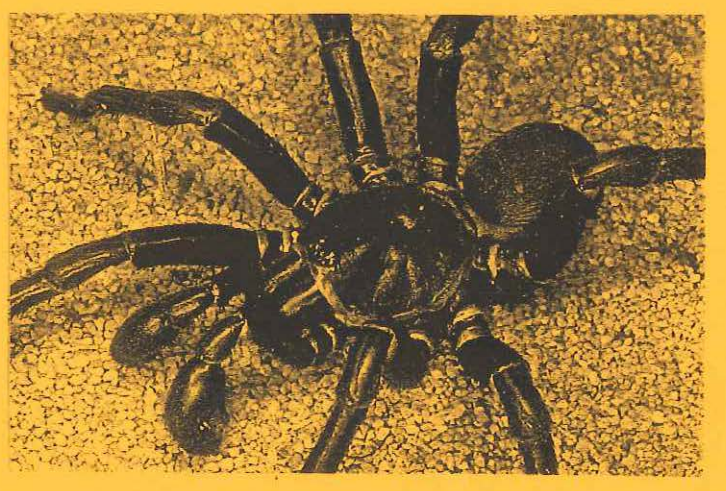
# AUSTRALASIAN ARACHNOLOGY



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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.

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## ARTICLES

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

Please send articles to the new editor:

Dr Volker Framenau
Department of Terrestrial Invertebrates
Western Australian Museum
Francis Street
Perth, W.A. 6000, Australia.

framenau@museum.wa.gov.au

*Format:* i) typed or legibly printed on A4 paper or ii) as text or MS Word file on CD, 3 ½ floppy disk, or via email.

## LIBRARY

The AAS has a large number of reference books, scientific journals and 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.

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**COVER PHOTOGRAPH** by Matjaz Kuntner:
*Arbanitis variabilis* ♂ from S.E. Qld.

## EDITORIAL

After this issue you will have a new editor at the helm: Dr Volker Framenau. As you have been reading in the newsletters Volker has a background in both taxonomy and ecology. A network across both disciplines should help keep us well informed of the latest news and research within the region. Volker is very enthusiastic about the society and I encourage members to keep supporting the newsletter by sending him your articles. Volker has been helping me develop the webpage so that will continue to evolve.

Volker's research focus is our diverse wolf spider fauna and in this issue you can be updated on that work. Peter Langlands has conducted an honours project on the arid zone spider species of Western Australia and we have the abstract as a summary. Mark Harvey's catalogue on the lesser known arachnid orders is reviewed, as is the last American arachnology meeting held in Denver.

After a wonderful summer, or Wet season as we have in northern Australia, I suspect many members have been admiring the golden orb webs in the garden. For those who look closer at these webs you will also enjoy reading Doug Wallace's explanation of one attractive little cohabitant...

Cheers for now ..... *Tracey*

## MEMBERSHIP UPDATES

**Welcome to:**

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# Revision of the Wolf Spiders of Australia - an Update

V. W. Framenau[1], M. S. Harvey[1], A. D. Austin[2]

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Who could imagine names for spider genera that sound more Australian than *Dingosa* or *Tasmanicosa*? These nomenclatural highlights are part of the legacy left by Carl F. Roewer, who shook up the lycosid world in the late 1950's when he attempted a worldwide revision of wolf spiders (Roewer 1955, 1960). This was a brave attempt, even by today's standards, but unfortunately it was misguided as C. F. Roewer ignored genitalic characters in his generic diagnoses and based his classification on rather uninformative characters such as eye measurements, number and arrangement of cheliceral teeth, and the relative length of legs. He recognized some 93 genera worldwide in the subfamily Lycosinae alone, about half of which were new. Subsequently, a large number of his genera have been synonymised (Platnick 2003), but purely by priority, a large number of his ill-defined genera will stay name-bearing within the Lycosidae. Two of these genera, *Allotrochosina* Roewer, 1960 and *Venatrix* Roewer, 1960, have been found to be valid and after a recent revision appear to be limited to the Australasian region (Vink, 2001, Framenau & Vink, 2001).

Similarly, *Dingosa* Roewer, 1960 (type species: *Dingosa simsoni* (Simon, 1898)) and *Tasmanicosa* Roewer, 1960 (type species *Tasmanicosa tasmanica* (Hogg, 1905) will most likely remain part of the Australian lycosid landscape. Current results of our three-year Australian Biological Resource Study (ABRS) funded study 'Revision of the Australian Wolf Spiders' which commenced in December 2002, indicate that most species currently listed in Northern Hemisphere genera, such as *Lycosa* and *Trochosa*, are misplaced. Up to date, Volker Framenau has examined more than 10,000 samples of Lycosidae in most Australian Museums, including the Museum Victoria (Melbourne), the Australian Museum (Sydney), the ANIC (Canberra), and the Queen Victoria Museum and Art Gallery (Launceston). An examination of the collections in Hobart, Brisbane and Darwin are planned for the second year of our project. The collection of the Western Australian Museum in Perth is particularly valuable for our study due to the collecting efforts of Barbara Y. Main and her husband Bert since the late 1940s, and of Rolly McKay during his appointment in the early 1970s.

The main aim of this study is to provide a generic overview of the Australian Lycosidae and to place these genera in a worldwide phylogenetic framework. Not surprisingly, this worldwide framework has to be established as well, as there is

considerable disagreement even on subfamily level (Dondale 1986, Zyuzin 1993). We will base our results on the phylogenetic analysis of both morphological and molecular data, in cooperation with Cor Vink (San Diego State University). In addition, we aim to re-describe the 145 currently recognized species of Australian wolf spiders and to describe selected new species, in particular, those which can be easily confused with current species and very common Australian lycosids. Complete revisions of smaller genera, such as the *'serrata'*-group (McKay, 1979, 1985) or *Tetralycosa* Roewer, 1960 (see below) will complement our project.

The Australasian lycosid fauna is dominated by two subfamilies, the Lycosinae (sensu Dondale, 1986) and an undescribed subfamily containing the genera *Artoria* Thorell (Framenau 2002), *Anoteropsis* L. Koch and *Notocosa* Vink (Vink 2003). *'Trochosa' expolita* L. Koch is also a representative of the latter subfamily but does not fit into any of the three listed genera.

Within the Lycosinae, valid generic names representing Australian species, are *Venatrix* Roewer (revised in Framenau & Vink 2001), *Venator* Hogg, 1900, and *Tasmanicosa* Roewer. *Venator* contains currently only 2 species, but must be regarded as one of the most diverse genera in Australia. A large number of species can be attributed to this genus, which is characterized by an overall brownish colouration and black patches of different shape on the surface of the venter. *Venator* may include, for example, the common *Venator spenceri* Hogg, 1900 (as the type of the genus), *'Hogna' immansueta* (Simon, 1909); *'Hogna' burti* (Hickman, 1944); *'Lycosa' ariadnae* McKay, 1979; *'Lycosa' australicola* (Strand, 1913); and *'Allocosa' palabunda* (L. Koch, 1877). *Tasmanicosa* appears to be the valid generic name for a large group of Australian wolf spiders with a 'Union-Jack-pattern' on the carapace. The type species, *Tasmanicosa tasmanica* (Hogg, 1905) is a junior synonym of *'Lycosa' godeffroyi* L. Koch, 1865 (unpublished data), one of the most common lycosids in the southern half of Australia. Other species belonging to this genus are: *'Lycosa' leuckartii* (Thorell, 1870); *'Lycosa' gilberta* Hogg, 1905; *'Lycosa' musgravei* McKay, 1974; and *'Hogna' subrufa* (Karsch, 1878). *Dingosa* is currently monospecific, however there are a number of undescribed species related to the type species of the genus, *D. simsoni* (Simon, 1898), within Australian collections. Another lycosine 'Roewer-genus' awaits resurrection: McKay (1973, 1975) established the '*bicolor*-group' for wolf spiders with spectacularly coloured females mainly from the dry interior of mainland Australia. Roewer (1960) designated *'Lycosa' errans* Hogg, 1905 as type of his new genus *Hoggicosa*, which appears to be the valid name of the '*bicolor*-group'. This genus currently contains nine species (e.g. *'Lycosa' bicolor* Hogg, 1905; *'Lycosa' duracki* McKay, 1975; and *'Lycosa' forresti* McKay, 1973). Another large group of Australian Lycosinae shows close affinities to the Northern Hemisphere genus *Hogna* Simon, 1885, both in genitalic and somatic characters. A morphological and molecular comparison of these species with the type of the genus, *Hogna radiata* Latreille,

1817 will hopefully reveal its relationship to the Australian representatives, such as *'Lycosa' crispipes* L. Koch, 1877; *'Lycosa' corallina* McKay, 1974; *'Pardosa' pexa* Hickman, 1944; and *'Lycosa' salifodina* McKay, 1976.

The subfamily Pardosinae (sensu Dondale 1986) currently contains only two genera world-wide, *Pardosa* and *Acantholycosa*. The genital morphology of the Australian *'Trochosa' oraria* L. Koch, 1876 suggests it is a member of the Pardosinae, however, distinctively different to representatives of *Pardosa* or *Acantholycosa*. Again, Roewer seemed to have been fastest in naming this genus. He designated *'Lycosa' meracula* Simon, 1909 as type of his new genus *Tetralycosa*. *'Lycosa' meracula* is a junior synonym of *'T.' oraria* (unpublished data), and this and two other species, *'Lycosa' alteripa* McKay, 1976 and *'Lycosa' eyrei* (Hickman, 1944), belong to *Tetralycosa* (Framenau et al., in prep.).

There are a variety of other Australian wolf spider species, which do not fit into any current generic borders. Two such species are *'Lycosa' mainae* McKay, 1979 and *'Trochosa' martensii* (Karsch, 1878). Both species have unique genitalic morphologies, and only a detailed phylogenetic analysis will reveal their affinities with other Australian or worldwide taxa. Whilst *'L.' mainae* cannot be attributed to a current genus, *'T.' martensii* is the type species of *Diahogna* C. F. Roewer, 1960. ..."Priority Man".

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## POSTGRADUATE PROJECTS

### Spiders, Spinifex, Rainfall and Fire: Response of spiders to burning and rainfall in the Great Victoria Desert, Western Australia

**Peter Langlands**

**Thesis:** Honours

**Institution:** Curtin University of Technology, Perth

**Supervisor:** Karl E.C. Brennan

**Co-supervisor:** David Pearson

**Submitted:** November 2003

Conservation of biodiversity in Australia's arid zone requires an understanding of the spatial and temporal patterning of biota. Fire and rainfall are considered major forces determining these patterns. The effects of experimental fires on flora and fauna in the Great Victoria Desert were investigated from 1987 to 2003. The study was conducted at Queen Victoria Spring Nature Reserve using a multi-taxa approach. Vegetation was assessed by point transects with mammals, reptiles and invertebrates pitfall trapped.

This thesis reports the effects of burning and rainfall on the spiders collected between 1989 and 2003.

Burning caused considerable changes to vegetation with increased bare ground, and decreased spinifex cover. For plants other than spinifex, cover increased in the first four years post fire, through the resprouting of shrubs and the emergence of fire ephemerals. Leaf litter also increased after burning due to falling of dead leaves and woody debris. Abundance and species richness of spiders decreased one to two years after burning followed by increases two to four years post-fire. Similar changes were observed seven to ten years after burning. Samples with decreased spider abundance and species richness coincided with years of low rainfall making elucidation of the individual effects of burning and rainfall difficult.

Spider species richness was significantly correlated with rain one to six months prior to sampling. It is suggested that rainfall events cause pulses in plant productivity with bottom-up effects increasing spider species richness. Increased rainfall between eight and seventeen months prior to sampling also was correlated with spider species richness. It is likely rainfall one-year prior to sampling increased reproductive fitness and juvenile recruitment leading to increases in the number of species caught.

Spider species composition appeared highly seasonal with assemblages differing between sampling months. Spider species composition was correlated poorly with changes in ground cover following burning. The ground cover category of bare ground was best correlated with spider species composition ($R = 0.548$). Rainfall in the months prior to sampling showed no correlation with spider species composition.

It is concluded that fire and rainfall are important determinants of spider assemblages in arid Australia. Although the individual influences of fire and rainfall on spider abundance and species richness could not be established, premature termination following the experimental fires would have overlooked the importance of rainfall. This finding highlights the importance of long-term sampling when examining complex ecological processes, but also the need for more complex experimental designs in future studies.

BOOK REVIEW 

## 'CATALOGUE OF THE SMALLER ARACHNID ORDERS OF THE WORLD: Amblypygi, Uropygi, Schizomida, Palpigrada, Ricinulei and Solifugae.'

### by Mark S. Harvey.

CSIRO Publishing, Collingwood, Victoria.
2003. 385 pages $220.00
ISBN 0 643 06805 8.

There is an email circulating at the moment with an extraordinary picture of two solifugids hanging from a man's arm in Iraq. Clearly, one solfugid is biting the other and they are huge. Most people believe they are spiders given that they have the common name of "camel spiders". According to this latest work by Mark Harvey, common names for solifugids also include "wind-spiders" or "sun spiders", referring to the speedy movements or unique diurnal activity of certain species. Sadly, these names do little to highlight the fact that there is a wonderful arachnid world out there beyond spiders. Fortunately, the efforts of Dr Harvey, as exemplified by this world class and comprehensive publication, do.

In recent times, new or revised catalogues have been produced for spider, mite, scorpion and pseudoscorpion taxa, with the remaining arachnid orders being left behind as the "neglected cousins". Harvey's catalogue has now remedied this deficiency in his typical style which is guided by perfectionist skills and, as he says in his book, driven by 'cataloguers disease' as ascribed by the late Ray Forster.

The introduction is brief and serves to clarify which catalogues exist for the Arachnida (with an associated reference list). Some methodological issues are also outlined here, such as the derivation of distributional data. The acknowledgements are then followed by a helpful summary of taxonomic changes: type species designated, new combinations and new synonyms.

I was very pleased to see a table included in the introduction that summarises the number of families, genera and species catalogued for each of the six arachnid orders. It made it easy to realise that Harvey has patiently worked his way through the taxonomic status and literature associated with 1,665 species! Within the six orders treated, solifugids are clearly the most diverse with 1,075 species across 140 genera and 12 families. For the remaining orders there are 136 amblypygid species (across 5 families), 218 schizomid (2), 78 palpigrade species (2), 55 ricinuleid (1) and 103 uropygid species (1).

This neat summary table format is used in each of the subsequent six chapters covering each order, presenting the number of genera and species included for each family. These chapters start with an illustration of the whole animal followed by a one page overview of their unique morphological features, world scale distribution, habitat preferences, notable behaviours, fossil records and of

course, current classification. The chapters on Amblypygi, Palpigradi, Schizomida, and Solifugidae are also blessed with a very useful key to families.

The main chapters then embrace the real legacy of Harvey's diligence with valid names, complete citations, synonyms, type locality and distribution under each species. Moreover, similar detail is provided, where relevant, at the level of order, suborder, infraorder, superfamily, family and subfamily, as well as, the expected generic level. The amount of information provided is extraordinary. Moreover, the author has streamlined the user's efforts by citing the exact pages and figures within a paper that provide a description or illustration of the specified taxon. The country of the type locality is in bold for ready recognition. The attention to detail is superb, the format is easy to follow and the result sets an excellent standard for future works.

An extensive reference list is provided at the end of each main chapter using an indented paragraph format which is easy to scan through. Whilst I understand that this provides a self contained chapter for workers focussed on a given order, I still feel its easier to move from a given page directly to the back section of the book to flick through a bibliography. I was happy to see the that full journal title was used rather than the abbreviated version to help track the lesser known journals. References in this list included some not worthy of mention within each catalogue as Harvey aimed to provide as comprehensive a listing as possible.

The index is again easy to read, with font style separating the valid and invalid names. I was, however, quite frustrated by the division of the index into orders. Given this format I would at least liked to have seen the page headings include the relevant family name.

My preferences aside, I cannot fault the book apart from a few errors in font size. It is even looks good bound by a classy black cover with beautiful gold font and a gold uropygid. It is interesting that the author chose a whip scorpion from this range of cute arachnid aliens: I mean who would mess with something that has awesome pedipalps with crushing interfaces with which to dismember prey? So don't mess around: it is an essential addition to the library of all arachnologists. It will also be invaluable to those involved in biodiversity studies worldwide by clarifying the current taxonomic position of these important arthropod taxa and providing a reliable bibliographic resource.

Check out the extract of the amblypygid chapter at *www.publish.csiro.au/Samples/SmallerArachnidOrdersSample.pdf*.

To purchase the catalogue go to *http://www.publish.csiro.au/pid/3468.htm* or email *publishing.sales@csiro.au* or phone 9662 7666 / fax 9662 7666 (prefix these numbers with (03) in Australia or with +(613) internationally.

**Dr Tracey Churchill**
Museum & Art Gallery of the Northern Territory , Darwin.

## The Quicksilver Spider, *Argyrodes antipodianus*

by Doug Wallace
Rockhampton, Queensland

A captured quicksilver spider, *Argyrodes antipodianus*, moves rapidly over the palm of your hand as it frantically tries to escape from this strangely threatening and unfamiliar piece of living strata. Its rolling motion suggests the movement of a drop of quicksilver as it attempts to find a safer refuge.

It is also called The Dewdrop Spider by some, as sunlight glints from the silver surface of the peaked dome of its abdomen, somewhat resembling, at first glance, the flash of sunlit dewdrops in the grass tops at early morning.

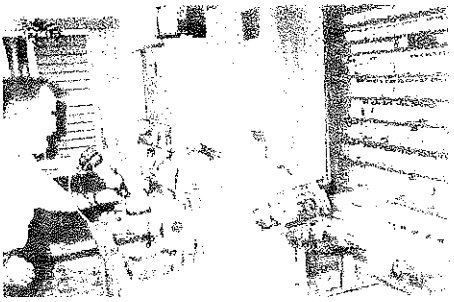
The female spider is only 4 mm long, the male a little smaller, and the microscope shows the silver to be a replica of the crumpled chocolate wrapping. The head and underside are black, and the male palps are readily seen with the naked eye.

*Argyrodes* makes a tiny, spherical, tan coloured egg-sac which is suspended in the web with a tiny tunnel shaped exit hole at the base, 1 mm long, from which the hatchlings emerge after a few weeks.

This species is commensal which means it is able to live in small groups in harmony with its host. It does not build a web for itself and once *Nephila*, the Golden Orb-Weaver, has built its web it seems that *Argyrodes* appears as if by magic to take up residence in the outskirts of this beautiful golden circle. Golden orb weavers building in urban areas are commonly found to build close to windows and similar flight paths of insects, as well as amongst the trees.

*Argyrodes*' presence in a *Nephila*'s web does not exclude other commensals. This group lives on the scraps or morsels of food rejected by the host spider and they also feed upon the tiny insects trapped in the silk. However. *Argyrodes* is also known as a kleptoparasite. and will readily prey upon the tiny *Nephila* hatchlings. Should the host spider make a quick or threatening move, *Argyrodes* disperses quickly through the fine mesh of this intricate web to a position of greater safety in the outer realms of its high sphere.

It is thus readily seen that since all spiders are cannibals, the host is quick to recognize the dark threat behind the facade of silver which will readily replenish its larder with stolen offspring. Such is the law of the jungle where victor and victim live within the wonders of the web in restless harmony.



Doug Wallace at his home office.

## CONFERENCE REVIEW

### AAS Denver 2003 - the Australiasian Perspective

The American Arachnological Society had its annual meeting at the Denver Museum of Natural Science from the 24th – 28th July 2003. It was the first meeting of the AAS I have attended and I enjoyed not only the perfect organization, and the high scientific standard of all presentations, but also the important social aspect culminating in the annual auction of spider paraphernalia conducted in sovereignty by George Uetz.

A number of presentations dealt with Australasian spiders. As part of the symposium on sociality in spiders, **Linda Rayor** (Cornell University) (co-authored by **Anne Peffer**, **Rachel Walsh**, from Cornell University, and **David Rowell**, ANU) gave an interesting presentation with a lot of scary photos of big huntsman spiders titled 'Social dynamics in an atypical social spider, *Delena cancerides* (Sparassidae)'. She highlighted some significant behavioural differences between *Delena* and other social spiders, most of which, in contrast to *Delena*, use a mutual web to communicate and capture prey. *Delena* are often highly aggressive to non-colony members, in particular large individuals, but may accept smaller conspecifics into the colony.

**Brent Opell** (Virgina Tech, Blacksburg) presented results (and beautiful pictures of his field sites on the North Island of New Zealand) of his research on the 'Population structure of the spider *Waitkera waitakerensis* (Uloboridae): does it really comprise a monotypic genus?' Two forms that mainly vary in size inhabit dissimilar habitats, understorey vegetation and rocky outcrops and these habitats are characterized by different microclimates. Using molecular tools, Brent demonstrated that the rock-dwelling populations do not represent a monophyletic lineage but appear to represent an ecotype.

In the first systematic session, **Cor Vink** (San Diego State University) gave an insight into the 'Morphological and molecular systematics of New Zealand Wolf Spiders'. Wolf spiders, in comparison with the diversity of other spider families in New Zealand, have a poor lycosid fauna of only 27 species. Twenty of these species, belong to the endemic genus *Anoteropsis* which, inferred from molecular, habitat and geological data, appears to have radiated within the last five million years.

In a second presentation on Australasian lycosids, **Volker Framenau**, Western Australian Museum (co-authored by **Mark Harvey**, also WAM, and **Andy Austin**, Adelaide University) gave an overview of the progress of their revision of Australian Wolf Spiders. Most of the currently recognized species attributed to Northern Hemisphere genera are misplaced and belong into true Australasian genera, e.g. *Venatrix*, *Artoria*, *Tasmanicosa* (for the large spiders with Union-Jack pattern on the carapace), *Hoggicosa* (the 'Lycosa

*bicolor* group'), or *Venator*. These genera show clear affinities with Australia's zoogeographical regions, e.g. the dry interior ('Eyrean'; e.g. *Hoggicosa* and *Venator*) and the South-east and South-west ('Bassian'; e.g. *Venatrix* and *Artoria*).

Wrapping up the Australasian contributions was **Simon Pollard** (Canterbury Museum, Christchurch) with a fascinating slide show on 'Diving crab spiders in the hanging stomachs of Borneo'. Two crab spiders, *Misumenops nepenthicola* and *Thomisus callidus* inhabit the pitchers of pitcher plants in Asia. Anti-predator behaviour in both species includes dropping into the pitcher plant fluid, although *T. callidus* will usually leave the pitcher rather than hide in the fluid. This behavioural difference is also reflected in morphological patterns, as *M. nepenthicola* has a cuticular indentation next to its book lungs that appears to trap air allowing a long submersion in pitcher fluid.

For all those who want to know more about the scientific content of the conference, a complete list of abstracts of the spoken and poster presentations is available at http://www.americanarachnology.org/AAS_Meetings/AAS_03_abstracts.html

Thanks to Dr Paula Cushing and her crew: I had a blast!

**Dr Volker Framenau**
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## UPCOMING EVENTS

## 16TH INTERNATIONAL CONGRESS OF ARACHNOLOGY

### Gent University, Gent BELGIUM

### 2-7 AUGUST 2004

Yes, its time for another wordly gathering of the arachnid experts, back in Europe where it all first started. Its rumoured that they lured the delegation to Belgium by bragging about the quality of their beer!

Those that sadly can't make it will miss out on presentations across a range of topics such as taxonomy, systematics, ecology, physiology, ethology and biogeography. At least there will be a proceedings published as a special volume of the "The Journal of Arachnology" for all to read.

There will be the usual mid-week excursion which, as always, is a perfect time to catch up with your collegues. Otherwise there is the congress dinner (with hopefully the traditional French song) and a post congress excursion to the Belgian coast and the Boulonnais-region in the North of France (Région Nord-Pas de Calais).

Check out the goss via the "meetings" section of the ISA homepage:
**http://www.arachnology.org**