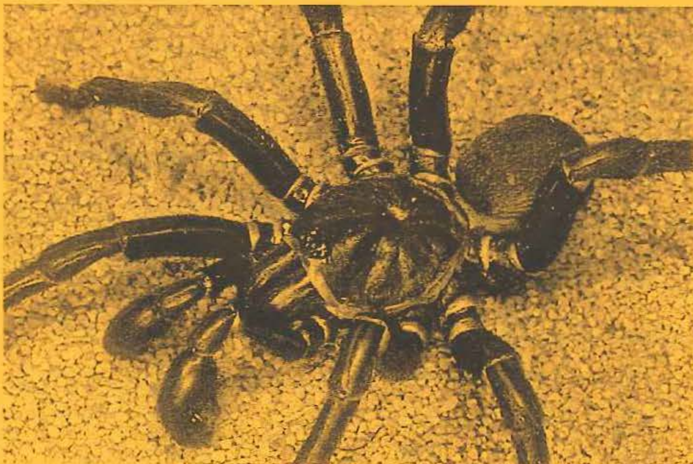
AUSTRALASIAN ARACHNOLOGY



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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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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 Editor:

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Museum & Art Gallery of the Northern Territory
GPO Box 4646
Darwin NT 0801
Australia.

email: spider@octa4.net.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.

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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.

Contact our librarian :

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

EDITORIAL

It seems that one of the famous Australian legends, the "redback on the toilet seat", now has more relevance elsewhere. As Robert Raven reveals in this issue, the redback has not only been introduced into Japan, it has made itself very much at home. Perhaps we will be hosting more Japanese visitors in future that feel safer in our region than at home!

Thanks to Richard Faulder who provided an arachnid poem currently on the email circuit. Perhaps some members may like to recite it as they enjoy a bottle of nice wine in front of a hearty fire this winter. If you are about to pop the cork on a big bold McLaren Vale Shiraz, however, you may want to have the tweezers handy and read David Hirst's article in this issue first!

Dr Robert Raven provides an invaluable article to guide the identification of our well known theraphosid taxa. Hopefully this will also help develop a better understanding of the extent of the growing tarantula trade across the different species.

To keep your literature up to date check out the details on Dr Cor Vink's book on New Zealand lycosids: congratulations Cor! And for those members who bought the interactive guide to Australian spiders (or those that have yet to buy one), Rudy Jocqué has kindly provided us with a thorough review.

........*Tracey*

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REDBACKS IN JAPAN

by Robert J. Raven
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PO Box 3300,
South Brisbane, Queensland.

Redback spiders were first noted in Osaka Prefecture in September 1995 and formally recognized as Australian redback spiders (*Latrodectus hasseltii*) in November, 1995. They were originally found in Takaishi (Osaka Prefecture) in very high densities around wharves where ships carrying oil from Australia (Sydney) were normally docked.

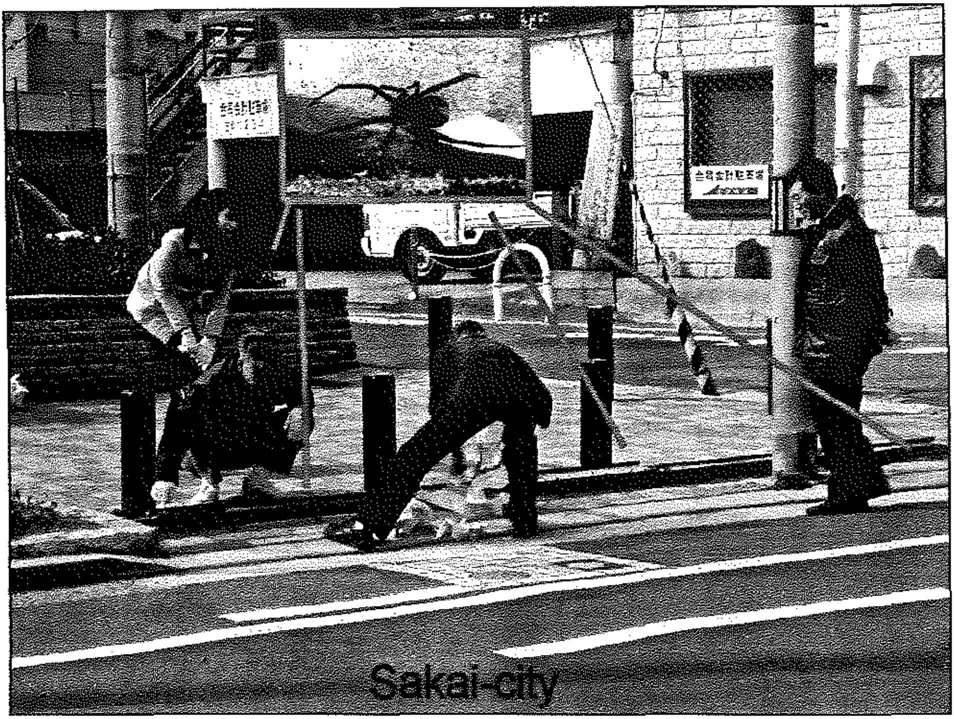
I was soon contacted by Japanese authorities (Drs Yoshiro Natuhara and Mutsuo Kobayashi) and, in May 1996, was officially visited by Dr Kitazumi (Osaka Prefecture) to whom I gave all my available information on the redback situation in Brisbane and throughout Australia. In February 2001, I was visited by Mr Yoshida, Entomologist, Osaka Prefectural Institute of Public Health, with whom I also shared information on redback spiders. Mr Yoshida showed me GIS analyses, performed by Dr Naoko Nihei (National Institute of Health (NIH), Tokyo), showing the expanding distribution of the redback in Osaka Prefecture.

Dr Mutsuo Kobayashi (Director, Department of Medical Entomology, NIH) visited the Queensland Museum in 2002 and suggested it may be possible for me to receive a grant from the National Institute of Health to visit Japan, give talks, survey the situation and comment upon the likelihood of redback spider envenomations in Osaka Prefecture. Soon after, Dr Naoko Nihei visited the Queensland Museum and showed me more recent data from the GIS analyses. Dr Kobayashi facilitated a successful application for an NIH grant for me to visit Japan in early February 2003.

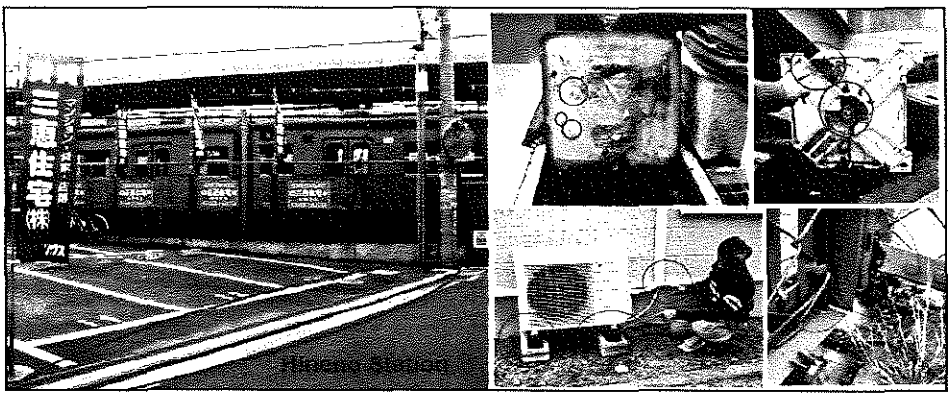
At that time of year, I found Osaka to be far colder than any Australian city in winter (daily average of 1-9°C, with an average of 13 days below 0°C). Despite that, redbacks found in urban areas in Osaka Prefecture were alive and well fed; subadult males were waiting for the first spring warmth to moult and court females, and; spiderlings in egg sacs were healthy and soon ready to emerge.

I was shown active redback infestations in Sakai-city, Kaizuka-city, Kansai International Airport and the Hineno Station area. The density of redback spiders that I saw in Hineno Station area in *winter* was far higher than I have seen in any comparable situation in Brisbane. The only location I have seen similar to that in Hineno was in *summer* in Alice Springs where the annual bite incidence is 0.36 per 1000 people—the highest in Australia. However, in Australia, this incidence has developed over at least 20 years as redback numbers have continued to increase.

In view of the apparent good winter health of the redback spiders in Osaka Prefecture, it seems that the spiders are becoming far more cold-adapted than they are in Australia. I suggest that this



Typical roadside location of female Redback spiders in Sakai-city, Japan.



Hineno Station, Japan (left) and four examples (right) of the places in which individual female redback spiders were found (circled). Photographs by R. Raven.

adaptation may allow the spiders to become a more widely spread international pest, if the cold-adapted spiders escape Japan. An alternative source of cold-adapted populations may be Belgium, where Australian redbacks were noted as established in 1999.

Determining the likelihood of redback bites involves two primary statistics: the number of redback bites and human population density. redback bite records in Australia are not centralised: a media survey reveals that many bites are simply not reported to any medical centre. Careful revision and cross comparison of data indicate that current estimates of redback bites in Australia are substantially under-estimated. This new analysis finds that it is likely that almost 10,000 redback bites occur annually in Australia and that bites in the greater Brisbane area account for around 36% of the total.

Human population density in the greater Brisbane area varies from about 300-700 /km^2 whereas in the Osaka Prefecture it averages 5,500 /km^2. If the spider density observed in Hineno Station is typical of a wider area, then the densities the spiders attain this summer will certainly result in bites in urban areas in Osaka. The expected number of bites in Osaka is difficult to predict based on Australian data because of behavioural differences between the two cultures: Australians tend to more careless than the Japanese about redback spiders and potential bites. The occurrence of redbacks in Osaka is presently very patchy. As the population expands with each summer, the likelihood of bites will increase. The spider population tends not to spread more than 100m by direct means, but on vehicles & building materials they can be moved into new locations. In some cases, redbacks have been found 10km from the nearest known location of a significant population. It will be interesting to monitor the future occurrence of redback bites and the changing distribution of *Latrodectus hasseltii* in Japan.

"ARACHNID"

O' spider, arachnid legs of eight,

you hunt and feast with power so great.

Your restless search for little creatures

for your stomache to digest.

You catch them and eat them,

or they fall into your web,

your glossy eyes and tiny mouth

take care of all the rest.

Mike Ganje

SPIDERS AND WINE

by David Hirst
South Australian Museum
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Over the years I have been asked to identify spiders that had supposedly found their way into bottles of South Australian wine prior to being corked. The 'finders' had all returned the foreign object from the United Kingdom. Apparently at one time the policy was if a recipient of the wine found such as a spider in a bottle and returned it to the winery then a dozen bottles would be sent as compensation.

Cases I have dealt with involved one of *Amaurobius similis* (Blackwall) and two each of *Tegenaria atrica* C.L. Koch and *T. domestica* (Clerck). The cases involving *A. similis* and *T. atrica* could be dismissed easily as those species have not been recorded for Australia. *Tegenaria domestica* on the other hand is difficult to dispute as this species has been introduced to Australia (Waldock, 1992) and there are records of this species from South Australia. However, in all, only a handful of specimens have been collected in or around Adelaide, from the early 1900's but none since 1978. Ironically the last specimens collected were from Coopers Brewery, Adelaide (now under housing development). The South Australian Museum also has two specimens of *T. pagana* C.L. Koch from the early 1900's but unfortunately without locality data.

However, there was one case of a female *Clubiona* sp. being sent in for identification in which the poor state of preservation indicated it had been submersed in a liquid for some time, unlike the other specimens mentioned above. The epigynum had a distinctive broad heavily sclerotized posterior margin and I was unable to match it with illustrations in Locket and Millidge (1951) nor quickly able to find any comparable species in collections in the South Australian Museum. Eventually I did come across a few specimens in the collection from localities within the wine growing areas which are conspecific.

So it would seem that South Australian spiders do find their own way into bottles prior to being washed and filled (bottles are scrubbed on the outside only). *Clubiona* spp. are well known for the sac-like silken retreat they produce and it is likely that it would take more than a wash to dislodge the spider from within the silk-nest inside a bottle.

References:

Locket G.H. & Millidge A.F. (1951). British Spiders. Vol. 1. London. Ray Society

Waldock, J.M. (1992). Australasian Arachnology 44: 4-5.

THE OFTEN ELUSIVE *Selenotypus plumipes* Pocock

by Robert J. Raven
Queensland Museum,
PO Box 3300,
South Brisbane, Queensland.

Recognition of Australian tarantula species has always been difficult. After Raven (1985), mygalomorph identification was hopefully a bit easier. Since that monograph, generic boundaries have changed and I have seen better spider material. Consequently, I can now clarify one of the most common sources of confusion for those trying to identify members of the Theraphosidae. The four main species involved are *Selenocosmia crassipes*, *Selenocosmia stirlingi*, *Selenotypus plumipes*, and *Phlogiellus*.

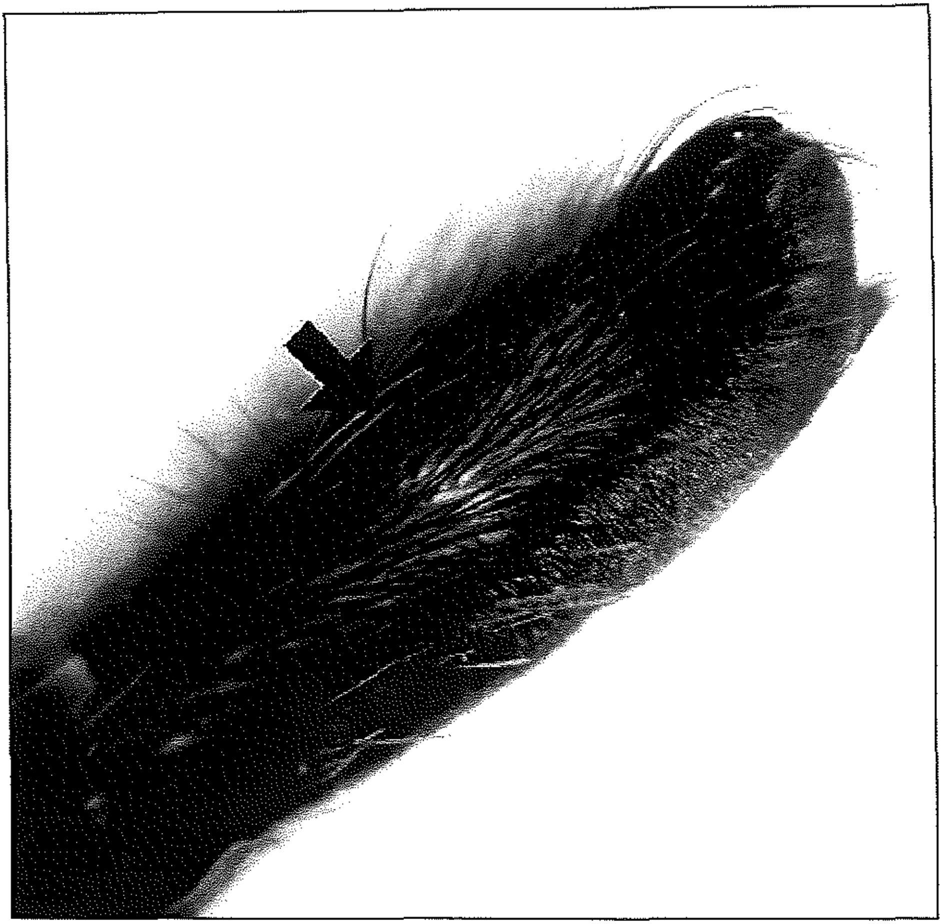
Selenocosmia crassipes is one of the most distinctive species because it has large, long, thick front legs. It is most often confused with species of *Phlogiellus* which are common in northern Queensland. The difference between *S. crassipes* and the genus *Phlogiellus* is not easy to pick unless you have been shown the character: *Phlogiellus* has a weak zone (see photograph opposite) across the middle of the fourth (and sometimes also the third) tarsus; in dead specimens, the tarsus appears bent at this point. Also, *Phlogiellus* has a third claw on the fourth leg which is not easily determined without a good microscope and a good light. So the most easily seen character is the cracked tarsus which is not present in *Selenocosmia crassipes*. If the spider was collected north of Bowen and had larger first legs, it is likely to be *Phlogiellus*.

Selenocosmia stirlingi is often misidentified as *Selenotypus plumipes* (e.g. www.tarantulas.com.au). The difference between the two is easy to pick: *S. stirlingi* has the first and fourth legs similar in girth and length. This species seems to be very common in western Queensland, coming to the coast between Rockhampton to Townsville. In *Selenotypus plumipes*, the fourth leg is clearly longer than the first and thicker, but the most diagnostic feature is the dense bush of hairs on the upper surface of the tibia and metatarsus of the fourth leg, relative to that on the third leg.

The Queensland Museum website will soon display this information to help with identification. Of course, there are more theraphosid species than these four! However, some we only know from photographs sent to us by pet keepers and collectors. To those of you who know such people, I appeal to you to ask them to send their dead animals, preserved in methylated spirits or ethanol to the Queensland Museum, either in Townsville (Museum of Tropical Queensland) or South Brisbane. We'd prefer to have specimens with their original locality but clearly this is not going to be given away too readily by collectors: we'd like the specimens anyway!

References:

Raven R.J. (1985). The spider Infraorder Mygalomorphae (Aranea): Cladistics and Systematics. Bulletin of the American Museum of Natural History Vol 182 (1).



The fourth tarsus of a species of *Phlogiellus* showing the character that helps distinguish between *Phlogiellus* species and *Selenocosmia crassipes*: a weak zone across the middle of the tarsus.

Fauna of New Zealand

Ko te Aitanga Pepeke o Aotearoa

Number 44

Lycosidae (Arachnida: Araneae)

The family Lycosidae (wolf spiders) has more than 2200 known species that are found worldwide, especially in open habitats. Twenty-seven species are found in New Zealand, two of which are introduced, while the remaining twenty-five species are endemic. In this significant new work, the twenty-seven species are revised with one new genus and fourteen new species described. Wolf spiders are easily recognised by the carrying of the spherical egg sac behind the adult female and the subsequent transport of the young on her abdomen. Like most lycosid species, New Zealand wolf spiders are habitat specific and are found in mountain screes, riverbeds, beaches, tussock grasslands, forest, swamps, and marshes. The most commonly seen species, *Anoteropsis hilaris*, has been investigated as a possible bioindicator and biomarker for organophosphate insecticide contamination, and is also thought to be a beneficial predator of insect pests.

This *Fauna* contribution contains descriptions of all genera and species, with information on synonymy, type data, geographical distribution, and subfamilial status. Habitus images of adults, illustrations of important structural features, and distribution maps are provided, and a key to adults is given. In addition, a phylogenetic analysis examining the relationships of species in the genus *Anoteropsis* is presented and contains significant phylogenetic structure.

Contributor **Cor Vink** recently completed a Ph.D. at Lincoln University on the taxonomy and systematics of New Zealand Lycosidae of which this *Fauna* contribution formed a major part. Cor is particularly interested in the taxonomy and systematics (both morphological and molecular) of wolf spiders but has also published work on the ecology of spiders and the taxonomy of New Zealand

2002, Colour photos, B&W illustrations, 94pp, 240x183mm, softback, $37.50
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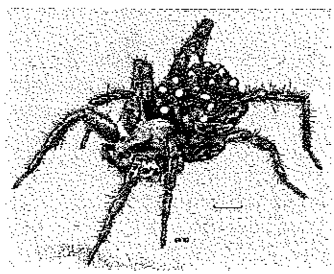

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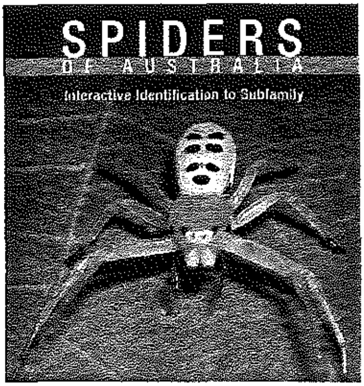
CD REVIEW



'Spiders of *Australia*. Interactive Identification to subfamily.'

by R.J Raven , B.C. Baehr & M.S. Harvey.

Produced by CSIRO Publishing.
ISBN 0 643 06870 8

This interactive identification key is a remarkable step forward in the dissemination of knowledge on spiders, and on the Australian Araneae, in particular. It would be an understatement to call it innovating as it is certainly not exaggerated to designate it as a pioneering contribution to arachnology. This is indeed the first endeavour to provide an interactive key for the identification of spiders of a major faunal region.

It takes between five and 15 minutes to download the program onto the hard disk and restart the computer. Although primarily meant as a key, the CD contains several other sections which can be accessed from an introductory window. Headed under "general information" there is an introductory chapter "About spiders" which looks at the group from an original angle which will certainly succeed in raising the fascination for spiders. It discusses some characters that make spiders unique or have made the group an evolutionary success: the production of silk, the development of gripping devices on the legs in a few and the evolution of acute vision in some others. It further considers the taxonomic status of spiders in Australia and provides a short introduction to systematics.

A major part of the annexes is the glossary. It is fairly complete and all characters are amply illustrated by drawings, photographs or images from a scanning electron microscope (SEMs), usually of good quality, that appear at a click of the mouse. However, since this glossary is probably the main document that will be consulted by novice key users, it is somewhat puzzling that several keywords are imbedded in groups of structures, and can thus only be found when one is well acquainted with the structure of spiders. "Chilum" for instance will be sought in vain in the list but is mentioned under "clypeus" or under "sulci". The same applies for "anal tubercle" which has to be found under "spinnerets". Several terms that are used in the keys cannot be found in the glossary such as "spigots" or "apophysis".

A particularly useful section is the checklist of Australian spiders. Although the information evidently overlaps with the Platnick Catalogue (2003) on worldwide taxa, it has the great advantage that the information is filtered. It also provides an alphabetical listing of genera and the family they belong to, a piece of information that is badly lacking in the otherwise magnificent Platnick Catalogue.

The identification keys constitute the main part of the CD and consist of four windows by default. The top left contains the characters, the bottom right the taxa (families or subfamilies), both the other windows are initially empty. The idea is that the user selects characters out of a list that may contain up to 184 states, by clicking on them. Users can either click on the text describing the state or on one of the thumbnails (it is not clear why the cursor changes into a magnifying glass when doing so), that illustrate the states after a click on the bullet in front of the character text. The selected state is then written in the top right window. Each time a character is added to that list, the taxa list in the bottom right window is reduced to those taxa that match the list of selected characters; the discarded ones are transferred to the bottom left window, and; both the number of remaining and of discarded taxa is shown.

For each character state a set of notes and pictures is available. These are in fact the same that are found via the glossary and good explanations on some characters (see above) are thus lacking. From within the keys there is no direct step back to the complete glossary but the different parts can be accessed by clicking on "notes" that is available under the "i" bullets. Most of these pictures are fairly good to excellent, as mentioned already, but some lack detail like those on spinnerets which becomes apparent when one wishes to use the character. The fact that several states of the same character may be illustrated by different means, for instance by photographs, SEMs or drawings, and from different angles (e.g. cheliceral orientation; spinneret size; male palp), makes comparison sometimes difficult. In some of the crucial steps it is difficult for the inexperienced user to understand what is meant by the different drawings.

The keys are cleverly made in that they contain shortcuts. One can choose from two shortcuts either "best" or "bingo". The main tool is doubtlessly "best" which leads the user through the most relevant characters just as a dichotomous key would do. It may, however, have some surprises in store as the first "best" selection to be made in the Arachnomorphae key concerns a character of the male palp (embolus shape) although the reason for this arrangement is explained in the "help" file for the keys. But if the user has a female they are somewhat left in the cold and has to use trial and error to select relevant characters in the beginning. For the second shortcut a few selections have to have been made before it can be used: it then proposes, very much as "best", a selection of characters that will be relevant for further identification.

There are three key sections: "Australian Spider Subfamilies", "Araneomorphae" and "Mygalomorphae". To one's surprise the first one appears to be leading to six possibilities called taxa probably in analogy with the subfamilies in the other sections: Mygalomorphae, and 5 groups of Araneomorphae: Hypochiloidea, Filistatidae, Dysderidae, Araneomorphae with long spinnerets and others. It is not clear why this first section was complicated to such an extent as all Araneomorphae are recapitulated in the second section just as are all the Mygalomorphae in the third. It could thus have been restricted to either Mygalomorphae or Araneomorphae.

Once arrived in the latter sections, the keys tend to run smoothly and when a final answer is reached the reward is waiting in the shape of notes on the (sub)family, a distribution map and an excellent picture of a representative of the family, in most cases. For a few families, mostly with tiny representatives, the picture is lacking. The notes give, among others, a diagnosis and short description and a checklist. The checklists are however not provided at the subfamily level.

No doubt the authors of this package have made a great effort and succeeded in the production of a remarkable tool for the identification of Australian spider families and subfamilies. In view of the novelty of this kind of work it is not surprising that this package contains a few inadequacies and limitations, some of which have already been mentioned.

The question that may be raised here is whether a key on line for identification to the level of families and subfamilies is to be preferred over an ordinary printed dichotomous key. As there is an excellent alternative (Davis 1986) it was possible to test the efficiency of both. We presented a male nicodamid to two non-arachnologist biologists with a clear inclination to computer-aided identification. It would take too long to describe their experiences but they both worked faster with the paper key than they did with the interactive one, although they used the dichotomous key first. Both testers had problems with finding the link from the key to the "glossary" and realized that the entire glossary is only available when one leaves the keys and returns to home. They also had problems with the first "best" character (embolus shape) and both abandoned the use of that character.

The drawings do not always show where that important part is. Sometimes the embolus is indicated with an arrow, sometimes the arrow indicates the opposite cymbium (thin) and often there is no indication at all. It is not clear at all where the embolus is in the drawings for "in apical part" and "s-shaped". Several states are illustrated by the same picture (coiled and spiral shaped; broad acuminate and hooked distally) which makes it extremely puzzling for the inexperienced user who would be seeking the difference between several states such as "short", "at the end of bulbus", "broad and acuminate" and "finger-shaped". It is felt that it would be very useful to have the possibility to go for a "second best", an option that is common practice in CABI keys.

A main drawback for the occasional user is that it takes much more time to open the program and get acquainted with it and come to a result than to use a simple dichotomous key. The explanation about how the keys work is divided over the help and the tutorial files and some searching is needed to get the knack of it. Not to speak of the inevitable "ctrl-alt-del" sessions that have become a widespread illness when working with complex programs but for which the authors of this CD are evidently not blamed. As for the frequent user, with experience dichotomous keys and pages of drawings are easily recalled, so that after some time one can very rapidly go through a key almost without reading. Time will tell whether the same phenomenon exists with an interactive version.

One of the main advantages of on line information is that it can easily be corrected and updated. However, by the time this CD will we distributed it will already be somewhat outdated: new families have already been added to the fauna of Australia (Ammoxenidae) or transfers of genera made (*Orthobula* has been transferred to the Corinnidae) and more of that can be expected in the near future. Some misspellings or small mistakes will remain on the CD one has purchased (eg. Remoisier is Reimoser, *A. biperformatum* is *A. biperforatum*; the picture for Amaurobiidae in part shows *Manjala*, Desidae; the animated arrow on some of the pictures indicates the wrong spot when the picture is maximized; pictures can be greatly distorted when maximised; one of the thumbnails on sternal sigilla is sometimes not shown; the checklist under Malkarinae appears to be that of the Lycosidae; information under *Uliodon* refers to the Araneomorphae subkey). In this context it might be questioned whether it was opportune to distribute the information on CD whereas the appropriate channel might have been the internet which would have allowed regular updating.

This key is a courageous and remarkable undertaking which will be the basis for future work in the same direction. It is an excellent first trial and inevitable step towards the development of interactive keys at the level of genera and species. The structure of the keys is very handy but the quality of the iconography is open for improvement. We have the impression that the authors were under strong time pressure to finish this first version.

References:

Davis, V. T. (1985). Australian spiders, collection, preservation and identification. Queensland Museum, 60 p.

Platnick, N. I. (2003). The world spider catalog, version 3.5. American Museum of Natural History, online at http://research.amnh.org/entomology/spiders/catalog81-87/index.html

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