Spectacular Spiders

featuring

local spider stars

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So what is a spider?

- Phylum Arthropoda: animals with jointed exoskeletons, e.g. beetles, crabs, millipedes, spiders (name literally means ‘jointed legs’).
- Class Arachnida: eight legs plus other appendages, one or two body parts.

The arachnid groups found locally:

- Scorpions (Scorpionida) are the oldest extant arachnid group, dating back to the start of the Silurian period, c. 435 MYA.

Cercophonius squama (Australian Museum)

- Acari: ticks and mites.

Acari (Australian Museum)

- Opiliones: harvestmen (confusingly, these are known as daddy long-legs in some parts of the world).

Opilione (L.Levens)

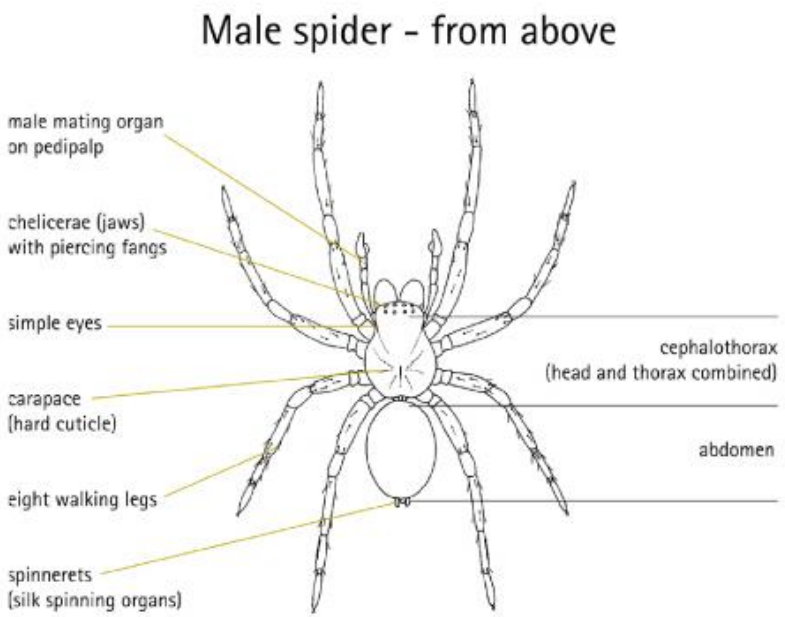
- Pseudoscorpiones.

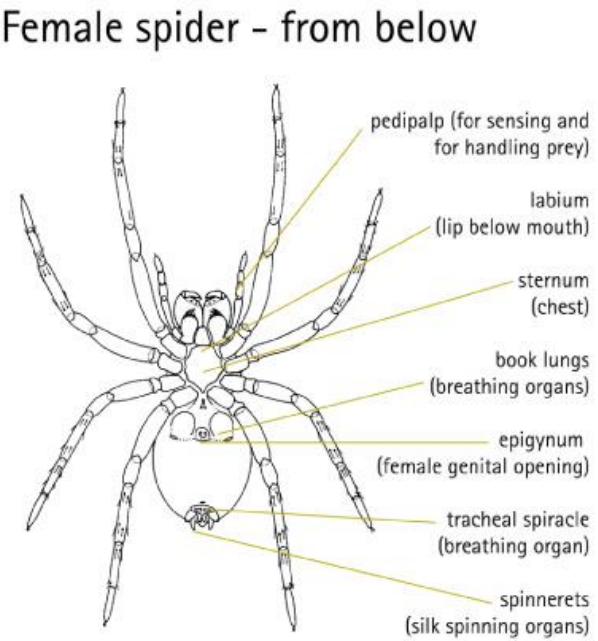
Pseudoscorpion (Australian Museum)

- Order Araneae: two body parts, eight legs, two pedipalps, silk from spinnerets, e.g. funnel web spider, garden orb spider.

Hadronyche cerberea ♀ (M.Gray)

Spider anatomy and identification





- Juvenile spiders often not identifiable to species, sometimes not to family.
- Male spiders have swollen pedipalp (mating organ) with structure on underside.
- Female spiders usually have genitalia (epigynum) visible on underside of abdomen.
- Eye pattern often helpful.
- Spider location and activity often useful clue for identification, e.g. in web (note web structure); running on ground; in burrow.

Spider biology

- Sexually dimorphic to a lesser or greater degree; typically males have different proportions to females – longer legs and smaller lighter bodies aids mobility for locating females. Colour differences sometimes major.

Australian Museum

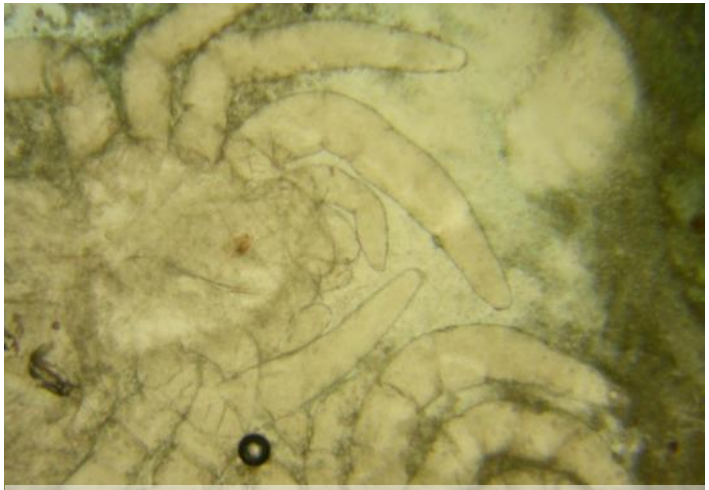

J.Otto

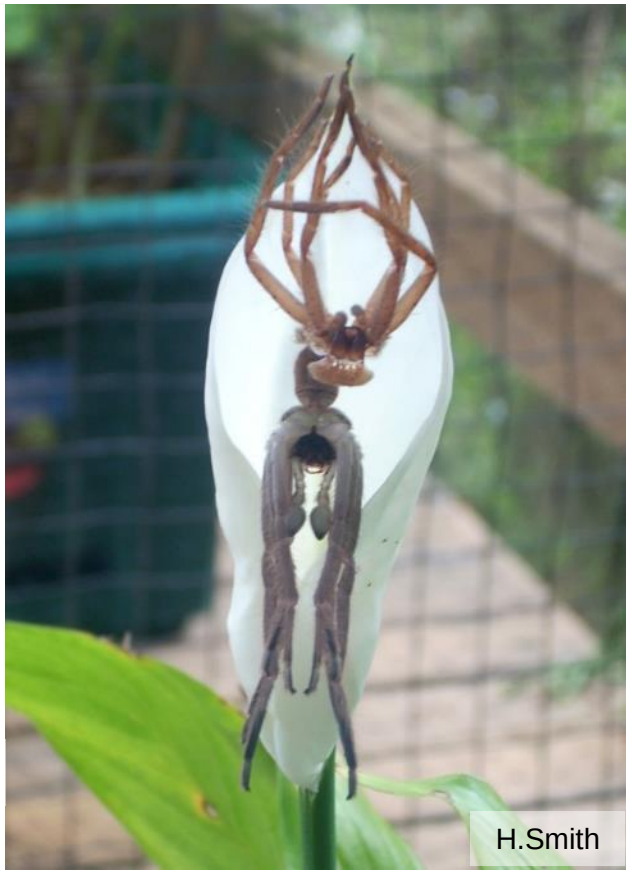

J.Otto

Spider biology

- Life history: egg – larva – nymph – spiderling (emergence stage) – juvenile – adult; moult to reach next stage and may pass through several juvenile moults.
- Most spiders are generalist predators but may discriminate on size, threat, chemical defences, movement.
- Spiders may have structural requirements for their homes and many have specific microhabitat requirements for one or more parts of the life cycle.
- Silk is made and used by all spiders.


H.Smith


Nymph instar inside egg sac (Andi Cairns)


H.Smith

Spider biology

Silk from spinnerets defines spiders

The most primitive spiders have generalised silk types. More recent spiders have developed many silk types, some highly specialised.

- Homes: burrows are silk lined for stability, for humidity control and for protection from some parasites and predators; silk lid may be used to close the burrow.
- Homes: many spiders use silk to form a retreat – a temporary or permanent shelter for periods of inactivity, e.g. moulting, egg laying, overnight.
- Reproduction: pheromone trails, sperm webs and covering for egg sacs.
- Travel: dragline silk is used for dispersal, a safety line and local movement between bushes.
- Food: several silk types are made only by web-building spiders.


H.Smith


Mike Gray


H.Smith


Mike Gray


H.Smith

What good are spiders?

Spiders are an important part of the food chain in terrestrial ecosystems. Spiders are primarily predators and they help to regulate insect populations.

Researchers released a paper in 2017 that estimated the annual global weight of prey consumed by spiders to be 400 to 800 million tons – global human consumption of meat and fish is ca. 400 million tons.

>90% of this prey is insects and collembolans

Nyffeler M, Birkhofer K. An estimated 400–800 million tons of prey are annually killed by the global spider community. *Die Naturwissenschaften*. 2017;104(3):30. doi:10.1007/s00114-017-1440-1.


D.Hain


H.Smith


M.Gray

What good are spiders?

In turn spiders are food for other predators, especially some we particularly appreciate around the garden such as many small birds, lizards and frogs, bandicoots and antechinus.


A.J.Salter

Nyffeler and Birkenhofer estimated that between 3,000 and 5,000 bird species around the world rely on spiders as an important component of their diet and 8,000-10,000 predator, parasites and parasitoids rely exclusively on spider prey.

We notice the big, most obvious spiders, but many species are busy down in the leaf litter, out of sight. The leaf litter ecosystem is often overlooked, but it is important as the primary site of decay and nutrient recycling.


Densey Clyne


Australian Museum


H.Smith

Spider evolution

Jumping, crab, wolf, huntsman spiders

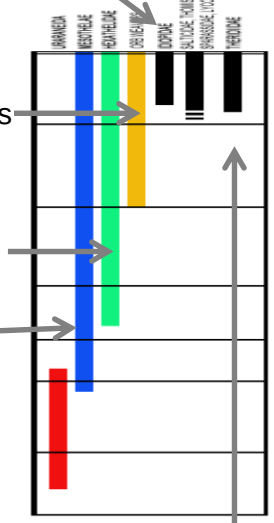
Trapdoors

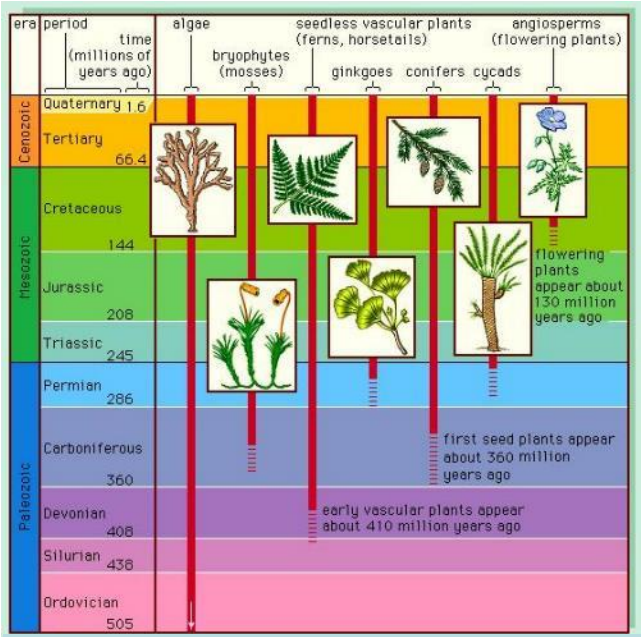
Orb-weavers

Hexathelids

Segmented spiders (not in Aus)

Theridiidae (e.g. redback)





Mesothelae: *Liphistius desultor* ♀ in Malaysia (M.Gray)

Spider diversity (March 2018)

World / Australia

116 / 82 families

4080 / 671 genera

47,380 / 3,798 described spider species

Estimated species: 92,000 – 232,000 / 8,500 – 20,000

Spider families present in northern Sydney area

Mygalomorphs
Actinopodidae
Atracidae
Dipluridae
Hexathelidae
Idiopidae
Nemesiidae

Araneomorphs: Web builders
Anapidae
Araneidae
Cyatholipidae
Deinopidae
Desidae
Dictynidae
Filistatidae
Hahniidae
Linyphiidae
Mysmenidae
(Pholcidae)
Stiphidiidae
Tetragnathidae
Theridiidae
Theridiosomatidae
Uloboridae

Araneomorphs: No catching web
Amaurobiidae
Arkyidae
Clubionidae
Corinnidae
Ctenidae
Cycloctenidae
(Dysderidae)
Eutichuridae
Gnaphosidae
Gradungulidae
Hersiliidae
Miturgidae
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Lamponidae
Lycosidae
Mimetidae
(Oecobiidae)
Oonopidae
Orsolobidae
Oxyopidae
Pisauridae
Prodidomidae
Salticidae
(Scytodidae)
Segestriidae
Selenopidae
Sparassidae
Thomisidae
Toxopidae
Trochanteriidae
Zodariidae

(only introduced species in this area)
= c. **53 families**

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Mygalomorphs

Identification:

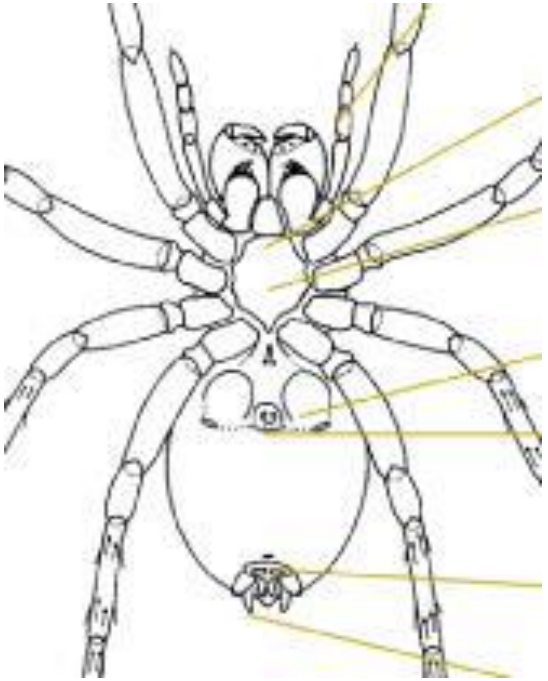
- **Two pairs of book lungs.**
- **Large, powerful chelicerae with stabbing fangs (fangs paraxial).**
- Paired sigillae (muscle attachment points) on sternum.
- Pedipalps long and leg-like.

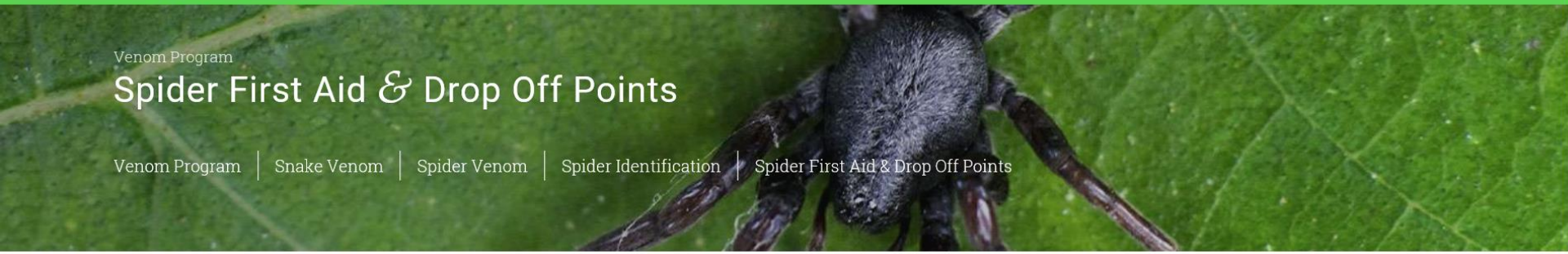
Mygalomorph ♂ ventral view (M.Gray)

Araneomorphs

Identification:

- Usually one pair of book lungs.
- Chelicerae with opposing fangs (fangs diaxial).
- Sternum smooth or with protrusions (no sigillae).
- Pedipalps usually short in females, sometimes extremely complex in males.





Venom Program

Spider First Aid & Drop Off Points

What you need to know about spiders

There are five spiders that regularly cause concern to members of the public in this area. Of these only the funnel-webs and red-backs are currently considered dangerous though there are others, such as mouse spiders, which are rarely encountered but potentially dangerous. Any spider larger in size than a dollar coin should be treated with respect, as all spiders have venom glands, though only the large species have fangs able to puncture human skin. The following safety rules apply to all spiders:

1. Do not leave clothes, shoes, towels, etc. on the floor
2. Check shoes before putting them on
3. Do not walk about at night without footwear
4. Do not handle spiders that appear to have drowned in pools, buckets, etc.
5. Wear gloves when gardening or working outside

First Aid

1. Keep the bite victim calm and immobile.
2. For a funnel-web bite, apply a pressure-immobilization bandage to the bite site and the adjacent limb. For example, a bite on the finger should be treated by bandaging the entire arm. Further restrict movement by applying a splint.
3. For a red-back bite, the only first aid required is the application of an ice pack to the bite site to reduce the pain.
4. Seek emergency medical assistance immediately.

Drop-off Points for Spider Anti-Venom Program

Region	Collection Point	Area	Hours
Newcastle			
New Lambton Heights	**John Hunter Hospital** Lookout Rd, New Lambton Heights	Pathology Level 2	Weekdays only 8am-5pm

Common Australian Spiders

Funnel-Web Spider (Atrax SP. And Hadronyche SP.)

Red-Backed Spider (Latrodectus Hasselti)

White-Tailed Spider (Lampona Cylindrata)

Brown Trapdoor Spider (Misgolas SP.)

Huntsman Spider (Various Species)

How To Safely Catch A Spider

https://reptilepark.com.au/venom-program/spider-first-aid-drop-off-points/

Mygalomorphs

Habitat and biology:

- Australian mygalomorphs are burrow-dwellers – in ground, rocks or trees. Line burrow with silk, some make a trapdoor.
- Most mygalomorph species have limited dispersal abilities c.f. many araneomorphs.
- Spiderlings may live in the mother's burrow for some time until they disperse to establish their own burrows.
- Juveniles take several years to mature.

Mature males:

- cease moulting and live a year or so;
- wander at the appropriate mating season in search of females.

Mature females:

- are usually sedentary – hunt from entrance to burrow;
- can continue to moult and can live for many years (maybe 30);
- need to mate after every moult as entire cuticle is shed, including genital tracts;
- construct a silken egg case within the burrow.

Tree funnelweb burrow entrances (above); trapdoors on burrows (below) (M.Gray)

Brown (or spiny) trapdoor spiders

Idiopidae: brown trapdoor spiders. Terminal section of spinnerets short conical; labium about as wide as long, or wider, without cuspules; eyes grouped. Golden hairs on carapace. Males usually have modified leg 1. Burrows with or without trapdoor, often in more open situations than Sydney FWS. Several species, all similar appearance in genus *Arbanitis* (used to be called *Misgolas)*; other genera less commonly seen.

Arbanitis sp. ♂ left, ♀ below (M.Gray)

M.Gray

H.Smith

Mouse spiders

Above: *Missulena bradleyi* ♂ left, ♀ right (M.Gray); below *M. occatoria* ♂ (Jason Bond)

Actinopodidae: mouse spiders. Terminal section of spinnerets short conical; labium much longer than wide; eye group wide. *Missulena bradleyi* is local species. Only known Australian mygalomorphs to disperse by ballooning. Venom potentially dangerous, treat as for FWS.

Funnel web spiders

Atracidae: funnel web spiders. Terminal section of longest spinnerets long and finger-like; eyes grouped; labium about as wide as long, or wider, with cuspules. Two or three species locally. *Atrax robustus* (Sydney FWS) burrows in ground usually under rocks, logs etc. Male note pointed spur leg 2. *Hadronyche cerberea* (Southern tree FWS) burrows in trees, either in rot holes or in deep bark (e.g. some *Melaleuca*). Note leg 2 modified but no spur. Female FWS below – see carapace in profile to identify genus, *Atrax* low, *Hadronyche* higher. Blue Mountains FWS, *H. versuta* may also occur here, burrows in old rotten tree stumps/logs on ground. Female FWS can live 20 years. All bites potentially dangerous, but male SFWS far more venomous to humans than female. FWS do not jump but can be surprisingly agile.

Above/below: *Hadronyche cerberea, above* ♀, below, ♂; right: *Atrax robustus*, ♀ above, ♂ below (M.Gray)

Identifying funnel web spiders from trapdoor spiders

Arbanitis sp. (left above / below), *Atrax robustus* (centre above / right below), *Hadronyche cerberea (*right above). (M. Gray)

- Trapdoor spiders: brown, hairy, **golden hairs on carapace**, males with large ‘boxing glove’ palps and modified **leg 1** (arrow).
- FWS black or brown, legs sparsely haired, **carapace glossy**, males with thin palps and modified **leg 2** (arrow).

Identifying funnel web spiders from trapdoor spiders

Burrow of *Arbanits* sp. (H.Smith)

Trapdoor spider burrow: often in an open situation; no triplines.

Sydney FW burrow: usually in sheltered situation; often with radiating triplines.

Burrow of *A. robustus*, photo and schematic diagram (M.Gray)

Tree FW: two entrances; triplines on tree

Burrow of *H. cerberea* (M.Gray)

Perspective on dangerous spiders

Spiders:

- Perform useful roles in our environment (eating pest arthropods).
- Some (a few) have potential to kill humans.
- Sometimes arrive unexpectedly into our lives (wander into homes or get tangled in our clothes).
- Children need to be educated to look but don't touch, don't stick fingers in holes etc.
- Due to improved first aid advice and antivenenes, there have been few, if any, deaths attributed to Australian spider bites since the 1980s.

Buses:

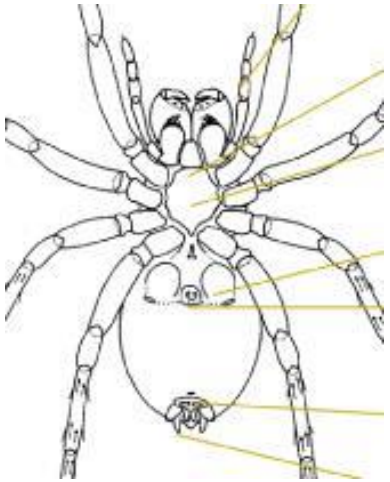
- Perform useful roles in our environment (transporting people).
- Have potential to kill humans.
- Sometimes arrive unexpectedly into our lives (vehicle accidents).
- Children need to be educated to keep clear, how to cross the road safely etc.
- Despite widespread first aid knowledge and continual advances in medicine, people die every year from accidents involving buses (6 pedestrian fatalities in NSW in 2016 Australian Road deaths database).

So, which is more dangerous?

Buses undoubtedly are dangerous when our behaviour is inappropriate around them. Same with some spiders (just a few). Perspective!
Respect spiders (and buses). Learn first aid and accept spiders as a part of your everyday environment!

Araneomorphs

Compared to Mygalomorphs, Araneomorphs are much more varied in morphology, behaviour and in details of life history.



Identification (refresher):

- Usually one pair of book lungs.
- Chelicerae with opposing fangs (fangs diaxial).
- Pedipalps short in females, sometimes extremely complex in males.

Habitat and biology:

- Great diversity of foraging strategies and range of habitat utilisation.
- Greater diversity of silk types c.f. mygalomorphs.
- Usually no further complete moults once adult in either sex.
- Life cycles can be short (several generations in one year) or long, taking one to several years to become adult then some may survive several years.
- Males are sometimes dwarf (or females giants) or males can be as big as females.
- Small spiders can disperse by ballooning – used by spiderlings of many groups and adults of some, e.g. money spiders (Linyphiidae).

Spider families present in northern Sydney area

Mygalomorphs
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Atracidae
Dipluridae
Hexathelidae
Idiopidae
Nemesiidae

Araneomorphs: Web builders
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Web builders

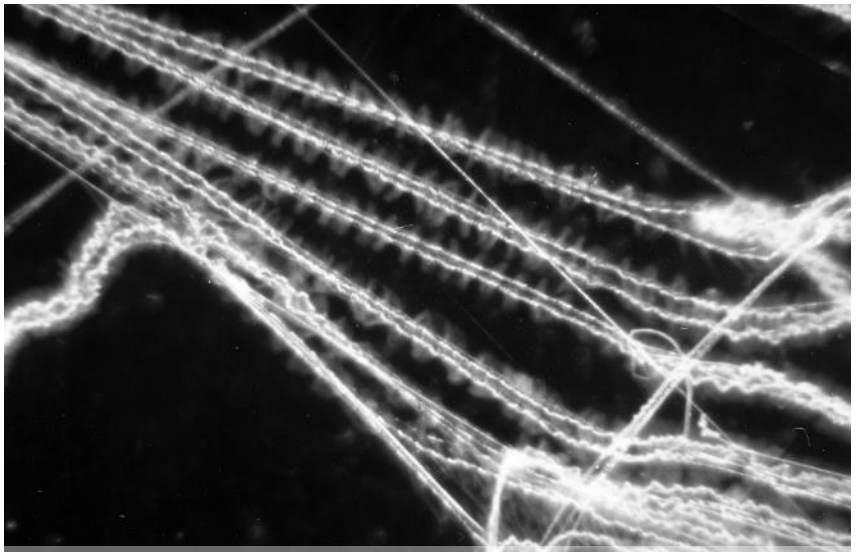
Silk produced from spinnerets on the abdomen is a defining feature of spiders. Silk glands inside the abdomen produce various silks with different properties. Silk exits the body via spigots (one strand per spigot), it is pulled out, not squeezed.

Cribellates

The most primitive araneomorphs are cribellate web builders. The cribellum may be derived from the fourth pair of spinnerets present today in some mesotheles.

The cribellum is a spinning ‘plate’ with hundreds or even thousands of tiny spigots (c. 4,000 strands = I human hair breadth).

Cribellar silk is combed using the calamistrum. It often appears bluish.



Spinnerets of a cribellate spider (top); *Deinopis* silk (above); *Deinopis* combing silk (left). (All M.Gray/spinnerets SEM also S.Lindsay)

Users of cribellate silk

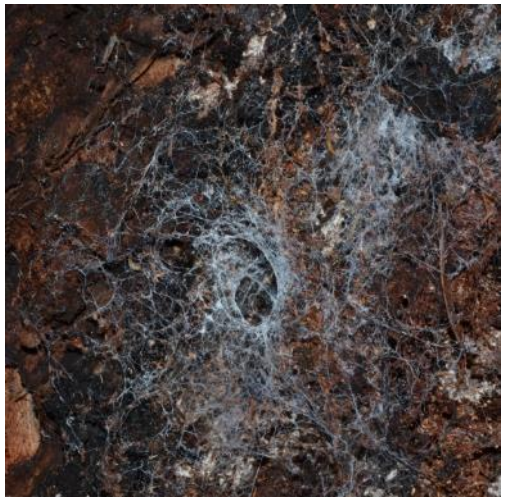
Deinopidae: net casting spiders. Huge forward facing eyes characterise *Deinopis*, the most frequently seen. *Menneus*, the only other genus in the family, lacks such enlarged eyes. The net-like cribellate silk web is extremely stretchy. Spiders hunt suspended from a frame of lines, holding the web ready above a marked spot. When potential prey crosses the mark, the spider swoops and envelopes the prey.

Menneus sp. ♂ (above) ♀ right (W.Grimm)

Deinopis subrufa ♀ left, hunting (W.Grimm); centre, close up of eyes (M.Gray); right, *Deinopis* web hung up for later use (H.Smith)

Deinopis subrufa ♀ with prey (D.Hain)

Desidae: lace web spiders. Most commonly seen are the black house spider, *Badumna insignis* and its sister species, *B. longinqua*. The former is most commonly seen on tree bark (or around windows) the latter in webs on foliage. Prey can be caught at any time but web maintenance is at night. Lace web pattern is distinctive when new but degenerates to a messy tangle in the old parts of the web. Look for the zig-zag structure in new or rebuilt areas. **Uloborida**e: cribellate orb weaving spiders. Uloboridae is the only family to have lost venom glands. Webs often include decorations; webs are not recycled and can become very tatty. *Philoponell*a is a common genus; webs may be aggregated.



Badumna insignis ♂ (above left, M.Gray); typical lace web structure (above, M.Gray); *Badumna* web on bark (left, H.Smith)

Philoponella spp. webs and spiders (H.Smith)

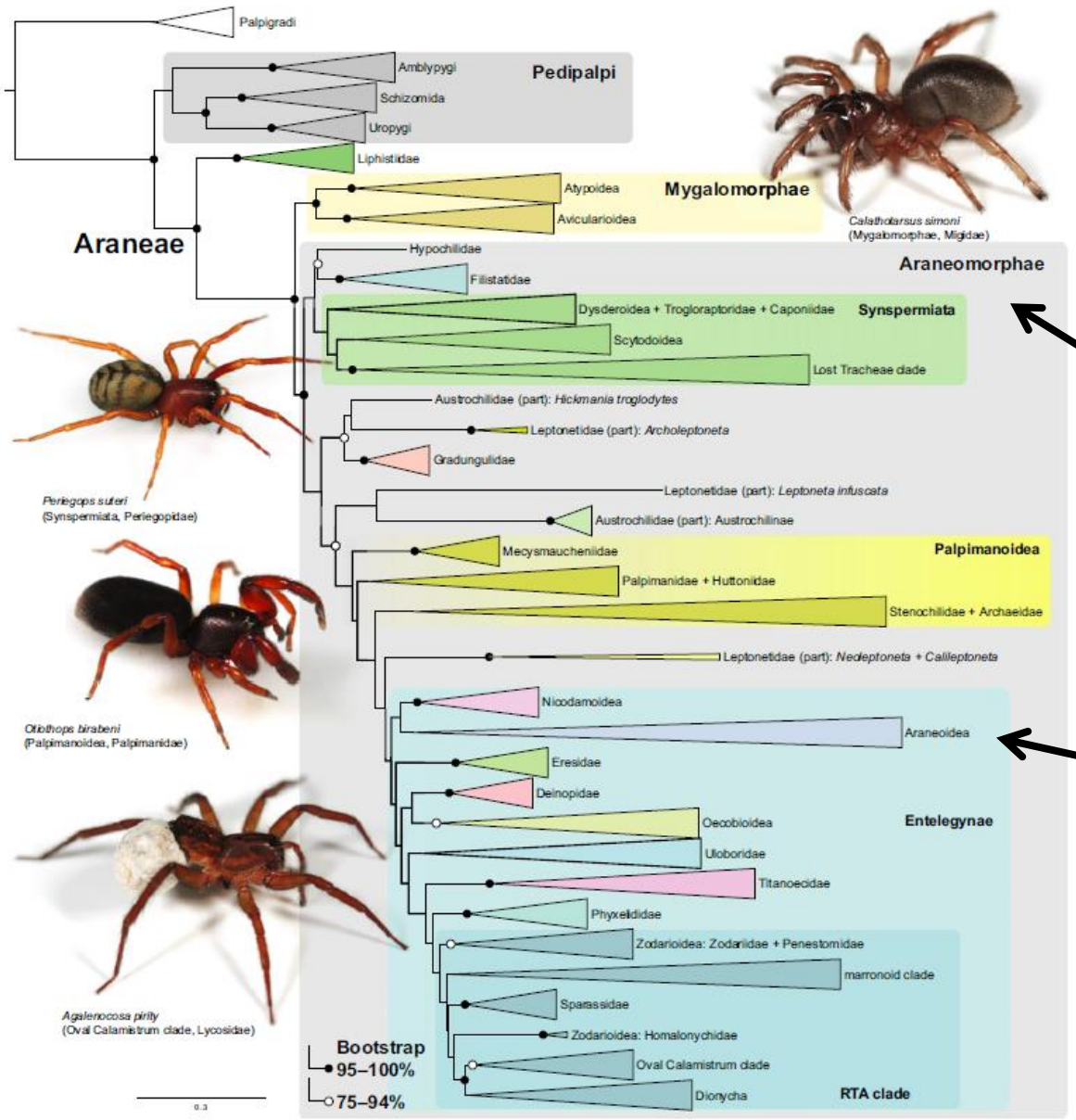


Fig. 1. Summary phylogenetic tree from concatenated analysis of six markers obtained under maximum likelihood, constrained by highly supported groups from transcriptomic analysis, four unstable terminals pruned (C-ML-P analysis).

Araneomorphs – cribellate web builders occur all through this tree from most basal groups

Spiders in many groups do not make webs and some web builders use neither cribellate nor sticky silk

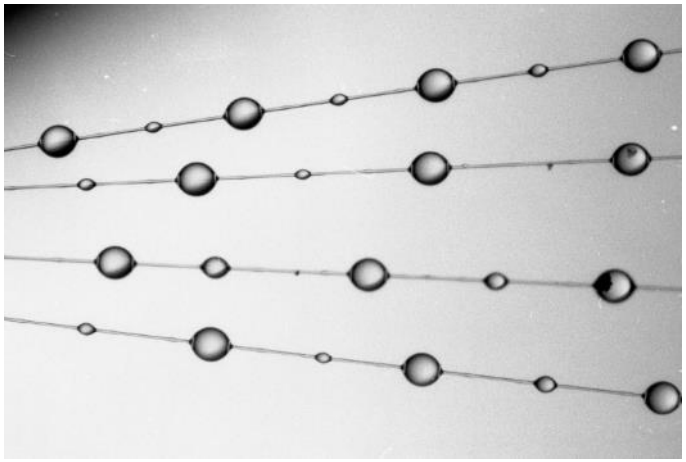
Sticky silk only in Araneoidea

Wheeler, W.C. *et al* (2017). The spider tree of life: phylogeny of Araneae based on target-gene analyses from an extensive taxon sampling. *Cladistics* 33(6): 576-616

Sticky silk

Many web builders today have lost the cribellum. Some evolved gluey webs.

Sticky silk is used in the catching part of the web by many orb weaving spiders and related groups, such as Theridiidae (inc. redback spider).



Spinnerets of a garden orb spider, *Eriophora* sp. (top right); sticky silk strands with glue droplets (far right) (MG/spinnerets SEM with Sue Lindsay); orb web of leaf curling spider (right D. Hain); sheet and tangle web of a theridiid (above, H. Smith)

Users of sticky silk

Araneidae: orb weaving spiders. Orb web with spiral of sticky silk. Many araneids recycle silk proteins by ingesting the old web. *Argiope keyserlingi* (St Andrews cross spider) is distinctively banded and commonly seen by day; *Eriophora transmarina* (garden orb spider) often hides away to one side of the web through the day.

Two unrelated species of leaf curling spiders mature at different times: '*Araneus' dimidiatus* in early summer, *Phonognatha graeffei* in late summer and autumn; they have different web architecture.

Argiope keyserlingi ♀ (W.Grimm)

Eriophora transmarina ♀ (W.Grimm

Phonognatha graeffei web (D.Hain), ♀ (inset, M.Gray)

Araneus dimidiatus ♀ (H.Smith)

Araneidae: golden orb weavers. Web structure (and colour) is diagnostic for the genus. Two common and quite similar species in Sydney, *Nephila plumipes* is most common near the coast and in moister areas. Separate the species by the sternum – with prominent knob in *N. plumipes*, no knob in *N. edulis*. *Nephila* males are much smaller than females and often cohabit in the female's web. Smaller kelptoparasitic spiders (*Argyrodes* spp.) are also frequent residents.

Tetragnathidae. *Tetragnatha*, (long-jawed spiders) have an elongate body and legs; male (and sometimes female) chelicerae are elongate and modified. May be camouflaged in web, spiders lie outstretched, resembling a piece of bark in the web, or lie along a dead twig. *Tetragnatha demissa* is a common smallish species favouring dead twigs, other species are commonly seen in webs over water or other damp habitats. *Leucauge* sp. (silver orb spider) makes a sloping web in bushes and over low vegetation.

Nephila web (below, H. Smith) ♂ ♀ (right, M.Gray)

Tetragnatha spp. (left and centre); *Leucauge* sp. (right) (H.Smith)

Theridiidae: comb-footed spiders. Tangle webs and gum-footed webs (e.g. *Latrodectus hasselti*, the redback) are characteristic of the family, sometimes with a sheet (*Parasteatoda mundula*) and often with a silk retreat. Many unnamed genera and species in Australia – one of the last major families needing extensive revision. Many species are tiny.

Latrodectus hasselti ♀ (above) ♂ (right) (M.Gray); remains of meals in redback web (H.Smith)

Parasteatoda mundula, web (left, H.Smith), ♀ (above, M.Gray)

Tangle web of *Theridion theridioides (left* (centre), *Theridio*n sp. (right) (H.Smith)

Linyphiidae: money spiders (UK). Small spiders that make little hammock webs among foliage. Many species are widely distributed due to the ability of adult spiders to disperse by ballooning. Some male linyphiids have bizarre head modifications.

Diplocephalus cristatus ♂ (above); Linyphiid spider (arrow) in hammock web (above right) (H.Smith)

Other common web builders

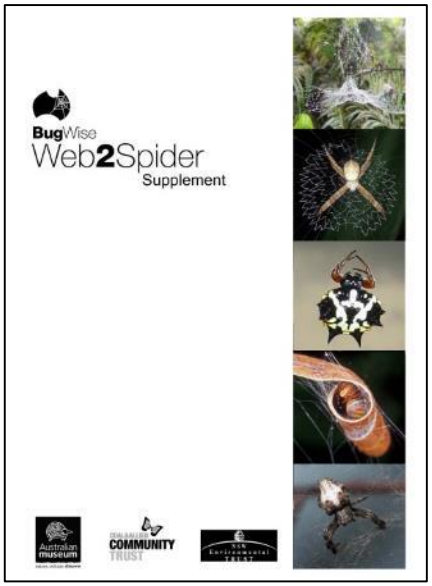
Corasoides australis (Desidae) makes platform webs – almost invisible except on a misty morning. The platform is a suspended sheet that leads into a burrow. Above the sheet a tangle of knockdown lines may extend a metre upwards.

Stiphidion facetum (Stiphidiidae) makes distinctive ‘sombrero’ webs under rock overhangs or in tree hollows.

Corasoides australis (above, M.Gray), *C. australis* webs (right and bottom right (H.Smith); *Stiphidion facetum* (below left, M.Gray), and web (below, H.Smith)

Web2Spider

Spider webs can be used as an identification tool – with or without the spider. This idea was developed as a habitat monitoring tool for citizen scientists as part of the *BugWise* program at the Australian Museum.



https://australianmuseum.net.au/document/original-web2spider-guide

https://australianmuseum.net.au/document/web2spider-supplement

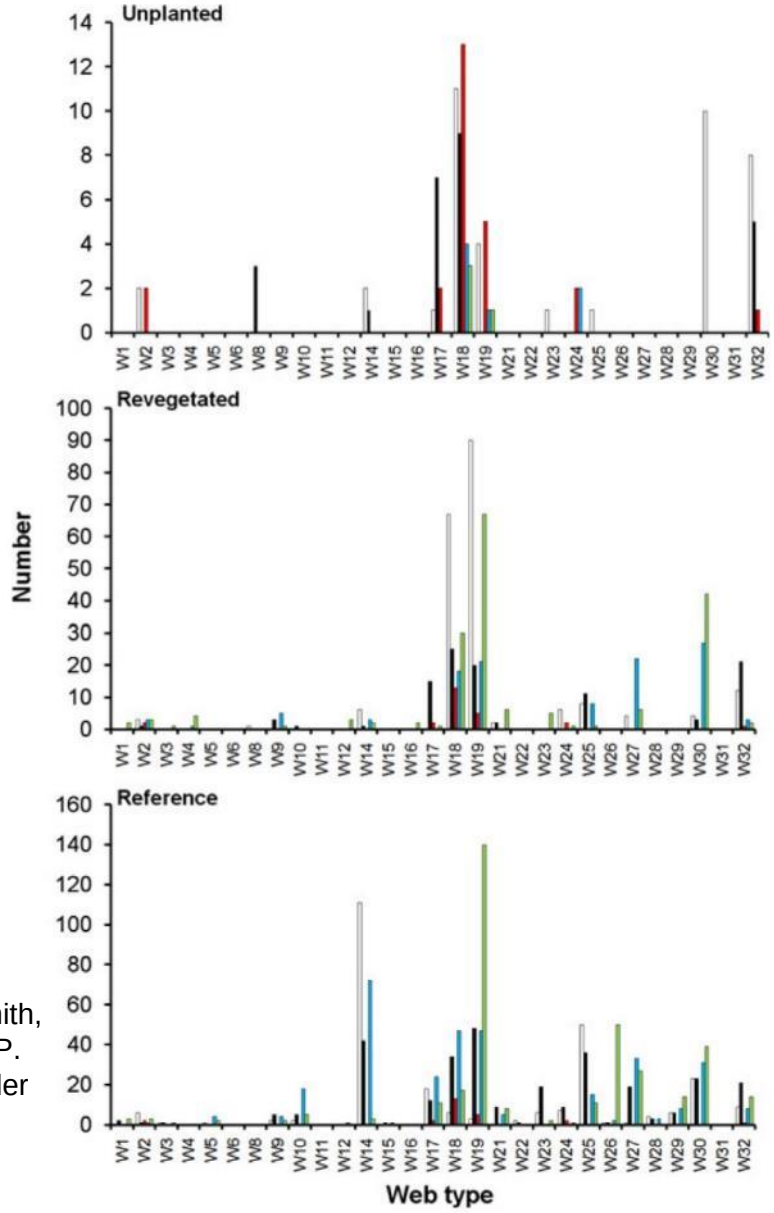


Figure 6 from: Gollan, J.R., Smith, H.M., Bulbert, M., Donnelly, A.P. and Wilkie, L. 2010. Using spider web types as a substitute for assessing web-building spider biodiversity and the success of habitat restoration. *Biodiversity and Conservation*. 19: 3141–3155.

Identifying a spider web using *Web2Spider*

A2. MISSING SECTOR & OFFSET ORBS 5

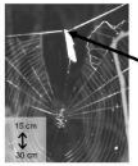
Curled-leaf in missing part of web circle

W9 Leaf at web **centre**

Leaf suspended in a tangle of lines

Web hub emerges from open end of leaf

W10 Leaf **away** from web centre

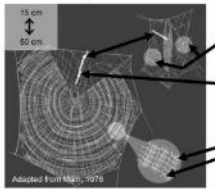


No tangle above web

Leaf attached to top support line

Web hub separate from leaf

W11 Many radial lines, **20 to 40** in 90°



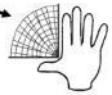
Barrier webs often present

Web silk often golden-yellow

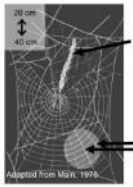
Debris may be present (on a separate line)

*Estimate 90° using hand. **NB** each branch line is counted*

Radial lines branch, making them numerous towards edge of web, 20-40 in 90° section



W12 Sloping web



Fluffy egg sacs may be present in a line through missing sector into web centre

Barrier webs often present

Radial lines less numerous (and do not branch), less than 20 in 90° section

More missing sector and offset orbs on next page

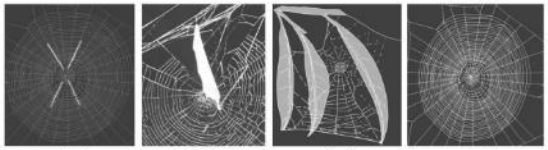
BugWise

Web2Spider

A tool for monitoring the diversity of web-building spiders

WEB KEY – START HERE

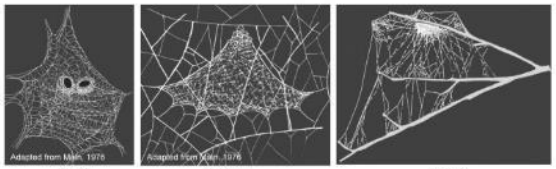
Choice A. Orb web: the main web is wheel-like, or part of a wheel... .....Go to **page 2**



(p. 3) (p. 5) (p. 6) (p. 7)

or

Choice B. Other webs: are not wheel-like.. .....Go to **page 8**



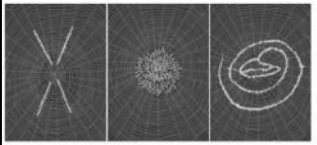
(p. 9) (p. 10) (p. 12)

A. Orb webs 2

A1. DECORATED ORBS

- **Silk patterns** or **debris** woven **onto** web catching surface or **flecks** on support lines

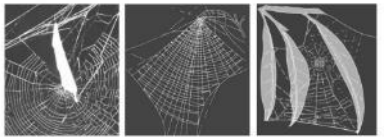
Go to page 3



A2. MISSING SECTOR & OFFSET ORBS

- **Incomplete** circle, or **hub** markedly **off centre**
- Missing sector narrow or most of the web
- Any objects are not attached to the catching surface

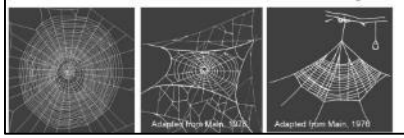
Go to page 5

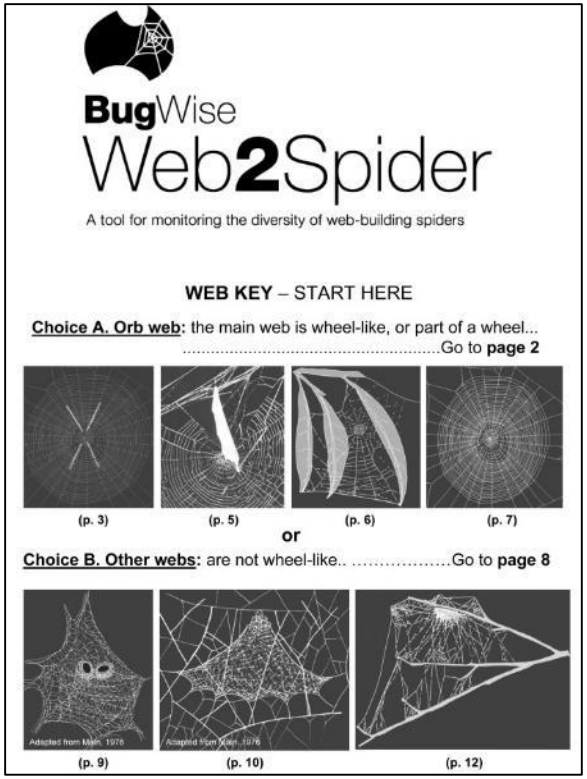


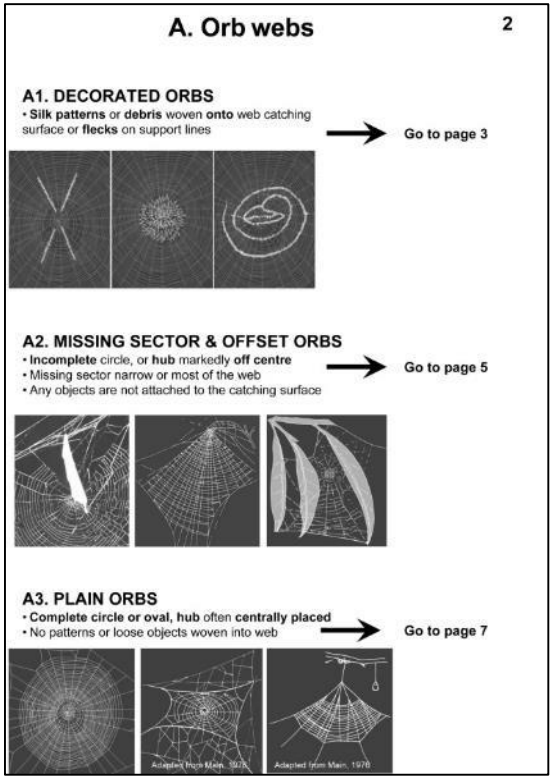
A3. PLAIN ORBS

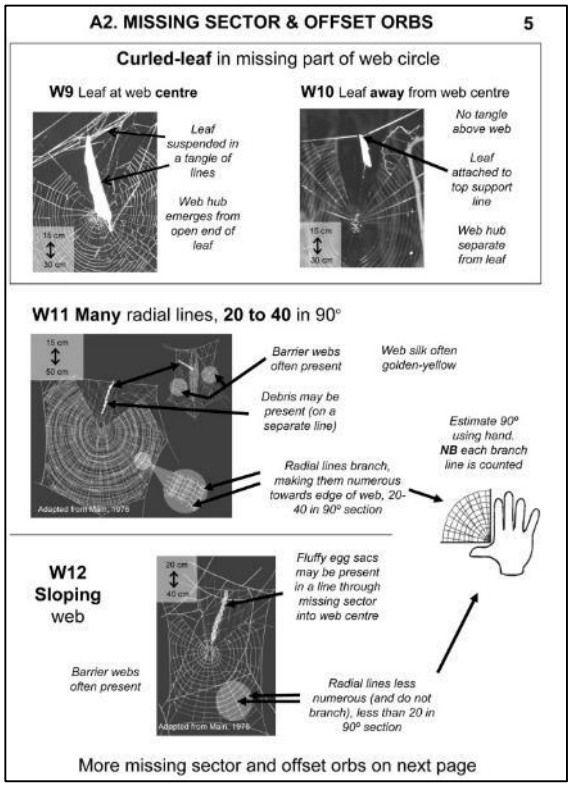
- **Complete circle or oval, hub** often **centrally placed**
- No patterns or loose objects woven into web

Go to page 7









Missing Sector and Offset orbs

W9. Araneidae: *Phonognatha graeffei* and other *Phonognatha* spp., leaf-curling spiders. Spiders sometimes use objects other than leaves for their retreat such as a snail shell or small piece of paper. The spider hides in its leaf during day; head down with legs often protruding from the entrance of the retreat. See also W13.

W9. *Phonognatha graeffei*

Spiders in houses – web builders

Most of the common house spiders are introduced species. Some native species also thrive in the conditions we create in and around our homes.

Pholcidae: daddy long legs (*Pholcus phalangioides* and relatives) – strength of venom is a myth, they are great little pest controllers. Native pholcid species occur in Australia but are not recorded in our area.

Theridiidae: cupboard spiders, *Steatoda grossa, S. capensis*. Relatives of the redback and often mistaken for it – check the underside for red 'hourglass' mark of redback. Cupboard spider bite can be quite painful but they are not aggressive. Redback spiders also occasionally come indoors but more often often in garages and sheds.

Theridiidae: *Cryptachaea gigantipes*, common under rock overhangs and picnic tables and sometimes comes indoors. This native was often confused with an introduced species (*Parasteatoda tepidariorum*) but we now know that to be quite rare in Sydney.

Steatoda grossa (top left, Ryan Kaldari); *Pholcus phalangioides* with spider prey (right); *Cryptachaea gigantipes* (left, H.Smith);

Spider families present in northern Sydney area

Mygalomorphs
Actinopodidae
Atracidae
Dipluridae
Hexathelidae
Idiopidae
Nemesiidae

Araneomorphs: Web builders
Anapidae
Araneidae
Cyatholipidae
Deinopidae
Desidae
Dictynidae
Filistatidae
Hahniidae
Linyphiidae
Mysmenidae
(Pholcidae)
Stiphidiidae
Tetragnathidae
Theridiidae
Theridiosomatidae
Uloboridae

Araneomorphs: No catching web
Amaurobiidae
Arkyidae
Clubionidae
Corinnidae
Ctenidae
Cycloctenidae
(Dysderidae)
Eutichuridae
Gnaphosidae
Gradungulidae
Hersiliidae
Miturgidae
Nicodamidae
Lamponidae
Lycosidae
Mimetidae
(Oecobiidae)
Oonopidae
Orsolobidae
Oxyopidae
Pisauridae
Prodidomidae
Salticidae
(Scytodidae)
Segestriidae
Selenopidae
Sparassidae
Thomisidae
Toxopidae
Trochanteriidae
Zodariidae

(only introduced species in this area)
= c. **53 families**

Spiders in houses – roaming hunters

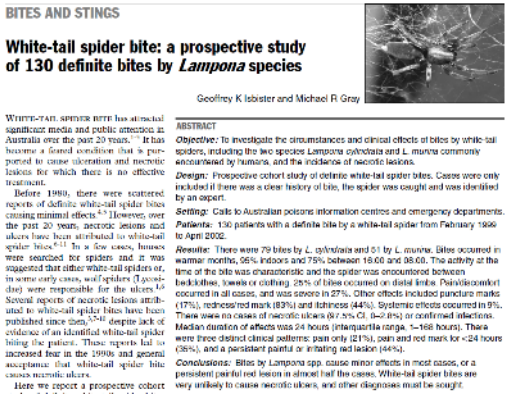
Scytodidae: spitting spider (*Scytodes thoracica*). Creep around at night. A mix of venom and ‘glue’ is squirted from fangs to entangle prey.
Oecobiidae: wall spider (*Oecobius navus*). Tiny but useful as they probably eat book lice.
Sparassidae: huntsman spiders. The Brisbane huntsman (*Heteropoda jugulans*) is spreading in Sydney and is usually found in and around buildings – but may not be in our area yet. Plenty of local huntsman species sometimes come into houses too. More on these later.

Scytodes thoracica ♀(top right) (André Karwath); *Oecobius navus* (left) (Kamran Iftikhar); *Heteropoda jugulans* ♀ on eggsac (Robert Whyte)

Spiders in houses – roaming hunters

Lamponidae: white-tailed spiders. *Lampona* spp. sometimes enter houses in search of prey, natural habitat is rough or loose bark on trees, and rocks. Prey on other spiders, especially black house spider, *Badumna insignis*. *Lampona* bite can cause a localised reaction but a 2003 study of 130 confirmed bites found no evidence for the damaging necrotic infections sometimes attributed to these spiders

Lampona murina ♀ ♂ (above, right, far right) (M.Gray). *Lampona* hunting (below) and frequent outcome (below right right) M.Gray).



BITES AND STINGS

White-tail spider bite: a prospective study of 130 definite bites by *Lampona* species

Geoffrey K Isbister and Michael R Gray

WHITE-TAIL SPIDER BITE has attracted significant media and public attention in Australia over the past 20 years.[1,2] It has become a feared condition that is purported to cause ulceration and necrotic lesions for which there is no effective treatment.

Before 1980, there were scattered reports of definite white-tail spider bites causing minimal effects.[3-5] However, over the past 20 years, necrotic lesions and ulcers have been attributed to white-tail spider bites.[6-11] In a few cases, houses were searched for spiders and it was suggested that either white-tail spiders or, in some early cases, wolf spiders (Lycosidae) were responsible for the ulcers.[1,6] Several reports of necrotic lesions attributed to white-tail spider bites have been published since then,[12-18] despite lack of evidence of an identified white-tail spider biting the patient. These reports led to increased fear in the 1990s and general acceptance that white-tail spider bite causes necrotic ulcers.

Here we report a prospective cohort

ABSTRACT

Objective: To investigate the circumstances and clinical effects of bites by white-tail spiders, including the two species *Lampona cylindrata* and *L. murina* commonly encountered by humans, and the incidence of necrotic lesions.

Design: Prospective cohort study of definite white-tail spider bites. Cases were only included if there was a clear history of bite, the spider was caught and was identified by an expert.

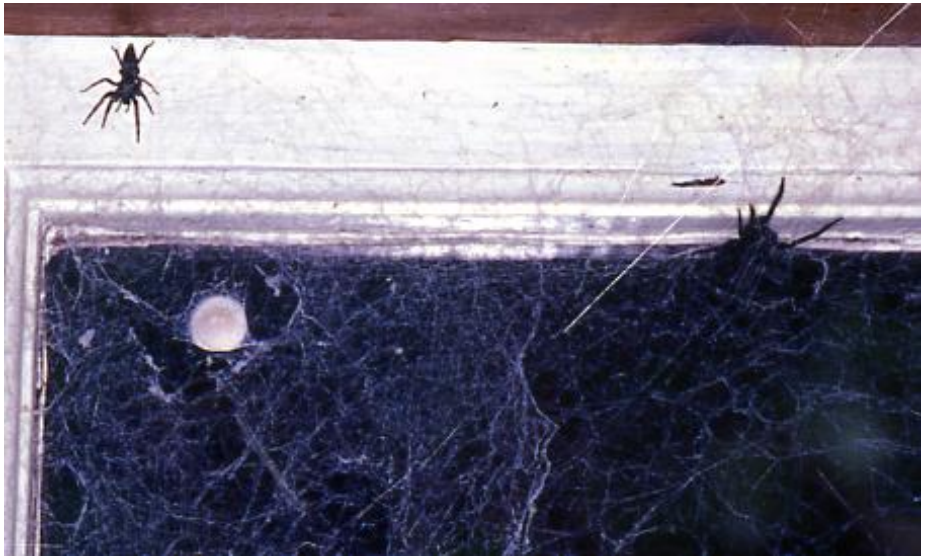
Setting: Calls to Australian poisons information centres and emergency departments.

Patients: 130 patients with a definite bite by a white-tail spider from February 1999 to April 2002.

Results: There were 79 bites by *L. cylindrata* and 51 by *L. murina*. Bites occurred in warmer months, 95% indoors and 75% between 18:00 and 08:00. The activity at the time of the bite was characteristic and the spider was encountered between bedclothes, towels or clothing. 25% of bites occurred on distal limbs. Pain/discomfort occurred in all cases, and was severe in 27%. Other effects included puncture marks (17%), redness/red mark (83%) and itchiness (44%). Systemic effects occurred in 9%. There were no cases of necrotic ulcers (97.5% CI, 0–2.8%) or confirmed infections. Median duration of effects was 24 hours (interquartile range, 5–168 hours). There were three distinct clinical patterns: pain only (21%), pain and red mark for < 24 hours (36%), and a persistent painful or irritating red lesion (44%).

Conclusions: Bites by *Lampona* spp. cause minor effects in most cases, or a persistent painful red lesion in almost half the cases. White-tail spider bites are very unlikely to cause necrotic ulcers, and other diagnoses must be sought.

Isbister, G.K. & Gray, M.R., 2003. White-tail spider bite: a prospective study of 130 definite bites by *Lampona* species. MJA 179:199 - 202



Hunters on foliage

Arkyidae: *Arkys*, For some spiders relying on camouflage, variation is the key to survival. The spiders in the top two rows are probably all the same species, *Arkys curtulus*, the bird dropping spider. Some other *Arkys* spp. also resemble bird dung and also vary in colour; *Arkys lancearius*, triangular spider, hides beneath leaves by day but is more active at night.

Clubionidae and Eutichuridae: sac spiders. *Clubiona* and *Cheiracanthium* use silk retreats under bark or leaves; spiders hunt mostly by night. Eyes are spaced evenly across the anterior carapace.

Arkys curtulus ♀♀ (top row H.Smith, second row W.Grimm)

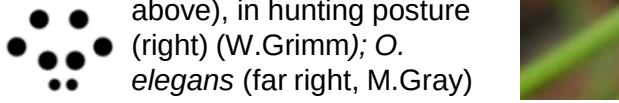
Arkys lancearius (left) and *A. alatus* (right) (W.Grimm)

Clubionid eye pattern, anterior view

Clubiona sp ♀ (M.Gray)

Oxyopidae: lynx spiders. Spiny legs and distinctive eye pattern; can move rapidly by jumping and running. Hunt on leaves and flowers and can be very common.

Salticidae: jumping spiders. Distinctive eye pattern with large, forward facing eyes that can focus and traverse. Often sexually dimorphic, can be difficult to match males and females. Active diurnal hunters, most hide at night in a silk retreat; some hang head down on a silk line from a twig.



Oxyopes spp. Eyes (left and above), in hunting posture (right) (W.Grimm); *O. elegans* (far right, M.Gray)

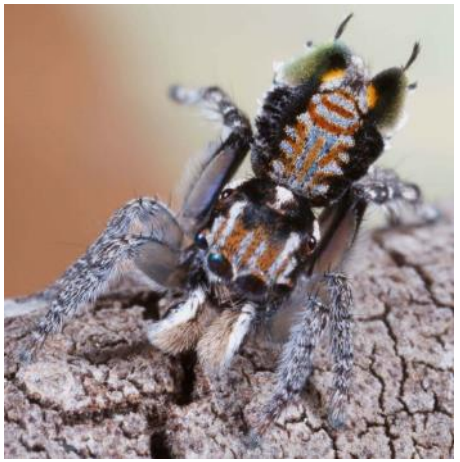
Helpis minitabunda ♂ (left, J.Otto), ♀ or j (centre, W.Grimm); *Simaethula* sp. ?♂, right (W.Grimm)

Salticid eye pattern, anterior view

Opisthoncus sp. ♀ (left, W.Grimm); *Ligonipes* sp. (above, J.Otto)

(Salticidae cont.): Peacock spiders, genus *Maratus*, are probably now world famous. Local resident, Jürgen Otto, has worked on this group and posted many videos (some taken locally) on YouTube. Iridescent males display to much drabber females on low shrubs, and fallen twigs. Most species are only a few millimetres in length and can be difficult to spot despite bright colours. *Maratus plumosus* was described in 2012 from specimens found in Ku-ring-gai Wildflower Garden in St Ives.

Maratus amabilis ♂ (left), *M. splendens* ♂ (right, J.Otto)



M. plumosus ♂♂ (above), ♀ (left), *M. volans* ♂ (right) (J.Otto)

Hunters on foliage, bark and rocks

Thomisidae: crab spiders/flower spiders. Legs 1 and 2 longest, distinctive stance. Thomisids are sit-in-wait predators, sometimes seen feeding on relatively large prey items such as butterflies. Prey is pierced but not crushed or wrapped in silk, so the discarded corpse may look intact. Some species are able to change colour according to environment. Insect eyes sensitive in UV range, spider colour may be attractive to prey despite being obvious to human eyes.

Tharrhalea evanida ♀ (left), *Sidymella* spp. ?j (centre) ♂ (right) (W.Grimm)

Thomisus sp. (left), *Tmarus cineraceus* (right) (W.Grimm)

Stephanopis spp. (J.Otto)

Sparassidae: huntsman spiders. Several genera in the area. Eyes spread across anterior carapace; flattened appearance. Mostly nocturnal, may be seen on beams or behind outdoor items by day. Preyed on by orange spider wasp, *Cryptocheilus bicolor* (Pompilidae); comatose spiders are dragged to a nest burrow by female wasp. Female huntsmen guard their cushion-shaped egg sacs until spiderlings emerge and moult. Loose bark, rock crevices and large leaf bases are typical habitats.

Isopeda sp. (above, D.Hain), *Holconia immanis* ♂ (above right, M.Gray). *Neosparassus sp.* ♀ (right, M.Gray). Orange spider wasp with *Isopeda* (below left, W.Grimm), *Heteropoda* sp. ♀ (below centre, W.Grimm), *Pediana regina* (below right) G.Anderson).

Hunters on the ground

Corinnidae: sun spiders. Fast moving and sun-loving, *Nyssus coloripes* and *N. albomaculata* most common. Colour pattern distinctive, yellow front legs of the former distinguish between the two species. Some other less noticeable species are ant mimics. *Nyssus* dash around in open areas or weave through leaf litter.

Lycosidae: wolf spiders. Characteristic eye arrangement. Larger wolf spider species are nocturnal, some smaller species are diurnal. Females most noticeable as they carry their whiteish egg sac attached to the spinnerets. Later, females carry spiderlings on their backs. Many wolf spiders use burrows, some construct extremely well camouflaged trapdoors.

Lycosid eye pattern, anterior view

Nyssus coloripes ♂ (above), *N. albopunctatus* ♀ (above right) (W.Grimm).

Tasmanicosa sp. (right, M.Gray); *Venatrix* sp. ♀ with spiderlings on board (centre far right) (J.Otto); *Hoggicosa* sp. ♀ with eye shine (below far right, not a Sydney species, J. Frazier)

Nicodamidae: red and black spiders. Colour distinctive. Females and juvenile males may be found in small webs in leaf litter; adult males wander, sometimes in considerable numbers.
Zodariidae: ant spiders. Eye arrangement is characteristic. Day or night active; many species feed on ants and some are ant mimics.

Nicodamids, ♂ (above, M.Gray), ♀ (above right, W.Grimm).

Zodariid eye pattern, anterior view

Storosa sp. (left, W.Grimm); Zodariidae sp. ♀ with ant prey (above, J.Otto); *Habronestes bradleyi* ♂ (right, W.Grimm),

Spider Resources

Internet:

- www.arachne.org.au: photographs and information; arranged by family.
- World Spider Catalog: http://www.wsc.nmbe.ch/ : the list of accepted species names and references that is followed by most spider researchers.
- Australasian Arachnology Society: http://www.australasian-arachnology.org/: Australasian information and news (occasional newsletter / conference symposia)
- http://australianmuseum.net.au/document/Original-Web2spider-guide
- http://australianmuseum.net.au/document/Web2spider-supplement/
- Jürgen Otto's peacock spider videos: https://www.youtube.com/user/Peacockspiderman

Books:

- **A guide to the SPIDERS of Australia** Volker,W. Framenau, Barbara C. Baehr and Paul Zborowski, New Holland Press 2014.
- **A field guide to SPIDERS of Australia** Robert Whyte and Greg Anderson, CSIRO Publishing 2017

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Helen Smith, updated April 2018

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