

## New records for Hemiptera species in Western Australia

Melinda L. Moir<sup>1</sup>, Jonathan D. Majer<sup>1</sup> and Murray J. Fletcher<sup>2</sup>

<sup>1</sup>Department of Environmental Biology, Curtin University of Technology, GPO Box U 1987, Perth, Western Australia 6845, Australia. Email: moirm@ses.curtin.edu.au

<sup>2</sup>NSW Agriculture, Orange, New South Wales 2800, Australia

**Abstract** – Four genera and nine species of Hemiptera from other states and territories have recently been recorded in Western Australia for the first time. Material has originated mainly from Jarrahdale, approximately 50 kms SE of Perth. Newly recorded species include one species of Cercopidae, five of Cicadellidae, one of Ricaniidae, one of Scutelleridae and one of Pentatomidae.

### INTRODUCTION

The Hemiptera of Western Australia are poorly known compared to Eastern Australia, possibly owing to the State's isolation from the main population centres of Australia, and the lack of local hemipteran taxonomists in the state. Even species representing potential threat to agriculture and/or forestry appear to have been overlooked, with the exception of introduced aphids. A few authors have attempted to catalogue Hemiptera within certain regions of WA (Abbott 1995; Cassis and Gross 1995, 2002; Heterick *et al.* 2001), although such catalogues rely on rather infrequent ground surveys of taxa. The first author has been investigating the understorey-associated Hemiptera of the northern jarrah (*Eucalyptus marginata* Sm.) forest at Jarrahdale, WA. New records of Hemiptera for WA, revealed by this study, are presented here.

### METHODS

Specimens were collected by beating and suction sampling (see Smith 1999) at Jarrahdale, approximately 50 km SE of Perth in WA, at 32°14'S 116°05'E. Understorey plant species from the families Zamiaceae (*Macrozamia*), Proteaceae (*Adenanthos* and *Hakea*), Fabaceae (*Bossiaea* and *Mirbelia*), Mimosaceae (*Acacia*), Dasypogonaceae (*Lomandra*), Myrtaceae (*Melaleuca*), Rhamnaceae (*Trymalium*), Epacridaceae (*Leucopogon*) and Poaceae (*Ehrharta*) were sampled. The two sampling methods were used on numerous understorey plant species of the jarrah forest, over a period of 20 months, resulting in excess of 26 000 hemipteran specimens, representing at least 380 species. At least nine of these represented records that were new to WA. Other collections examined for records of these newly recorded species, were those of the Western Australian Museum, Department of Agriculture WA, Department of Environmental Biology at

Curtin University, and A. Postle's Argyle Diamond Mines specimens (lodged in the WA Museum and Department of Environmental Biology). The methods utilised by Postle (1984) were light traps, sweeps, malaise traps and pitfall traps. Voucher specimens of adults collected by the first author have been lodged with the Western Australian Museum and, in some cases, the Department of Agriculture, WA.

Abbreviations used: ASCU, Agricultural Scientific Collections Unit, NSW Agriculture, Orange; NSW, New South Wales; Qld, Queensland; Vic, Victoria; SA, South Australia; NT, Northern Territory; Tas, Tasmania; WA, Western Australia; WAM, Western Australian Museum, Perth; WADA, Entomological collection, Department of Agriculture Western Australia, Perth.

### NEW RECORDS

#### Suborder Auchenorrhyncha

#### Family Cercopidae

#### *Petyllis deprivata* (Walker, 1858)

**Material examined:** 4♂, Jarrahdale jarrah forest (32°14'S 116°05'E), November 2000, M. Moir, on FABACEAE: *Bossiaea aquifolium* (Benth.) (suction sampling); DASYPOGONACEAE: *Lomandra sonderi* (Muell.) (suction sampling); ZAMIACEAE: *Macrozamia riedlei* (Gaudich.) (suction sampling); PROTEACEAE: *Adenanthos barbiger* (Lindl.) (suction sampling) (WAM); 1♀, Dog Pool, Shannon National Park (34°46'S 116°22'E), 22–25 March 1993, M.S. Harvey and J.M. Waldock (WAM 33561); 1 (genitalia missing), Glen Forest, Perth, Darling Range, November 1975, S.M. Postmus (WAM 33560); 1 (genitalia missing), Mt Clarence, Albany, 10 January 1941, P.N.F. (WADA 16200); 1♂, Denmark, 8 December 1972, P.N. Forte (WADA

16201); 1♂ 2♀, Mandurah, 27.xi.1969, K.T. Richards (WADA 16196, 16197 and 16198); 1♀, Banister, 15 January 1971, K.T. Richards (WADA 16202); 1♀, Northam, 18 November 1982, K.T. Richards (WADA 16203); 1♀, Yanchep, March 1973, S.J. Curry (WADA 16202), light trap.

Note: This is the first record of this genus in WA. *Petyllis deprivata* has been recorded from Qld, NSW and Vic by Fletcher and Larivière (2001), and the material examined demonstrates that it is also distributed between Perth and Albany in WA. Plant species on which it has been collected in WA indicate that this cercopid may have a wide host range, although it was collected mainly in jarrah forest. These host plants possibly include members of the Fabaceae, Zamiaceae, Proteaceae and Dasypogonaceae (*Lomandra*). The specimens collected to date indicate that *P. deprivata* is active during late spring to autumn in WA.

### Family Ricaniidae

#### *Epithalamium aziola* (Kirkaldy, 1906)

**Material examined:** 1♀, Jarrahdale rehabilitated mine pit (32°14'S 116°05'E), April 2000, M. Moir, suction sampling; 13♀ 4♂, Jarrahdale rehabilitated mine pit and surrounding jarrah forest (32°14'S 116°05'E), ii.2001, M. Moir, on FABACEAE: *B. aquifolium* (suction sampling), *Mirbelia dilatata* (R.Br.) (suction sampling and beating); PROTEACEAE: *Hakea lissocarpa* (R.Br.) (suction sampling); MIMOSACEAE: *Acacia pulchella* (R.Br.) (beating), *Acacia drummondii* (Lindl.) (beating), *Acacia trigonophylla* (Meisn.) (beating) (7♀ 2♂ in each of WAM and WADA).

Note: This material represents the first record of the genus from WA. A small and attractive species of ricaniid planthopper, this species was described in a monotypic genus by Kirkaldy (1906) from Sydney, but few further records exist for the species. Fletcher and Larivière (2001) provide an illustration of the species based on specimens collected in 1977 by M.J. Fletcher at Mount White, North of Sydney. There are also two specimens in ASCU collected at Tahmoor, NSW, by C.E. Chadwick in 1966. In the northern jarrah forest of WA, the species appears to be active during late summer to early autumn. It is likely that *M. dilatata* and certain *Acacia* species are hosts.

### Family Cicadellidae

#### Subfamily Ulopinae

##### Tribe Ulopini

#### *Austrolopa* sp. (Evans, 1937)

**Material examined:** 1♂ 22♀, Jarrahdale rehabilitated mine pit and surrounding jarrah forest

(32°14'S 116°05'E), May–August 2001, M. Moir, on FABACEAE: *B. aquifolium* (suction sampling and beating), *M. dilatata* (suction sampling and beating); MYRTACEAE: *Melaleuca* sp. (beating); PROTEACEAE: *H. lissocarpa* (beating); RHAMNACEAE: *Trymalium ledifolium* (Fenzl, 1837) (beating) (1♂ 11♀ in WADA, 11♀ in WAM); 1♂, Beedelup National Park, karri forest, Pemberton, ii.2003, M. Moir and K.E.C. Brennan, on *B. aquifolium* (beating) (WAM).

Note: This material represents the first record of the genus *Austrolopa* from WA. *Austrolopa* currently includes two described species, *A. brunensis* Evans (1937) and *A. victoriensis* Evans (1939). The former is widespread in eastern Australia and has also been recorded in SA and Tas (Day and Fletcher 1994). The latter is known only from the female type specimen, collected from Warburton, Vic. The two species were differentiated by Evans (1966) by the length of the vertex, but this character is somewhat variable and further specimens of *A. victoriensis* from SE Australia, particularly males, are needed to support the recognition of *A. victoriensis* as a valid species. *Austrolopa brunensis* is known in several colour forms, and in both macropterous and brachypterous forms. No specimens collected from WA display brachyptery. *Austrolopa* adults and nymphs were common in the southwest on *B. aquifolium* and *M. dilatata*, although adults were occasionally collected on other plant species. Western Australian host plant records conform to eastern state hosts of *Bossiaea* and other Fabaceae species for *A. brunensis* (Day and Fletcher 1994; Fletcher and Larivière 2001). It appears that the *Austrolopa* species recorded in WA is distributed widely on *B. aquifolium*, as collections on this host plant were recorded at sites over 200km apart (Jarrahdale to Pemberton). However, a study of the genus *Austrolopa* from all parts of Australia is required to determine whether more than one species can be recognised, or whether the genus contains only a highly variable *A. brunensis*.

### Subfamily Typhlocybinae

#### Tribe Erythroneurini

#### *Zygina zealandica* (Myers, 1923)

**Material examined:** 14♂ 15♀, Jarrahdale rehabilitated mine pit and surrounding jarrah forest (32°14'S 116°05'E), April 2000 – November 2001, M. Moir, on FABACEAE: *B. aquifolium* (chemical knockdown), *M. dilatata* (suction sampling); PROTEACEAE: *H. lissocarpa* (suction sampling); MIMOSACEAE: *A. pulchella* (suction sampling); RHAMNACEAE: *T. ledifolium* (beating) (7♂ 8♀ in WAM, 7♂ 7♀ in WADA); 7♂ 4♀, Como, Perth, October 2002, M. Moir, POACEAE: *Ehrharta longiflora* (Sm.) (hand collection) (WAM).

Note: This species is common and widespread in eastern Australia and New Zealand on a very wide range of host plants (Knight 1976). Its presence in WA on many plant species is not surprising and it is presumably also present in SA, although the species has not yet been confirmed in that State.

### Subfamily Deltocephalinae

#### Tribe Macrostelini

##### *Balclutha viridinervis* (Matsumura, 1914)

**Material examined:** 1 ♀, Como, Perth, January 2002, M. Moir, by fluorescent light (WAM).

Note: This species is distributed in SE Asia and the western Pacific from India to New Zealand. In Australia it has been recorded in NT, NSW, Qld (Knight 1983; Fletcher and Larivière 2001). This record from WA needs to be confirmed by examination of the genitalia of a male. The record may represent a recent introduction to WA, as the species has a wide distribution, and the single specimen examined was collected from a suburban garden of Perth.

##### *Balclutha incisa* (Matsumura, 1902)

**Material examined:** 1 ♂, Jarrahdale rehabilitated mine pit (32°14'S 116°05'E), April 2000, M. Moir, on MIMOSACEAE: *A. pulchella* (chemical knockdown) (WAM); 1 ♂, Lennard River crossing Gibb River road, Kimberley (17°23'S 124°44'E), 14–28 July 1988, T. Houston, Malaise trap (WAM 33562).

Note: *B. incisa* is one of the most common species of grass-feeding leafhoppers in Australia but has not previously been formally recorded from WA (Knight 1987; Fletcher and Larivière 2001). Given the species' wide host range and large distribution, the paucity of specimens captured at Jarrahdale suggests that *B. incisa* could be a recent introduction.

#### Tribe Athysanini

##### *Limotettix incertus* (Evans, 1966)

**Material examined:** 1 ♀, Jarrahdale rehabilitated mine pit (32°14'S 116°05'E), November 2000, M. Moir, suction sampling (WADA); 1 ♀, Argyle Diamond Mines, Kununurra, December 1983, A. Postle, light trap (WAM); 4 ♀, Mussel Pool, 7 km NW of Midland (32°14'S 116°05'E), 24 November 1975, S.M. Postmus (WAM 33563-33566); 1 ♀, Marandoo camp, Karijini National Park, Pilbara (22°38'S 118°06'E), 5–29 May 1980, T.F. Houston (WAM 33567).

Note: A common species in eastern Australia and an adventive in New Zealand (Evans 1966). The wide distribution within WA indicates a wide natural range, rather than this being a more recent introduction. Host plant information is not available for this species as the method utilised (light traps) does not allow such records, and few specimens have been captured and identified to date.

### Suborder Heteroptera

#### Family Scutelleridae

##### Subfamily Odontotarsinae

##### *Morbora australis* (Distant, 1899)

**Material examined:** 1 ♀, Jarrahdale rehabilitated mine pit (32°14'S 116°05'E), November 2001, M. Moir, on MIMOSACEAE: *A. pulchella* (beating) (WADA); 1 ♀, Mundrabilla Station (via Eucla), 7 January 1990, R. Patterson, under *Eucalyptus* sp. bark (WAM 33559).

Note: This is the first record of the genus in WA for this unusual Scutelleridae, which is distinctive due to its dull brown coloration (unlike other species in this family) and spines on the pronotum. Although the genus and species are poorly known, the species has been recorded from most states and territories of Australia (Gross 1975).

#### Family Pentatomidae

##### Subfamily Pentatominae

##### *Gilippus hostilis* (Hagland, 1868)

**Material examined:** 2 ♀, Jarrahdale rehabilitated mine pit and surrounding jarrah forest (32°14'S 116°05'E), November 2000 and November 2001, M. Moir, on EPACRIDACEAE: *Leucopogon nutans* (Pritz) (beating) (1 ♀ in each of WAM and WADA).

Note: This species has been recorded previously from NSW and Vic (Gross 1976). It may be active during late spring, as both females were collected during November.

### DISCUSSION

The most common of the newly recorded Hemiptera were *Z. zealandica*, *Austrolopa* sp. and *E. aziola* (506, 21 and 18 specimens collected at Jarrahdale, respectively). *Zygina zealandica* and *Austrolopa* sp. were found easily and it is probable that these species have always been present in the southwest. It is possible that they have gone unnoticed until the present, possibly due to a lack of hemipteran surveys.

Single specimens of *M. australis*, *B. viridinervis*, *B.*

*incisa* and *L. incertus* were obtained at Jarrahdale. Other species that were represented by fewer than five specimens at Jarrahdale were *G. hostilis* and *P. deprivata*. Considering the intensity of the collection methods for the understorey, and the total number of hemipterans collected, populations of the above-mentioned species were thought to be in low abundance at Jarrahdale. Whether these species are recent introductions to WA is unknown, although the small populations would have inhibited the chance of previous discovery. If species are present most of the year, either as eggs, nymphs or overwintering in leaf litter, further difficulty could be expected in collecting and recording them. One particular cicadellid, *L. incertus*, has a large distribution over the State, as specimens were collected over 2200km apart (Jarrahdale, Swan Coastal Plain, Karijini National Park and Kununurra). Although sampling was conducted intensively at Jarrahdale and Kununurra, only single specimens were obtained. The singletons from most locations suggest either that the species is at the limit of its range, populations occur in extremely low abundance, or that the host plants were not targeted in the sampling effort (for further discussion on singletons see Novotny and Basset 2000).

Herbivorous Hemiptera are thought to have close relationships with the plant species upon which they feed (New 1988; Carver *et al.* 1991). Future surveys, therefore, should incorporate host plant data to uncover more information about this interesting group. Further collections of Hemiptera will, undoubtedly, reveal more described species in WA. In addition to new records such as these, many undescribed species and genera are expected with an increase in surveys. For example, the Jarrahdale Hemiptera study has revealed in excess of 250 species that are yet to be described.

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