

Rungulla National Park Bush Blitz

Hemiptera (True Bugs)

May 2022

Submitted: 30 November 2022

Gerry Cassis and Zoe Bloesch

University of NSW

List of contributors	2
Abstract.....	3
1. Introduction.....	3
2. Methods	3
2.1 Site selection.....	3
2.2 Survey techniques.....	3
2.2.1 Methods used at standard survey sites	3
2.3 Identifying the collections	3
3. Results and Discussion	4
3.1 Un-named or not formalised taxa	4
3.2 Putative new species (new to science).....	5
3.3 Exotic and pest species.....	6
3.4 Threatened species.....	6
3.5 Range extensions	6
3.6 Genetic information	6
4. Information on species lists	6
5. Information for land managers	6
6. Other significant findings	7
7. Conclusions.....	7
Acknowledgements	7
References.....	8
Appendices	9
Appendix 1. List of Heteroptera recorded during the Rungulla Bush Blitz	9
Appendix 2. Images of the putative new species (and an un-named species*) collected during the Rungulla Bush Blitz.....	11

List of contributors

List of contributors to this report.			
Name	Institution/affiliation	Qualifications/area of expertise	Level/form of contribution
Zoe Bloesch	UNSW	PhD candidate, Hemiptera/plant evolution	Survey participant, principal author
Gerry Cassis	UNSW	Professor	Principal author

Abstract

On this Bush Blitz trip 101 separate collections were made. Many of these included 2 or more individuals, so the total number of individuals is over 200. Specimens collected were from 17 different families, totalling 56 species. The Miridae (14 species), Pentatomidae (12 species) and Reduviidae (7 specimens) had the most number of species recorded at the family-group level. Seven species are putatively recognised as new to science; 3 plant bugs (Miridae), 1 new damsel bug (Nabidae) and 3 new assassin bugs (Reduviidae). The mirid bug *Setocoris* MS WEIR was found on a new plant host species - *Drosera lanata* and is also a major range extension.

1. Introduction

The hemipteran suborder Heteroptera is one of the core target taxa for the Bush Blitz program (Cassis and Symonds 2016). This Heteroptera is represented in Australia by 2500+ species (Australian Faunal Directory), with over 400 new species described in the past 20 years (e.g., Symonds and Cassis 2018). Much of the taxonomic impediment pertains to the families Miridae and Tingidae, which are sister-taxa (Cassis 2019). These taxa are generally phytophagous, feeding on a broad range of host plants, particularly eudicot angiosperms.

Prior to 1995, the majority of Heteroptera species were known from the wet tropics of Queensland species (Cassis and Gross 1995, 2002). Most of these taxa did not account for the Miridae and Tingidae. There has been no prior assessment of heteropterans from Rungulla National Park known to us. Thus, there was an expectation that new taxa would be found within the boundaries of the targeted reserve area, with the caveat that the survey was conducted in the dry season.

2. Methods

2.1 Site selection

Most sites were chosen based on potential host plant species. Pre-determined host plants included: *Lomandra* sp. for ant-mimetic Miridae, grasses for seed-feeding bugs (superfamily Lygaeoidea), lacebugs associated with sheoaks (Casuarinaceae) and sundew bugs (Miridae: *Setocoris*). One site described as “perched wetland” in the Regional Ecosystems classification was chosen as a possible location for *Drosera* sp. Riverbanks were searched from the air for riparian sheoaks. Other plants were surveyed based on plant phenology (new growth, flowers, seeds/fruits); for example, *Melaleuca brachtiata* was found to be a notable host for Miridae species.

2.2 Survey techniques

The main survey technique used was beating host plants. Specimens were collected from the beating sheet with an aspirator. Morphospecies were either pinned or stored in ethanol for future DNA extraction. A light sheet was set up near Base Camp where heteropterans were also captured.

2.2.1 Methods used at standard survey sites

The standard survey sites yielded no collections for the Heteroptera.

2.3 Identifying the collections

Prof. Gerry Cassis and Zoe Bloesch (UNSW) processed and identified specimens with reference to the entomological collection housed at UNSW and consultation with heteropteran literature on. Nomenclature aligns with the Heteroptera section of the Australian Faunal Directory.

3. Results and Discussion

Appendix 1 lists all Heteroptera recorded during the Bush Blitz. Collections made during this Bush Blitz will result in 465 specimens being added to the UNSW insect collection and will be made available through the Heteropteran Species Page portal.

3.1 Un-named or not formalised taxa

In the following table the species required for further work is given. This will require in most instances an investigation of the male genitalia. In some cases such as *Eurynysius* and *Riptortus* modern revisions are required.

Table 1. Un-named species that require additional research.

TAXON	COMMENT
<i>Riptortus</i> SP001	<i>Riptortus</i> is in need of a taxonomic revision and has known new species in collections. It is premature to make a species decision.
<i>Pomponatus</i> SP001	There are two species of <i>Pomponatus</i> . Male dissection is needed to differentiate between the two.
<i>Gralliclava</i> SP001	Further comparisons are required to make a definitive identification.
CYDN GN001 SP001	Further comparisons are required to make a definitive identification.
CYDN GN002 SP001	Further comparisons are required to make a definitive identification.
GERR GN001 SP001	Further comparisons are required to make a definitive identification.
GERR GN002 SP001	Further comparisons are required to make a definitive identification.
<i>Spilostethus</i> SP001	Further comparisons are required to make a definitive identification.
<i>Eurynysius</i> SP001	<i>Eurynysius</i> is in need of a taxonomic revision and has known new species in collections. It is premature to make a species decision.
ORTH GN001 SP001	Further comparisons are required to make a definitive identification.
ZANC GN001 SP001 n.sp.	Further comparisons are required to make a definitive identification.
CREM GN001 SP001	Further comparisons are required to make a definitive identification.
CREM GN003 SP001	Further comparisons are required to make a definitive identification.
<i>Blessingia</i> SP001	Further comparisons are required to make a definitive identification.
<i>Campylomma</i> SP001	Further comparisons are required to make a definitive identification.
PHYL GN002 SP002	Further comparisons are required to make a definitive identification.
PHYL GN003 SP001	Further comparisons are required to make a definitive identification.
PHYL GN002 SP003	Further comparisons are required to make a definitive identification.
MIRI GN001 SP001	Further comparisons are required to make a definitive identification.

MIRI GN003 SP001	Further comparisons are required to make a definitive identification.
<i>Antestiopsis</i> SP001	This is a possible new species but is represented by only a single specimen. Further comparisons are required to make a definitive identification.
<i>nr. Dippilana</i> SP001	This is a possible new species but is represented by only a single specimen. Further comparisons are required to make a definitive identification.
<i>Ocirrhoe</i> SP001	This could not be identified to species based on existing keys.
PENT GN001 SP001	This is a possible new species but is represented by only a single specimen. Further comparisons are required to make a definitive identification.
<i>Austromalaya</i> SP001	This is a possible new species but is represented by only a single specimen. Further comparisons are required to make a definitive identification.
<i>Helonotus</i> SP001	Further comparisons are required to make a definitive identification.
<i>Trachylestes</i> SP001	Further comparisons are required to make a definitive identification.
RHYP GN001 SP001	Further comparisons are required to make a definitive identification.
RHYP GN002 SP001	Further comparisons are required to make a definitive identification.
<i>Remauderiana</i> SP001	Further comparisons are required to make a definitive identification.
<i>Dieuches</i> SP001	Further comparisons are required to make a definitive identification.
<i>Saldula</i> SP001	Further comparisons are required to make a definitive identification.
<i>Austromicrovelia</i> SP001	Further comparisons are required to make a definitive identification.
<i>Setocoris</i> MS WEIR n.sp.	Previously recognised as a new species from Groote Eylandt, with the Rungulla population putatively considered as conspecific to the Groote Eylandt material.

3.2 Putative new species (new to science)

In this report, '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.

Six putatively new species were discovered on this trip. Two putative new species of Miridae are recognised, one new species of Nabidae and three new Reduviidae are recognised. It is likely that there are additional new species among those listed in Table 1 (see notes).

Species	Comment
ZANC GN001 SP001 n.sp.	There are no described species of Zanchiini in Australia. This is a new species and its generic placement is unknown.
<i>Pseudosphordus</i> SP001 n.sp.	There are many new species of <i>Pseudosphordus</i> in Australia.

<i>Pseudosphodrus</i> SP002 n.sp.	There are many new species of <i>Pseudosphodrus</i> in Australia.
<i>Pseudosphodrus</i> SP003 n.sp.	There are many new species of <i>Pseudosphodrus</i> in Australia.
<i>Phorticus</i> SP001 n.sp.	This is a new species of <i>Phorticus</i> that has not been observed before G Cassis.
<i>Singhalesia</i> SP001 n.sp.	This is a new species of <i>Singhalesia</i> that requires dissection of the male genitalia.

3.3 Exotic and pest species

Exotic/pest species	Location sighted/observed	Indication of abundance	Comments
None			

3.4 Threatened species

Species	Listing status and level (EBPC, State/Territory)	Location sighted/observed	Indication of abundance
None			

3.5 Range extensions

Species	Location sighted/observed	Distance from nearest known record (km)	Comments
<i>Setocoris</i> MS WEIR n.sp.		Ca. 800 kilometres	

3.6 Genetic information

No genetic sampling was undertaken. Some species were stored in 100% ethanol for possible future DNA analysis.

4. Information on species lists

The identification of all heteropterans requires additional study, particularly with the investigation of male genitalia.

5. Information for land managers

Site 7 (perched wetland) includes the new species *Setocoris* MS WEIR. This species has been collected in the Kimberley (Western Australia) and Groote Eylandt (Northern Territory). The Rungulla collection of this *Setocoris* species is a major range extension but it is unknown at this time if this is due to sampling inadequacy.

6. Other significant findings

The collection of three new species of *Pseudosphodrus* (Reduviidae) is of significance. This genus may have numerous new species in the Australian Monsoonal Tropics. Comprehensive future sampling is required.

7. Conclusions

The number of species of Heteroptera captured by family is as follows:

Family	Number of Species of Heteroptera
Alydidae	1
Coreidae	2
Cydnidae	2
Gerridae	2
Lygaeidae	3
Miridae	14
Nabidae	1
Oxycarenidae	1
Pachygronthidae	2
Pentatomidae	10
Pyrrhocoridae	1
Reduviidae	7
Rhyparochromidae	4
Saldidae	1
Scutelleridae	2
Tingidae	2
Veliidae	1
Grand Total	56

Acknowledgements

We thank the Bush Blitz team for logistics and funding to participate in the Rungulla Bush Blitz. We thank Arlee McMaha for encouragement and advice.

References

1. Cassis, G. (2019). True Bugs (Insecta: Hemiptera: Heteroptera): Evolution, Classification, Biodiversity and Biology. In Reference Module in Life Sciences.
2. Cassis G and Gross GF. 1995. Zoological Catalogue of Australia. Heteroptera. Volume 27.3A. Canberra: CSIRO.
3. Cassis G and Gross GF. 2002. Zoological Catalogue of Australia. Heteroptera. Volume 27.3B. Canberra: CSIRO.
4. Cassis G. and Symonds C. 2016. Plant bugs, plant interactions and the radiation of a species rich clade in southwest Australia: *Naranjakotta* nov. gen. and eighteen new species (Insecta: Heteroptera: Miridae: Orthotylinae). *Invertebrate Systematics*. 30(2): 95-186.
5. Symonds CL, Cassis G. 2018. Systematics and Analysis of the Radiation of Orthotylini Plant Bugs Associated with Callitroid Conifers in Australia: Description of Five New Genera and 32 New Species (Heteroptera: Miridae: Orthotylini, *Bulletin of the American Museum of Natural History*, 2018: 1-228.

Appendices

Appendix 1. List of Heteroptera recorded during the Rungulla Bush Blitz

FAMILY	SUBFAMILY	TRIBE	SCIENTIFIC NAME
Alydidae	Alydinae	Alydini	<i>Riptortus</i> SP001
Coreidae	Coreinae	Acanthocorini	<i>Pomponatus</i> SP001
Coreidae	Pseudophloeinae	Clavigrallini	<i>Gralliclava</i> SP001
Cydnidae			CYDN GN001 SP001
Cydnidae			CYDN GN002 SP001
Gerridae			GERR GN001 SP001
Gerridae			GERR GN002 SP001
Lygaeidae	Lygaeinae		<i>Graptostethus servus</i>
Lygaeidae	Lygaeinae		<i>Spilostethus</i> SP001
Lygaeidae			<i>Eurysius</i> SP001
Miridae	Bryocorinae	Dicyphini	<i>Setocoris</i> MS WEIR n.sp.
Miridae	Bryocorinae	Dicyphini	<i>Singhalesia</i> SP001 n.sp.
Miridae	Orthotylinae	Orthotylini	ORTH GN001 SP001
Miridae	Orthotylinae	Zanchiini	ZANC GN001 SP001 n.sp.
Miridae	Phylinae	Cremnorrhinina	CREM GN001 SP001
Miridae	Phylinae	Cremnorrhinina	CREM GN003 SP001
Miridae	Phylinae	Leucophoropteriini	<i>Ausejanus albisignatus</i>
Miridae	Phylinae	Leucophoropteriini	<i>Blessingia</i> SP001
Miridae	Phylinae	Nasocorini	<i>Campylomma</i> SP001
Miridae	Phylinae		PHYL GN002 SP002
Miridae	Phylinae		PHYL GN003 SP001
Miridae	Phylinae		PHYL GN002 SP003
Miridae			MIRI GN001 SP001
Miridae			MIRI GN003 SP001
Nabidae	Prostematinae	Phorticini	<i>Phorticus</i> SP001 n.sp.
Oxycarenidae			<i>Oxycareus arctatus</i>
Pachygronthidae	Pachygronthinae		<i>Pachygrontha nr. walkeri</i>
Pachygronthidae	Teracriinae		<i>Stenophyella macreta</i>
Pentatomidae	Pentatominae	Antestiini	<i>Antestiopsis</i> SP001
Pentatomidae	Pentatominae	Halyini	<i>Dippilana membranacea</i>
Pentatomidae	Pentatominae	Halyini	nr. <i>Dippilana</i> SP001
Pentatomidae	Pentatominae	Halyini	<i>Poecilometis nigriventris</i>
Pentatomidae	Pentatominae	Halyini	<i>Poecilometis nymphs</i>
Pentatomidae	Pentatominae	Piezodorini	<i>Piezodorus oceanicus</i>
Pentatomidae	Pentatominae	Rhynchocorini	<i>Ocirrhoe</i> SP001
Pentatomidae	Pentatominae	Antestiini	PENT GN001 SP001
Pentatomidae	Pentatominae	Halyini	<i>Austromalaya</i> SP001
Pentatomidae	Pentatominae	Piezodorini	<i>Piezodorus oceanicus</i>
Pyrrhocoridae			<i>Dysdercus cingulatus</i>

Reduviidae	Harpactocorinae		<i>Helonotus</i> SP001
Reduviidae	Harpactocorinae		<i>Poecilobdallus formosus</i>
Reduviidae	Harpactocorinae		<i>Pseudosphordus gratiosus</i>
Reduviidae	Harpactocorinae		<i>Pseudosphordus</i> SP001 n.sp.
Reduviidae	Harpactocorinae		<i>Pseudosphordus</i> SP002 n.sp.
Reduviidae	Harpactocorinae		<i>Pseudosphordus</i> SP003 n.sp.
Reduviidae	Harpactocorinae		<i>Trachylestes</i> SP001
Rhyparochromidae	Rhyparochrominae	Myodochini	RHYP GN001 SP001
Rhyparochromidae	Rhyparochrominae	Myodochini	RHYP GN002 SP001
Rhyparochromidae	Rhyparochrominae	Myodochini	<i>Remauderiana</i> SP001
Rhyparochromidae	Rhyparochrominae	Rhyparochromini	<i>Dieuches</i> SP001
Saldidae			<i>Saldula</i> SP001
Scutelleridae	Elvisurinae		<i>Coleotichus costatus</i>
Scutelleridae	Scutellerinae		<i>Lampromicra senator</i>
Tingidae	Tinginae	Tingini	<i>Epimxia vulturna</i>
Tingidae	Tinginae	Tingini	<i>Urentius sarinae</i>
Veliidae			<i>Austromicrovelia</i> SP001

Appendix 2. Images of the putative new species (and an un-named species*) collected during the Rungulla Bush Blitz

