The web is strong

Congress NZ  4
Gone fishing  20
Aussie rocks  26
The Australasian Arachnological Society
The aim of the Australasian Arachnological Society is to promote interest in the ecology, behaviour and taxonomy of arachnids of the Australasian region.

Website
In 2018 the Society website was refreshed with a new design, a membership database and ecommerce abilities. This website replaces the previous version which now redirects to the new website. An archived copy to two families, Desidae and Trochanteriidae, hence suggesting it appeared to have characteristic similar to

Desognaphosa

Point at the Cooloola Cooloola Bio Blitz 26 Aug 2108. (Trochanteriidae) collected by the spider team Carlo Cover: A new species of Desognaphosa

magnificent Argiopinae, see story on page 12.

Editorial
Maintaining a society of Australian Arachnologists and issuing newsletters is no easy task, and all credit must go to those key members who stepped up over the years to take on admin and newsletter duties. The Australasian Arachnological Society was formed in November 1979 by Robert Raven who produced the first nine issues of Australasian Arachnology.

In 1983, while Robert Raven was overseas doing post-doctoral research, Richard Faulder, of Yanco Agricultural Institute, became administrator and newsletter editor, producing issues 10-20. In 1985, Robert Raven returned with issues 21-35. Richard continued to print the newsletter. In January 1989 Robert Raven handed over to Mark Harvey. Newsletters continued to be produced by Mark with help from Julianne Waldock, until issue 54 in 1998, when Tracey Churchill, then with CSIRO in Darwin, took on the editorial role. From April 1999 to May 2004, Tracey produced issue 55-69. In June 2004 Volker Framenau took on the editorial role and was instrumental in getting the society website up and running in August 2005. In September 2009, Michael Rix took over as newsletter editor and in May 2012 Cor Vink became Australasian Arachnological Society webmaster.

This issue of Australasian Arachnology (Number 87) features a new look, being the first for the new editorial team (Robert Whyte, co-author of A Field Guide to Spiders of Australia and Helen Smith, Australian Museum). We hope you like it. As always we encourage our audience to participate in developing content for the newsletter and welcome contributions for all quarters.

Robert Whyte            Helen Smith

Thursday, December 6, 2018

Contents
In this issue we range from Shark Bay Western Australia to Christchurch New Zealand and meet people from Ernst Haeckel to Sarah Crews.

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By Mike Rix

A lobster pot

Lobster pots and Spider Baskets by Glenda Walter

Below, one of many atypical putative Opisthoncus spp. from the Daintree causing problems for the development of a key to the genera of Jumping Spiders of Australia. Story page 38. GREG ANDERSON

Above and right, Argiope mascordi from Castle Rock, between Dimbula and Chillagoe. For more on the magnificent Argiopeinae, see story on page 12.

Cover: A new species of Desognaphosa (Trochanteriidae) collected by the spider team Carlo Point at the Cooloola Cooloola Bio Blitz 26 Aug 2108. Desognaphosa as a genus prior to its assignment to Trochanteriidae was stored in a jar with notes suggesting it appeared to have characteristic similar to two families, Desidae and Trochanteriidae, hence the name. ROBERT WHYTE
XXI International Congress of Arachnology
New Zealand 10–15 February 2019

Plenary Speakers

Eileen Hebets University of Nebraska-Lincoln, USA
Sensory Systems, Learning, and Communication - Insights from Amblypygids to Humans

Martin J. Ramirez Museo Argentino de Ciencias Naturales "Bernardino Rivadavia", Buenos Aires, Argentina Spider phylogenetics and evolution - beyond the trees

Prashant Sharma University of Wisconsin-Madison, USA The evo-devo spyglass: a promised renaissance for morphology in an era of genomes and functional toolkits

Klaus Birkhofer Brandenburg University of Technology, Cottbus, Germany Spider communities in agricultural landscapes – response patterns and consequences for predation service

Symposia

Growth, morphogenesis and developmental genetics
Organiser: Prashant P. Sharma

Arachnid venoms Organiser: Greta Binford

Arachnological outreach for community engagement, conservation and research Organisers: Maria Albo and Lizzy Lowe

Island Arachnids biogeography Organisers: Sarah Boyer, Rosemary Gillespie, Julien Pettillon and Kaina Privet

The breadth of sexual strategies and reproductive morphology in arachnids – This is just the beginning! Organisers: Anita Aisenberg and Michael Kausmunic

Jumping spiders: behaviour, ecology and evolution Organisers: Daiqin Li and Elizabeth Jakob

Outstanding Opiliones: Reproductive and population-level biology in harvestmen Organiser: Mercedes Burns

Mygalomorph spiders – evolution and conservation Organisers: Mark Harvey, Joel Huey, Mike Rix & Jeremy Wilson

Workshops

Flyer for the workshop is attached.

Congress 2019 Schedule and Program

Sunday 10 February registration, welcome party, workshop
Monday 11 February opening ceremony, talks, poster primers
Tuesday 12 February talks, Russian party
Wednesday 13 February Mid-congress excursion
Thursday 14 February talks
Friday 15 February talks, ISA meeting, closing ceremony, congress dinner

Mid-congress excursions A trip is proposed to Hinewai Reserve www.hinewai.org.nz on the Banks Peninsula. This 1250 hectare reserve is privately owned and managed by the Maurice White Native Forest Trust. A limited amount of collecting should be possible and will not require a permit.

Post congress excursion This will be a three day trip to the West Coast of the South Island. Please register for the excursion when you register for the meeting. The costs will include transport!

Accommodation and food costs are to be met by participants but we will negotiate group rates with selected hotels to be listed closer to the time.

Day one 16 February travel to Wesport via Lewis Pass.
Day two 17 February travel to Franz Josef and Fox Glaciers.
Day three 18 February travel to Christchurch via Arthur's Pass.

Congress 2019 is being held in Christchurch, which is one of the most beautiful cities you will ever see. Please book accommodation as soon as you can. There are plenty of accommodation options in Christchurch, but February is a busy tourist time.

The conference's main accommodation partner is the Central City YMCA. They have dormitories, standard rooms, deluxe rooms and apartments.

When you book via https://goo.gl/7udvJ8 use the code Arach2019 to receive a 10 per cent discount. Rooms are subject to availability and some configurations are limited.

If you wish to share or have any other special requests, please email julia@ymcachch.org.nz

The breadth of sexual strategies and reproductive morphology in arachnids – This is just the beginning!

Organisers: Anita Aisenberg and Michael Kausmunic

Jumping spiders: behaviour, ecology and evolution
Organisers: Daiqin Li and Elizabeth Jakob

Outstanding Opiliones: Reproductive and population-level biology in harvestmen
Organiser: Mercedes Burns

Mygalomorph spiders – evolution and conservation
Organisers: Mark Harvey, Joel Huey, Mike Rix & Jeremy Wilson

Organisers: Lizzy Lowe lizzy.lowe@mq.edu.au & Jonas Wolff Jonas.wolff@mq.edu.au
10 February 2019 10am - 3pm
Workshop aims: provide information on comparative analyses and the potential of big data analysis to answer ecological and evolutionary questions, present ideas for collaborative projects using trait data, and form working groups to address these questions, discuss possibilities for a centralized data repository to facilitate future meta-analyses.

Speakers will give: a 10 min talk on a research project that included collection or meta-analysis of functional data across spider species; a 20 min primer on biostatistical methods or data curation; a pitch (5 min) for a potential project to use collated trait data. The pitch will be used to recruit interested collaborators and identify possibilities of data sharing to enhance impact and robustness.
A game to identify and help save life

“What on Earth is that?” As you lean in a little closer to your latest find, you notice it’s not quite like any species you’ve seen before. “I can’t wait to tell someone about this!”

For readers of Australasian Arachnology this may well be a common experience. Yet it’s actually very alien for many people. Unfortunately, society is increasingly distracted from the beauty of nature. Our eyes constantly buried in our smartphones.

But wouldn’t it be great if more people felt inspired to get outdoors and really appreciate the life all around us? The outdoor mobile game QuestaGame is bringing about this change – not only engaging new audiences in nature, but also empowering them to contribute to biodiversity citizen science. Every QuestaGamer is on their own real life adventure to help save life on Earth.

So how does it work? QuestaGamers earn rewards submitting photo sightings, or identifications, of real wild plants, animals and fungi using the app on their smartphone (or online). The better their finds, the higher their scores (in part informed by taxon rarity in biodiversity research databases).

QuestaGame players get connected with real experts as they learn about the diverse life they are finding. It’s this connection with real taxonomic expertise that ensures the citizen science data generated through QuestaGame has real scientific utility when it is shared with research databases such as the Atlas of Living Australia and accessed by researchers.

Since it was started with just a $3,500 crowdfund in 2014, QuestaGame has now grown to have players in over 50 countries, with over 1.4 million submitted photo sightings and identifications. It’s value to research was also recognised this year at the ‘Oscars’ of Australian science, being awarded the 2018 Eureka Prize for ‘Innovation in Citizen Science’.

QuestaGame’s ‘gamification’ approach to citizen science was inspired by the enthusiasm that co-founders Andrew and Mallika Robinson saw in their own kids’ willingness to learn about the multitudes of diverse weapons and bits of equipment they needed to succeed in their virtual game worlds. The idea crystallised when Andrew and Mallika used their collective intelligence and citizen science system-design experience to develop the ’Bio-Expertise Engine’ that now powers QuestaGame’s species verification.

Where to from here? “Well we’re really just scratching the surface of what’s possible when you combine online multiplayer gaming with scientific activity,” says Andrew Robinson. “As the game evolves and gets more interesting, the quantity and quality of the biodiversity data also increase, allowing researchers to map and better understand the distribution of plants and animals.” Quite an evolution looks to be in store for ‘QuestaGame 2’ as well, with aliens, augmented reality and card-battling elements promising to take the adventure to a new level.

Experts can contribute identifications by visiting the Bio-Expertise Engine (bee.questagame.com) and set up an account. There are plenty of interesting Arachnid sightings coming in every day that players are keen to learn about. Be sure to choose ‘Australasian Arachnological Society’ as your ‘Pays to Know Nature’ cause when submitting IDs. Then all your correct IDs will earn the society donations.

Why not download the ‘QuestaGame’ app on Android or iOS and take up the adventure yourself? Or simply encourage someone else who you know would enjoy it.

Story by David Haynes
Evolution and conservation of Australia’s trapdoor spiders

Trapdoor spiders and their kin (infraorder Mygalomorphae) present as a major, significant component of the Australasian ground-dwelling spider fauna, increasingly renowned for their longevity, cryptic fossorial life history, biogeography and conservation significance.

Australia is home to over 400 described species in 10 mygalomorph families, and numerous undescribed species await taxonomic description. Recent collaborative research since 2012, focusing on the ‘spiny trapdoor spiders’ of the Gondwanan family Idiopidae, has revealed a remarkably diverse and highly endemic fauna. This work has provided important insights into the phylogeny, biogeography and taxonomy of Australia’s trapdoor spiders and the conservation challenges faced by some species.

Mygalomorph spiders include some of Australia’s most iconic arachnids, including the highly venomous and biomedically-significant funnel-web spiders (family Atracidae) of eastern Australia, the large and popular tarantulas (family Theraphosidae) of inland and tropical regions, and the distinctive mouse spiders (family Actinopodidae) which can sometimes be found commonly in semi-urban environments.

Mygalomorph spiders have a fairly conservative morphology by spider standards, and the group is unambiguously monophyletic; all species have the symplesiomorphic four pairs of respiratory book lungs, downward striking chelicerae and distinctive spinnerets at the end of the abdomen. In Australia Idiopid trapdoor spiders characteristic of the arid zone with their burrows shown beneath, left Gaius villosus A. Parsons, M Harvey, right a new species of Idiosoma M Rix.
the vast majority of species are fossorial and none are cursorial hunters, although a number of taxa build burrows or retreats on or in tree bark. With few exceptions they are nocturnal sit-and-wait ambush predators, characterised by relatively limited dispersal abilities as both juveniles and adults, and extreme longevity relative to other spiders. Males are usually strongly sexually dimorphic, possessing modified pedipalps for sperm transfer (as do all spiders) and longer legs for wandering during the mating season. Their deep evolutionary history, low vagility, long generation times, often limited inter-population gene flow, strong genetic structure within and between populations, high habitat or substrate specificity, and generally high species turnover across landscapes make mygalemorph spiders eminently suited to evolutionary and biogeographic research.

Over six years of dedicated research on spiny trapdoor spiders of the family Idiopidae has highlighted a number of central themes underlying our understanding of mygalemorph evolution and biogeography in an Australian context. One of the most obvious themes, in line with numerous studies on other vertebrate and invertebrate taxa, is the presence of old endemic lineages in the eastern mesic zone; and the allopatric distributions of included species in mescic refuges (e.g. upland rainforests) separated by more xeric inter-zones. There are a number of trapdoor spider genera in Australia that are characteristic of the eastern rainforests, including at least four species which have extraordinary ‘palisade’ burrows. One of these, a highly restricted and soon to be described new species from south-eastern Queensland, has an extraordinary crenate burrow lid morphology – among the most remarkable built by any spider. This species, being worked up by Griffith University PhD student Jeremy Wilson (see Wilson et al., 2018), is evidence of just how much remains to be discovered in our precious rainforest habitats.

Another major theme in trapdoor spider research, and indeed something of a central tenet for Australian biogeography more generally, is the recognition that within old endemic lineages, a number of phylogenetically derived groups have managed to radiate into the central arid zone since the Miocene. Idiopid trapdoor spiders are an old element of the fauna, having been in temperate Australia since the continent was still attached to Antarctica. However, lineages within at least seven genera have independently moved into arid zone habitats across Australia, including species of Gaius and Idiosoma.

A third theme is the observation that trapdoor spiders in multiple families are extremely diverse in more transitional (semi-arid) habitats, situated between the mesic zone and the inland arid zone. This is best exemplified by the idiopid genus Bungulla, which is remarkably diverse in the Southern Carnarvon Basin (SCB) of Western Australia. The SCB is a stunning region south of Shark Bay, and is home to at least 12 endemic species of Bungulla. It seems as though a diversity of species-group lineages within Bungulla, and a wide variety of habitats and substrates in the region, creates a landscape in which numerous species can occur together (or nearly so). This situation is replicated in places like the Wheatbelt of Western Australia and parts of southern South Australia, where a suite of genera and a diverse assemblage of species can be found in remnant woodland habitats.

Finally, research on trapdoor spiders in Australia and around the world has revealed the conservation significance of these organisms. One Australian species – Idiosoma nigrum (the ‘shield-backed trapdoor spider’) – is currently listed as Endangered, having suffered severe contemporary population declines. M. Harvey

**References**


Lobster Pots and Spider Baskets

Story by Glenda Walter, member of the Toowoomba Field Naturalists, August 2018

As a keen naturalist, amateur entomologist and arachnologist exploring the natural world, I often muse on how little I know and how much there is to learn.

Three years ago I photographed a strange little woven basket-like structure at Lake Broadwater, west of Toowoomba. It was empty. I had no idea what it was or what had made it. My limited contacts of that time were unable to help, so I relegated the image to the back shelf, hoping that one day I’d find out more.

While watching some old DVDs in August’s cold weather, I came upon Densey Clyne’s Webs of Intrigue https://youtu.be/oxoDKBJ853E in which she showed a clip of a Lobster Pot Spider with a woven trap in the act of catching ants. It seemed that Densey had given me the answer to my puzzle.

Densey Clyne, whose articles, books and films so many of us have appreciated, lives in Sydney and at the age of 96 is still interested in natural history. When we contacted her through Daphne Bowden, she told us that the spider she had filmed and photographed was named in her records as Saccodomus formivorus Rainbow, 1900, a member of the Crab Spider family Thomisidae.

I found this spider has several records on the Atlas of Living Australia: New South Wales, South East Queensland and South Australia.

Densey’s film shows that the spider builds its pot near meat ant nests, where the foraging ants eventually discover it, enter and become dinner for the spider. McKeown, in Spiders of Australia, calls it the Basket-nest Spider and describes it as a little yellowish-brown creature, found on various shrubs where psyllids and tree-hoppers attract ants with their honeydew. He mentions the ant-like leg-waving behaviour recorded on film by Densey.

Bert Brunet, in Spider Watch, shows an image of an adult spider with her trap and several juveniles at its entrance and says it is the only Lobster Pot (Saccodomus) Spider in Australia. It is in fact the only Saccodomus in the world, described from the female only in an article by Rainbow: Two new Thomisids, Records of the Australian Museum 3, 1900. Brunet describes the adult as being often seen waving its legs in an ant-like manner to subdue or placate its prey. Densey’s film indeed shows this interaction between ants and spider. The plant on which the spider has woven its lobster pot snare seems as though it may be the same as the plant upon which I saw mine.

Naturalist Rod Hobson has seen the pots or baskets of this spider in state Forest west of Toowoomba. Densey’s record as well as Rainbow’s was in the Tamworth area. Rob Whyte suggests Saccodomus formivorus may possibly be found west of the Great Dividing Range as far south as Echuca and north as far as Emerald.

I am looking forward to summer, when I will return to the location and see if the spiders are still there. It will be fascinating to document and photograph the behaviour and life cycle of this interesting arachnid and its prey.

Many thanks to Densey Clyne, Daphne Bowden, Rob Whyte and Dr Ron Atkinson for their suggestions and help with identification of and information about the Lobster Pot Spider.
Citizens and experts mucking in together: the greatest group online

If you’re an aficionado of the finest arachnid photography in the world, bar none, look no further than the fabulous www.facebook.com/groups/845862308764265 – just Google Australian & NZ Arachnid Photography groups/845862308764265 and go there only. You’ll be so glad you did. By the way, who’s Trump?

It’s a closed group, open to requests for joining, so move on. It’s a great hangout for the best arachnid experts worldwide. Once your request to join has been quickly approved (there is no test or secret handshake) just have a gander at the member list. It’s an arachnological who’s who! All you have to do is bookmark the Australian & NZ Arachnid Photography group www.facebook.com/groups/845862308764265 and go there only when you want to.

It’s a closed group, open to requests for joining, so no riff raff or “Quick, get a thong!” serial arachnid killers. Just quality. It’s a favoured hangout for the best arachnid experts worldwide. Once your request to join has been quickly approved (there is no test or secret handshake) just have a gander at the member list. It’s an arachnological who’s who!

Group owner Adam Parsons leads by example, with superb photos and brilliant observations from his NSW property. That’s some backyard he’s got. He’s got a great eye for the mygals, having an uncanny ability to get his IDs spot on from photos. It’s a gift. He admits struggling a little with Salticids, but then the group has got Joseph Schubert for them. He’s got a great eye for the mygals, having an uncanny ability to get his IDs spot on from photos.

Keen macro photographers are learning excellent arachnology for this group, without racking up a huge HECS debt. You can see people changing from mildly interested to absolutely obsessed before your eyes.

Do yourself a favour, forget you ever heard Mark Zuckerberg’s name and join. You’ll be so glad you did. By the way, who’s Trump?

Stellar career acknowledged with prestigious Museum gong

On August 16 2018, one of Australia’s most-loved scientists, Dr Robert Raven, was awarded the Queensland Museum Medal for his contribution to science and research in the field of arachnology. Robert is Head of Terrestrial Biodiversity, Senior Curator, and Chairman of the Animal Ethics Committee at Queensland Museum.

An important time in his career was as CSIRO Post-doctoral fellowship at the American Museum of Natural History in New York in 1983 (for whom he remains a Research Associate) and at Canberra in 1984. In 1985 he produced his benchmark study structuring of the classification of the mygalomorph spiders on a global scale.

Robert Raven with Barbara Baehr at the presentation.

"...you see something that’s so far out of left field you can’t believe it..."
Arachnids are not easy. It’s almost certain everyone in the world has heard about spiders, but what of the other arachnid taxa? There are whole superorders, subclasses and other taxonomic levels of animals in their thousands, all with their place on the tree of life. Several taxonomic schemes have been proposed. Sometimes taxa move, from branch to branch, as we learn how they fit into nature’s lineages. Here are just a few.

Mites and ticks have in the past been treated as a single order, Acari. They are now treated separately, the mites being Acariformes (32,000 species) which include plant parasitic mites, snout mites, chiggers, hair follicle mites, velvet mites and water mites. Ticks are now in their own order Parasitiformes (12,000 species). Opilioacariformes are harvestman-like mites (having six pairs of eyes, and abdominal segmentation) with around 10 genera.

Harvestmen and kin are Opiliones (6,300 species). The Pseudoscorpions with 3,000 species are often found in litter and under bark when searching for spiders, and are well known, as are traditional scorpions in Scorpiones (2,000 species).

More obscure are the Ricinulei, hooded tickspiders often described as “living fossils” noted for their bizarre appearance and gait (60 species); Schizomida, having long, tactile front legs, able to move very rapidly over short distances, found in rainforest leaf litter, caves and hot houses (220 species); tropical Amblypygi, whip spiders, flattened with multi-segmented, extremely long front legs which act as tactile organs (153 species); small, fragile, enigmatic Palpigradi, microwhip scorpions (80 species); Solifugae (sun spiders, wind-scorpions or camel-spiders with large, powerful, two-segmented chelicerae (900 species) and the imposing, robust, tropical predators Thelyphonida, aka Uropygi known by many names including vinegaroons and whip scorpions (100 species).

Note: species numbers are approximate and ever-changing.

Ernst Haeckel (1834–1919), who produced the plate opposite, was a German scientist and artist who promoted and popularised Charles Darwin’s work in Germany. His illustrations were collected in his Kunstformen der Natur (Art Forms of Nature).

1. Tegeocranus hericius (Michaeli) = Protocepehus hericius (Michael, 1887)
2. Tegeocranus latus (Koch) = Cepheus latus C.L.Koch, 1836
3. Tegeocranus cepheiformis (Nicolet) = Cepheus cepheiformis (Nicolet, 1855)
4. Leiosoma palmicinctum (Michael) = Tereticepheus palmicinctum (Michael, 1880)
5. Phrynus reniformis (Olivier) = Phrynichus reniformis (Linnaeus, 1758) / Phrynus ceylonicus (C.L.Koch, 1843)
6. Arkys cordiformis (Walckenaer) = Gnolus cordiformis (Nicolet, 1849)
7. Gasteracantha cancriformis (Latreille) = Gasteracantha cancriformis (Linnaeus, 1758)
8. Gasteracantha acirosomaides (Koch) = Acirosomaides acirosomaides (O. P. Cambridge, 1879)
9. Gasteracantha geminata (Koch) = Gasteracantha geminata (Fabricius, 1798)
10. Gasteracantha arcuata (Koch) = Macroacantha arcuata (Fabricius, 1793)
11. Acrosoma hexacanthum (Hahn) = Gasteracantha hexacanthum (Linnaeus, 1758)
12. Acrosoma spinosum (Koch) = Micrathena schreibersi (Perty, 1833)
13. Acrosoma bifurcatum (Hahn) = Micrathena furcata (Hahn, 1822)
14. Oxyopes variegatus (Hahn) (non Latreille, 1806: preoccupied) = Oxyopes ramosus (Martini & Goeze, in Lister, 1778)
15. Epeira diadema (Linne) = Araneus diadematus Clerck, 1757

Facing page, Ernst Haeckel - Kunstformen der Natur (1904), plate 66: Arachnida
taking STOCK

The Cooloola BioBlitz on the weekend of 26-27 August 2018 was a timely reminder. No matter what the season or the weather, natural areas can reveal astonishing diversity and more than a few surprises. >
Cooloola is a significant natural area adjoining the Great Sandy Strait Ramsar site with a rich array of habitats from bay to beach, wallum to rainforest and fens to high dunes.

The involvement of scientists, naturalists and community members in all phases of observation, identification, recording and analysis of habitats of all living natural resources, was an important exercise in promoting and developing citizen science.

Ninety seven people signed on for seven target areas representing distinctive habitat types easily accessible from Rainbow Beach, the centre of operations.

Indicators
Spiders (order Araneae) have proven to be highly rewarding organisms in biodiversity studies\(^1\), being an important component in terrestrial food webs, an indicator of insect diversity and abundance (their prey) and in Australia an understudied taxon, with many new species waiting to be discovered and described.

Many lineages of spiders have evolved to utilise terrestrial habitat niches where their food is found, some in quite specialist ways. For the 2018 Cooloola BioBlitz, techniques targeted ground-running and arboreal spiders. Methods were used in the following sequence:

- careful visual study of bush, leaves, bark and ground, to see movement, spiders suspended on silk, or spiders on any surface
- shaking foliage, causing spiders to fall onto a white tray or cloth
- scraping and brushing bark

An early 2018 BioBlitz new species was an *Ornodolomedes* sp. nov. found at midnight on Friday 24 August at Lake Poona by Ben Revell, who is part of the Australian QuestaGame Citizen Science team. Ben is a specialist with these Water Spiders (Pisauridae) recently having *Ornodolomedes benrevelli* named in his honour. Adult *Ornodolomedes* can reach a body length of around 7-10 mm.

Citizen science

The aim of the BioBlitz was to generate and extend biodiversity data for northern Cooloola, educate participants and the larger community about the area’s living natural resources and build citizen science capacity through mentoring and training.

\(^1\) [Google Scholar resources for spiders biodiversity.](https://goo.gl/Q7zGLw)
Yellow-tailed *Eilca* sp. (Gnaphosidae). Australian *Eilca* spp. are fast running ground spiders connected with ants. ♀ 5 mm ♀ 3 mm ROBERT WHYTE

Confirmed new species of the Back-walking Jumping Spider *Opisthoncus*, closely related to *O. sexmaculata* differentiated by genitalia. ROBERT WHYTE

Above left, the undescribed male *Cetratus circumlitus* (Thomisidae), Carlo Point 25 August 2018. The female, above right, was known by taxonomists at least as early as 1876 when Ludwig Koch described it. ♀ 5 mm ♀ 4.5 mm ROBERT WHYTE

**AUSTRALIAN ARACHNOLOGICAL SOCIETY**

**Australasian Arachnology 87**

This 2.4mm *Orthobula* sp. found on 25 August 2018 at Carlo Point, is a new species of a genus in the family Trachelidae, not yet official for Australia. ROBERT WHYTE

**Background: Tin Can Bay Inlet** MARIE EDMISTON-PRIOR
peeling bark (utilised minimally so as to leave habitats relatively undisturbed)

• turning logs and rocks (returning them to their initial position)

• transferring leaf litter into bags, then sifting though a handful at a time

• sitting beside grass tussocks and waiting (watching for movement of Peacock Spiders).

Common collection methods not utilised at Cooloola due to our consideration for the sensitivity of the habitats included: knock down pyrethrum fogging; digging burrows and working litter down to its base.

Spiders can also be attracted with vibrations of a rough-running diesel engine, impractical on this occasion. However we benefited from ‘by-catch’ from entomologists, botanists and fungi experts.

Initial findings turned up greater diversity than expected, suggesting that the relative stability of the landscape over long periods of time has resulted in adaptations to suit micro-niches. It seems where life is a struggle, a wide variety of organisms colonise a given area, without any of them becoming overwhelmingly successful to the detriment of others.

Naturally fewer new undescribed species were encountered as the survey progressed. This was because some of the same new species occurred in each location.

It was remarkable, however, how many completely new species we found at Seary’s Creek and Inskip Point and in particular Inskip Point where the diversity was simply mind-blowing. It suggests the affect of an overlap of many habitat types, because of the leeward side being close to the open ocean side. Forest, wallum, dunes and heath are all in close proximity in a small area. Sampling skills had also improved by that time. The collection at Inskip Point was cut short (by about half) because of rain, making it all the more astonishing.

The highlights of collecting overall included:

• Ben Revell’s near magical abilities to find new species of Orthodolomedes

• Robert Whyte misidentifying the common Bomis larvata as a new species of Cymbacha

• Robert Raven identifying a new species of Desognaphosa; and Orthobula in the new family Trachelidae

• More specimens of the new Crab Spider species Tharrhalea-Lehtinelagia "woodfordia", which if not conspecific will become Tharrhalea-Lehtinelagia "cooloola"

• First live photos of Cetratus circumlitus and first ever photos of its undescribed male

• ‘Mr Stripey’ and ‘Exclamation Point’ finally separated into two new species

• Many new money spiders, the chances of identifying them in Australia being next to nil

• Hundreds of Tetragnatha sp. which normally have webs above fresh water, nowhere near fresh water

• Robert Whyte misidentifying a linyphiid as a theridiid

• Many apparently new theridiids, especially at Inskip Point

• Pairing up of some theridiids into obvious conspecific males and females

• World’s first ever successful photos of a Baalzebub male

• Confirmation of a new species of jumping spider related to Opisthonus sexmaculatus

• Being able to declare a new species of araneid, apparently in genus Verrucosa.

Strays and by-catch

Some of the most interesting material gathered in a BioBlitz, or any biodiversity survey, comes from other participants whose interests and collecting methods, often at night, leads them into peculiar places harbouring peculiar species.

The main contributor at the 2018 Cooloola BioBlitz from outside the Spider Team was a biologist looking for herps and other verts at night, Chris Sanderson, who has been involved in surveys all over Australia.

Other people who brought specimens included the botanists, entomologists and fungi specialists. Even Rainbow Beach residents got into the spirit of things, bringing specimens from their back yards. It all counts in a fauna, flora and fungi stocktake of an area as rich and diverse as Cooloola Coast.

List of New Species

• Araneidae Verrucosa sp. nov. not furcifera

• Gnaphosidae Elica sp. nov.

• Linyphiid Male sp. nov.

• Linyphiidae Laperousea sp. nov.

• Pisauridae Orthodolomedes Female 1 sp. nov.

• Pisauridae Orthodolomedes Female 2 sp. nov.

• Pisauridae Orthodolomedes Male sp. nov.

• Pisauridae Orthodolomedes Sub-Male sp. nov.

• Salticidae New Genus in MS gen. nov.

• Salticidae Opisthonus sp. nov. 1

• Salticidae Opisthonus sp. nov. 2

• Salticidae 'Exclamation Point' sp. nov.

• Salticidae 'Mr Stripey' sp. nov.

• Salticidae Neon sp. nov.

• Salticidae Lotus sp. nov.

• Stiphidiidae Procambridgea sp. nov.

• Tetragnatha sp. nov.

• Theridiidae 'Small Balloons' sp. nov.

• Theridiidae 'Large Balloons' sp. nov.

• Theridiidae Male 1 sp. nov.

• Theridiidae Male 2 sp. nov.

• Theridiidae Male 3 sp. nov.

• Theridiidae Male 4 sp. nov.

• Theridiidae Argyrodes sp. nov.

• Theridiidae Janula sp. nov.

• Theridiidae Hadrotarsine sp. nov.

• Theridiidae Phoronicida sp. nov.

• Theridiidae Female 1 sp. nov.

• Theridiidae Female 2 sp. nov.

• Theridiidae Female 3 sp. nov.

• Theridiidae Female 4 sp. nov.

• Theridiosomatidai Baalzebub Female sp. nov.

• Theridiosomatidai Baalzebub Male sp. nov.

• Thomisidae Cetratus circumlitus male (und.)

• Thomisidae "woodfordia" sp. nov.

• Trachelidae Orthobula sp. nov.

• Trochanteriidae Desognaphosa sp. nov.

Thanks to Fraser Island Defenders Organisation and Cooloola Coastcare.

One of the highlights of the 2018 Cooloola BioBlitz for the Spiders Team, a living Baalzebub sp. in Theridiosomatidae, a little-known spider family found worldwide in the tropics. This Seary’s Creek male was 1.17 mm. ROBERT WHYTE

Below, a new species of Laperousea body length about 2.4 mm related to L. blattifera and L. quindecim-punctata. ROBERT WHYTE
just another pile of
AUSSIE ROCKS

“I accidentally began studying flattie spiders a few minutes before I was to meet with my potential PhD advisor who worked on island spiders. I needed to come up with a project... and fast.” Story by Sarah Crews >
One more pile of Aussie Rocks

Story by Sarah Crews
California Academy of Sciences

Scanning the World Spider Catalog, I noticed a family, Selenopidae, which had members in the Caribbean islands. So, I made up this story about how they were found on all the islands, perfect for biogeography, there would be many new species, and I'd easily get collecting permits. I did not know if any of this was even remotely true; luckily it worked out. While I was working with these spiders for my PhD, I became quite fascinated (obsessed?) with them. I began keeping them alive in the lab, and in addition to my evolutionary studies, I began working, and continue to work, on any and all aspects of their biology – doing things I never thought I would – like working with spiders that aren't dead and looking at the endoplasmic reticulum 'n' stuff in their eyes. In 2008, when Mark Harvey asked me if I wanted a post-doctoral appointment at the Western Australian Museum, I jumped at the chance. When I first began working in Australia, there was a single selenopid spider described from the continent, Selenops australiensis, and the type was lost. By the time I finished, there were 24 species known in Karaops, a new genus we described. https://zookeys.pensoft.net/article/2353/

Not too long after, Julienne Waldock of WAM found a jar of selenopids hidden deep in the collection. It contained 12 new species and the undescribed male of another. Another new species had been found in the interim. Thus, I described 13 more species http://www.mapress.com/zootaxa/2013/f/z03647p469f.pdf

Back in the States I'd begun working on the biomechanics of prey capture in the genus Selenops. They can strike in any direction, even directly behind them, spinning around at up to 2800°/s, which is the fastest turn of any terrestrial animal ever measured http://jeb.biologists.org/content/221/7/jeb177634)

Selenopids are called Flattie Spiders because, well, they're flat. But arachnophiles in Australia know there are many flat spiders from other families like sparassids and trochanteriids.

I began to wonder if all flat spiders were able to catch prey quickly and in the same way that Selenops do, specifically, are the Australian Karaops similar?

Field Trip

My peak Australian experience would be my 2016 field trip. I was funded by National Geographic to go to Australia, collect some 200 spiders and bring them back to the US alive, film their prey capture and compare it with the Selenops data. I wanted to find new specimens that could be used for molecular studies, unknown males and females, and potential new species (although I was told that there probably weren't any more undescribed selenopids). Ha!

If I was going to collect spiders for two months, yet keep them alive, I'd have to feed them. I was sure it would be easy, and that's what I told the funders... although I had no idea how I was going to do this. You may be noticing a common pattern in how I conduct research.

I was lucky to have a herpetologist field partner who might be able to help with this, and besides I love snakes! In April 2016, Jordan DeJong and I set out from Perth. We drove some 15,000 km in 45 or so days, and occasionally ate strange things including martini and coffee-flavoured TimTams!

We saw all kinds of lizards and snakes and other critters including my favorite snake, the Rainbow Bee Eater (Merops ornatus) from the Burrup Peninsula. It wasn't injured, it was just hanging out. Greater Black Whipsnake (Demansia papuensis) Gibb River Road, Egermia epsisolis, near Roebourne. Burton's legless lizard (Lialis burtonis) Gibb River Road. Finally the last image at the bottom right is a scutigeromorph found on the Newman-Port Hedland Road.

Some of the Australian critters from the top, Rainbow Bee Eater (Merops ornatus) from the Burrup Peninsula. It wasn't injured, it was just hanging out. Greater Black Whipsnake (Demansia papuensis) Gibb River Road, Egermia epsisolis, near Roebourne. Burton's legless lizard (Lialis burtonis) Gibb River Road. Finally the last image at the bottom right is a scutigeromorph found on the Newman-Port Hedland Road.
Additionally, I collected mating behavior data from two species and oodles of life history data.

As for our goal of finding the undescribed sexes or material for molecular work, we were somewhat successful with the former (we would only spend a few hours at a place to cover more ground, so we would take what we could get and hope to rear them to adulthood), and very successful with the latter. However, we now have a new problem. We found 13 new species that I am currently describing, and DNA data suggests about an additional 15 for which we have no adults to describe.

So, I need to revisit these localities...

Oh, and search the rest of Australia. I figure I need about 2 years if anyone wants to send me a giant bag of money. Or if you are able to collect any for me, I have a wish list. Or if you just see any and let me know where you saw them... really, anything is appreciated.

I also want to work with “the other flat spiders”, particularly the trochanteriids. I think their strikes might be faster (shhh, don’t tell the selenopids), but they don’t turn to catch prey.

My greatest disappointment, if any would have to be that I haven’t been everywhere with rocks and don’t have all the selenopids.

My guess is there are many more species. I believe the Spiders of Australia was the first Australian spider book to even mention the family... but they are in the back in the “Little Known Families” section. I’m not sure what I have to do to get them out of there, but hopefully more species, life history data, prey capture data and mating data will be enough!

Visit Sarah Crews on the web https://sarahnopidae.com

Argus monitor (Varanus panoptes) Carnarvon-Mullewa Road SARAH CREWS

“No one told me that Western Australia is made of cement and I wouldn’t be able to stake a tent.”
In January 2016 Graham Winterflood posted a photo of Argiope keyserlingi on Flickr. Nothing unusual about that. It’s a big, obvious spider, certainly in the top 25 best known Australian spiders, perhaps even in the top five.

By December 2017 Graham was taking a much closer look. He reported having taken photos of up to 10 Argiope spiders over a period of two weeks, noticing that one of them had two legs missing between 10 and 14 December, then regrew them, having eight legs on 16 December. The two new legs were not full size (see photos next page). As a strange side observation, the stabilimentum of the spider’s web disappeared at the same time the legs regrew.

Such an occurrence would pique anyone’s curiosity, even more so when it seems part of a repeated behaviour across species in this genus.

On 23 January 2018 Graham saw a juvenile female Argiope sp. on an incomplete stabilimentum. The spider had seven legs. The full cross was completed by 24 January. By 26 January the stabilimentum had disappeared. The spider had lost two front legs, but gained a new rear leg.

Curiosity led Graham to Nentwig and Heimer’s Ecophysiology of Spiders, 1987. They had observed changes in stabilimentum building frequency in Argiope species. “A few days before moulting stabilimenta are built more frequently, after the moult spiders construct them less frequently.” This corresponded neatly with Graham’s observations, the result being a satisfying situation where one is able to substantiate one’s inferences with examples in the literature.


In this article it was proposed St Andrew’s Cross spiders may build more and larger web decorations...
just prior to moulting for a range of reasons, the exact causes and benefits not yet known.

One suggestion was they may be reducing body mass by externalising silk reserves. This would help them to get to the optimal moulting size.

Ingestion of the silk post moulting may help in rapid growth. (They do not ingest the cast-off moult so they need to get food quickly from somewhere.)

Web decorating may also help with post-moulting hydration, droplets of water being caught in the decorative silk.

Another consideration is that aciniform decoration silk, which is used in immobilising prey as well as in decoration, is particularly valuable because its production is vital to the typical wrapping behaviour in prey capture. This may mean spiders are keeping their aciniform silk spigots in peak production before a moult so they can quickly resume activity with them post moult. Ingestion of the dense aciniform silk post moult might quickly replenish vital amino acids, needed for all silk production. All these factors may be in combination.

The quest continues

After having wrapped up the silk question, Graham’s next Argiope was something truly special. This brings us up to date with the present, because the promise offered by this sighting, and the disappointment at not reaching its full potential, is still ongoing.

*Argiope magnifica*, as the name suggests, is an impressive spider. First described by Koch in *Die Arachniden Australiens* in 1871 (only from a female), it was revised in 1983 by Levi, when he added a male, but unfortunately only depicting the male palpal organ, not the whole spider.

Another paper by Jäger in 2012 mentioned *Argiope magnifica*, but the only illustration of this species was a broken-off embolus.

Graham first spotted his female *Argiope magnifica* in his garden on 23 April. It was a juvenile, almost completely concealed by a Spider Lily. He was able to photograph her when she moved on 3 May 2018 but paid her no more attention as he was going bush for six weeks.

While on this trip, Graham saw *Argiope mascordi* on large rocky outcrops in two locations, the first being Cobbold Gorge south of Georgetown with...
about 20 spiders and the second being Castle Rock, about 6km south east of Petford, on the road between Dimbulah and Chillagoe, where he saw about 15 spiders.

Perhaps having *A. mascordi* in mind after returning from the bush late June, Graham saw another spider in his garden which he thought might be *A. mascordi*. He then changed his mind when he observed it was a subadult male, wondering whether it was the male *A. magnifica*. This species lacks documentation for a live male or even depictions of a preserved one.

Further observations and the return of the female (now adult) made the identification of the male as *A. magnifica* a near certainty. However in Graham’s garden *Argiope* spp. have a habit of disappearing before they reach adulthood. The locations of two males and a female are shown below left.

The female vanished on 27 August 2018. The males hung on a bit longer, tantalising sclerites beginning to form inside the swollen palpal organ. On 2 September Graham reported that the last remaining subadult male had vanished overnight. Oh well, there’s always next year.

Below left, locations of two males and one female *Argiope magnifica* in Graham’s garden. Right and bottom row, subadult male *Argiope magnifica*. Unfortunately, the male spiders did not mature to adults so that they could be confirmed by genitalia. GRAHAM WINTERFLOOD

A likely cause for the disappearance of adult and subadult *Argiope* spp. Sunbird *Cinnyris jugularis* feeding *Argiope keyserlingi* to her chick. GRAHAM WINTERFLOOD
Opening Pandora’s Box: A new key to the genera of Australian jumping spiders

Many species are quite photogenic and are very popular with photographers who can be left frustrated by not being able to identify specimens, even to genus.

As a consequence, Marek Żabka, Robert Whyte and I decided to prepare a new key to the genera for use, not just by the taxonomic community but by a much wider group of users, many of whom were expected to have little or no experience in identifying jumping spiders. It was decided that a Lucid-based key was the best approach. The advantage of these keys is that characters do not need to be used in a fixed order – the user can start anywhere and use whatever characters they can see. They do not need to guess a character state, they can simply move on to another character.

One of the challenges facing those wanting to identify jumping spiders is the habit of taxonomists of concentrating on palp and epigyne characters in their descriptions. New sets of characters, useful when making identifications from photographs or from parts of specimens, were needed. As a result, unusual characters related to form and shape, as well as the traditional ones, have been included. The resulting character set has high redundancy (98 characters, 294 character states). An added advantage is that a specimen can be keyed out several times using different character sets to confirm the accuracy of the original identifications.

To help users to further find their way, an information sheet attached to each genus provides a list of known species and information on evolutionary relationships, distribution, habits, a simplified diagnosis, and some key references. A series of diagrams and photographs (of living specimens and of aspects of the morphology, including palps and epigynes) are provided for each genus (see examples below). Once the genus is known, further information on the genus and described species can be found in Richardson and Żabka (2017) and Whyte and Anderson (2017).

The key will be available for use early in the New Year on the Australian National Insect Collection web site.


“A new key to the genera, not just for the taxonomic community but also for a much wider group of users...”

Bianor Peckham & Peckham 1886

Taxonomy: Bianor is a cosmopolitan genus with two Australian species: Bianor maculatus and a very poorly known (doubtful) second species: Bianor concolor. The genus is related to Harmochirus, whose range extends to Australia (Maddison 2015).

Description: In Australia, Bianor spp. are small, rounded spiders, with a body length around 3 mm. The head, viewed from above, is rounded, widest behind the posterior lateral eyes. The posterior lateral eyes overlap the edges of the cephalothorax. The abdomen is round to ovate and can be much wider than the cephalothorax. The head is mostly uniformly dark brown or black, the upper abdomen of the female with various light-coloured to white splottes, chevrons and blobs. The chelicerae each have a single retromarginal tooth (unident) with two teeth opposite on the promargin. The first pair of legs is only slightly longer and stronger than the remaining legs. The male has enlarged femurs on the first pair of legs (shiny underneath) and sparse to thick white facial hair.

Males have a compact palp, the embolus arising as a wide duct at about 8 o’clock on the face of the tegulum, proceeding up and clockwise around the simple, rounded tegulum eventually moving to the outside of the tegulum and ending in a very slender, finely tapered point distally. The simple, tapering tibial apophysis is short.

The female’s epigyne has the appearance of a raised, central hood in the anterior part, with atria either side. The copulatory openings are at the rear of the atria beneath well-sclerotised guides. Large, convoluted, spermathecal ducts and chambers protrude laterally well past the atria.

Biological: Found from desert to woodland living on the ground, on grass, on tree trunks, on other surfaces and on foliage. It is also found around houses and is common on railings and fences. Bianor is common in cotton crops across Australia. Distribution: Animals have been collected in all mainland States but not Tasmania. The genus is also found in Afrotropical, Neotropical, Palaeartctic, Oriental, and Pacific Regions.
Next issue: contributions welcome

We hope you have enjoyed No. 87 of Australasian Arachnology. If you are inspired to write an article please send to newsletter@australasianarachnologicalsociety.org

All contributions welcome on any related topics. We especially encourage contributions from students and citizen scientists, but not to the exclusion of professionals, of course.

The next issue will carry some content related to the 21st International Congress of Arachnology 10–15 February 2019 in New Zealand (see pages 4-5).

As well as reporting on recent discoveries, we will continue the series of reports on Australian adventures of overseas workers, and illuminate the Godeffroy collection at the Hamburg Museum.

Val Davies: a tribute in names

Valerie Davies was a pioneering Australasian arachnologist, responsible for the discovery of many new species of spiders and a passionate advocate for women gaining access to higher education and to careers in science. She took a master's degree with honours with a thesis on trap-door spiders. She was then awarded a travelling scholarship to Somerville College, Oxford, where she completed a PhD. In 1972, she was appointed curator of arachnids at the Queensland Museum. She formally retired in 1985 at the age of 65, but continued working at the Museum in an honorary capacity until she was 82. The genus Toddiana and 15 new species, including Austrarchaea daviesae, were named for her.

Source: Leading Light in World of Arachnids Sydney Morning Herald by Rosemary Davies.