King George Sound. The government barque *Lucy Ann* put to sea as planned on Sunday 23 November 1828 (*The Australian* 25 November 1828, p. 3). Baxter was back at the Sound before 24 March 1829, accommodated in “the best vacant” hut and given “the exclusive services of one of the most useful of the Crown prisoners, who attends him on all his botanizing perambulations” (Maiden 1909: 8).²⁷ It is known that Baxter collected around King George Sound in 1829 and also

²⁷ Grandison (see Barker and Barker 1990: 69) suggested that this person was John Matthew Richardson (1797–1882), an English nurseryman who was first transported in 1817 (see George 2009: 528). While he had been sent to Melville Island in 1826 and was returning on the *Lucy Ann* to Sydney in 1829, the dates of his likely visit to King George Sound (sometime after 4 April 1829) make it rather improbable.

Wilson (1835: 236) reported that a man who volunteered to accompany him on “an excursion” from King George Sound in 1829 sometime after Baxter’s visit, had been one of a pair of “prisoners of the Crown... [who] had accompanied Mr. Baxter on all his botanical excursions ...”, but he gave no name.

inland as far north as the Stirling Range. His inland excursion – up to 50 miles was the estimated distance from King George Sound – is confirmed in the manuscript list of Baxter’s herbarium that Robert Brown produced in London after receiving the specimens on 23 April 1830.²⁸

Baxter must have started gathering seeds immediately, for Fraser indicated in his account of Baxter’s activities that “the first collection received from him was in April 1829” (Maiden 1909: 9), which corresponds with the arrival at Sydney from King George Sound of the schooner *Madeira Packet* laden with 1,500 seal skins (*Sydney gazette*, 23 April 1829, p. 2; *The Australian* 24 April 1829, p. 3). By 21 May, further lots of seeds being “forwarded to the Botanic Garden at Sydney” were on board the *Lucy Ann* (see Maiden 1909: 8) which docked at Sydney on 10 June (*Sydney gazette*, 11 June 1829, p. 2; *The Australian* 12 June 1829, p. 3). Baxter himself chose not to return on the government barque, perhaps because it was already carrying almost one hundred people, and instead took the free passage he was offered for himself and his collections on the sealer *Prince of Denmark*, Master Duncan Forbes, who was an “acquaintance” (Maiden 1909: 8). Forbes has previously captained the brig *Minerva* (see p. 20).

Meanwhile, in Baxter’s absence, the sale of four “capital road side” building allotments, situated

about four miles out of Sydney “adjoining the lane to Petersham”, took place on 21 August 1829. They were sold “by order of the Trustees of William Baxter, an Insolvent”. There can be no doubt this was William Baxter, for the allotments had been “selected by Mr. Baxter at great expense for the formation of a Botanical Garden” (*The Australian* 22 July 1829, p. 4). The allotments amounted to about 26 acres, and the sale realised £522 sterling (*The Australian* 4 September 1829, p. 3).

At that time, Baxter was on the *Prince of Denmark*, returning from King George Sound. The schooner had been engaged on a sealing expedition and had touched at the Sound (*The Australian* 9 September 1829, p. 3) after very severe weather had dismasted her and three of the crew were lost (*The Hobart-town courier* 29 August 1829, p. 3). She arrived in the Sound on 8 May and remained until the mast was repaired. After calling at George Town in Tasmania in late August, *Prince of Denmark* docked in Sydney on 6 September (*Sydney gazette*, 8 September 1829, p. 2), and unloaded 930 seal skins and “18 packages [of] plants and seeds” (*Sydney general trade list* 10 September 1829, p. 1): “Mr. Baxter, the Botanist, has recently returned from King George’s Sound, with a splendid collection of botanical varieties, moiety of which is the property of the Government” (*Sydney gazette* 24 September 1829, p. 2).

Charles Fraser reported the incident that followed the off-loading of the botanical specimens from *Prince of Denmark* (quoted in Maiden 1909: 8–9).

On applying for the collection to be landed at the [Botanic] Garden, he [Baxter] made several evasive excuses, when I found it necessary to apply to the Government for an order from the Collector of Customs to prevent them being landed by him, in Sydney.

On the application being granted, an order was given to the Officer of the Customs (Mr. Oliver) to prevent the landing of them, Baxter having previously given particular orders that two sacks containing cones of *Banksia* should not be delivered to any person but himself. On Mr. Oliver going on board and making his business known, Baxter made use of the most abusive language, threatening to

²⁸ NHM ms. B.74 (ix) (d): Moore and Beasley (1997: 268). The following *Banksia* entries had additional information including localities; (note that some of these names evidently are unpublished). Robert Brown’s writing is often well nigh impossible to decipher.

[*Banksia*] *Baxteri* Arbor orgyalis ramosissima ramis patentibus Behind Mount Many peak & inland after passing the first [?] Farms about 30 miles from the Sound

[*Banksia*] *Browni* Arbor orgyalis ramosa ramis [?] patentibus On the top of the hill at the entrance to Princess royal harbour on the right entering. On the hill called by the natives [O ... ?] a Sugar loaf hill near the top of the Sound & on the small [?] heights] inland for about 30 miles.

[*Banksia*] *insignis* 4.-5 *pedalis* on the top of the rugged mountains of Cape Flinders

[*Banksia*] *aristata* On the low land between the first & 2d range of mountains Frutex 4*pedalis*

[*Banksia*] *Baueri* Habitus [aristalia ?] on the banks of a stream about 50 miles inland

[*Banksia*] *macrophylla* After passing the first M... Farms about 40 miles from the sound.

knock Mr. Oliver down, at the same time attempting to throw some of the most valuable tubs of plants overboard ... Such was the violence of his [Baxter's] conduct that Mr. Oliver was obliged to send for two constables. When Mr Baxter saw them approach he left the vessel.

Baxter's collections were landed at the Botanic Garden and "some days after" Baxter went there to receive his portion of the seeds and dried specimens. Whether he received a share of the two earlier sendings is not clear: Baxter boasted, according to Fraser, that he has "taken means effectually to destroy the first collection" (Maiden 1909: 9) Fraser was convinced Baxter's "intentions were to purloin the most valuable part of the collection", noting that when Baxter embarked for England "he publicly stated that after all our look out he had cheated the Government out of the very things he particularly wanted".

Meanwhile, Baxter was arrested and sent to gaol for a second time, as he informed Robert Brown in a letter written in Sydney on 21 October.²⁹

Dear Sir

By the ship *Harmony* you will receive four Cases of Specimens of Plants marked W.B. × No 1. 2. 3. 4. which you must apply for to Capt'n Church, at the same time exhibiting this letter I should have affixed every particular to them but had expected to have accompanied [*sic*] them to England myself, however to my utter disappointment when on the eve of embarkation after having paid my passage Freight &c. I was arrested & now in Gaol – for £30 I will by the earliest ship give you further intelligence.

I have sent you Eight new *Dryandras*, & Six new *Banksias* [...] [T]here is one of the latter with a leaf like grandis & a globe flower the discovery of which you will perhaps think should be in some way kept in remembrance of me – There is a new Genu[s] like *Dryandra aramat* which you will likewise do as you please with. There is among some seeds [addressed] To Mr Knight Nurseryman Kings Road Tou [*sic*] large truffles which you will enquire for Cut one & eat part of it the black people live partly on it at Kangaroo

²⁹ BL Add. MSS 32441 f. 101.

Island.³⁰ I remain, Dear Sir in heart

Yours truly
WillBaxter

To the letter, along the left-hand side, Baxter added a postscript: "Publish the new *Dryandra* & *Banksia* before the Nurserymen". As it happens, some of Robert Brown's names for new species discovered by Baxter were published in Robert Sweet's *Hortus Britannicus* (1826) and in *A catalogue of plants, cultivated and sold by John Mackay ...* (1828)³¹, but without any descriptions attached.

Return to Britain, 1829–1830

According to *Lloyd's list* (26 March 1830, p. 1; *Sydney gazette*, 24 October 1829, p. 2), on Friday 23 October, two days after he wrote that letter, Baxter sailed as a steerage passenger on the *Harmony*, Captain Church, for London. How he achieved this is not known, but having "posted" the letter to Brown (quoted above), he would not have been able to retrieve it. Thus, by chance it seems, Baxter did accompany the packages of plants. Baxter's anxiety to get on to the *Harmony* was probably due to him having living plants of *Cephalotus follicularis* in tubs or boxes, and these would need careful attention on the voyage to prevent them dying. In this, Baxter evidently was successful for Brown (1832) recorded that "a plant brought also from King George's Sound in 1829 by Mr. William Baxter is now in flower in Mr. Knight's nursery". Baxter had also collected "numerous specimens [of *Cephalotus*] with ripe seeds" at the Sound and Brown used them to write about the morphology and affinities of the genus (Brown 1832).

Harmony reached Bahia on the northeastern coast of Brazil on 26 January 1830 and arrived in Portsmouth on 25 March (*Morning advertiser*, 27 March 1830, p. 3; *Morning post*, 27 March 1830, p. 3) and in Gravesend on 29

³⁰ This allusion to two "truffles" that Brown could cut and eat suggests that Baxter had had a recent opportunity to collect on Kangaroo Island. By using "truffle" Baxter probably only meant to convey the information that it was a fungus found underground, such as, for example, the sclerotia of *Laccocephalum mylittae* (the so-called Native Bread) (Web ref. 2) known to have been eaten by the Aboriginal people..

³¹ The only copy I have traced is in the Linnean Society of London; strangely, this was not noted by Harvey (1973).

March (*Lloyd's list*, 30 March 1830: p. 1). As noted above, Robert Brown recorded receiving "Plants Collected on the South West Coast of New Holland chiefly at, & near in the interior near King George's Sound" on 23 April 1830²⁸.

The horticulturist and writer, John Claudius Loudon (1783–1843) visited the Upper Clapton Nursery on 3 April 1830 and in a dated report published later in his *The gardener's magazine*, wrote that

Mr. Baxter who has been employed in Sydney for nearly seven years, chiefly on Mr. [John Bain] Mackay's account, has recently returned with a magnificent collection of specimens and seeds; some of which, we understand, are for other nurserymen, but the greater part, we believe, will be disposed of to Mr. Mackay (Loudon 1830a).

Some months later, Loudon (1830b) reported that Joseph Knight³² of the Exotic Nursery, King's Road, "has become the purchaser, at, it is said, 1500*l.* [£1,500³³] of the seeds and plants brought home from Australia by Mr. Robert [*sic*] Baxter [who] ... informed us that he had added sixty species³⁴ to the natural order Proteaceae". As noted, Brown listed²⁸ the pressed specimens he received from Baxter; many only had a generic name, but there were also indications for others of possible specific epithets, "Laxmannia exscapa" and "Bacteria exscapa", being two examples on the first page, neither name has ever been published. Evidently Brown was thinking about naming several after Baxter himself: *Petrophile*, *Isopogon*, *Banksia*, *Dryandra* and *Lysinema*.³⁵ In all Baxter handed over 53 "fascicles" of pressed specimens containing, by Brown's reckoning²⁸, 383 species and 7 "Incertae".

One month after his return to Britain, on 1

³² Australian Plant Names Index (APNI: Web ref. 5) data indicate that in contemporary horticultural publications Knight was credited with raising twelve novel species from Baxter's seeds, John Bain Mackay with six species, and Hugh Low with two species.

³³ Approximately equivalent to £127,700 or AUS\$ 233,500 today, an unbelievable amount.

³⁴ APNI data indicate that 74 specific epithets in Australian Proteaceae are typified by Baxter's material.

³⁵ In APNI, Brown is credited with only seven binomials commemorating William Baxter, all being in Proteaceae.

May, Baxter wrote to Robert Brown. This is the last of the extant letters, and it is an untidy mess compared with his previous letters. As it bears no franks the letter must have been hand-delivered to 17 Dean Street, Soho.³⁶

Dear Sir,

When I last had the pleasure of seeing you I forgot to mention to you that in naming the new Plants in my Herbarium I would be glad to have my friendship for Mr. Loudon of Bayswater Commented [*sic*] by giving a specific name & if possible in either of my favourit Genus Banksia or Dryandra – I have also to request that as you have on former Occasions done me the honour of adopting my Specific Names you would so far gratify Me by as to let the ~~fine~~ small fine leaved Banksia bear your name, as I have ever since I saw it called it by that name[.] I will call on you in the Course of a few days, & in the mean [*indecipherable*] remain yours

Will Baxter

John Claudius Loudon was commemorated in *Isopogon loudonii*, and Brown (1830: 8) did attribute the binomial to Baxter. Likewise, he attributed *Banksia brownii* to "Baxter in litt." (Brown 1830: 37).

A letter signed simply "H.", published in *The Times* (London) on 19 June 1830 (p. 3), regarding the "conduct of General Darling", reveals that Baxter had been closely connected to the notorious affair of Joseph Sudds, one of a pair of soldiers who, in 1826, while dressed in their uniforms, has stolen some calico in the hope of being discharged from the 57th Regiment. Instead of being discharged, the Governor of New South Wales, Sir Ralph Darling, ordered that the men should be stripped of their uniforms in public, placed in irons and then sent to a road gang. Sudds was already ill and died on 29 November 1826. According to this letter to the editor of *The Times*, "Baxter a botanical collector ... was in prison for debt, and in the same room with [Patrick] Thompson and Sadds [*sic*], and has much to say on the subject". Thus, while Sudds's death may provide the general date for Baxter's first period of imprisonment (November 1826) in Sydney, it should also be noted that, according to the passenger manifest of *Harmony*, a fellow

³⁶ NHM ms. B.74 (ix) (c): Moore and Beasley (1997: 268); Mabblerley (1986: 286n62).

passenger was “Thompson, a private soldier”, perhaps the companion of Sudds.

There is one further glimpse, and a degrading one, of Baxter in London, in Bow Street Police Court, on Tuesday, 27 July 1830. John Phelps and his wife were charged with having stolen 14 sovereigns from “a person named Baxter, who stated himself to be a botanist”. Newspaper accounts (*London courier & evening gazette* 28 July 1830, p. 4) of the court case report that the prisoners’ barrister

cross-examined the prosecutor [Baxter] at considerable length, and drew from him several strange admissions. He had been, he said, to Botany Bay, to collect plants for Mr. Knight, of Knightsbridge, and he was worth 20,000*l.* [£20,000]³⁷; but somehow or other, whenever he drew money, it was always stolen from him, and the next morning he found himself not worth “a dump”. He had several times provided himself with money to go down to Scotland, for the purpose of visiting his friends, but was always obliged to abandon his intentions, the fund which he had drawn for the purpose having been stolen from him. The night previous to this robbery he had passed in a house of accommodation in Lisle-street; but he is quite certain that no person there had robbed him, as he had taken the precaution of placing the sovereigns which he had about him in his cravat. He had lived for five days in another brothel in Lisle-street, the landlady of which has furnished him with a bill amounting to 40*l.* [£40] He admitted that he was in the habit of drinking pretty freely; but he was seldom drunk before dinner.

... The required bail was ... put in, and the prisoners were discharged.

In the *Morning advertiser* of Friday, 30 July, three days later, there was a legal notice (repeated in the issue of 31 July) from John Phelps.

To WILLIAM BAXTER, Botanist, late of Sydney’s Town, Botany Bay, and late a lodger to Mr. Phelps, of No. 9 Hart-street, Covent-garden. – Take Notice that unless you pay to me the amount of the

³⁷ Although Knight was said to have purchased Baxter’s seeds and plants for £1,500 (see note 33 above), this seems like a gross exaggeration.

Debt due to me for Board, Lodgings, &c., within fourteen days from the date hereof [29 July 1830], your Trunk, Clothes, &c., will be sold, and the amount applied towards payment of the said debt and costs due to me.

After this incident, William Baxter disappeared from contemporary documents. A small number of references to him occur in later horticultural and botanical works, but nothing that indicates the course of his life or career. He was not lionized and apparently was never encouraged to write an account of his adventures, in stark contrast to some of his near contemporaries such as Thomas and James Drummond, or Thomas Coulter (see Nelson and Probert 1994). The silence, particularly of W. J. Hooker, is remarkable.

When a plate illustrating *Chorizema henchmanii* was published in *Curtis’s botanical magazine* on 1 October 1837, W. J. Hooker designated Baxter as “the late”, without any comment. Likewise, that same year, Joseph Paxton (1837) wrote that “the late Mr. Baxter” had brought seeds of *Dillwynia glycinifolia* from New South Wales. And, J.C. Loudon (1840: 238) referred to Baxter as “the late” in May 1840. However, no record of Baxter’s death has been traced.

He may have returned to Sydney. The *Sydney herald* on 8 November 1831 reported a court case as “Baxter and Wife v. Piper, Campbell and Walker, Executors of Andrew Frazier”, but there is no indication that William Baxter was present in court.

Baxter’s plants in cultivation in Britain, 1824–1832

By August 1826, when Robert Sweet completed the first part of his two-volume work *Hortus Britannicus*, keen gardeners would have been aware of numerous novel Australian plants being grown by John Mackay; in retrospect many, but not all, of these can be linked to Baxter. Using the symbol ψ , Sweet marked numerous species signifying that these were “New plants from New Holland in Mr. Mackay’s Nursery, with the MS. names, not published.” These included *Banksia prostrata* and *Dryandra baxteri* (Sweet 1826: 350).

In the second edition, published in 1830 and edited by John Claudius Loudon, the annotation “*Ma. C.*” (Loudon 1830c: xi) indicated “*Mackay’s Catalogue*. Catalogue of the plants

cultivated in Mackay's nursery at Clapton" – this can only be the 1828 catalogue issued by Mackay³¹. Species in about 15 genera including *Acacia*, *Aotus*, *Callistemon*, *Calothamnus*, *Eriostemon*, *Gompholobium*, *Hakea*, *Pultenaea* and *Xerotes* were so tagged.

After Baxter's return to London bringing more seeds, Loudon was more explicit in a supplement to *Hortus Britannicus* (Loudon 1832), devoting a whole paragraph to Baxter's introductions in Joseph Knight's nursery:

The species to which this character (§) is prefixed are those which have been raised in the Exotic Nursery of Mr. Joseph Knight, King's Road, Chelsea, from seeds collected and brought home by Mr. Baxter. The names of these species have been verified and authenticated by Mr. Knight's very able and intelligent foreman, Mr. Alexander Scott, who, while he trusts that each may be found accurately denominated, nevertheless reminds us that Proteaceous plants are subject to great variation in foliage, in their progress upwards from a seedling state. Besides the above, Mr. Baxter's seeds have produced various other species of *Banksia* and *Dryandra*, and species of *Petrophila*, *Oxylobium*, *Mirbelia*, *Gompholobium*, *Hovea*, *Burtonia*, *Pultenaea*, *Brachysema*, *Kennedyia*, *Daviesia*, &c.: many of which, when farther advanced in growth and age, may prove to be new species.

Among the tagged plants were *Banksia brownii* and *B. baxteri*, as well as *Beaufortia splendens*.

Acknowledgements

Newspapers were searched using online resources especially of the British Newspaper Archive (Web ref. 3) and the National Library of Australia (Trove) (Web ref. 4), and at the Cambridgeshire Libraries. Other data searches were facilitated by Find My Past (United Kingdom) (Web ref. 5), Ancestry (United Kingdom) (Web ref. 6) and the Australian Plant Names Index (Web ref. 7). I am grateful for the assistance of the librarians and Liz McGow (Archivist) of the Linnean Society of London, Anna Monro (APNI), Kat Harrington and Saffron Mackay (Archives, Royal Botanic Gardens, Kew), and Dr Philip Short, Dr Pam Catcheside, Prof. Hugh Torrens and Prof. David Mabberley.

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Coming conference



Mind the Gap
2018



Brisbane ASBS conference update

Registrations and Abstracts are now open for the 2018 ASBS conference 'Mind the Gap!' (Web ref. 1).

Be sure to book before mid-September to make the most of the early bird discount. Students be sure to renew your membership if you haven't already so as you will be eligible to apply for the ASBS student assistance (Web ref. 2) and the student prizes.

This year as well as oral presentations, we will

have posters with lightning talks in the symposium themes of:

- Information Gaps in the age of Genomics
- Informed decision making — conservation genetics of threatened flora
- Insights from long ago: palaeobotany informing systematics
- MacPherson–Macleay, other gaps and overlaps: biogeography of Australasia
- Phylogenetic progress

- Sharing botanical wealth: engagement, benefit sharing and the Nagoya Protocol
- Other/General Systematics

Workshop

‘How to provide effective peer review of taxonomic manuscripts and Flora treatments’

To the uninitiated, taxonomic papers and Flora accounts look simple to prepare but this belies reality—as is often the case with taxonomy itself, the devil is in the detail.

Editors from several Australian journals and the Australian Biological Resources Study (ABRS) have joined forces to present a workshop on how to review (and to some extent write) taxonomic manuscripts and *Flora of Australia* treatments. This is a *must attend* for anyone starting out in taxonomy or those of us needing to brush up our skills.

At the workshop you will receive training on:

- what to look for when assessing taxonomic research
- writing review reports to meet the needs of the editor and the author/s
- writing and reviewing taxon descriptions
- how to review keys and use KeyBase, and
- how to review treatments on the new Flora of Australia digital platform
- You will also be alerted to some of the things that can go wrong if you don't adhere to the International Code of Nomenclature.

Workshop contact: Juliet Wege
Nuytsia Managing Editor
nuytsia@dbca.wa.gov.au

Field Trip to Springbrook

Continuing our Mind the Gap theme, the 2018 ASBS conference field trip will take us to Springbrook and to the precipice of the remains of the Mt Warning caldera. The ancient lava flows of this giant shield volcano are swathed in bryophyte-laden subtropical and temperate rainforests, criss-crossed by swift-running streams. These closed communities are flanked by wet sclerophyll forests

of towering Eucalypts and Brush Box, possessing a wide variety of understorey vegetation from tall shrub lands to heath communities. The many lookouts and walking tracks of the area, provide ample scope for visitors to experience a wide range of plant communities atop the basalt and rhyolite slopes and ridges. As Springbrook has amongst the highest rainfall in south-east Queensland, participants should come prepared with a rain jacket and/or umbrella. In December, temperatures can be warm to hot during the day and severe thunderstorms are also possible.

If you intend collecting specimens, please ensure you have obtained a permit to do so from the Queensland Department of Environment and Science on-line (Web ref. 3). Apply early—at least eight weeks in advance is recommended.

This excursion will depart the Queensland Herbarium at 7:30 am and return is estimated to be around 9:30 pm. Please ensure you have accommodation booked for this evening. *Get in early as numbers are limited.*

BRI Herbarium visits

If you would like to visit the Queensland Herbarium before, during or after the conference, please email the Queensland.Herbarium@qld.gov.au so we can facilitate your visit.

Contact address: Queensland.Herbarium@qld.gov.au

Further updates

Keep an eye on the ASBS facebook page and newsletters for more updates as the year progresses. We look forward to seeing you all in Brisbane.

Web references

1. <https://systematics.ourplants.org/registration>
2. www.asbs.org.au/asbs/student.html
3. <https://www.ehp.qld.gov.au/licences-permits/plants-animals/research-education/>

Facebook page: [@ASBSbrisbane2018](https://www.facebook.com/ASBSbrisbane2018)
ASBS conference organising committee
(<https://systematics.ourplants.org/>)



ABRS report

Staff updates

Peri Bolton joined the ABRS in March 2018 on a short-term project assisting with establishing governance and workflow processes for managing content on the new digital Flora of Australia platform (FoA, Web ref. 1). Peri was previously an Endeavour Postdoctoral Fellow at East Carolina University, USA. Tony Orchard continues to provide volunteer associate editorial support for the FoA.

Flora of Australia

The ABRS continues to update and add new information to the FoA, including the alignment of taxon concepts with the *Australian Plant Census*. Phillip Kodela is busy revising the FoA *Acacia* treatment, with assistance from Tony Orchard and edits provided by Bruce Maslin. This is a substantial task and is helping inform development of the platform and new Flora Contributor Guidelines. As well as nomenclatural revisions and the addition of taxa published since the release of the hardcopy FoA in 2001, we are taking the opportunity to update and incorporate information on distributions, conservation status, ecology and uses, as well as expanding bibliographies and making links to relevant web information resources.

The ABRS is grateful for new contributions from botanists including Todd McLay (Postdoctoral Fellow, CSIRO), who is enthusiastically working on *Hibiscus*, based on his own research and the previous work of Lyn Craven. Barry Conn is kindly reviewing and editing a draft Verbenaceae manuscript, previously submitted to the ABRS for publication in the FoA.

ABRS is encouraged by a number of botanists who have made contact in recent months, keen to be involved. One of the great strengths of the new FoA platform is its ability to be accessed via a web portal allowing authors, editors and peer reviewers direct access to descriptions and images. Updates can now be made, reviewed and published within a relatively short timeframe. Please email abrs@environment.gov.au to provide the ABRS with any feedback about the FoA content and platform functionality, or if you would like to contribute any new taxon profiles, or update existing descriptions.

Bush Blitz

In March 2018, the Minister for the Environment and Energy, the Hon Josh Frydenberg MP, announced that his department and BHP would continue to support Bush Blitz for a further 5 years. The scale of the program will be reduced with 15 expeditions coordinated over the five years. Bush Blitz will however see an increase in its education and community outreach component with an added emphasis on supporting land managers.

The two shortlisted names for the Bush Blitz spider naming competition (Jumping Fortini and Ginger Meggs) are currently up for public vote via the Bush Blitz Instagram Page. Voting will close on 1 June. Go to the Bush Blitz Instagram site (Web ref. 2) to find out more and place your vote!¹

Grants

The 2018–19 National Taxonomy Research Grant Programme (NTRGP) Research Grants and Capacity-Building Grants rounds closed on 2 November 2017. Sixteen flora and fauna projects were recommended by an independent expert panel and approved for funding. Projects will commence in July 2018. The 2019-20 round is likely to open to applicants in September 2018.

The NTRGP Student Travel Grants round closed on 23 April 2018. Fourteen student travel plans have been approved for grant funding. These grants provide financial support to postgraduate students studying at Australian institutions to travel to a national or international conference or workshop relevant to systematics or taxonomy. More information about the NTRGP is available on the ABRS website (Web ref. 3).

Web references

1: www.ausflora.org.au

2: www.instagram.com/bushblitz/

3: www.environment.gov.au/science/abrs/grants/

Zoe Knapp & Anthony Whalen

ABRS

May 2018

¹ Voting has closed. Jumping Fortini won the vote; the name honours Western Australian teacher and microbiologist Ellen Fortini. *Eds.*

News

Greg Keighery retires

Greg Keighery, stalwart of many aspects of Western Australian botany, has retired from the Western Australian Public Service. Greg started his working life with Kings Park in March 1974, following a B.Sc. at University of Western Australia. In March 1984 he joined the then Department of Fisheries and Wildlife as a Survey Botanist and Research Officer, morphing into a Research Officer with the new Department of Conservation and Land Management (CALM) in 1987, later attaining the role of Senior Principal Research Officer with the same department in 2002. Greg was still with this same department on his retirement but there had been several changes in name with changes in government, amongst them DEC, DPAW and DBCA. His botanical publications have been many in formats and subjects in this time, ranging across systematics, weeds and biological surveys and he and his wife, fellow botanist Bronwen, have also been heavily involved with the community through their involvement with the WA Wildflower Society. Their present project, *The Morcombe and Keighery eGuide to the Wildflowers of WA* (Web ref.), is apparently imminent, but we hasten to add that the images of them on this site are presumably placeholders. We are hoping that some of Greg's associates might provide us with more detail on his botanical life, particularly those who have spent time in the field with him.

Web ref.: <http://flowers.wildaustralia.info/#releasedate>

Congratulations Jessie Prebble

In 1989 the Zonta Club of Wellington established the biennial Zonta Science Award to encourage young women to enter the field of science. The first award was made in 1990 (Web ref. 1) and on 7th June 2018 the 15th award was presented

to Jessie Prebble, plant systematist at Manaaki Whenua – Landcare Research. A recipient in 2012 of an Hansjörg Eichler Research Award, Jessie was chosen from 33 other early career women scientists! Heidi Meudt, justly proud co-supervisor of Jessie's Honours, M.Sc. and Ph.D. degrees, provided the following links.

Web references

1. www.scoop.co.nz/stories/SC1806/S00017/landcare-research-scientist-wins-zonta-science-award.htm
2. <https://www.facebook.com/GovernorGeneralNewZealand/posts/1933038710103499>
3. <https://zonta.org.nz/wp-content/uploads/2017/09/ALBUM-OF-WINNERS-1990-2016.pdf>
4. www.radionz.co.nz/national/programmes/afternoons/audio/2018648447/zonta-science-award-winner-jessie-prebble

Queen's Birthday 2018 Honours List

Congratulations are also due to two other of our ASBS members (Web ref.):

- Barbara Briggs (AM) for “significant service to science and research as a botanist, to documenting Australian flora, and to professional societies”
- Dean Nicolle (OAM) for “service to the conservation of Australian eucalypts”

A founding member of ASBS, Barbara is a Past President of the Society and was Burbidge medallist in 2005, while Dean was a recipient of Hansjörg Eichler Research Award in 1999.

Web ref. <https://www.gg.gov.au/queens-birthday-2018-honours-list>

International Mycological Society meeting in Puerto Rico, July 16-21, 2018

The 11th International Mycological Congress is being held in Puerto Rico in July and the packed programme across a broad range of topics is available on the web for those who

Australasian Systematic Botany Society Inc.

Marlies Eichler Postdoctoral Fellowship

Applications close on 31st July 2018

We invite applications from members.

For eligibility and other information see the ASBS website
www.asbs.org.au/awards/marlies-eichler-postdoc.html

or contact Vice-President Dan Murphy (vicepres.asbs@gmail.com)

have an interest in fungi (Web ref.). Of interest is the controversy which seems to be splitting the fungal systematics community at the moment on just how to treat taxa known only from DNA sequences. Hawksworth et al. (2016) proposed that a DNA sequence be acceptable as the type of a name but a large number of mycologists have opposed this view and their opinion has been published recently (Zamora et al. 2018). The outcome will be of interest to all systematists.

References

- Hawksworth, D.L., Hibbett, D.S., Kirk, P.M. & Lücking, R. (2016). (308–310) Proposals to permit DNA sequence data to serve as types of names of fungi. *Taxon* 65(4): 899–900. <http://dx.doi.org/10.12705/654.31>
- Zamora, J.C. & 410 other authors (2018). Considerations and consequences of allowing DNA sequence data as types of fungal taxa. *IMA Fungus* 9(1): 167–175 (2018). <https://doi.org/10.5598/imafungus.2018.09.01.10>
- Web ref.: <http://imc11.com/>

Full text search in Biodiversity Heritage Library

Not so long ago having access to a facility like the Biodiversity Heritage Library was just a dream. Now we take it for granted and only get frustrated when an obscure piece of literature is not available through it. Occasionally it had crossed my mind that being able to search in individual books would be extremely helpful and so the appearance of a yellow “Search Inside” on the page in the last month or so is another dream come true. You can read more about it on their blog.¹

Web ref. <https://blog.biodiversitylibrary.org/2018/05/announcing-full-text-search-on-bhl.html>

GLOVAP controversy

In the last issue of the Newsletter we pointed to the controversial Global Flora Special Edition published by Plant Gateway in which a very large number of name changes for vascular plants (e.g. all *Grevillea* to *Hakea*) were published. At that time there had been very little visible reaction in the botanical press but since then the American Society of Plant Taxonomists has issued a lengthy statement on Facebook.

Web ref. <https://www.facebook.com/asptsystbot/posts/10155458519005878>

¹ We must mention that all issues of our Newsletter are now available fully-scanned and searchable on the ASBS website. More next issue. *Eds.*

Bryophyte workshops

The Natural History Museum, London, has for the last two years offered an annual week long course conducted by experts in Taxonomic Principles and Tools in Botanical Research (Web ref. 1). It was presumably one of these, with mosses as the subject, which was reviewed so positively in *Botany One* recently (Web ref. 2).

Remember that the *XIV Australian Bryophyte Workshop* is being held on 23–28 September (see *ASBS Newsletter* 174) this year at Dorroughby and you too can be enthused in a similar way.

Contacts: Andrew Franks andrew@oberonia.com.au
Alison Downing alison.downing@mq.edu.au

Web references

- 1: www.nhm.ac.uk/content/dam/nhmwww/our-science/courses-students/short-courses/Taxonomic-principles-tools-course-leaflet-2018.pdf
- 2: <https://www.botany.one/2018/05/amazing-moss-and-how-to-identify-it/>

New rules for loan of types from the Paris Herbarium

As a result of the mistake by Australian Quarantine last year all loans of type specimens from Muséum national d’Histoire naturelle (P and PC) have ceased, except for exceptional circumstances. Should exceptional circumstances be recognised, and this will require persuasive argument, then type specimens will have a declaration of their value, the shipment will be insured and a private courier service will be used; costs for this will be borne by the institution requesting the loan.

Reference. *Taxon* 67: 467 (2018); <https://doi.org/10.12705/672.35>

National Herbarium of NSW on the move

The NSW Government recently announced (Web ref. 1, 2) a \$60 million investment in a new facility, the Centre of Innovation in Plant Sciences, which will house the botanical collection of the National Herbarium of New South Wales (NSW). The new facility is to be based in Western Sydney at Mount Annan next to the PlantBank facility. Clearly this will have a substantial impact on the operations of the Herbarium, at least until the end of 2021.

Beginning in January 2019 access to the Herbarium collections will be restricted and visitors will not be accommodated from July 1, 2019. Requests for loans, images, and destructive sampling made after July 2019 will not be actioned and any such requests should be resubmitted early in 2022.

NSW has requested the immediate return of any

outstanding loan materials for processing and imaging at this time.

Specific requests for visitation or possibility of materials being loaned should be sent to the Collections Manager, Dr Shelley James (*shelley.james@rbgsyd.nsw.gov.au*), as soon as possible to assess and accommodate ongoing research needs.

Web references

- 1: [https://www.rbgsyd.nsw.gov.au/stories/2018/\\$60-million-win-for-our-vital-botanic-sciences](https://www.rbgsyd.nsw.gov.au/stories/2018/$60-million-win-for-our-vital-botanic-sciences)
- 2: <https://www.theherald.com.au/story/5445657/new-sydney-herbarium-to-house-cook-plants/>

New funding for Royal Botanic Gardens Victoria

A funding boost of \$27 million over five years to revitalise Royal Botanic Gardens Victoria, plus ongoing support after that of \$5 million per year has just been announced by the Victorian Minister for Energy, Environment and Climate Change and Minister for Suburban Development, the Hon. Lily D’Ambrosio. In his post on ASBS Facebook, Director Tim Entwisle indicated that the ongoing \$5 million per year would be used “to employ 18 new permanent staff (in all parts of the organisation), fix crumbling infrastructure and run new public programs”. There will be two new science positions, a Bioinformatics Scientist and a Biodiversity Services Manager, and all existing positions will be fully funded.

Web ref.: <https://www.rbg.vic.gov.au/news/27-million-to-revitalise-royal-botanic-gardens-victoria>

Tasmanian Botanical Gardens 200 years old

The Royal Tasmanian Botanical Gardens is this year celebrating its 200th year and to mark the occasion they have released a new limited edition

coffee-table book (see New Books, p. 42).

Web ref. <https://gardens.rtbg.tas.gov.au/>

Kew Temperate House re-opened on 5th May

After a closure of five years and a bill of £41 million for refurbishment, the Temperate House at Kew has reopened and is the subject of a lot of new activities (Web ref. 1). There is no shortage of coverage of the event in the media (e.g. Web ref. 2), but for an Australian perspective see Tim Entwisle’s 8th May blog (Web ref. 3).

Web references

- 1: <https://www.kew.org/the-worlds-greatest-glasshouse>
- 2: <https://www.theguardian.com/science/2018/may/03/kew-gardens-temperate-house-reopens-after-restoration>
- 3: <http://talkingplants.blogspot.com/>

New app for NZ native trees

This application for the identification of New Zealand trees has apparently been prepared by applied ecologists at the Auckland University of Technology. I was able to download it readily and it was easy to use but I can’t really assess the outcomes, apart from noting that only one character state seemed to be able to be selected when there are a number to choose from. Perhaps a local or a visiting botanist might provide some further *in situ* comment.

Web references

- 1: <https://aenz.aut.ac.nz/nz-tree-app/tree-app-project>
- 2: <https://news.aut.ac.nz/news/nztrees-app-puts-natives-on-the-map>
- 3: <https://www.radionz.co.nz/national/programmes/afternoons/audio/2018648257/nz-native-trees-there-s-an-app-for-that>

Exhibitions

Beckler’s Botanical Bounty. The flora of Menindee – an Art Gallery of Ballarat exhibition

Barry J Conn
tugiri1975@yahoo.com.au

Unfortunately now closed, the Beckler’s Botanical Bounty exhibition presented the illustrations of twenty or so botanical artists¹ from Bendigo and Melbourne. They were inspired by the 150th anniversary of the Victorian Exploring Expedition, better known as the ‘Burke and Wills Expedition’.

¹ The number of artists involved with the “Beckler’s Botanical Bounty” project is cited as either twenty or twenty-six.

The fate of the explorers Robert O’Hara Burke and Williams Wills on the Victorian Exploring Expedition in 1860 is well-known. What is less well known is the considerable scientific legacy left by the scientists who joined the Expedition – surveyor, astronomer, meteorologist, geologist, mineralogist, zoologist and botanist (Gott 2012). This last role was fulfilled part-time by medical

officer and botanical collector, Dr Hermann Beckler (Anonymous 2018, October 2017).

Beckler resigned in dismay at Burke's erratic leadership just one month into the expedition (Anonymous October 2017), but remained with part of the expedition party in the area of Menindee, on the Darling River (New South Wales). Despite increasingly difficult conditions, Beckler managed to document some 420 taxa from Yanga Lake to 'Kurliatto Creek' (Anonymous October 2017). During this time, Beckler collected 120 plant species from near Menindee and sent these collections to Ferdinand von Mueller. His original plant collection is now housed at the National Herbarium of Victoria (MEL) (Anonymous October 2017).

The "Beckler's Botanical Bounty" (BBB) project has been an eight-year endeavour (since 2010) by several botanical artists, led by Mali Moir and with generous help from botanist Andrew Denham. They visited Beckler's collecting areas around Menindee to locate, collect, preserve and illustrate the same 120 plants species that Beckler collected from 1860–1861. The botanical collections made by the BBB project have been lodged at MEL and NSW.

The works provide an accurate representation of the plants studied, as well as revealing the different style of each artist (for example, Hudson 7 March 2018). The exhibition of this collection of artwork includes a range of additional materials that are integral to the project. There are working drawings and diaries from many of the artists. The exhibition also includes a short introductory video that explains the BBB project and provides a glimpse of this semi-arid landscape – and a glimpse it is because the images of the plants presented skip through much too quickly for anyone interested in these botanical delights!

Sarah Hudson (2018), a Ballarat artist, commented

that the "exhibition is not just about art, but also science, history and country." The exhibition includes cabinets of objects that provide 'behind-the-scenes' insights into these four themes. For example, collecting books, painting tools used to create one of the art works, plus sketchbooks, colour charts and working drawings, which show the preliminary work before the painting were started. It was nice to see web pages from PlantNET (Conn 1999) of *Enneapogon avenaceus* (Lindl.) C.E.Hubb. by Surrey W.L. Jacobs and Sarah M. Hastings on display.

References

- Anonymous (2018) 'Beckler's Botanical Bounty Exhibition. February 25th to 27th May 2018.' In. <https://becklersbotanical.weebly.com/>
- Anonymous (October 2017) 'Botany of the Burke and Wills expedition.' In. (Royal Botanic Gardens Victoria: South Yarra) <https://www.rbg.vic.gov.au/science/herbarium-and-resources/national-herbarium-of-victoria/botany-of-the-burke-and-wills-expe>
- Conn BJ (1999) 'The PlantNET system.' In. (National Herbarium of New South Wales: Sydney) <http://plantnet.rbg.vic.gov.au/hist.html>
- Gott B (2012) The science of the Burke and Wills expedition, 150 years on. Book Review of 'Burke & Wills. The Scientific Legacy of the Victorian Exploring Expedition'. Edited by E.B. Joyce and D.A. McCann (2011) (CSIRO Publishing, Melbourne). *Australasian Systematic Botany Society Newsletter* 150: 57–59. www.asbs.org.au/asbs/newsletter/pdf/12-march-150.pdf
- Hudson S (2018) 'Botanical exhibition celebrates Burke and Wills at Art Gallery of Ballarat.' In. *Country Living, Weekly Times* [7 March 2018]. (News Corp Australia) <https://www.weeklytimesnow.com.au/country-living/botanical-exhibition-celebrates-burke-and-wills-at-art-gallery-of-ballarat/news-story/577ca41e8af861e458581541209e9c7d>

Herbaria in a global world

The "En Tibi" Herbarium

"En Tibi Perpetuis Ridentum Floribus Hortum... [Here for you a smiling garden with everlasting flowers].

This is the Latin inscription on this leather-bound herbarium from Italy. The 'En Tibi herbarium' contains 477 specimens, probably collected around Bologna. The watermark of the paper dates in the period 1550–1555 and the paper was made in

Florence or Bologna. This herbarium is therefore one of the oldest collections of dried plants compiled from a scientific perspective." [From the *Naturalis* website (Web ref. 1)].

An analysis of the contents of this herbarium consisting of 455 taxa in 97 families has just been published (Stefanaki et al. 2018) and the En Tibi herbarium was also used by Stech et al (2018) as part of their account of bryophytes and

lichens in 16th Century herbaria. Images of all 477 specimens in the herbarium have been made available through the *Naturalis* website (Web ref. 1). This is all part of a five-year project to throw open the doors of the Leiden “treasure rooms” (Web ref. 2).

Prof.dr. Tinde van Andel’s (2017) lecture on this topic should be required reading for those who have ever doubted the value of what is held in herbaria. By making these old collections digitally available the specimens are accessible globally and there have been huge add-on benefits, not just for botanists, but also for those people who occupy the lands from which the specimens were gathered. Inspiring, but also requiring a lot of collaborative effort!

References

- Stefanaki, A., Thijsse, G., van Uffelen, G.A., Eurlings, M.C.M., & van Andel, T. (2018). The En Tibi herbarium, a 16th century Italian treasure, *Botanical Journal of the Linnean Society*, boy024, <https://doi.org/10.1093/botlinnean/boy024> (Abstract only free).
- Stech, M., van Andel, T., Aptroot, A., Bertin, A. & Stefanaki, A. (2018) Bryophytes and lichens in 16th-century herbaria, *Journal of Bryology* 40:2, 99–106, <https://doi.org/10.1080/03736687.2018.1447304>
- Van Andel, T.R. 6 January 2017. Open the treasure room and decolonize the museum. Inaugural lecture, Clusius chair of History of Botany and Gardens, Leiden University. <https://www.universiteitleiden.nl/binaries/content/assets/science/ibl/oratie-van-andel.pdf>
- Web ref. 1: http://biportal.naturalis.nl/result?theme=en_tibi&language=en
- Web ref. 2: <https://www.universiteitleiden.nl/en/research/research-projects/science/ibl-unlocking-the-doors-of-the-leiden-treasure-rooms>

Herbarium specimens in climate change studies

This paper (Lang et al. 2018) on the uses of herbarium specimens for studying global climate change is a preprint and has yet to be peer-reviewed; whether it should be included at this stage is arguable, but it does represent a perspective from a German laboratory. Herbarium specimens represent preserved responses to environmental change and samples existing in global herbaria from the 16th century on provide a much longer time frame than usual for studying the effects of climate change. Their summative Figure 2 with a herbarium sheet surrounded by all of the different data that can be obtained from a

specimen and how this feeds into measurements of pollution, habitat change, climate change and biological invasions would be a good basis for convincing the greater community of the worth of herbaria.

Reference

- Lang, P.L.M., Willems, F.M., Scheepens, Hernán, J.F., Burbano, H.A. & Bossdorf, O. (2018). Using herbaria to study global environmental change. *PeerJ Preprints*. <https://peerj.com/preprints/26886/>

Herbaria as hubs for global change research

While herbarium data has been used extensively to study impacts of climate change and invasive species the authors (Meineke et al. 2018) point to other information that is less commonly accessed from herbarium specimens for the study of ecological processes. They also note that fungal specimens, less commonly used, can also provide similar information to vascular plant specimens. Their stated goal is to position “herbaria as hubs for global change research” and their list of research questions for which herbaria can provide data (each supported by a reference) is informative. Another such list of potential applications for herbarium specimens was provided by Heberling & Isaac (2017).

References

- Meineke, E.K., Davis, C.C. & Davies, T.J. (2018). The unrealized potential of herbaria for global change biology. *Ecological Monographs* 2018. <https://doi.org/10.1002/ecm.1307> (Abstract only free)
- Heberling, J.M. & Isaac, B.L. (2017). Herbarium specimens as exaptations: new uses for old collections. *American Journal of Botany* 104(7): 963–965. <https://doi.org/10.3732/ajb.1700125>

Yet another plea for vouchers

No further comment needed!

- Ref. Funk, V.A., Edwards, R. & Keeley, S. (2018). The problem with(out) vouchers. *Taxon* 67: 3–5.

Collections: past and future

A great summary of the changes that have occurred in collections-based science since the 17th century is provided in a paper (Funk 2018), which had its origins in a keynote paper presented by the author at the 2015 ASBS conference. The paper has evolved markedly since that time, and the interesting part is the review of changes in the recent past and the sort of big evolutionary questions which may be able to be answered as a result of phylogenomics. Despite all of this

specimen-based research, however, the challenges to the existence of our biological collections still remain. Some suggestions are made for how this may be addressed in the future.

Reference

Funk, V. (2018). Collections-based science in the 21st Century. *Journal of Systematics and Evolution* 56(3): 175–193. <https://doi.org/10.1111/jse.12315>

Deaths

Vale Bruce Sampson (1937–2018)

Ilse Breitwieser and Rob Smissen provided the following sad news.

Bruce Sampson, known as F.B. Sampson in botanical authorships, passed away peacefully on May 11th 2018. Bruce was a Reader in Botany at Victoria University in Wellington and retired about 20 years ago. He continued to be active and to publish. His main research interest was the evolution of basal angiosperms, but he had wider interests. For example, he wrote a book on early New Zealand botanical art (Web ref.) and one on important seed plants grown in Thailand. He was one of our New Zealand botanists who was probably more known internationally than nationally.

Bruce was an exceptional mentor and had significant influence on Rob's as well as on Ilse's career and life.

He had his 80th birthday last November and is survived by his wife Viv and his two sons John and Neil.

Web ref.: <http://nzetc.victoria.ac.nz/tm/scholarly/name-122574.html>

Vale John La Salle (1951–2018)

It was a shock to hear that John La Salle, Director of the Atlas of Living Australia (ALA) for the last five years, died in a car accident near Tumut, NSW, on May 27th 2018. Before taking up the position at ALA John had been Director of the National Insect collection in Canberra from 2001 to 2012. Prior to this he had worked at the Natural History Museum in London.

He was born in California and was awarded his Ph.D. in Entomology from the University of California Riverside in 1984. His area of expertise was the taxonomy of parasitic wasps.

See Darren Crayn's words on behalf of ASBS on p. 1.

Web references

1. <https://www.ala.org.au/blogs-news/vale-dr-john-la-salle/>
2. <https://www.canberratimes.com.au/national/act/vale-dr-john-la-salle-1951-2018-20180615-p4zlok.html>
3. <http://cba.anu.edu.au/news-events/vale-john-la-salle>
4. <https://people.csiro.au/L/J/John-Lasalle.aspx>

Items of interest

The disappearance of flying insects

Late last year a group of amateur entomologists in Germany published the results of their long term study into flying insect biomass (Hallmann et al., 2017). Over the last 27 years the group, the Entomological Society Krefeld, has recorded a 76 percent decline in the total seasonal biomass of flying insects netted at 63 protected locations in Germany. In midsummer, when these insects are most numerous, the decline exceeded 80 percent. The authors rule out habitat type and changes in weather and land use as contributing factors, suggesting that it is possibly caused by "agricultural intensification". The ramifications

of these findings are discussed in two popular articles, one a *New York Times* opinion piece (Web ref. 1) and the other Nigel Chaffey's *Botany One* piece at Web ref. 2.

References

Hallmann, C. A., Sorg, M., Jongejans, E., Siepel, H., Hofland, N., Schwan, H., Stenmans, W., Müller, A., Sumser, H., Hürren, T., Goulson, D. & de Kroon, H. (2017). More than 75 percent decline over 27 years in total flying insect biomass in protected areas. *PLOS ONE*, 12(10), e0185809. <https://doi.org/10.1371/journal.pone.0185809>

Web ref. 1: <https://www.nytimes.com/2018/05/26/opinion/sunday/insects-bugs-naturalists-scientists.html>

Web ref. 2: <https://www.botany.one/2018/03/flying-insects-plummet/>

Life cycles disrupted by climate change

It doesn't take much to disrupt an ecological cycle. Here are some that have been commented on recently in the American and British Press (Web ref. 1 & 2).

Web references

1. <https://www.nytimes.com/2018/04/04/climate/animals-seasons-mismatch.html>
2. <https://www.theguardian.com/environment/2018/apr/05/climate-change-threatens-rare-british-orchid-that-tricks-bees-into-mating>

Modelling and data analysis preferred over field work

An analysis of publications in the conservation literature from 1980 to 2014 indicates that fieldwork-based investigations have reduced significantly. Fieldwork-based publications have decreased by 20% while those based on modelling and data analysis have risen by 600% and 800% respectively. More highly cited conservation science journals have been found to publish a

lower number of fieldwork based studies than lower ranked journals. A cause for concern?

Reference

Ríos-Saldaña, C.A., Delibes-Mateos, M. & Ferreira, C.C. (2018). Are fieldwork studies being relegated to second place in conservation science? *Global Ecology and Conservation* 14: e00389; <https://doi.org/10.1016/j.gecco.2018.e00389>

How to design an award-winning conference poster

Great advice on how you might design your poster for the next ASBS conference or anywhere else.

Web ref. <http://blogs.lse.ac.uk/impactofsocialsciences/2018/05/11/how-to-design-an-award-winning-conference-poster/>

... and combine it with an eye-catching abstract

Web ref. <http://blogs.plos.org/blog/2018/06/07/building-a-great-scientific-abstract-a-quick-checklist/>

New books

Aboriginal biocultural knowledge in south-eastern Australia. Perspectives of early colonists

By Fred Cahir, Ian Clark, Philip Clarke

CSIRO Publishing; May 2018.

ISBN: 9781486306114 (pbk), 360 pp, 245 x 170 mm; \$ 69.95AU

ISBN: 9781486306121 (ePDF); ISBN: 9781486306138 (ePUB) e.g. Kindle edn \$53:26AU

<https://www.publish.csiro.au/book/7558/>

Aboriginal Biocultural Knowledge in South-eastern Australia is the first book to examine historical records from early colonists who interacted with south-eastern Australian Aboriginal communities and documented their understanding of the environment, natural resources such as water and plant and animal foods, medicine and other aspects of their material world. This book provides a compelling case for the importance of understanding Indigenous knowledge, to inform discussions around climate

change, biodiversity, resource management, health and education. It will be a valuable reference for natural resource management agencies, academics in Indigenous studies and anyone interested in Aboriginal culture and knowledge. [Publisher's Blurb]

Recovering Australian threatened species. A book of hope

Edited by Stephen Garnett, Peter Latch, David Lindenmayer, John Woinarski
CSIRO Publishing. March 2018

ISBN: 9781486307418; Paperback 360 pp., | 245 x 170 mm; AU \$59.95

ISBN: 9781486307432 eBook e.g. Kindle edn \$41:95

<https://www.publish.csiro.au/book/7705/>

Australia's nature is exceptional, wonderful and important. But much has been lost, and the ongoing existence of many species now hangs by a thread. Against a relentless tide of threats to our biodiversity, many Australians, and government and non-government agencies, have devoted

themselves to the challenge of conserving and recovering plant and animal species that now need our help to survive. This dedication has been rewarded with some outstanding and inspiring successes: of extinctions averted, of populations increasing, of communities actively involved in recovery efforts. The book includes 35 case studies dealing with threatened plants, invertebrates, fish, reptiles, birds and mammals.
[Publisher's blurb]

The Gardens: Celebrating Tasmania's botanical treasure 1818–2018

Royal Tasmanian Botanical Gardens. 2018.

\$24.95AU

<https://www.tasmap.tas.gov.au/do/category/RTBG200>

The Royal Tasmanian Botanical Gardens is 200 years old this year (Web ref.) and to mark the occasion they have released this limited edition “coffee table” book filled with contributions and recollections from the public. Profits from the sale of the book are dedicated to fund the Tasmanian Seed Conservation Centre (“The Seedbank”).

Web ref.: <https://gardendrum.com/2018/03/30/botanic-history-in-tasmania/>

The rise of yeast: how the sugar fungus shaped civilization

By Nicholas P. Money

Oxford University Press. 2018

ISBN: 9780198749707 (Hdback), 224 pp, 216x135mm; c. \$50AU. eBook available.

<https://global.oup.com/academic/product/the-rise-of-yeast-9780198749707>

Nigel Chaffey's review of an earlier book on fungi together with reference to other works by Professor Money were mentioned in the last issue of the newsletter. Here is another book by the same author with another review by Chaffey. There is a google preview available of the book which gives a good insight into its contents.

Web references

1: <https://www.botany.one/2018/04/how-a-microbe-moulded-civilisation/>

2: https://books.google.com.au/books/about/The_Rise_of_Yeast.html

The wasp and the orchid: the remarkable life of Australian naturalist Edith Coleman

By Danielle Clode

Picador. 2018

ISBN: 9781760554286; 432 pp.

<https://www.panmacmillan.com.au/9781760554286/>

There are a myriad of reviews of this book (e.g., Web ref. 1, 2) about the more or less forgotten Mrs Edith Coleman (1874–1951), writer on orchids, particularly for the *Victorian Naturalist* and whose orchid collections reside in the herbaria of MEL, NSW, AD and PERTH. She was the first woman to be awarded the Australian Natural History medallion in 1949.

Web references

1: <https://australiascience.tv/researcher-rediscovered-a-great-forgotten-australian-woman-of-science/>

2: www.abc.net.au/radio/programs/conversations/danielle-clode/9602044

The songs of trees: stories from Nature's great connectors

By David George Haskell

Viking. 2017

ISBN 9780525427520 (HB); ISBN 9780698176508 (ebook)

<https://www.penguinrandomhouse.com/books/317034/the-songs-of-trees-by-david-george-haskell/9780143111306/>

Mentioned in the press with comparisons to Rachel Carson, there are links to two reviews below which may help you decide whether you want to pursue this topic further.

Web references

1: <https://www.brainpickings.org/2017/12/08/the-songs-of-trees-david-haskell/>

2: <https://www.theguardian.com/books/2017/jul/07/songs-of-trees-david-george-haskell-review>

Identification slips

On p. 38 of the last issue of the Newsletter (174) the person identified as Kirk Johnson

is Jim Basinger (now of the University of Saskatchewan).

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Edited by Helen Hewson, 1987

This Newsletter issue includes the reports from the February 1986 Boden Conference on the "Systematic Status of Large Flowering Plant Genera". The reports cover: the genus concept; the role of cladistics in generic delimitation; geographic range and the genus concepts; the value of chemical characters, pollination syndromes, and breeding systems as generic determinants; and generic concepts in the Asteraceae, Chenopodiaceae, Epacridaceae, *Cassia*, *Acacia* and *Eucalyptus*.

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Evolution of the Flora and Fauna of Arid Australia (book)

Edited by W.R. Barker & P.J.M. Greenslade.

Peacock Publications, ASBS & ANZAAS, 1982

This collection of more than 40 papers will interest all people concerned with Australia's dry inland, or the evolutionary history of its flora and fauna. It is of value to those studying both arid lands and evolution in general. Six sections cover: ecological and historical background; ecological and reproductive adaptations in plants; vertebrate animals; invertebrate animals; individual plant groups; and concluding remarks.

Cost: \$20, plus \$10 postage (in Australia).

This book is almost out of print. There are a few remaining copies.

To order a copy of this book email Bill Barker at: bill.barker@sa.gov.au

History of Systematic Botany in Australasia (book)

Edited by P.S. Short. A4, case bound, 326 pp. ASBS, 1990

No longer available

Australasian Systematic Botany Society Newsletter

The Newsletter keeps ASBS members informed of Society events and news, and provides a vehicle for debate and discussion. In addition, original articles, notes and letters (not exceeding ten published pages in length) will be considered.

Every effort is taken to distribute the Newsletter quarterly; delays or rare combined issues are attributable usually to the availability of the Editors who act in a voluntary capacity rather than to lack of copy. As soon as possible after compilation of each issue a searchable pdf version (in full colour) is placed on the Society web site and announced to members by email, and printed copy (in grey scale) is produced and distributed to members who have requested it.

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