

# Taxonomic affinities of *Deroparia* Munro, *Euryphalara* Munro and *Xenodorella* Munro (Diptera: Tephritidae: Tephritinae)

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*Deroparia reticulata* (Munro), *Euryphalara barnardi* (Bezzi), *E. extensa* Munro, comb. n., *E. sp. nr. extensa*, *E. mecistocephala* (Munro) and *Xenodorella mira* Munro are considered to belong to a closely allied group of genera, the *Euryphalara* group, placed in the tribe Platensini. The species occur mainly in Namibia and appear to be associated with *Monechma* (Acanthaceae).

**Key words:** *Deroparia*, *Euryphalara*, *Xenodorella*, taxonomy, southern Africa.

## INTRODUCTION

Examination of recently-collected material of five taxa in the predominantly Namibian genera *Deroparia* Munro, *Euryphalara* Munro and *Xenodorella* Munro (Diptera: Tephritidae: Tephritinae) has enhanced knowledge of the taxonomic relationships of these poorly-known genera of tephritine flies.

*Deroparia* was described by Munro (1957) for one species, *D. reticulata* (Munro), originally placed in *Ensina* Robineau-Desvoidy and transferred to *Euryphalara* by Munro (1938). Munro (1957) later suggested a relationship with the South American genus *Protensina* Hendel (a synonym of *Ensina*). Norrbom *et al.* (1998) included it in the tribe Tephritini but did not assign it to a particular genus-group.

*Euryphalara* was described by Munro (1938) for *E. barnardi* (Bezzi), *E. barnardi* var. *extensa* Munro, *E. mecistocephala* (Munro) and *E. reticulata*, the latter species subsequently transferred to *Deroparia* (Munro 1957). Munro (1938, 1967) placed it in the tribe Tephrellini, close to *Tephrella* Bezzi but also (Munro 1957) suggested an affinity with *Spathulina* Rondani. Norrbom *et al.* (1998) placed it in the *Spathulina* genus-group in the tribe Tephritini.

*Xenodorella* was described by Munro (1967) for one species, *X. mira* Munro, but its relationships have remained uncertain. Munro (1967) noted similarities with four different groups: Oedaspidini, Tephritini, Tephrellini and Platensini. Freidberg & Kaplan (1992) placed it in the tribe Oedaspidini, while Norrbom *et al.* (1998) placed it in the subtribe Oedaspidina of the tribe Dithrycini.

Specimens examined are in the National Museum of Namibia, Windhoek (NMWN), University of Pretoria (UPSA) and South African National Collection of Insects, Plant Protection

Research Institute, Pretoria (SANC).

## Key to species

1. Wing pattern blackish-brown, not banded or reticulate. . . . . 2  
— Wing pattern yellow-brown, banded or reticulate and with dark patches on costal vein . . . . . 5
2. Cell c with a distinct medial dark spot from costa; basal brown area reaches hind wing margin; dark bar across middle of cell  $cu_2$  distinct and broad . . . . . 3  
— Cell c without a dark medial spot; basal brown area not reaching hind wing margin or dark bar across middle of cell  $cu_2$  narrow and interrupted or absent . . . . . 4
3. Abdomen black; outer of three hyaline spots in cell m elongate and reaching wing margin . . . . . *Euryphalara extensa* Munro  
— Abdomen orange-brown; outer of three hyaline spots in cell m rounded and not reaching wing margin . . . . . *Euryphalara sp. nr. extensa*
4. Basal brown area not reaching hind margin of wing; cell sc and basal part of cell  $r_1$  below it mostly blackish-brown . . . . . *Euryphalara barnardi* (Bezzi)  
— Basal brown area reaching hind margin of wing; cell sc mostly yellowish and basal part of cell  $r_1$  below it mostly yellowish or hyaline . . . . . *Euryphalara mecistocephala* (Munro)
5. Wing pattern banded; scutellum black and swollen. . . . . *Xenodorella mira* Munro  
— Wing pattern reticulate; scutellum not black and swollen . . . . . *Deroparia reticulata* (Munro)

## DISCUSSION

### Species limits in *Euryphalara*

*Euryphalara extensa* comb.n. is raised here from a variety of *E. barnardi* to a distinct species. As noted by Munro (1938), the main difference is the basal dark marking, reaching the hind wing margin in *E. extensa* but ending well before it in *E. barnardi*. Another difference is the presence or absence of a distinct medial dark spot from the costa in cell *c*, present in *E. extensa* but absent in *E. barnardi* (and also in *E. mecistocephala*). Typical *E. extensa* from South Africa has the abdomen black (as in *E. barnardi* and *E. mecistocephala*) and an elongate outer hyaline spot in cell *m* that reaches the wing margin. Munro's (1967) figure of the wing is inaccurate; in cell *m* there are three hyaline indentations, the basal one large. Namibian specimens are similar but have the abdomen largely or entirely orange-brown and the outer hyaline spot in cell *m* is rounded and isolated from the wing margin, suggesting that they represent a separate, but closely related species (*E. sp. nr. extensa*). The distributions of *E. barnardi*, *E. extensa* and *E. sp. nr. extensa* are essentially allopatric. *Euryphalara extensa* is known only from the Northern Province, South Africa. In Namibia *E. barnardi* occurs in the west and *E. sp. nr. extensa* occurs in the south but the collection of both taxa at Sesriem 137, in the Maltahöhe District, supports their specific separation. The reduced wing markings of *E. barnardi* and *E. mecistocephala* suggest a sister-taxa relationship.

### Definition of the *Euryphalara* genus-group

Apart from the wing patterns, the three genera discussed here show a remarkable similarity in general appearance, all having an elongate head with protruding epistome and long, geniculate mouthparts. This is particularly evident in *D. reticulata*, *E. sp. nr. extensa* and *X. mira*, all of which have a mostly black scutum, orange-brown abdomen and long black oviscape. They are placed here in a single group, the *Euryphalara* genus-group, that is defined by the following characters.

**Head.** Elongate, much longer than high; cheeks wide; epistome projecting to beyond line of antennae; antennae short; arista pubescent; lunule large, longer than wide; frons pubescent anteriorly; three pairs of dark frontal bristles; two pairs of orbital bristles, the lower dark, the upper white

and thickened; ocellar bristles moderately developed; occipital bristles white and thickened, interspersed with short, dark setulae; palpi elongate; proboscis very long and thin, about twice as long as head. Illustrations of heads were provided by Munro (1967) and Freidberg & Kaplan (1992).

**Thorax.** Largely black, laterally yellowish from postpronotal lobes to wing base; pubescence fine, with distinct coarse tomentosity on scutum but not on pleura; the anepisternal suture thin but distinct; postpronotal lobes yellow; dorsocentral bristles on or slightly anterior to line of supra-alar bristles; one anepisternal bristle; scutellum with two pairs of long bristles; scutellum swollen in *Xenodorella*. Wing with vein  $R_{4+5}$  bare; veins  $R_{4+5}$  and *M* slightly to moderately convergent towards apex, distinctly so in *Deroparia* and *Xenodorella*; *R-M* cross-vein placed about its own length from *DM-Cu* cross-vein, well beyond middle of cell *dm-cu*; one long and one shorter costal spines above base of cell *sc*; cell *bcu* with a short, broad apical extension. Wing pattern blackish-brown in *Euryphalara*, yellow-brown in *Deroparia* and *Xenodorella* but in both the latter genera the costa is conspicuously darkened above the pattern. Illustrations of wings were provided by Bezzi (1924), Munro (1929, 1967) and Freidberg & Kaplan (1992).

**Abdomen.** Elongate-oval, orange-brown or black; with fine pale pubescence but without distinct tomentosity; female tergite *VI* almost as long as tergite *V*; oviscape elongate, at least two-thirds as long as abdomen; black or partly so, the remainder orange; aculeus elongate, sharply pointed at apex; two papillose spermathecae. The morula glands of *E. mecistocephala* and *X. mira* are very similar and were illustrated by Munro (1967). The aculeus of *X. mira* was illustrated by Freidberg & Kaplan (1992) and those of *D. reticulata* and *Euryphalara* are very similar.

### Tribal placement

The lack of dense tomentosity (or 'dust') on the pleura and abdomen, yellow postpronotal lobes and association with the acanthaceous plant *Monechma* suggest that this group belongs in the tribe Platensini. This was placed as a subtribe of Tephrellini by Norrbom *et al.* (1998) but in view of its possible closer affinity with the tribe Tephritini (Hancock 1990), it is given separate tribal status here. The *Euryphalara* genus-group may be separated from both *Perihithrum* Bezzi (which may not belong in this tribe) and the *Platensina* genus-

group (containing all other platensinines) by the elongate head and geniculate mouthparts. The swollen scutellum in *Xenodorella* appears to be a secondarily apomorphic character, convergent with that in the Oedaspidini and other groups. The species have not been reared, but both *E. mecistocephala* and *X. mira* have been swept from *Monechma* in Namibia (Munro 1967) and this represents a likely host.

## MATERIAL EXAMINED

### *Deroparia reticulata*

NAMIBIA: 3♂, Otjinungwa, Kaokoland, SE 1712Ab, 19–22.viii.1973; 1♂, Hartmann's Valley, Kaokoland, 17.23S 12.15E, 24.iv.1995, E. Marais; 1♀, Epembe, Kaokoland, 17.34S 13.32E, 5–11.xi.1989, C.S. Roberts; 1♂, 2♀, Opuwo District, Omungwindi, 17.47S 12.51E, 4.iv.1996, E. Marais, sweeping; 1♂, 1♀, Orupembe, Kaokoland, SE 1812Ba, 16–17.viii.1973; 1♀, Unjab Delta, Skeleton Coast Park, 20.11S 13.13E, 18–26.vii.1990; 1♂, Rössing Mine, Swakopmund District, 22.28S 15.02E, 31.vii.–28.viii.1984, J. Irish, H. Liessner; 1♀, Lower Dome Gorge, Swakopmund District, 22.28S 15.04E, 23.x.–20.xii.1984, J. Irish, H. Liessner (all NMWN).

### *Euryphalara barnardi*

NAMIBIA: 3♂, 1♀, Mooihoek 376, Outjo District, 20.08S 15.53E, 10.ii.1986, J. Irish; 1♀, Otjiku 192, Otjiwarongo District, 20.16S 16.49E, 16–29.xi.1988, E. Marais; 1♂, Hungorob Valley, Brandberg, 21.11S 14.31E, 1180 m, 2–5.iv.1999, S. van Noort & S.G. Compton, yellow pan trap NA99-Y27, bushy Karoo-Namib shrubland; 1♂, Lower Dome Gorge, Swakopmund District, 22.28S 15.04E, 5.vi.–3.vii.1984, J. Irish, H. Liessner; 1♀, Sesriem 137, River, Maltahöhe District, 24.29S 15.57E, 1.iv.–23.vi.1995, E. Marais, pres. pitf. traps; 1♀, Riverside 135, Bethanie, SE 2616Ca, 23–26.x.1971 (all NMWN).

### *Euryphalara extensa*

SOUTH AFRICA: Northern Province, 1♂, Mogoto Nature Reserve, Zebediela, 24.15S 29.13E, 22–25.x.1979, M.W. Mansell (SANC).

### *Euryphalara* sp. nr. *extensa*

NAMIBIA: 1♀, Blässkrantz 7, Maltahöhe District, 24.06S 16.14E, 12–14.x.1984, J. Irish; 4♂, 6♀, Sesriem 137, River, Maltahöhe District, 24.29S 15.57E,

1.iv.–23.vi.1995, E. Marais, pres. pitf. traps; 1♀, Hoagces, Keetmanshoop District, 25.55S 17.56E, 9.ii.–22.iii.1996, E. Marais, pres. pitfall traps; 1♀, Neisip 34, Lüderitz District, 26.14S 16.34E, 13.vii.–12.ix.1994, E. Holm, E. Marais, yellow tray (all NMWN); 1♀, Awasis Mountain, 25S 15E, 3.vii.1976 (UPSA).

### *Euryphalara mecistocephala*

NAMIBIA: 1♀, Klein Gaias, Skeleton Coast Park, 20.23S 14.02E, 3–6.viii.1985, E. Griffin; 1♀, Messum Valley, Brandberg, 21.13S 14.30E, 700 m, 2–5.iv.1999, S. van Noort & S.G. Compton, malaise trap NA99-M02, bushy Karoo-Namib shrubland; 2♂, Eastern Messum Crater, Swakopmund District, 21.24S 14.17E, 1–13.viii.1985, E. Griffin; 1♀, Rössing Mine, Swakopmund District, 22.28S 15.02E, 8.v.–5.vi.1984, J. Irish, H. Liessner; 2♂, 1♀, Lower Dome Gorge, Swakopmund District, 22.28S 15.04E, 3–31.vii., 28.viii.–25.ix. & 25.ix.–23.x.1984, J. Irish, H. Liessner; 3♀, Upper Panner Gorge, Swakopmund District, 22.29S 15.01E, 25.ix.–23.x.1984, J. Irish, H. Liessner; 3♂, 4♀, Upper Ostrich Gorge, Swakopmund District, 22.29S 14.59E, 3–31.vii. & 28.viii.–25.ix.1984, J. Irish, H. Liessner & 9.iv.–6.v.1985, J. Irish, H. Rust; 2♂, 2♀, Lower Ostrich Gorge, Swakopmund District, 22.30S 14.58E, 28.viii.–25.ix. & 23.x.–20.xi.1984, J. Irish, H. Liessner & 11.iii.–9.iv.1985, J. Irish, H. Rust (all NMWN); 1♂, Ganab, Namib-Naukluft Park, 23.06S 15.33E, 16.iii.1983, I.M. Millar (SANC).

### *Xenodorella mira*

NAMIBIA: 1♂, Mooihoek 376, Outjo District, 20.08S 15.53E, 10.ii.1986, J. Irish; 1♀, 6 km N Arandis, Damaraland, 22.22S 14.59E, 9.iv.–6.v.1985, J. Irish, H. Rust (both NMWN).

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