

Namadgi, ACT Bush Blitz

Spiders

27 November-5 December 2018

Submitted: August 2019

Robert Raven

Nomenclature and taxonomy used in this report is consistent with:

The Australian Faunal Directory (AFD)

<http://www.environment.gov.au/biodiversity/abrs/online-resources/fauna/afd/home>

Contents

Contents.....	2
List of contributors.....	2
Abstract.....	4
1. Introduction.....	4
2. Methods	4
2.1 Site selection.....	4
2.2 Survey techniques.....	4
2.2.1 Methods used at standard survey sites.....	5
2.3 Identifying the collections	5
3. Results and Discussion	5
3.1 Un-named or not formalised taxa	6
3.2 Putative new species (new to science).....	6
3.4 Threatened species.....	6
3.5 Range extensions	7
3.6 Genetic information.....	7
4. Information on species lists	7
5. Information for land managers.....	7
6. Other significant findings	7
7. Conclusions.....	7
Acknowledgements	8
References.....	9
Appendices	10
Appendix 1. List of Spiders recorded in Namadgi, Australian National Botanical Garden & Parliament House during the ACT Bush Blitz.....	10

List of contributors

List of contributors to this report.			
Name	Institution/affiliation	Qualifications/area of expertise	Level/form of contribution
<i>Dr Robert J Raven</i>	<i>Queensland Museum</i>	<i>PhD, Spider authority</i>	<i>Principal author</i>
<i>Mr Eamon Amsters</i>	<i>Queensland Museum</i>	<i>Undergraduate</i>	<i>Collector & film star</i>
<i>Cara Littlefair</i>			<i>Teacher, collector</i>
<i>Oliver Lintott</i>			<i>Teacher, collector</i>
<i>Alyce Brownlie</i>			<i>Teacher, collector</i>

<i>Jane Brandenburg</i>			<i>Teacher, collector</i>
<i>Mich Couper</i>			<i>Teacher, collector</i>
<i>Jo Harding</i>	<i>Bush Blitz</i>		<i>Collector</i>
<i>Adriana Sardoni</i>			<i>Teacher, collector</i>
<i>Damien Esquerre</i>	<i>ANU</i>		<i>Herpetologist, collector</i>
<i>Jessica Fenker</i>	<i>ANU</i>		<i>Herpetologist, collector</i>
<i>Olivia Evangelist</i>	<i>ANIC</i>		<i>Entomologist, collector</i>
<i>Jody Rowley</i>	<i>Australian Museum</i>		<i>Herpetologist, collector</i>
<i>Ryan Shofner</i>	<i>Univ. NSW</i>		<i>Hemipterist, collector</i>

Abstract

Spider collections were more diverse than in a previous Bush Blitz survey. Similar species to those taken at Namadgi 2013 were encountered with two further species of interest: one was previously only known from the ill-fated Kinglake region of Victoria, the other was taken in the Parliament House Gardens. The former is a previously known but unnamed species of Racing Stripe spider in the family Miturgidae; the Gardens spider is a new genus and species related to the Black House Spider genus *Badumna*, family Desidae.

1. Introduction

Given the close proximity to the National Capital and the number of arachnologists who had, over the past 40 years, lived or do live in the area, it was considered unlikely that a high yield of unnamed or totally unknown species would be discovered. This was further lessened in the light of massive forest fires through the area in 2003. Likewise, a previous Bush Blitz study including spiders had been conducted in 2013 (<http://bushblitz.org.au/namadgi-national-park-act-and-kosciuszko-national-park-nsw-2013/>). This survey included Namadgi National Park (but not Kosciuszko National Park) as well as the Australian National Botanical Gardens (ANBG) and the gardens of Parliament House; hence, there was overlap. That survey reported on a limited number of families (Corinnidae, Cycloctenidae, Desidae, Idiopidae, Lycosidae, Miturgidae, Orsolobidae, Prodidomidae, Stiphidiidae, Zodariidae, Zoridae), and yielded 33 spider species of which 15 were deemed new to science, some of which have now been described with support from ABRS funds. Most species were taken in pitfall traps, a highly efficient and productive method not considered readily defensible in this survey.

Our participation was delayed by the knockon affect of major dust storms through Sydney, affecting air traffic, on the weekend before the survey; this delayed Raven's return to Brisbane from an international conference and thus the departure date.

[N.B.: direct comparisons between that report and this are conflated by the high fluidity of spider families due to the premature application of preliminary and limited molecular studies.]

2. Methods

2.1 Site selection

From previous experience, knowledge of the locals, especially herpetologists and botanists, about areas of high diversity were taken as starting points.

2.2 Survey techniques

The primary method of collection was the use of an aged diesel 4WD to idle and generate on- and in-ground vibrations to which arachnids, cockroaches and a number of other groups are "attracted". Spiders so attracted have been found coming from over 20 metres distant as well as coming from under bark on trees and in logs on the ground. Using an accelerometer, we established that soon after the vehicle stops, the trees and tree stumps nearby also start vibrating. Trees located closest to the 4WD become a focal point for the attracted fauna and can be used to take animals as they climb the tree. A number of "rules" guide the optimal placement of the vehicle, including time of day, soil moisture, and slope. Usually, a productive site will see spiders moving to the vehicle with 5 minutes of idling.

Thus, vehicle access to suitable sites governed the location of a number of "sites" in which roadsides which provided a clear, litter-free zone adjacent to deep litter.

As well as the 4WD vibration, we used hand searching both day and night, including searches in the leaf litter, on tree trunks, under bark, logs and rocks. We also appreciated the by-catch of entomologists sweeping nets and using water based shallow pitfall traps.

Wet Pitfall traps, with a killing solution of fire-retardant propylene glycol, are very effective as survey method for ground active invertebrates. However, they were seen as a major Animal Ethics impediment because of the potential (albeit very minor, 1 vertebrate for every 64,000 trap days, QM records) of vertebrate by-catch. Without the wet pitfall traps, both the real diversity both of invertebrates (less so, vertebrates) is vastly underestimated and the take will be depauperate in active male spiders which are critical in completing the scientific naming process: papers describing new species based only on females are considered unfavourably.

By far, the highest diversity of spiders is in the leaf litter. The depth of the litter gives animals both rich ambush and escape opportunities. As well as that a number of groups make burrows in the soil or use cracks in the soil/substrate to retreat to more buffered microenvironments. The usual approach to litter sampling is hand searching litter which has a limited effect as spiders, etc, will run away from the area being sampled. As noted, the 4WD diesel vibration is a spectacular replacement and, in one site here, more species were taken using that method than all of the species taken in the previous Bush Blitz survey.

An additional ethics approach to the 4WD survey is that not all spiders “attracted” are kept and preserved. Spiders are taken alive in glass vials and assessed by RR on site. The object is to take a representative sample of adults of each species. Hence, once three males and females are taken of each species are taken from a site, further material of that species is released away from the idling vehicle. Equally, for species in which no males or females are yet taken only large subadult or penultimate adults are kept. Often in the changed environment of the glass vial and in travel, the spiders will moult to adulthood and are then preserved.

2.2.1 Methods used at standard survey sites

As noted for Animal Ethics issues, pitfall traps were not used at the Standard survey sites and thus data will not be comparable to surveys in which they were used.

On climate/weather, BOM (<http://www.bom.gov.au/climate/current/annual/act/summary.shtml>) noted:

“Overall rainfall was very much below average across most of the ACT

- Total rainfall for Canberra Airport was 472.0 mm, which is 76% of the long term average of 617.4 mm
- It was the driest autumn since 2004, and driest winter since 1994 at Canberra Airport which contributed to a very dry year overall
- February, November and December were wetter than average months”

The reduced rainfall certainly was reflected in low activity of spiders and the dry leaf litter. etc.

2.3 Identifying the collections

Identifications were based on existing QM data resources (Images, keys, etc) and previous Bush Blitz surveys.

3. Results and Discussion

Appendix 1 lists all Spiders and Opiliones recorded during the Bush Blitz.

3.1 Un-named or not formalised taxa

These are species which were known from previous studies but as yet unnamed prior to this survey.

Table 1. Putatively un-named or not formalised taxa	
Taxon	Comment
Miturgidae NGen_KL_Raven	This species was previously known only from Kinglake National Park in Victoria which was badly burnt in 2009 and the fate of the species seemed doubtful,

3.2 Putative new species (new to science)

In Bush Blitz III reporting, 'putative new species' means an unnamed species that, as far as can be ascertained, was identified as a new species as a direct result of this Bush Blitz.

This species were unknown to RR prior to the survey; it would be several months work to establish whether it existed in Museum collections previously.

Table 2. Putative new species (new to science)	
Species	Comment
Desidae gen sp nov.	Taken in Parliament House gardens, not far from native bushland, It is likely to have ballooned into the Gardens as no females were taken or noted.

3.3 Exotic and pest species

The Australian Redback (*Latrodectus hasseltii*) is considered only native to South Australia and south-western Western Australia; elsewhere it is considered an introduced pest and voracious predator of trapdoor and funnelweb spiders as well as skinks, frogs and even small snakes. The spider is favoured by hot dry summers and youn have been found in Osaka where Winter day temperatures drop to 2degrees C, so the spiders are very adaptable and invasive.

Table 3. Exotic and pest species recorded			
Exotic/pest species	Location sighted/observed	Indication of abundance	Comments
<i>Latrodectus hasseltii</i>	ANBG	Breeding female with egg sac including ca. 300 eggs	

3.4 Threatened species

None.

3.5 Range extensions

Spiders are generally not well documented and not amenable to readily assert valid range extensions. As this species is in a manuscript, it will not be known via the Atlas of Living Australia (www.ala.org.au)

Species	Location sighted/observed	Distance from nearest known record (km)	Comments
Miturgidae NGen_KL_Raven	Namadgi		This species was previously known only from Kinglake National Park in Victoria which was badly burnt in 2009 and the fate of the species seemed doubtful,

3.6 Genetic information

Nil.

4. Information on species lists

Putative New species with checked with authorities on the groups.

5. Information for land managers

Very little is known of the ecology and biology of many of the spiders taken in this survey. We presume that maintenance of habitat and protection from illegal take by pet keepers will optimally sustain the species.

6. Other significant findings

Despite the presence of ample microhabitats (under logs and rocks), areas deep within the reserves had unexpectedly very low incidence of long-lived burrowing mygalomorph spiders (*Atrax sutherlandi*, Idiopidae, *Paraembolides brindabella*). This presumably reflects the slow recovery from the fires of 2003. However, equally, with the advent of more pervasive pet collectors, their presumably illegal take may be further reducing the recovery.

7. Conclusions

31 families, 75 genera, 90 species of which only 46 could be confidently named. One species taken in Tree Ferns planted in the National Botanical Gardens is an unnamed species of the trapdoor genus *Arbanitis* which locals suggest appears similar to a species from the Blue Mountains, NSW. By such a mean, spiders of this genus have also been introduced into Dublin, Ireland.

Acknowledgements

I am grateful to Dr Helen Smith for examining the new desid spider and confirming its novelty. As noted, Eamon Amster did much of the collecting.

References

- Baehr, B. C. 2003. Revision of the Australian spider genus *Habronestes* (Araneae: Zodariidae). Species of New South Wales and the Australian Capital Territory. *Rec. austral. Mus.* **55** 343-376.
- Baehr, B. 2008. Revision of the Australian ant spider genus *Habronestes* L. Koch 1872 (Araneae: Zodariidae): III. The *Habronestes macedonensis*-group in Queensland and New South Wales. *Mem. Qd Mus.* **52**: 65-87.
- Baehr, B. & R. Jocque 1996. A revision of *Asteron*, starring male palpal morphology. *Rev. suisse Zool.*, vol. hors s,rie **1**: 15-28.
- Baehr, B. C. & R. J. Raven 2009. Revision of the Australian spider genus *Habronestes* L. Koch, 1872 (Araneae: Zodariidae). Species of Tasmania
- Raven, R. J. 1978. Systematics of the spider subfamily Hexathelinae (Dipluridae: Mygalomorphae: Arachnida). *Australian Jour. Zool.* Suppl. ser. no. 65, pp. 1–75, 2008.
- Revisions of Australian Ground-hunting Spiders: III. *Tuxoctenus* gen. nov. (Araneomorphae: Zoridae). *Records of the Western Australian Museum* **24**: 351–361.
- Raven, R. J. 1981. A review of the Australian genera of the mygalomorph spider subfamily Diplurinae (Dipluridae: Chelicerata). *Australian Jour. Zool.*, vol. 29, pp. 321–363
- Raven, R. J. 2015. A revision of ant-mimicking spiders of the family Corinnidae (Araneae) in the Western Pacific. *Zootaxa* 3958: 1-258.
- Raven, R. J. 1985. The spider infraorder Mygalomorphae (Araneae): cladistics and systematics. *Bull. American Mus. Nat. History*, vol. 182, pp. 1–180
- Raven, R.J. & Wishart, G. 2006. The Trapdoor spider *Arbanitis* L. Koch (Idiopidae: Mygalomorphae) in Australia. *Memoirs of the Queensland Museum* **51**: 531–557.
- Raven, Robert J., & Wendy Hebron, 2018. A review of the water spider family Pisauridae in Australia and New Caledonia with descriptions of four new genera and 23 new species. *Memoirs of the Queensland Museum, Nature* **60**: 233–381
- Raven, R. J. & K. S. Stumkat 2002. *Pteroneta* Deeleman-Reinhold and a remarkable sympatric *Clubiona* (Clubionidae: Araneomorphae: Arachnida) in northern Australia. *Mem. Qld. Mus.* **48** 199-206.
- Raven, R. J. & K. S. Stumkat 2003. Problem solving in the spider families Miturgidae, Ctenidae and Psechridae (Araneae) in Australia and New Zealand. *J. Arachnol.* **31** 105-121.
- Rix, M. G., Raven, R. J., Main, B. Y., Harrison, S. E., Austin, A. D., Cooper, S. J. B. & Harvey, M. S. 2017. The Australasian spiny trapdoor spiders of the family Idiopidae (Mygalomorphae: Arbanitinae): a relimitation and revision at the generic level. *Invertebrate Systematics* **31**(5): 566-634.

Appendices

Appendix 1. List of Spiders recorded in Namadgi, Australian National Botanical Garden & Parliament House during the ACT Bush Blitz.

Family	Taxon
Araneidae	Araneus ACTsp30
Araneidae	Araneus ACTsp35
Araneidae	Araneus aranenaceus
Araneidae	Araneus lodiculus
Araneidae	Araneus talipedatus?
Araneidae	Gea theridioides
Araneidae	Phonognatha graeffei
Araneidae	Plebs bradleyi
Atracidae	Atrax sutherlandi
Clubionidae	Clubiona ACTsp33
Clubionidae	Clubiona ACTsp8
Clubionidae	Clubiona cycladata
Corinnidae	Battalus diadens
Corinnidae	Nyssus albopunctatus
Corinnidae	Nyssus coloripes
Cycloctenidae	Cycloctenus ACTsp11
Cycloctenidae	Toxopsoides ACTsp27
Desidae	Badumna ACTsp39
Desidae	Badumna ACTsp5small
Desidae	Badumna insignis
Desidae	ACTNewGen1 ACTnewsp1
Desidae	Paramatachia ACTsp29
Dictynidae	Arangina ACTsp12
Cheiracanthiidae	Cheiracanthium gracile
Gnaphosidae	Anzacia ACTsp30
Gnaphosidae	Eilica ACTsp38
Gnaphosidae	Encoptarthria ACTSmGrey4
Gnaphosidae	Gnaphosidae ACTsp15
Gnaphosidae	Gnaphosidae ACTsp32
Gnaphosidae	Hemicloea rogenhoferi
Gnaphosidae	Intruda signata
Hahniidae	Hahniidae ACTsp34
Hersiliidae	Tamopsis fickerti
Idiopidae	Arbanitis ACTsp43
Lamponidae	Asadipus kunderang
Lamponidae	Lampona ACTsp36
Lamponidae	Lampona ACTsp37
Lycosidae	Artoria albopilata
Lycosidae	Artoriopsis ACTsp32
Lycosidae	Lycosidae ACTsp16

Lycosidae	Lycosidae ACTsp17
Lycosidae	Venatrix funesta
Lycosidae	Venatrix mackayi
Lycosidae	Venonia micarioides
Miturgidae	Argoctenus pictus
Miturgidae	CycGen1 Sp25
Miturgidae	Mituliodon tarantulina
Miturgidae	Miturga ACTsp24NKing
Miturgidae	Tuxoctenus gloverae
Nemesiidae	Stanwellia ACTsp14
Nicodamidae	Nicodamidae ACTsp 42
Oxyopidae	Oxyopes ACTsp9
Pholcidae	Pholcus phalangioides
Pisauridae	Dolomedes ?alexandre
Prodidomidae	Myandra bicincta
Salticidae	Aprica jovialis
Salticidae	Arasia mollicoma
Salticidae	Helpis minitabunda
Salticidae	Holoplatys ACTsp6
Salticidae	Hypoblemum grisea
Salticidae	Jotus ACTsp2
Salticidae	Opisthoncus ACTsp3
Salticidae	Salt/SmBlack ACTsp47
Salticidae	Sandalodes ACTsp13
Salticidae	Simaetha ACTsp1
Segestriidae	Ariadna ACTsp45
Sparassidae	Delena cancerides
Sparassidae	Neosparassus diana
Stiphidiidae	Stiphidion facetum
Tetragnathidae	Tetragnatha ACTsp44
Tetragnathidae	Tylorida ACTsp41
Theridiidae	Achaearanea ACTsp7
Theridiidae	Achaearanea pyramidale
Theridiidae	Cryptachaea gigantipes
Theridiidae	Euryopsis elegans
Theridiidae	Latrodectus hasseltii
Theridiidae	Steatoda capensis
Thomisidae	Australomisida pilula?
Thomisidae	Sidymella ACTsp26
Thomisidae	Stephanopsis altifrons
Thomisidae	Tmarus ACTsp31
Trochanteriidae	Morebilus ACTsp46
Trochanteriidae	Trachycosmus sculptilis
Uloboridae	Uloborus congregabilis
Zodariidae	Asteron grayi

Zodariidae	Habronestes ACT9spot
Zodariidae	Habronestes grahami
Zodariidae	Neostorena ACTsp18
Zodariidae	Storosa ACTsp40
Zodariidae	Subasteron daviesae