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THE AUSTRALASIAN ARACHNOLOGICAL SOCIETY

We aim to promote interest in the ecology, behaviour and taxonomy of arachnids of the Australasian region.

MEMBERSHIP

Membership is open to amateurs, students and professionals, and is managed by our Administrator :

Richard J. Faulder
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Yanco, New South Wales 2703. Australia.

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ARTICLES

The newsletter can only thrive with your contributions ! We encourage articles on a range of topics including current research activities, student projects, upcoming events or notable behavioural observations.

Please send articles to the editor as :

i) email attachments, in text, or preferably MS Word, format to :

tracey.churchill@terc.csiro.au

ii) typed or legibly written articles on one side of A4 paper. or on disk (which will be returned only upon request), to :

Dr Tracey Churchill
CSIRO Wildlife & Ecology
PMB 44 Winnellie N.T. 0822.
Australia.

LIBRARY

The AAS has a large number of reference books, scientific journals and scientific papers available for loan or as photocopies, for those members who do not have access to a scientific library. Professional members are encouraged to send in their arachnological reprints. Contact our librarian :

Jean-Claude Herremans
P.O. Box 291
Manly, New South Wales 2095. Australia.

or email : jcl@eagles.bbs.net.au

EDITORIAL



It is with much sadness that I include in this issue the terrible news that we have lost two more outstanding arachnologists : Drs Ray Forster and Gary Polis.

Thankyou to those who have contributed other articles to this issue, including Julianne Wladock who has clarified the real identity of our beloved Christmas spider - keep the contributions rolling in !

..... Tracey

MEMBERSHIP
CHANGES**New Members**

Welcome to the :

Rockhampton Arachnological Society

with which we are now exchanging issues for the A.A.S. library.

Changes of address

David Mitchell
50 Salisbury St
Leederville WA 6007

Senckenberg-Museum
Dept. Arachnology
Senckenberg-Anlage 25
D-60325 Frankfurt
Germany

RAY FORSTER
&
LYN FORSTER

On the 30th June, Dr Ray Forster died peacefully at his home in New Zealand. Ray has been recently challenged with health problems. He had had knee operations and lost partial use of a lung, although he had responded well to recent treatment.

However, since October last year, his wife Dr Lyn Forster, also a well respected arachnologist, has been unwell. Lyn initially had pneumonia and then suffered a series of strokes and now remains in a critically ill condition in hospital.

On behalf of the society we pass on our most sincere condolences to Lyn and the family at this very sad time. Ray has contributed immensely to our knowledge of the Australasian fauna and his passing leaves an incredible gap in this part of the world.

A full obituary will be published in a subsequent issue.

On behalf of the society we also send Lyn our genuine wishes and hopes that she will soon recover.

... Tracey Churchill & Robert Raven

GARY POLIS



Professor Gary Polis, who chaired the University of California Davis' Department Environmental Science and Policy, U.S.A., tragically died in a boating accident on the 27th March, 2000.

Gary was not only a high profile member of the international arachnological and ecological communities, but a very likeable and generous person. His passing will be a very significant loss to all who valued his work and knew him personally, which includes many members of our society.

Some members may remember that we had the pleasure of Gary presenting a keynote paper at our XII International Congress of Arachnology, in Brisbane in 1992. The topic was the ecological importance of scorpions in deserts.

The following information is summarised from the university's website which can be referred to for more detail : www.news.ucdavis.edu/accidentnews

Prof. Gary Polis was leading a routine research expedition to the Baja Islands in the Sea of Cortez, Mexico, when the accident happened. Among the team of 20 were overseas colleagues, students and Earthwatch participants. The field trip was part of a study into predator-prey

relationships on the islands, particularly in relation to spiders and scorpions.

In one of two inflatable boats, Gary and eight others encountered rough seas and the boat capsized. Four survived. Gary and postgraduate student, Michael Rose, 27, apparently died whilst trying to save others. Three professors visiting from the Centre for Ecological Research at Kyoto University, Japan, also died : Prof. Takuya Abe, 55 (termite ecologist); Masahiko Higashi, 45 (food web ecologist), and; Shigeru Nakano, 37 (aquatic ecologist).

Gary Polis, from California, was very well known and respected for his work on scorpions and food webs. He edited the books : "Biology of Scorpions" (1990, Stanford University Press) and " The ecology of Desert Communities" (1991, University of Arizona Press), and has "Scorpions Biology and Research" in press (Oxford University Press). Gary also published many well cited scientific papers.

Sadly, Gary leaves a wife, Sharon and two children : Evan, (10) and Maia (4). The family have established the "Gary Polis Memorial Fund" for the education of his children. For all members of the society who would like to contribute to this fund, and haven't already done so independantly :

- please forward cheques in Australian dollars to Richard Fauldner (see page 1) by the 14th August so that a combined bank draft can be forwarded by the society (contributors will be acknowledged).

... Tracey

**Notes on the generic name
of the Christmas or Jewel Spider,
Austracantha minax (Thorell)**

*(or a new generic name for the
Christmas spider, 25 years late)*

by **Julianne M. Waldock**

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Francis Street, Perth,
Western Australia 6000, Australia

& **Nikolaj Scharff**

Zoological Museum,
University of Copenhagen,
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Copenhagen, Denmark

Familiar to many people in Australia is the jewel or six-spined or Christmas spider. The glossy, black, white and yellow spiny orb-weaving spider is particularly common during the summer months across southern Australia including Tasmania.

Thorell in 1859, assigned these spiders to the genus *Gasteracantha* as the species *Gasteracantha minax*. When Dahl reviewed the collections of the Berlin Museum in 1914 he noted significant features that lead him to place *G. minax* under a subgeneric name of *Austracantha*.

Sixty years later, in 1974, Emerit published his study on the gasteracanthine spiders of Madagascar. As part of this revision Emerit presented a key to genera of the Gasteracanthinae. Emerit looked at species of gasteracanthines from outside Madagascar including *Gasteracantha*

minax Thorell. From his observations, Emerit decided to remove *G. minax* from the large genus *Gasteracantha* and place it in a new genus by raising the Dahl's subgenus to generic level, so *Gasteracantha minax* Thorell became *Austracantha minax* (Thorell).

Emerit used the arrangements of the small sclerotized discs (sigillae) on the dorsal side of the abdomen and the abdominal spines as his chief characters for distinguishing the gasteracanthines. However, the main distinguishing character used by both Dahl and Emerit to separate *Austracantha* (and several other gasteracanthine genera such as *Macracantha*, *Togacantha*, *Afracantha*, *Hypsacantha* etc.) out of *Gasteracantha* was the lack of a genital tubercle (a sclerotized knob between the epigynum and spinnerets). Dahl (1914) also mentioned that *Austracantha* specimens do not have a strongly sclerotized ring around the spinnerets (see also Davies, 1988).

Whether or not *Austracantha minax* should be kept in its own separate monotypic genus (that is, with only a single species) will remain to be seen. Monotypic genera are not particularly useful and the species should only stay in *Austracantha* if there is good phylogenetic reason for such a placement. The available phylogenetic information on the family Araneidae is, unfortunately, very limited. Scharff and Coddington (1997) presented a phylogeny where the monophyletic *Austracantha* was most closely related (sister group) to the African genus *Isoxya* (with several species in Africa and Madagascar). Only 2 species of *Isoxya* were included in the study of Scharff and Coddington and a new analysis including all species of *Isoxya* plus *Austracantha* should be carried out to

determine the fate of the genus *Austracantha*. If *Austracantha minax* falls within *Isoxya* then *A. minax* should be transferred to *Isoxya*. If it remains as sister to *Isoxya* then it would be perfectly all right to keep it in a separate sister genus, *Austracantha*. For the time being, the correct genus name for *G. minax* is *Austracantha*.

Thus, for the past 25 years this well-known spider should have been named as *Austracantha minax* (Thorell).

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SPIDER BIODIVERSITY



Professor Norman Platnick of the American Museum of Natural History, New York, has recently updated the estimated number of valid species and genera in each spider family (pp.8-9 of "American Arachnology" no. 61 – May 2000 - the Newsletter of the American Arachnological Society) thanks to funds from the National Science Foundation.

Norman points out that it is still an estimate as it accounts for literature only up to 1998, and does not include comparisons between the catalogues of Bonnet and Roewer.

The estimates are now :

No families : 106

No. genera : 3,330

No. species : 36,446

The most diverse family was the Salticidae with 4,663 species !

The level of species richness for the next six families were :

Linyphiidae	4,101
Araneidae	2,797
Lycosidae	2,241
Theridiidae	2,208
Thomisidae	1,993
Gnaphosidae	1,921

POSTGRADUATE
PROJECTS



**The effect of Broom invasion on
spider communities in areas of native
vegetation in South Australia**

My-my Huhn

Institution : University of Adelaide

Supervisors: Drs Andy Austin

& Kerrie Davies

Arachnological Support : David Hirst,
South Australian Museum.

Abstract : As part of a larger study to investigate the effect of the invasion of weedy species into native vegetation on arthropods, communities of spiders were compared between stands of the weed broom (*Cytisus scoparius* and *Genista monspessulana*) and native vegetation. The native vegetation of the Adelaide hills is primarily open woodland with an open canopy and a relatively sparse understorey. The broom invades and forms dense thickets which shades out any natural understorey vegetation.

Spiders were collected in a standardised sampling grid using three methods; netsweeping, pitfalls and visual searching. Spiders were counted and sorted into morphospecies that were identified by a professional taxonomist.

Overall there were no obvious differences in abundance and species richness of spiders between native vegetation and the broom stands, despite the noticeable

dissimilarity in vegetation and soil characteristics between these two habitats. However, there was evidence to suggest that there were more 'rare' species found in the native vegetation, while the broom plot was dominated by many of the same species that were shared with the native plot. When species collected from the ground and from vegetation were considered separately, the communities of spiders collected from vegetation between the native and broom habitats were found to be quite similar. Moreover, there were more species collected from the denser vegetation growing in the broom plot.

The dense vegetation may have harboured more spiders because there were more anchoring points for silk webs and the complexity of the vegetation may have provided more hiding places for ambushers. Other possible advantages of broom plants for these species include a decrease in the wind damage to webs and reduced predation by vertebrates. Most spiders are generalist predators, therefore access to food resources in this case was less likely to affect their distribution as there were also high numbers of other arthropods collected from the broom canopy layer.

However 'degraded' a habitat may appear, it is important to also consider the other organisms that may be using these habitats. Destructive methods of controlling broom, such as fire, may not be the best choice given the complex community of arthropods that occur in these areas. Knowing the fauna associated with weeds in native habitats can assist in making realistic conservation decisions for habitat preservation.

ARACHNOLOGICAL ACTIVITIES



Insect-Spider Interactions: A recent History in Australia

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One of the most fascinating areas of spider biology surrounds their interaction with other animals, particularly insects. I have had an ongoing interest in this area from nearly 25 years when in 1976, as an honours student in the Dept. of Zoology at Sydney University, I reared a number of predatory and parasitic insects from the eggs of several common spiders, including *Badumna robusta* and *Nephila clavipes* (Austin & Anderson 1978). The egg predator of *Nephila* was a lepidopteran larva and this biology turned out to be new for the family (Austin 1977).

The wasp associated with *Badumna* eggs took several years to identify and was *Ceratobaeus setosus*, a species not reported since its original description in 1914 by Alan Dodd, who was Australia's foremost wasp taxonomist at the time, and later revered as the entomologist who engineered the biological control of prickly pear. Interestingly, the biology of *C. setosus* was examined in detail a few

years ago by Mike Downes at James Cook University (Downes 1994).

As is often the case, this early interest in wasp-spider interactions led to my undertaking a PhD on the topic at The University of Adelaide (1978-82), specifically to examine several *Clubiona* spp. and their egg parasitoids (Scelionidae) (see Austin (1984a, 1984b, 1988b, 1993). Obvious from these studies was that virtually nothing was known about the systematics and biology of these wasps anywhere in the world, and yet they are responsible for very high levels of egg mortality. Also, these wasps displayed a plethora of adaptations associated with the habitats in which they lived (such as leaf litter) and for penetrating the egg sacs of spiders.

What followed over the next few years was a series of taxonomic studies on scelionid wasps that resulted in the description of several new genera and species (see Austin 1981, 1984c, 1984d, 1986, 1988a, 1995), and an account of the evolutionary arm's race between spider egg sac structure and wasp morphology and behaviour (Austin 1985; interestingly, until recently this was my most cited paper!). During this time, one paper stood out in an otherwise void of relevant literature; that is V.V. Hickman's little known study on scelionids reared from spider eggs in Tasmania (Hickman 1967). This paper served as a benchmark for my studies and I have read it so many times the reprint is frayed beyond repair.

Since 1985 I have been a lecturer at Adelaide University, and during this time I have been in three different departments, although I still have the same office and

laboratory. Unfortunately, these changes have more to do with the turmoil that has plagued Universities over the last eight years and the vagaries of government funding, than it does with sensible reorganisations for scientific or academic reasons. My research while at Adelaide has mostly focused on the systematics and evolutionary biology of parasitic wasps in a much broader context. However, I have maintained a strong interest in arachnology and have a number of related projects recently completed or underway. Mark Harvey and I recently facilitated the description of a new eupelmid wasp that parasitises eggs in the brood pouch of a pseudoscorpion (Austin *et al.* 1998); an honours student, Nick Stevens, has revised the wingless 'micro-flea' wasps associated with spider eggs; and an ex graduate student, Muhammad Iqbal (now a postdoctoral fellow in my laboratory) and I have just completed a taxonomic account of *Ceratobaeus* in which we more than treble the number of species known from Australia and provide an account of their phylogeny, biogeography and host relationships (Iqbal & Austin, in press). Significantly, it now appears that the most diverse group of scelionid wasps in Australia are those that parasitise spider eggs. In 1985 there were only 53 described species; this has now expanded to 150 species in 2000, while the true size of the Australian fauna is probably about 500 species. Clearly, scelionids have undergone a major radiation in response to the number of available hosts in Australia.

Other projects that are presently underway are a revision of Australasian *Nephila* with Mark Harvey and Mark Adams, in which we examine variation

among populations at the morphological and electrophoretic levels; a taxonomic and biological synopsis of Australian spider-hunting wasps (Pompiliidae) with Michael Day and Ian Naumann; and two projects by honours students, Travis Gotch and Tim McCullough. Travis is studying the ecology of lycosids around the artesian springs in the South Australian arid zone, while Tim is working on the biology of lycosid and trapdoor spiders that construct burrows which are utilised by the endangered pygmy blue-tongue lizard in the Burra region, north of Adelaide (project reports of these two studies will appear in a later issue of Australian Arachnology).

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UPCOMING
EVENTSECOLOGICAL SOCIETY
OF AUSTRALIA

Annual Conference 2000

29 November - 1 December
La Trobe University, Melbourne.

The theme is "Ecology in a Rapidly Changing World". The information below is extracted from the ESA 2000 website :

<http://www.zoology.unimelb.edu.au/ESA2000/esa2000.htm>

The aim of the conference is to capture the wide range of ecology traditionally presented at ESA and also to focus on how ecological research can help better measure and interpret change. Understanding the effects of "change" in landscapes has important implications for the conservation and management of ecological communities. We must make decisions about how to characterise and address change. As a result, many new approaches to research and management are developing across a range of disciplines.

The meeting will be a mixture of half-day symposia and general contributed papers, which may be on any ecological topic. Papers may be oral or presented as a poster, and we particularly want to encourage students to participate in the meeting. The postgraduate seminar day (Tuesday 28th November) is to give postgrads a chance to talk in a more informal setting and to network.

Symposia topics :

- How Ecologists Can Contribute to Restoring Landscapes.

Convenor: Ralph MacNally Department of Biological Sciences, Monash University, Clayton. (dacelo@silas.cc.monash.edu.au)

The questions are: What can ecologists contribute and with what degree of confidence ? How can ecological principles be meshed with alternative approaches, probably with different overall objectives? How can ecologists ensure that ecological objectives are not overwhelmed by other concerns ?

- Measurement and monitoring of landscape condition for biodiversity conservation.

Convenors: Ian Oliver and Peter Smith Centre for Natural Resources, Department of Land and Water Conservation, Armidale. (ioliver@ / psmith@dlwc.nsw.gov.au)

Speakers will explore condition assessment in a range of ecosystem types to answer the question: "Are there common elements of assessment within the context of biodiversity conservation which apply across ecosystem types".

- Assessing and valuing ecosystem services in Australia.

Convenors: Steve Cork and Brian Walker CSIRO Division of Wildlife and Ecology, Canberra (s.cork@ / b.walker@dwe.csiro.au).

There is increasing interest worldwide in the benefits that come to humans from natural ecosystems and the changes to those benefits from technological and societal change. This symposium aims to promote approaches linking ecology with

economics which are currently few and far between.

- The Ecology of Cities and Towns.
Convenor: Mark J. McDonnell Australian Research Centre for Urban Ecology, University of Melbourne, Parkville. (m.mcdonnell@botany.unimelb.edu.au).

Contributors are asked to address such topics as landscape fragmentation, edge effects, meta-populations in suburban environments, altered disturbance regimes, invasions of non-indigenous species, the effects of air pollution on animals and plants and food webs.

- Sustaining Regional Australia: Issues and Progress.
Convenor: Tony Norton, Department of Land Information, RMIT University, Melbourne. (tony.norton@rmit.edu.au).

The focus of the symposia will be on the sustainability of landscapes, the maintenance of biodiversity and the provision of key information to regional communities for improved environmental and socio-economic decision making.

- The role of recruitment and colonization processes in structuring communities.
Convenor: Belinda Robson, School of Ecology and Environment, Deakin University, Warrnambool. (brobson@deakin.edu.au).

Colonization processes are typically extremely variable, and this symposium will consider whether that variability affects communities, with the intention of seeking common patterns in aquatic and terrestrial habitats.
