

LINNEAN SOCIETY OF NEW SOUTH WALES

LINN S'O'C' NEWS

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INCLUDED WITH THIS ISSUE

Membership renewal form
Minutes of the Annual general Meeting, 23 March 2016

NEW MEMBER: We welcome Mr Andrew Carr. Field of interests: Natural history, botany, biodiversity and Australian flora and fauna.

RENEWAL OF MEMBERSHIP

A form for renewal of membership is included with this newsletter. Please note: you get a discount if you pay before 31 March. If you send a bank transfer, make sure you tell us, or we will receive the money and not know who paid it.

A CD of the *Proceedings* is available to Members at no extra cost, on request. The form for renewal of membership has a box to tick if you want a CD, or you can contact the office at any time.

The *Proceedings* is published on line and may be accessed free of charge by anyone at the website <http://ojs-prod.library.usyd.edu.au/index.php/LIN>

If you have already renewed your membership for 2017 or are a life member, please disregard this notice

E-MAIL COPY OF THE NEWSLETTER

Now that postage is \$1 per newsletter, if you are still receiving a paper copy we would appreciate it if you changed over to an e-mail copy. Please send your email address to h.martin@unsw.edu.au. If you do not have e-mail, we will continue to send you a paper copy.

AUSTRALIAN ALPS SYMPOSIUM

The Society is organizing a symposium on the Australian Alps for 11-12 December 2017, in the theatre adjacent to the National Park Visitor Centre in Jindabyne. Field trips in the Kosciusko region are being planned. Future newsletters will have further information about the symposium.

APPLICATIONS FOR GRANTS FROM THE SCIENTIFIC RESEARCH FUNDS

Application forms for all Research Funds may be obtained from the Secretary or the Home Page: <http://linneansocietynsw.org.au>

Intending applicants please read instructions carefully and submit your signed application by email to linnsoc@inet.net.au

The date for submission of applications for all the funds is 1st March 2017.

WILLIAM MACLEAY MICROBIOLOGY RESEARCH FUND

Grants are available from the William Macleay Microbiology Research Fund to support original research in an Australian context within the field of Microbiology.

- Applications will be accepted from postgraduate and Honours degree students at recognised Australian Universities who are undertaking full-time or part-time studies with a microbiological emphasis.
- Applications are also encouraged from amateur or professional microbiologists, whether in employment as such or not, who can demonstrate a level of achievement in original research in Microbiology.

In awarding grants, the Council of the Society will assess:

- The quality of the project
- The applicant's ability to carry it out
- A realistic costing and timetable.
- The likelihood that successful completion of the research will lead to publication.

A grant of up to \$2,300 is available to members of the Linnean Society of New South Wales and \$1,200 is available to non-members of the Society.

The Society envisages that grants would normally be used for items such as travel within Australia, equipment, photographic and other expenses, but not for subsistence, travel to conferences, or thesis preparation.

Applications are not restricted to members, but other things being equal, members of the Society will be given preference.

As a rule, the deadline for applications will be 1st March in any year; however, in exceptional circumstances, applications for emergency support will be received at any time.

Grantees will be required to make a report at the end of the project and no later than 12 months after the receipt of the grant, and to justify their expenditure.

Any publication arising from work supported by the William Macleay Microbiology Scientific Research Fund should include an acknowledgement to that effect.

Any type material generated by studies supported by these grants should be lodged in the collections of an appropriate scientific institution.

Closing date is **1 March 2017**. Submit your signed application by email to linnsoc@iinet.net.au

BETTY MAYNE SCIENTIFIC RESEARCH FUND FOR EARTH SCIENCES

The Betty Mayne Scientific Research Fund for Earth Sciences provides financial assistance to support short term original research projects in all aspects of the earth sciences.

Applications will be accepted from postgraduate and honours students, amateur or professional geologists who can demonstrate a level of achievement in original research in Earth Sciences.

Projects proposed for support do not have to be restricted to Australian locations or specimens, but, given the Society's interests in the natural history of Australia, they must demonstrate a strong Australian context.

In awarding grants, the Council of the Society will assess: the quality of the project; the applicant's ability to carry it out; a realistic costing and timetable; and the likelihood that the successful completion of the research will lead to publication.

Applicants need not be members of the Society, although all other things being equal, members will be given preference.

Individual grants will not normally exceed the level of equivalent awards from the Joyce W. Vickery Scientific Research Fund, i.e. \$2,500 for Members and \$1,500 for non-members. Money awarded must be used for research purposes, and field work or travel within Australasia. Requests for subsistence, travel to conferences, or thesis preparation expenses, will not be supported.

The Council will take into account other sources of research funds currently held or applied for

by the applicant. While financial support from other sources will not ordinarily exclude award of a grant from the Betty Mayne Scientific Research Fund for Earth Sciences, a grant from this Fund cannot be held concurrently with one from the Joyce W. Vickery Scientific Research Fund.

Applications must be made on the form specific to the Betty Mayne Scientific Research Fund for Earth Sciences. Intending applicants are strongly urged to seek assistance from their supervisor or an appropriate colleague with experience in writing research proposals, and further, to have their application reviewed before submission.

Successful applicants are required to make a written report to the Society no later than 12 months from receipt of their grant, detailing progress of the project, briefly outlining research results, and justifying expenditure of the award money. Any publication arising from studies supported by the Betty Mayne Scientific Research Fund for Earth Sciences must acknowledge that support. Type material, representative sample collections, relevant analytical data, and figured or mentioned thin sections, must be lodged in a state or national museum or university collection.

The Council's decision in regard to the award or non-award of grants from the Betty Mayne Scientific Research Fund for Earth Sciences is final, and no correspondence will be entered into.

Closing date is **1 March, 2017**. Submit your signed application by email to linnsoc@inet.net.au

THE JOYCE W. VICKERY SCIENTIFIC RESEARCH FUND

Grants from the Joyce W. Vickery Scientific Research Fund are intended to support worthy research in those fields of the Biological Sciences that fall within the range of interests of the Society, especially natural history research within Australia.

- Applications will be accepted from postgraduate and Honours degree students at recognised Australian Universities who are undertaking full-time or part-time studies with a biological emphasis.
- Applications are also encouraged from amateur or professional biologists, whether in employment as such or not, who can demonstrate a level of achievement in original research in Biological Sciences.

In awarding grants, the Council of the Society will assess:

- Realistic costing and timetable
- The quality of the project
- The applicant's ability to carry it out
- The likelihood that successful completion of the research will lead to publication.

Individual grants will not normally exceed \$2,500 for Members of the Linnean Society of New South Wales and \$1,500 for non-members.

The Society envisages that grants would normally be used for items such as travel within Australia, equipment, photographic and other expenses, but not for subsistence, travel to conferences, or thesis preparation.

Applications are not restricted to members, but other things being equal, members of the Society will be given preference.

As a rule, the deadline for applications will be 1st March in any year; however, in exceptional circumstances, applications for emergency support will be received at any time.

Grantees will be required to make a report at the end of the project, and no later than 12 months after the receipt of the grant, and to justify their expenditure.

Any publication arising from work supported by the Joyce W. Vickery Scientific Research Fund should include an acknowledgement to that effect.

Any type material generated by studies supported by these grants should be lodged in the collections of an appropriate scientific institution.

An application form may be obtained from the website or from the Secretary of the Society. The application may contain no more than three (3) pages of additional information plus references.

The Society's decisions are final and no correspondence will be entered into about the results.

Closing date is **1 March, 2017**. Submit your signed application by email to linnsoc@inet.net.au

EXPANSION OF THE TROPICS – CLIMATE WINDOWS FOR POLYNESIAN VOYAGING AND COLONISATION OF THE PACIFIC: a talk given by A/Prof Ian Goodwin

Hot air rises at the tropics and moves north and south, to sink back again when it has cooled down (the Hadley Cell). When temperatures are warmer, the Hadley cells expand further towards the poles, and this produces the tropical expansion. Thus the width of the tropical zone expands when temperatures are warmer, and there are more tropical influences, like our present weather patterns. The rains come down from the north and the climate is more like summer. When temperatures are cooler, the tropics contract, and the cold air from Antarctica moves further north and it is more like winter. We are currently in a tropical expansion.

The tropics contracted 60,000 to 80,000 years ago and this would have brought drought that stimulated migration. This was the time people migrated of Africa. Then 50,000 to 60,000 years ago, the tropical contraction stopped and migrations stopped as well. Then 3,500 to 3,000 years ago, Polynesians migrated eastwards, but only as far as Tonga. This migration is known as the Lapita voyage that is distinguished by its culture of distinctive pottery and houses on stilts over water. Then in 1025 to 1120 AD, Polynesians migrated further east to the Society Islands and the Gambiers. Then in 1190 to 1290 AD, they voyaged further to New Zealand, Hawaii and Easter Island.

Anthropologists have attempted to explain these migrations but all of these attempts are based on modern windfields. Thor Heyerdahl built a raft and re-enacted a journey from South America to Easter Island, taking advantage of the easterly trade winds. Today, the trade winds are predominantly from the east, making journeys from the west very difficult or impossible. Today, travel from island to island is only possible in the spring, at a time when the subtropical trade winds are at their strongest and avoiding the cyclone season. Modern yachts have a lee board that allows them to tack into the wind at 75°. This means a yacht must tack 14 miles to make one nautical mile into the wind. Polynesian double canoes did not have lee boards and were limited to 30° off the wind, meaning that they would have to tack for 39

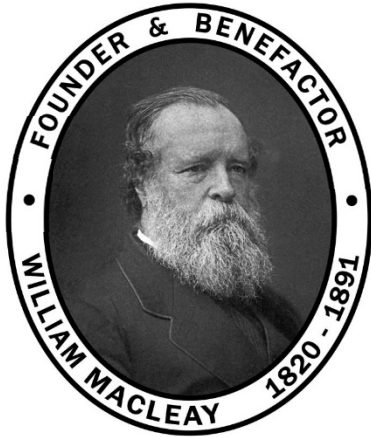
miles to make one nautical mile into the wind. This means the winds had to be favourable for the Polynesians to make any voyage.

One thousand years ago in the Medieval Period, there was a climatic reversal to a dominance of El Nino events and accompanying reversal of the trade winds that allowed eastward migration. The westerly winds under strong El Nino conditions may have been only brief episodes but would have been sufficient to allow long voyages downwind. Migration was very rapid and it all happened in 100 to 150 years. At the same time, climatic changes were apparent in the northern hemisphere: the Vikings settled in Greenland during a climatic amelioration, only to abandon it later and the Mayan civilization in Mexico collapsed due to drought. The El Nino/La Nina events affect ocean currents that eventually make their way into the Indian Ocean then the Atlantic and the northern hemisphere.

Climatic models are built up from proxy climatic evidence. Many environmental studies indicate what the past climate was like and when climatic changes occurred. For example, studies of tree rings in Tasmania indicate a period of warm dry weather. Northerly winds would have brought the warm dry weather. For the same period, New Zealand experienced cold wet weather that would have been caused by southerly winds from Antarctica. And sand cores from the eastern Australian coastline indicate easterly winds. This wind pattern is commonly a high pressure system. Ice cores are the best source of proxy data and even record events such as when lead was taken out of petrol and dust containing uranium from Roxby Downs. They also record dust from volcanic activity elsewhere in the world.

Once a model is built, the climate for any selected time period can be determined. When the decade by decade climate is plotted to show the changes, a surprising feature emerges: climatic changes do not occur gradually but change suddenly from one pattern to another. One reason for this is volcanic eruptions that pump dust and gasses into the atmosphere that are recorded in the ice cores. Thus in the Medieval period to 1300 AD, there was a tropical expansion. From 1190 to 1258 AD, Auckland Island was settled. Today it is a sub-Antarctic island and quite uninhabitable. After 1300 AD, the tropic contracted until the last 50 years, when the tropics expanded again. This last tropical expansion is not caused by volcanism but is anthropogenic.

With windfields varying with the climatic fluctuations, the Polynesians could just bide their time until favourable winds arose to take them where they wanted to go. Two Maori cultures are recognised in New Zealand, representing two migrations. Folklore tells of multiple comings and goings. The Polynesians were superb mariners, with mental maps of the islands, the stars, wind and wave patterns, birds and other details to use for navigation. The DNA of the Easter Island people reveal two migrations, one from the west and one from South America and this may have contributed to the warfare that wracked the island.



**THE LINNEAN SOCIETY
OF NEW SOUTH WALES**

2016 Annual General Meeting

The 141st Annual General Meeting of the Society will be held at 18:00 on 23 March 2016 in the Classroom in Anderson Building, Royal Botanic Gardens, Mrs Macquaries Road, Sydney.

Members and guests are invited to join the Council of the Society for wine and light refreshments from 17:30.

Five members of Council are due to retire at this AGM:

Michael Augee
Emma Gorrod
Robert King

Helene Martin
Bruce Welch

and four offer themselves for re-election. Dr Augee decided to retire from Council.

Council recommends the election of Dr Michele Cotton as President of the Society for 2016.

Further nominations are invited for vacancies on Council (6), the office of President, and Auditor. Nominees must be financial Ordinary Members (a category which includes Life Members) of the Society. The nominations must be signed by at least two financial Ordinary Members of the Society and countersigned by the nominee in token of their willingness to accept such office.

Nominations must be received by the Secretary at the Society's offices at 3/40 Gardeners Road, Kingsford (PO Box 82, Kingsford 2032) by 31 January 2016.