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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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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 (returned only upon request) to :

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

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COVER PHOTOGRAPH : *Lychas* sp.
by T. Churchill & G. Wanganeen

EDITORIAL



In this issue we have the privilege of honouring the passing of Dr Ray Forster. In this region, we have benefitted enormously from Ray's contributions to arachnology which Drs Platnick and Shear have kindly summarised for us. Dr John Murphy (B.A.S.) generously provided photos taken in the Forsters' company. And last year Ray and his wife, Dr Lyn Forster, produced the *Spiders of New Zealand* which is reviewed here. We have also included an article by Dr Glenn Hunt, written not long before he died last year. Thankyou to those providing articles and updates – keep them rolling in!

.....Tracey

MEMBERSHIP
CHANGES

New Members

Welcome to : My-my Huhn
84 Young St.,
Parkside
South Australia. 5063

Change of Address

Dr Penny J. Gullan
Department of Entomology
University of California
One Shields Avenue
Davis, CA 95616-8584, USA

Erich Strauch Voischenk
Dept. Terrestrial Invertebrates
Western Australian Museum
Francis St. Perth 6000

On their backs to bite 'em

by the late **Glenn Hunt**

Arachnology Department
Australian Museum, Sydney

Whilst doing some work for another project, Sue Lindsay, who runs our SEM lab, and I happened upon a mite piggy-backing a Tasmanian triaenonychid harvestman, *Mestonia* sp. (Plates 1 and 2), which belongs to a genus more noted for its lofty eyemound than the passengers it carries. Bruce Halliday of CSIRO Entomology looked at the SEMs and believed that the mite is almost certainly the parasitic *Leptus* sp. of the family Erythraeidae.

There are a few records of *Leptus* or closely related genera parasitising hard bodied Laniatores harvestmen in the families Gonyleptidae, Cosmetidae and Assamiidae (Cokendolpher, 1993). This is the first published record for the family Triaenonychidae. Parasitism by *Leptus* has been reported more in the usually softer bodied members of the suborder Palpatores.

Reference

Cokendolpher, J.C., 1993. Pathogens and parasites of Opiliones (Arthropoda: Arachnida). *Journal of Arachnology* 21: 120-146.

Plate 1 : The mite *Leptus* sp. on the harvestman *Mestonia* sp.

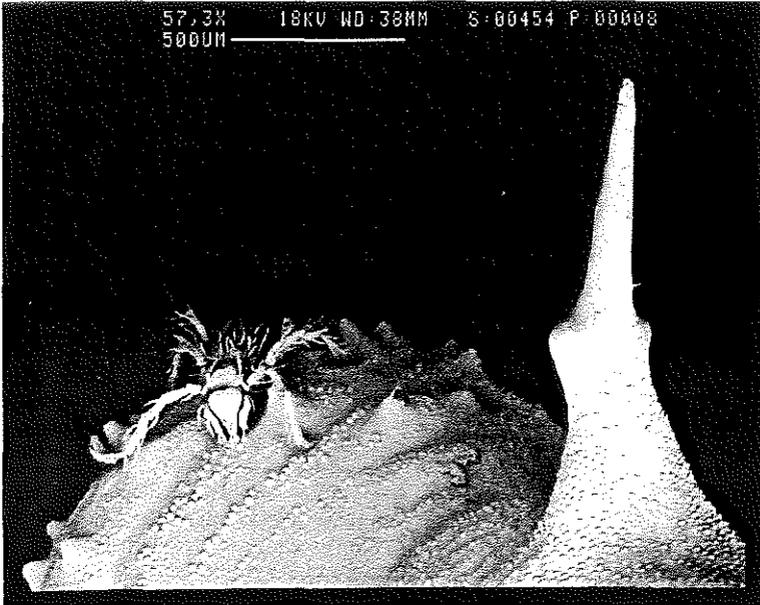
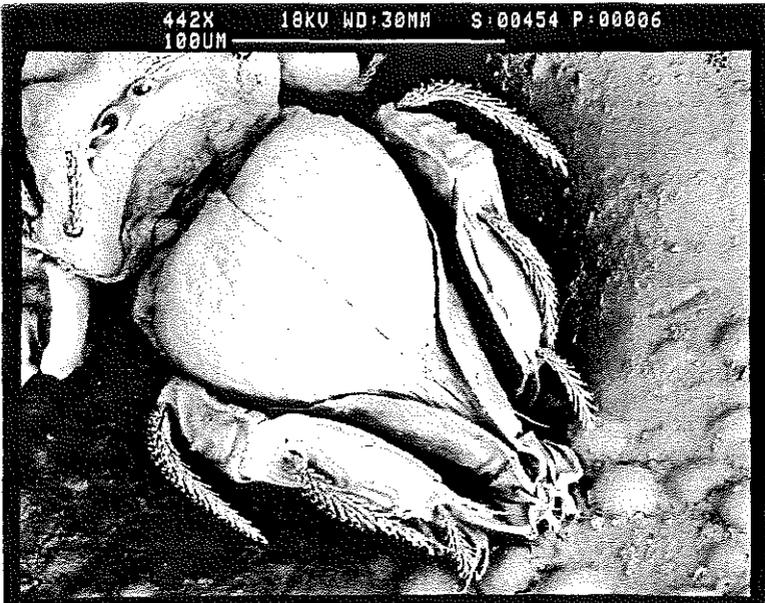


Plate 2 : Closeup view of the mite *Leptus* sp.



OBITUARY

RAY FORSTER

1922 - 2000



The world's arachnological community was enormously saddened by the unexpected death of Dr Ray Forster on June 30, just a few days after his 78th birthday. During his long and productive career, Ray had become the grandmaster of the often puzzling and always challenging south temperate arachnid fauna.

Ray was born on June 19, 1922, in Hastings, New Zealand, and benefitted from the then-widespread tradition of on-the-job-training for museum-based systematists. By the time he was 18, he had published his first scientific paper and begun work at his first professional position, as Assistant Entomologist at the Dominion Museum in Wellington. He quickly became an inveterate field biologist and collector, eventually joining serious expeditions into the remote parts of Fiordland, where he discovered a small valley now named Forster Burn in his honor.

Ray stayed in Wellington through 1947, with some interruptions for wartime service, and obtained his Bachelor of Science from the Victoria University of New Zealand in that year as well. The following year, the university awarded him a Masters Degree in Science with Honors, and he moved to the Canterbury Museum in Christchurch, as Zoologist and Assistant Director. He obtained his Doctor of Science in 1953, and in 1957 moved to the Otago Museum in Dunedin, where he spent 30 years as that institution's Director.

Ray received many grants and honors, of course; he was a Fulbright Research Scholar in 1956-57, spending time at the Bishop Museum in Hawaii and working on

symphytognathoids with both the late Willis Gertsch at the American Museum in New York and Herbert Levi at the Museum of Comparative Zoology at Harvard. Almost three decades later, he returned to the US for another year, on senior fellowships that allowed him to work both in my lab at the American Museum and that of Jon Coddington at the Smithsonian.

Ray was elected a Fellow of the Royal Society of New Zealand in 1961, and received its Hutton and Hector medals for his outstanding scientific research. The Hutton medal was most appropriate, being named for the earlier Otago Museum biologist and director who discovered the palpimanoid spider now named *Huttonia*.

Ray's early work on opilionids and spiders showcased his unmatched skills in morphology, microscopy, illustration, and photography. Among his earliest important discoveries were the first known members of the spider family Gradungulidae, which he described in 1955. Ray realized that these animals were hypochiloids, and very much enjoyed sending an account of his remarkable discovery (an araneomorph spider with two pairs of booklungs but no cribellum) to Alexander Petrunkevitch, then the doyen of spider morphologists. Petrunkevitch responded that no such spider could possibly exist ! Ray eventually replied by sending specimens and his publication on them, and never heard another word from Pete !

Ray was best known, of course, for the six large volumes in *The Spiders of New Zealand* series; the first volume appeared in 1967, and the sixth in 1988. These books were largely supported by grants

from the New Zealand national lottery, a source of funding for scientific research that other countries would do well to emulate. Together, they represent a massive contribution, probably unmatched since Simon's *Histoire Naturelle des Araignes*. What is perhaps most remarkable is that this enormously influential work was produced while Ray was Director of the Otago Museum, a local institution small enough to ensure that virtually all of its business had to cross his desk at some point. It is scant wonder that Ray so much enjoyed his sessions at the university's scanning electron microscope, and in the darkroom, for those were the only places where he could work undisturbed for more than a few minutes at a time !

Those SEM sessions were tremendously productive; Ray was the first person to realize the significance of tarsal organ morphology, and he carefully documented that character system across dozens of families. His findings had repercussions far beyond the borders of New Zealand, allowing us to collaborate on documenting many previously unsuspected ties between Australasian and Chilean taxa in groups as disparate as the Austrochilidae, Orsolobidae, Mecysmaucheniidae, Micropholcommatidae, Malkaridae, Synotaxidae, and Anapidae.

To his colleagues, Ray was always thought of together with his wife Lyn, a broadly knowledgeable zoologist and arachnologist in her own right, who co-authored the three popular volumes (*Small Land Animals of New Zealand* in 1970, *New Zealand Spiders: An Introduction* in 1973, and *Spiders of New Zealand and Their Worldwide Kin* in 1999) that cemented their local reputation as

outstanding naturalists. Together, Ray and Lyn raised four children in their home near the south end of the South Island; sadly, Lyn has recently suffered a severe stroke.

My family and I were lucky enough to spend three months living with them in 1987, and we remember those times with great fondness. Ray will always be pictured, in our memories, in his typical Saturday morning pose, engrossed in the cricket match on television while dangling a cigarette that seemed always to bear an impossibly-long string of burned ash, after which he would rise and take our four-year old son into the backyard garden for a serious session of strawberry-picking.

The universe seems much diminished with his passing.

.....Prof. Norman Platnick

American Museum
of Natural History
New York, U.S.A.

Ray Forster published a number of papers on Australian and New Zealand harvestmen (Opiliones) from the mid-1940s to the mid-1960s. In New Zealand, he had a rich fauna with which to work, and nearly all taxa were endemic.

Notable among these papers was a large 1954 monograph on the suborder Laniatores in New Zealand, a 327-page opus in which he described a new endemic family (Synthetonychidae), four new genera, and 122 new species, as compared to the 30 that had been previously known.

In 1948, a shorter monograph had covered the New Zealand cyphophthalmids, and he returned to that subject later with descriptions of still more species. Also in 1948, he discovered the first New Zealand member of the sub-family Acropsopilionines, previously known only from Chile. At the generic level he dealt with the endemic genus *Megalopsalis*, now recognized as the type of a family-level taxon. A synopsis of cave-dwellers was published in 1965, and in 1962, a useful key to all then-known New Zealand harvestmen.

Three papers by Forster on Australian harvestmen stood for decades as the only monographic work on the order in Australia. Several endemic genera, including the unusual phalangiid genus *Spinocrus*, were described in these papers.

Forster can truly be regarded as the father of opilionology in New Zealand and Australia; the vast majority of the New Zealand species were named by him, and until the work of Glenn Hunt (also recently deceased), he had done the only synoptic work available on Australian harvestmen.

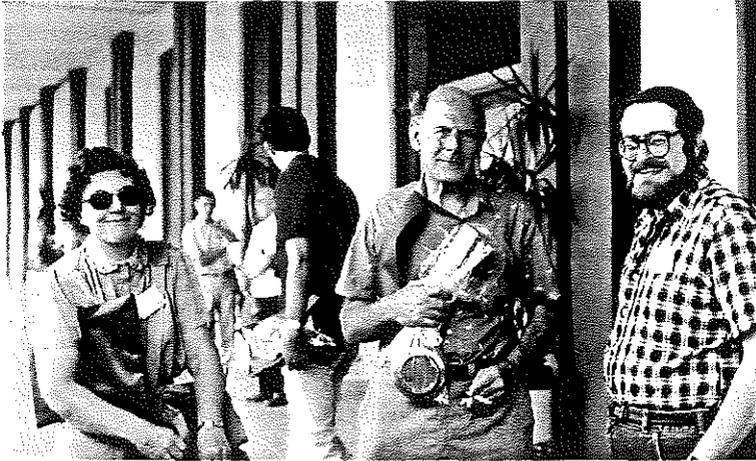
His papers on the fauna of both countries will continue to be of seminal importance for whoever may take up the study of these intriguing animals.

.....Dr William Shear

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Hampden-Sydney VA 23943



Photographs of the Forsters by John & Francis Murphy (B.A.S.)



Lyn and Ray with Norman Platnick at the Panama Congress, August 1983



Ray sifting trays at Pleasant Flat, Mt. Aspiring, N.Z. January 1991.

BOOK REVIEW



Spiders of New Zealand
and their Worldwide Kin

by Ray Forster & Lyn Forster

1999. University of Otago Press,
Dunedin, New Zealand

"Sometimes, on a brisk early morning, the sparkle of a dew-laden web catches your eye" (p. 3). And so begins the reader's journey, as the authors readily share their immense knowledge and enthusiasm for spiders and other arachnids. The book is a very timely celebration of the decades of detailed study by both Ray and Lyn into the taxonomy, ecology and behaviour of the New Zealand fauna, which has earned them international respect.

The design and content makes it highly useful to a wide spectrum of readers, from the arachnologist to the novice naturalist. The format of the eighteen chapters is easy to read, with clear text supported by wonderful colour and black and white photographs, and drawings. The latter includes many of the excellent illustrations characteristic of the six part series of "Spiders of New Zealand" produced by Ray and his colleagues from 1967 – 1988. With their complimentary areas of expertise, Lyn and Ray have achieved a satisfying integration of both taxonomic and ecological / behavioural information, which is a model for others to follow.

The authors begin by answering fundamental questions that we are often presented with such as : "But why study spiders ?" as well as, an outline of higher

classification, introduced taxa, and phylogeny. The first chapter covers anatomy, function and terminology of all body parts (including types of hairs and silk glands), in such valuable detail that this chapter alone would be useful for teachers. Spider life cycles, dispersal modes, prey capture, courtship, mating, and other topics such as the use of silk, are adequately dealt with in the second chapter. The four other arachnid orders that occur in New Zealand (NZ) are given attention in the next chapter, and whilst they acknowledge that 16 orders occur globally, it was a pity that the other 11 orders were not mentioned. For the four NZ orders, there is : a brief section on Acari; four pages on Chelonethi; a large section on Opiliones (reflecting Ray's expertise); and, sadly, nothing on the Palpigradi. Four families of mygalomorphs that occur in NZ are covered in one chapter with wonderful images of genera and their sometimes cryptic burrows.

The fifth chapter serves an introduction to the subsequent eleven chapters on araneomorph spider families and focuses on the primitive members within the Hypochilidae, Austrochilidae and Gradungulidae. Chapters Six to Sixteen are certainly more than a repetitive review of taxa within the 53 families they cover. The families are grouped according to foraging style or web types and the text embraces many facets of spiders' lives, such as foraging tactics, styles of mating, eggsac construction, the perils facing spiderlings or achieving camouflage in their preferred habitat. Scanning electron images are also used to share the secrets of tiny spider species, helping the authors excel at getting the reader to visualise life at the spider scale. I really liked the enchanting story, complete with

illustrations, of the unique way *Sidymella* rights itself, testament again, to the authors' fascination and great patience.

I was intrigued to see some new family common names: Clubionidae (hopping spiders), Corinnidae (fleet-footed spiders), Miturgidae (prowling spiders), Gnaphosidae (stealthy spiders), Lamponidae (white-tailed spiders), Malkaridae (shield spiders), and Cycloctenidae (scuttling spiders). I am not prepared to promote the lamponid name given the amount of mis-information and fear already associated with *Lampona cylindrata*. I would have preferred to have had a discussion amongst regional arachnologists to determine common names, especially for families, to ensure widespread acceptance and adoption.

The well known jumping spiders have an entire chapter dedicated to them as worthy tribute to the insight Lyn has acquired over years of study. Indeed, the first line best relates her sentiments : "By far the most fascinating arachnids are the Salticidae or jumping spiders, so astonishingly anthropoid in posture and movements that one is tempted at times to ascribe human thought processes to them." (p. 117). This chapter is great for explaining why spiders are so maligned !

Most families are represented by excellent illustrations or photographs, however, for the chapter on six eyed spiders, there were, unfortunately none for two of the four families (Scytodidae and Oonopidae). This is a pity, especially for students attempting to recognise the introduced *Scytodes*. For the more experienced, the chapter on orbweb spiders offers a new family, the Nanometidae, which spin horizontal orb webs and occur in New

Caledonia, New Zealand and Australia. They have a very unusual structure...but I'll let you to discover that for yourself ! The chapter on spaceweb spiders has an invaluable overview of the katipo and redback, including their infamous mating rituals which Lyn tirelessly documented.

The penultimate chapter provides a handy reference to the famous dance of the tarantella, and to spider bites from several taxa including the redback and the white tailed spider (as well as theories associated with the latter). The last chapter describes the techniques involved in capturing spiders and establishing a collection. The appendices contain a very useful list of spider families worldwide and a brief background to famous arachnologists. There is one index that includes both common and latin names (which I prefer to use, and which is better for the novice who may be unsure of the origin of a name) and easily identifies the page reference for illustrations.

In summary, the words of the authors are again most appropriate : "As you read this book we hope that you will come to realise, as we did, that spiders are remarkable little animals often with strange features and astonishing behaviours, and that very few are to be feared." (p. 3). The book will be a lasting legacy to highlight Lyn and Ray's lifelong dedication to arachnology. It is a "must have" for all arachnologists and students across our region. The recommended retail price, including GST, is A\$79.95c, and it is distributed in Australia by Unireps, a division of UNSW Press.

.....Dr Tracey Churchill

Tropical Savannas CRC & CSIRO Darwin

ARACHNOLOGICAL ACTIVITIES



Spiders as bioindicators of burning and/or mining in the Jarrah forest of Western Australia : an update.

Karl E.C. Brennan, Jonathan D. Majer
Lachlan Ashby, Melinda L. Moir,
John M. Koch* and Owen G. Nichols*

School of Environmental Biology
Curtin University of Technology
&

* Environmental Department,
Alcoa World Alumina,

Fire plays an important role in Australian ecosystems, so much so that it is now considered a natural part of the system. It has been, and continues to be, one of the most important factors influencing the structure and distribution of plant and animal communities. It is employed extensively for management purposes, including: the reduction of fuel loads in order to control the spread of wildfires; the protection of timber resources; the promotion of regeneration; and the maintenance of species diversity and habitats. However, our understanding of fire as a management tool with respect to biota is far from complete.

Currently, in the Jarrah forest of Western Australia, *Alcoa World Alumina's* rehabilitated mine pits are protected from fire. Conversely, the *Department of Conservation and Land Management* (CALM) manage surrounding unmined Jarrah forest with the use of prescribed burns. The ultimate fate of rehabilitated mined lands is to be returned to these

land managers (CALM). As such, the application of fire into the management regime for rehabilitated lands is seen as inevitable, and desirable, in relation to this relinquishment. However, at what time since rehabilitation fire should be incorporated into management of rehabilitated lands, is unknown. Therefore, determination of the effects of fire on the fauna inhabiting lands of different ages since rehabilitation is critical for sound management.

Given the importance of fire in Jarrah forests ecosystems, it is possible that prescribed burning of rehabilitated mine pits may facilitate the return of the mine pit fauna to a state similar to unmined forest. Alternatively, the addition of another disturbance (fire) being imposed on a system already recovering from a major disturbance (mining) may inhibit the rehabilitation process.

Invertebrates are recognised as having an important role in the structure and maintenance of ecosystems. They are fundamental to processes such as decomposition, herbivory, parasitism and pollination and form important dietary linkages throughout the food web. Additionally, invertebrates constitute about 95% of the world's animal biodiversity. Hence, they are important organisms to consider in terms of rehabilitation success following mining.

Previously, the vast majority of terrestrial invertebrate studies, which were designed to assess rehabilitation success following mining, have focused on ants. However, a recent review into the consistency of responses of invertebrates to disturbance suggested that ants may not be as good a bio-indicator as first thought. In fact, this

study found that spiders displayed more consistent responses.

Recently, spiders have been promoted as ideal bio-indicators as they are diverse and abundant predators and changes in spider faunas are likely to reflect ecological impacts at lower down the food chain. To date, two studies have been very successful in using spiders to assess mine rehabilitation success. However, the use of spiders as bio-indicators is still in its infancy. Hence, further studies that utilise spiders as bio-indicators in ecological monitoring are necessitated.

Three students from *Curtin University of Technology*, under the supervision of Jonathan Majer, have taken up this challenge and in co-operation with John Koch and Owen Nichols from *Alcoa World Alumina* have been examining the response of spiders to the disturbances of burning and/or mining at Jarrahdale Mine. To date more than 12,000 spiders have been identified. Surprisingly over 440 different species have been collected with more than 80% of these not formerly named. Specimens of a few species are currently in Queensland and the United States being described by taxonomists. One species of lamponid was recently named *Pseudolampona jarrahdale* Platnick, 2000 after the collection locality, Jarrahdale Mine.

In 1998, honours student Lachlan Ashby examined the response of spiders to burning in unmined forest. He found a change in the species composition of spider communities as time since burning increased. Initially, after prescribed burning approximately only 15 species of ground dwelling spiders were present. After 3 years since burning the number of

species had increased to approximately 26. Over longer times the number of spider species plateaued at approximately 22 to 24 species.

Ph.D. student Karl Brennan has been examining spider recolonisation following mining and also the effects on spiders of burning mine pits of different ages since rehabilitation. He has found a change in the species composition of spider communities as time since rehabilitation increased. Many species of spiders colonised about three years following mining. By comparing his spiders with Lachlan Ashby's he has found that nine-year-old mine pits are most similar to spider communities inhabiting forest sites burnt nine years previously. However, most importantly he has found that the burning of eight-year-old mine pits alters the spider community to a species composition most similar to recently burnt forest sites. Thus, through the use of prescribed burns in mine pits, Alcoa is likely to be able to control what type of animal communities will eventuate.

Last year Honours student Melinda Moir examined how burning alters the spider communities of older mine pits that have eastern state eucalypt overstories. She found that burnt mined sites were characterised by a spider community different to that of the surrounding Jarrah forest, and of unburnt mined sites. The cause for this was most likely due to a combination of habitat changes brought about by the original rehabilitation process and secondly by burning. Given the difference noted between burning jarrah and eastern state eucalypt overstories careful consideration of the application of fire in rehabilitation may be necessary.



**15th INTERNATIONAL
CONGRESS OF
ARACHNOLOGY**



26-30 March 2001

**Badplaas Aventura Conference Centre
South Africa**

"Arachnology in the new millenium"

Don't miss the next arachnological congress to be held at the luxurious Badplaas Aventura Holiday Resort. From Johannesburg International Airport, there will be some transport options to get to Pretoria, where delegates meet before going to Badplaas. In Pretoria, special hotel rates will be available, and bus transport to Badplaas then provided.

Badplaas is an Afrikaans word meaning "a farm where you can bath" and refers to the presence of a natural hot spring. Badplaas is a well-known resort in South Africa, and offers a peaceful and relaxed environment. It is situated in the 1500 ha Embuleni Private Nature Reserve, at the foot of the Hlumuhlumu Mountains, 1288 m above sea level in Mpumalanga Province between Carolina and Barberton. The reserve includes 300 species of birds, White Rhino, Leopard, Zebra, Black Wildebeest, and many other species. There are no restrictions on collecting arachnids in the reserve surrounding the resort, except for baboon spiders (Theraphosidae) which require a

special permit. Fortunately, it is not one of the malaria risk areas of South Africa.

The resort offers a wide range of amenities, services and styles of accommodation (eg. guesthouses, luxury chalets, hotel rooms and camping facilities). Package accomodation deals are available to delegates, including cheaper options for students.

Topics for oral presentations will include systematics, medically important arachnids, ecology, biodiversity, behaviour, morphology and physiology. Topics for workshops currently being considered are biodiversity and collecting methods. The proceedings will be published in the Journal of Arachnology Volume 30 issue 2 and 3 of the American Arachnological Society.

Registration fees are R300 for ISA members (approx. A\$64) and R330 for non-members (approx. A\$70). Registration deadline is 15 January 2001 and the registration form is available on the web or in the third circular due in October –November 2000.

For more details check the website :

<http://www.arc.agric.za/lnr/institutes/ppri/arachnology/conweb.htm>

or contact the congress Organiser:

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