LINNEAN SOCIETY OF NEW SOUTH WALES

LINN S'O'C' NEWS

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IN THIS ISSUE

INCLUDED WITH THIS ISSUE
Membership renewal form

NEW MEMBER: We welcome Mr Peter Olde whose main interest is the genus *Grevillea*

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

AWARD TO DAVID KEITH

Congratulations to Professor David Keith - winner of the 2013 Australian Ecology Research Award. The award recognises David Keith's outstanding contributions in providing a strong scientific foundation for the conservation of biodiversity.

THANKS TO STEFAN ROSE

Stefan has been a Council Member of the Society for a long time, and set up and maintained the web site Our thanks to your generosity, Stefan.

NEW BOOK: *Conservationists: Greening Modern Sydney*, by Peggy James. Australian Scholarly Publication

The book is a history of the Sydney conservation movement spanning the years from around 1900 to the 1960s. It focuses on the network and lives of a number of key conservationists in Sydney, such as David Stead, Marie Byles, Myles Dunphy, Thistle Harris, and Annie Wyatt. It covers the development of groups like the Wildlife Preservation Society and Nature Conservation Council, and the creation and conservation of various parklands in the Sydney region. The book notes the conservation contribution of early Linnean Society members such as Walter Froggatt, Joseph Maiden and Alexander Hamilton.

For further information, phone 03 9329 6963 or visit the website aspic@ozemail.com.au

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@iinet.net.au

The date for submission of applications for all the funds is 1st March, 2014.

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 2014.** 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, 2014.** Submit your signed application by email to linnsoc@iinet.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:

- The quality of the project
- The applicant's ability to carry it out
- Realistic costing and timetable
- 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, 2014.** Submit your signed application by email to linnsoc@iinet.net.au

KEYSTONE EFFECTS OF AUSTRALIA'S TOP PREDATORS: FOCUS ON THE DINGO - a talk given by Dr. Mile Letnic.

All species interact with other species through processes such as competition for food and space, predation and mutualism. A predator has a direct effect on a herbivore and herbivores have a direct effect on the vegetation. Indirectly, the predator has an effect on the vegetation, through the herbivore. A keystone species has strong interactions with other species that are disproportionate to their abundance. So how does the dingo, Australia's largest predator interact with other species in the environment.

The dingo (*Canis lupus dingo*) is descended from a primitive domestic dog that is descended from the Asian wolf. It arrived in Australia about 3,500-5,000 years ago. Prior to its arrival, thylacines and devils were the main predators, and the arrival of the dingo coincided with the extinction of the thylacines on the Australian mainland. The Tasmanian thylacine was larger than the dingo and this presented a dilemma: predators will readily kill other smaller predators but they rarely kill larger predators. However, fossil skulls of the thylacine found on the mainland, especially from caves on the Nullabor showed that mainland thylacines were smaller than their Tasmanian cousinsand females were considerable smaller than the males, and hence more vulnerable to attack.

Dingoes will attack livestock and are controlled with 1080 poison, traps and shooting. Exclusion fences attempt to keep dingoes out. Control is necessary or there would not be a sheep industry. Dingoes readily hybridise with domestic dogs, especially in southeastern Australia so that we have difficulty determining what a purebred dingo is like. Museum specimens from the time of first settlement show a wide variation of colours, from light to dark and even brindle (like an Alsation). The dingo is known under other names: native dog, warrigal (the Aboriginal name) and wild dog. When a cull is necessary, the name 'wild dog' is preferred: it somehow does not sound so bad.

Study sites with and without dingo control are compared. Red kangaroos, emus and foxes are more abundant in the absence of dingoes. Rabbits are more abundant in the presence of dingoes. The persistence of small marsupials and native rodents relies on the presence of dingoes that keep fox numbers low. There is a size effect here: large predators (the dingo) eat the large herbivores (kangaroo and emu) and actively seek out and kill the medium sized predators (foxes and cats) that would eat the small mammals. With fewer large herbivores, more grass can grow.

The dingo-proof fence runs from the cliffs on the Nullabor Plain through South Australia to the New South Wales Border and then north before turning easterly, enclosing most of southern Queensland and southeast Australia. Its effectiveness relies on maintenance: holes and washouts along creek lines after heavy rains must be repaired. Work on the dingo-proof fence is a hard and lonely life and fewer are willing to take it up. Nevertheless, a satellite photo of the fence along the SA-NSW border shows a marked difference in the vegetation on either side of the fence. In this area, the hop bush, a native, will take over the area and become a woody weed if left unchecked. Inside the dingo-proof fence, with rare dingoes, lots of foxes and few small mammals, the hop bush proliferates. Outside the dingo-proof fence, with dingoes present, few foxes and more small mammals that eat the hop bush seedlings, the hop bush cover is much reduced.

An experimental area 36 km^2 in area in the arid zone was enclosed in a dingo-proof fence to test if the reintroduction of the dingo would suppress foxes and indirectly benefit small mammals. The experiment is working as hoped. The effects of dingo control in forests were observed in baited and non-baited areas. Areas without baiting had a more diverse and thicker grass and shrub layer, since wallaby numbers were kept in check.

It is tempting to think the reintroduction of dingoes may be the solution to some conservation problems, but it is not a silver bullet. Dingoes induce community-wide changes and there is strong evidence that they can structure ecosystems and have positive ecological effects on taxa of conservation concern. Can we harness the positive ecological effects of dingoes and minimise their impacts on livestock? The farmers with their ingrained antipathy to dingoes will take some convincing.

VEGETATION AND FLORA OF SOUTH AFRICA: a talk given by Dr Peter Weston

Dr Weston was the botanical guide on a tour to Namibia and South Africa sponsored by the Foundation and Friends of the Botanic Gardens. Throughout his talk, Dr Weston showed beautiful photos of the flowers encountered. Endemism is high and many of the species are found nowhere else. We recognised some of our garden plants growing in the wild in South Africa

The South African coastal areas have a Mediterranean climate with dry summers and rain in the winter. The high escarpment of the Drakensberg Mountains runs parallel to the east coast and here, the mountain climate has a summer rainfall. The Namib Desert along the west coast relies on fog rather than rain. Here, the coastal region is drier than further inland on the uplands, and that is the reverse of most deserts. The vegetation largely follows these climatic zones.

Welwitschia in the Namib Desert is the weirdest plant and has been described as an unmade bed. It has two long strap-like leaves on either sides of the short stem and the ends become shredded with wear and tear, but they keep growing from the central part that joins the stem. The plants cluster along dry streams and the taproot goes down to permanent water. They have male and female plants that bear cones in the centre of the plant.

In the upland part of the Namib, savannah receives about 200 mm of rainfall a year. Many plants are spiny. What used to be called *Acacia*, until taxonomists put South African species into other genera, has thorns. There are spiny grasses, spiny cucurbits and a spiny *Geranium*. There are succulents as well and a succulent *Euphorbia* is very common.

The Karoo many spiny and succulent plants also. The daisy family is very common and includes a succulent daisy shrub. *Gazania* species may form colourful masses and the bitou bush, a weed here is at home in the Karoo. The succulent *Euphorbia* is common and there is a great diversity of other succulent in the families Aizoaceae (pigface) and Crassulaceae. There are many geophytes that have bulbs, tubers or corms for survival over the dry period and some of these are common garden plants. *Oxalis* has large flowers and comes in pinks and yellows. A species of Scrophulariaceae s has oil nectaries instead of the usual sugar nectaries and is pollinated by bees that collect the oil.

The fynbos or Cape shrubland covers the southwesern and central coastal region and Table Mountain is a well-known landmark in this region. The fynbos is restricted to the Table Mountain Sandstone that is remarkably like the Hawkesbury Sandstone. Proteaceae, Ericaceae and Restionaceae are the three most common families in the fynbos. The endemic family Bruniaceae, Asteraceae (different species to those in the Karoo), Boraginaceae a *Geranium* and *Widringtonia*, a cypress pine are found there also. There are many species of *Protea* and other genera in the Proteaceae and bird pollination is common. The long tubular corollas of the *Erica* species are also adapted for bird pollination. One of the few Myrtaceae in South Africa, *Metrosideros* and Scrophulariaceae, Campanulaceae. *Oxalis*, *Lachenalia*, *Iris*, *Watsonia* and orchids are part of the rich flora of the fynbos.

In tropical savannah, the family Fabiaceae is common and includes '*Acacia'* shrubs and trees, *Cassia*, a tree wisteria and *Bauhinia*-like species in thickets and a variety of grass species. Montane grasslands above 1500 m are subalpine and as well as the grasses, there are herbaceous daisies, Scrophulariaceae, amaryloides and other geophpytes. Our common garden plants the jade plant, *Agapanthus* and *Plumbago* are found here, and the *Plumbago* is eaten by elephants. In subtropical forests, species of *Podocarpus*, one with orange and another with white seeds are present. Cunoniaceae, rather like our Christmas bush is found in these forests.

Southern Africa diverged from Gondwana some 150 million years ago and became connected to tropical Africa 105 million years ago. It has been isolated for a very long time and has become connected to Europe in relatively recent times. This history poses a dilemma for botanists. Proteaceae, Ericaceae, Restionaceae, are but a few of the families common in both South Africa and Australia and molecular genetics has shown up many other close connections, yet geological separation of the two predates the evolution of these families. This early separation rules out vicariance, where one large distribution of a population is split into two, as an explanation of the similarities of the flora. This leaves long distance dispersal as the other likely explanation, but it is not known how this would have happened. Africa and Australia would have been closer than they are today for some time after separation. We may postulate violent storms as a means of dispersing seeds much further than normal, but dispersal is just the start. The seeds must land in some place suitable for growth. And so the dilemma continues.