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Review of the genus *Aphaereta* Förster, 1863 (Hymenoptera, Braconidae, Alysiinae) from the Afrotropical region, with description of three new species

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Abstract

The *Aphaereta* Förster, 1863 species of the Afrotropical region (including Madagascar) are reviewed. Three new species, *A. elongata* **sp. n.** (Kenya), *A. hararensis* **sp. n.** (Zimbabwe) and *A. mosselensis* **sp. n.** (South Africa) are described and illustrated. Re-descriptions of *A. basirufa* Granger, 1949 (Madagascar) and *A. sarcophagensis* Shenefelt, 1974 (South Africa) are added.

Keywords

Endoparasitoids, Braconidae, Alysiinae, *Aphaereta*, Afrotropical Region, key

Introduction

The Alysiinae is a conspicuously diverse subfamily within the Braconidae (Dolphin and Quicke 2001) with more than 2000 described species from two large and polymorphic tribes Alysiini and Dacnusini (Shenefelt 1974, Yu et al. 2012). Species of Alysiini are parasitoids of different groups of Diptera-Cyclorrhapha, but members of Dacnusini are almost exclusively specialised on leaf- and stem-miners, predominantly of the families Agromyzidae, Ephydridae and Chloropidae.

The genus *Aphaereta* Förster, 1863 can be recognised amongst the genera of the tribe Alysiini by the following characters: mandible simple and with three teeth, its

ventral and diagonal ridges well developed; first flagellar segment sometimes only slightly shorter than second segment; pterostigma of fore wing narrow, merging imperceptibly with R1 in most species; fore wing RS+M absent; 2RS shorter than 3RSa; first subdiscal cell open; 2CU interstitial or nearly so; hind wing with m-cu absent, if rarely cu-a present, then r-m and M+CU much shorter than 1M; ovipositor sheath sparsely setose throughout (Wharton 2002).

This genus includes about 40 species around the world wide, of which two species were known in the Afrotropical region including Madagascar (Yu et al. 2012). In this paper, three new Afrotropical species of the genus *Aphaereta* are described and illustrated, viz. *A. elongata* sp. n. from Kenya, *A. hararensis* sp. n. from Zimbabwe and *A. mosselensis* sp. n. from South Africa. Moreover, re-descriptions of *A. basirufa* Granger, 1949 from Madagascar and *A. sarcophagensis* Shenefelt, 1974 from South Africa are given. Finally, a key for the identification of *Aphaereta* species from the Afrotropical region (with Madagascar) is provided.

Material and methods

For the terminology of the morphological features and sculpture, measurements and wing venation nomenclature see Sharkey and Wharton (1997) and HAO (Hymenoptera Anatomy Ontology Portal: http://portal.hymao.org/) (Yoder et al. 2010). For measurements of the length and width of mandibles and abbreviations for ocellar proportions see Peris-Felipo et al. (2013). The following terms are equivalent between this paper and Peris-Felipo et al. (2013):

Gena: temples.
Anterior tentorial pit: paraclypeal fovea.
Mesoscutal midpit: mesoscutal pit.
Scutoscutellar sulcus: prescutellar depression.
Mesopectus: mesopleuron.
Mesepimeral sulcus: posterior mesopleural furrow.
Marginal cell: radial cell.
Nervulus: vein cu-a.
Second submarginal cell: brachial cell.

The external morphology of the Alysiinae parasitoids was studied and illustrated using Leica© S8 APO stereomicroscope equipped with a Nikon© D700 digital camera, and Hitachi© S–4800 scanning electron microscopes in the Electron Microscopy Service of the University of Valencia (SCSIE) with a beam of 2 kV and without sputter coating for SEM pictures was used. The types of newly described species are deposited in the collection of the Natural History Museum (London, UK; BMNH). Other abbreviation used in the text is MNHN for "Muséum National d'Histoire Naturelle" (Paris, France).

Taxonomic part

Aphaereta basirufa Granger, 1949

Figs 1–2

Aphaereta basirufa Granger 1949: 405; Shenefelt 1974: 957; Fischer 1994: 773; Yu et al. 2012.

Type material. Holotype: female, Madagascar, Ankaratra, Terra typica, ii.1938, alt 1800, Mém. Inst. sci. Madagascar 2A: 405 (A. Seyrig) (MNHN) (not examined).

Material examined. 3 females, Madagascar, Tamatave, Perinet, 27.iv–3.v.1983 (J.S. Noyes and M.C. Day leg.) (BMNH).

Re-description. Female.

Head entirely smooth; in dorsal view 1.6–1.8 times as wide as median length, 1.4 times as wide as mesoscutum, with rounded gena behind eye. Eye in lateral view as high as wide and twice as wide as temple medially. POL 1.6 times OD; OOL 4.3 times OD. Face twice as wide as high; inner margins of eyes subparallel. Clypeus slightly curved ventrally, 2.4–3.0 times as wide as high; its upper margin striated. Mandible widened towards apex, 1.3 times as long as its maximum width. Upper tooth of mandible longer than lower tooth, rounded apically; middle tooth very long, wide basally and narrowed towards apex, rounded apically; lower tooth pointed apically. Antenna longer than body, 22–25-segmented. Scape about 3.0 times as long as pedicel. First flagellar segment 3.7–4.0 times as long as its apical width; second segment 5.0–5.6 times as long as its maximum width, 1.5 times as long as first segment. Third flagellar segment 4.5 times as long as its width. Fourth to seventh flagellar segments 3.4–3.5 times, eight to penultimate segments 3.0 times, and apical segment 3.8 times as long as their maximum width accordingly.

Mesosoma 1.1 times as long as high (lateral view). Mesoscutum 1.2 times as long as its maximum width. Notauli mainly absent on vertical surface of mesoscutum. Mesoscutal midpit absent. Prescutellar depression smooth, without lateral carinae. Precoxal suture present, reaching anterior margin of mesopectus and not reaching posterior margin of mesopectus. Mesepimeral sulcus crenulate below. Propodeum sculptured, with long median longitudinal carina, with apical half densely sculptured. Propodeal spiracle relatively small.

Wings. Length of fore wing 3.0 times its maximum width. Marginal cell reaching apex of wing, 5.2 times as long as its maximum width. Vein 3RSa about 2.0–2.1 times as long as 2RS, 3.3–3.4 times as long as r, 0.3–0.4 times as long as 3RSb. Second submarginal cell 2.45 times as long as its maximum width. Hind wing 6.8 times as long as its maximum width.

Legs. Hind femur 5.0–5.5 times as long as its maximum width. Hind tibia weakly widened towards apex, 10.4 times as long as its maximum subapical width, as long as hind tarsus. First segment of hind tarsus (basitarsus) twice as long as second segment.

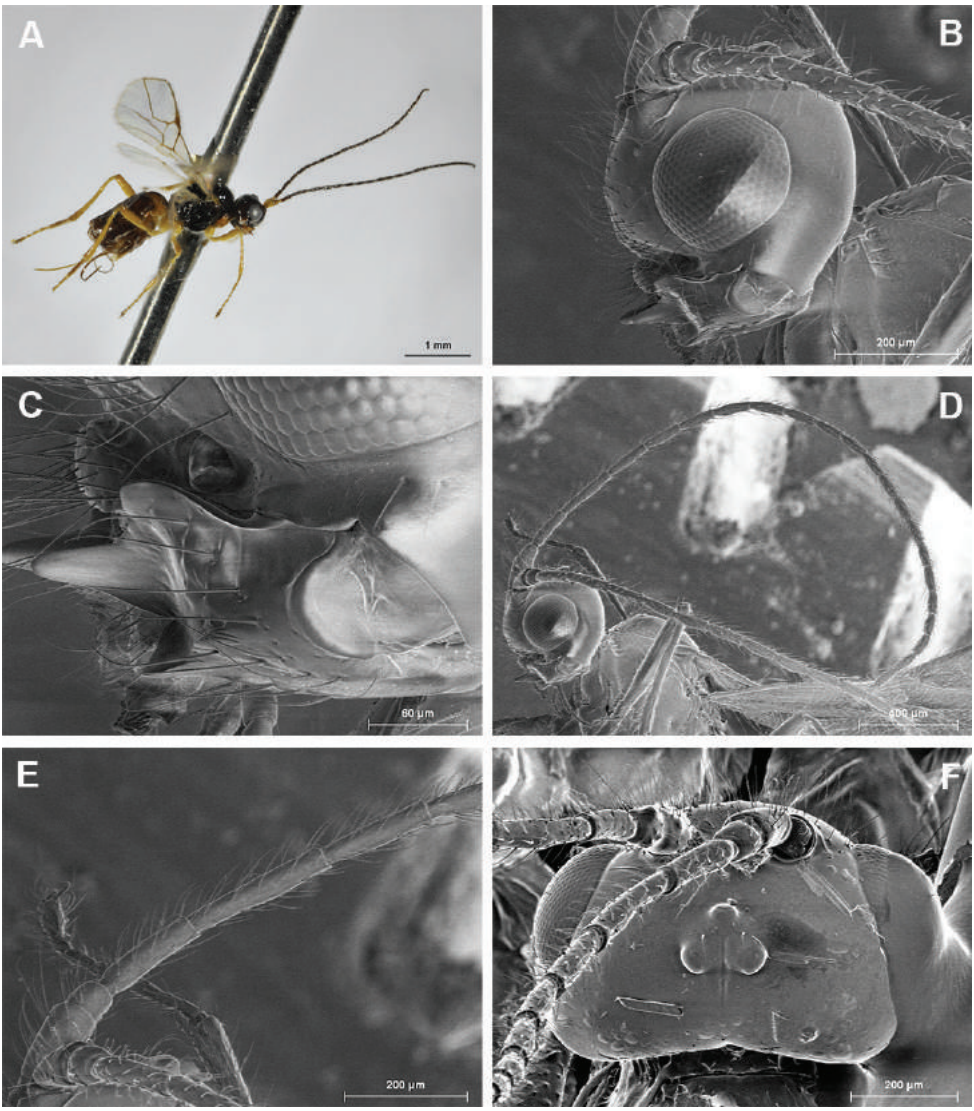

Figure 1. *Aphaereta basirufa* Granger (female) **A** Habitus, lateral view **B** Head, lateral view **C** Mandible **D** Antenna **E** Basal segments of antenna **F** Head, dorsal view.

Metasoma distinctly compressed. First tergite with two median carinae, striate inside them, and smooth on lateral area; weakly widened towards apex; as long as its apical width. Ovipositor 3.4 times as long as first tergite, nearly as long as metasoma, 1.8 times as long as hind femur.

Colour. Body dark brown. Scape, pedicel, mandible, legs and ovipositor yellow. In dorsal view, head and mesosoma dark brown; first metasomal tergite yellow, paler than brown second and third tergites. Wings hyaline. Pterostigma brown.

Body length 2.7–3.0 mm; fore wing length 3.8–3.9 mm.

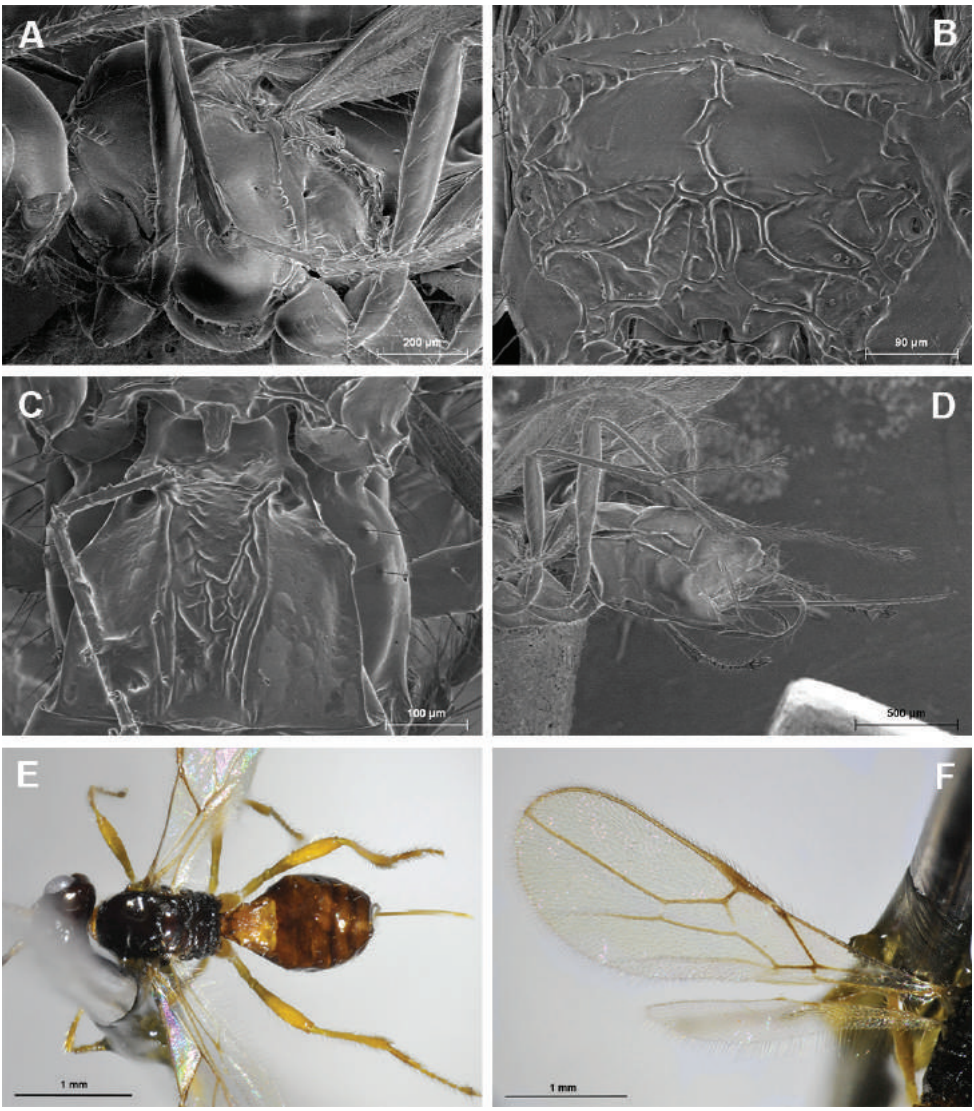

Figure 2. *Aphaereta basirufa* Granger (female) A. Mesosoma, lateral view **B** Propodeum, dorsal view **C** First metasomal tergite **D** Metasoma, hind leg and ovipositor, lateral view **E** Habitus, dorsal view **F** Fore and hind wings.

Male. Unknown.

Comparative diagnosis. This species is similar to *A. sarcophagensis* Shenefelt, 1974 from South Africa, but differs in having the first metasomal tergite paler than second and third tergites (similar colouration in *A. sarcophagensis*), hind femur 5.0–5.5 times as long as its maximum width (4.5 times in *A. sarcophagensis*), first flagellar segment 3.7–4.0 times as long as its maximum width (3.0 times in *A. sarcophagensis*); second segment 5.0–5.6 times (4.6 times in *A. sarcophagensis*); third

segment 4.5 times (3.3 times in *A. sarcophagensis*), face twice as wide as high (1.6 times in *A. sarcophagensis*), and clypeus 2.4–3.0 times as wide as high (3.5 times in *A. sarcophagensis*).

Aphaereta elongata Peris-Felipo, sp. n.

http://zoobank.org/93BE1E4A-3FD0-4F0E-ACD4-C02C8AA0106C
Figs 3–4

Etymology. Named after its long second submarginal cell.

Type material. Holotype: female, Kenya, NE Kisumu (Nr. Lake Victoria), 15 mts, xi.1979 (M.D. Croft leg.) (BMNH). Paratypes: 2 females, same data as holotype (BMNH).

Description. Female (holotype).

Head entirely smooth; in dorsal view 1.5 times as wide as median length, 1.4 times as wide as mesoscutum, with rounded gena behind eye. Eye in lateral view 1.2 times as high as wide and 1.9 times as wide as temple medially. POL 1.25 times OD; OOL 2.7 times OD. Face 1.25 times as wide as high; inner margins of eyes subparallel. Clypeus slightly curved ventrally, 2.6 times as wide as high. Mandible widened towards apex, 1.8 times as long as its maximum width. Upper tooth of mandible longer than lower tooth; middle tooth wide basally and narrowed towards apex, rounded apically; lower tooth rounded apically. Antenna longer than body, 16-segmented. Scape as long as pedicel. First flagellar segment 4.5 times as long as its apical width; second segment 6.4 times as long as its maximum width; 1.3 times as long as first segment. Third flagellar segment 5.1 times as long as its width: fourth to fifteenth segments 4.4–4.5 times, and sixteenth (apical) segment 5.0 times as long as their maximum width accordingly.

Mesosoma 1.5 times as long as high (lateral view). Mesoscutum 1.2 times as long as its maximum width. Notauli mainly absent on vertical surface of mesoscutum. Mesoscutal midpit absent. Prescutellar depression smooth, without lateral carinae. Precoxal suture smooth, not reaching anterior and posterior margins of mesopectus. Mesepimeral sulcus smooth. Propodeum sculptured, with pentagonal areola in apical half. Propodeal spiracle relatively small.

Wings. Length of fore wing 2.9 times its maximum width. Marginal cell reaching apex of wing, 4.8 times as long as its maximum width. Vein 3RSa 4.5 times as long as 2RS, 9.0 times as long as r, 0.5 times as long as 3RSb. Second submarginal cell distinctly narrowed distally, 5.5 times as long as maximum width. Hind wing 7.2 times as long as its maximum width.

Legs. Hind femur 4.4 times as long as its maximum width. Hind tibia weakly widened towards apex, about 10.5 times as long as its maximum subapical width, as long as hind tarsus. First segment of hind tarsus (basitarsus) twice as long as second segment.

Metasoma distinctly compressed. First tergite mostly smooth, finely striate in middle part, weakly widened towards apex, 1.6 times as long as its apical width.

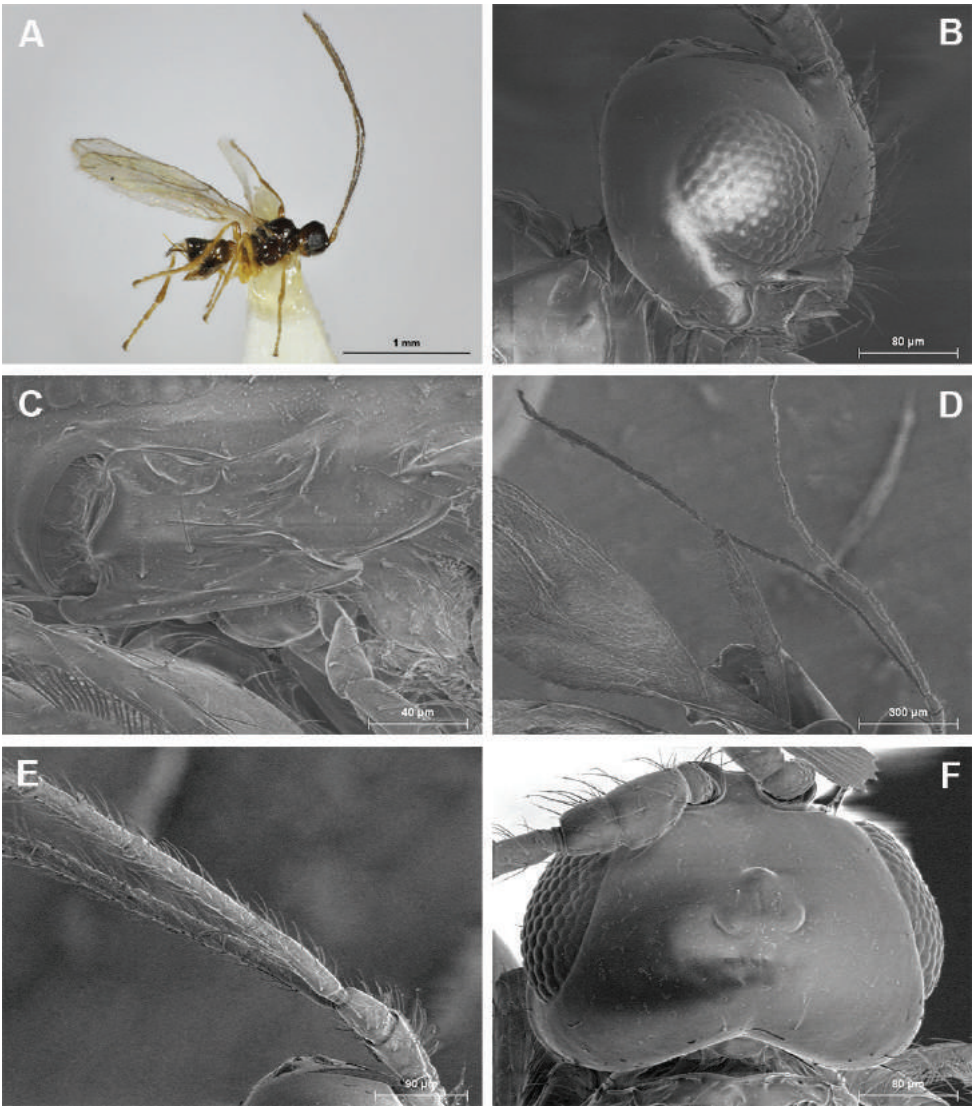

Figure 3. *Aphaereta elongata* Peris-Felipo, sp. n. (female) **A** Habitus, lateral view **B** Head, lateral view **C** Mandible **D** Antenna **E** Basal segments of antenna **F** Head, dorsal view.

Ovipositor 2.2 times as long as first tergite, distinctly shorter than metasoma, as long as hind femur.

Colour. Body dark brown. Antenna brown. Legs and ovipositor yellow. In dorsal view, head and mesosoma dark brown; metasoma light brown. Wings hyaline. Pterostigma light brown.

Body length 1.2 mm; fore wing length 1.8 mm.

Variations. All specimens are identical.

Male. Unknown.

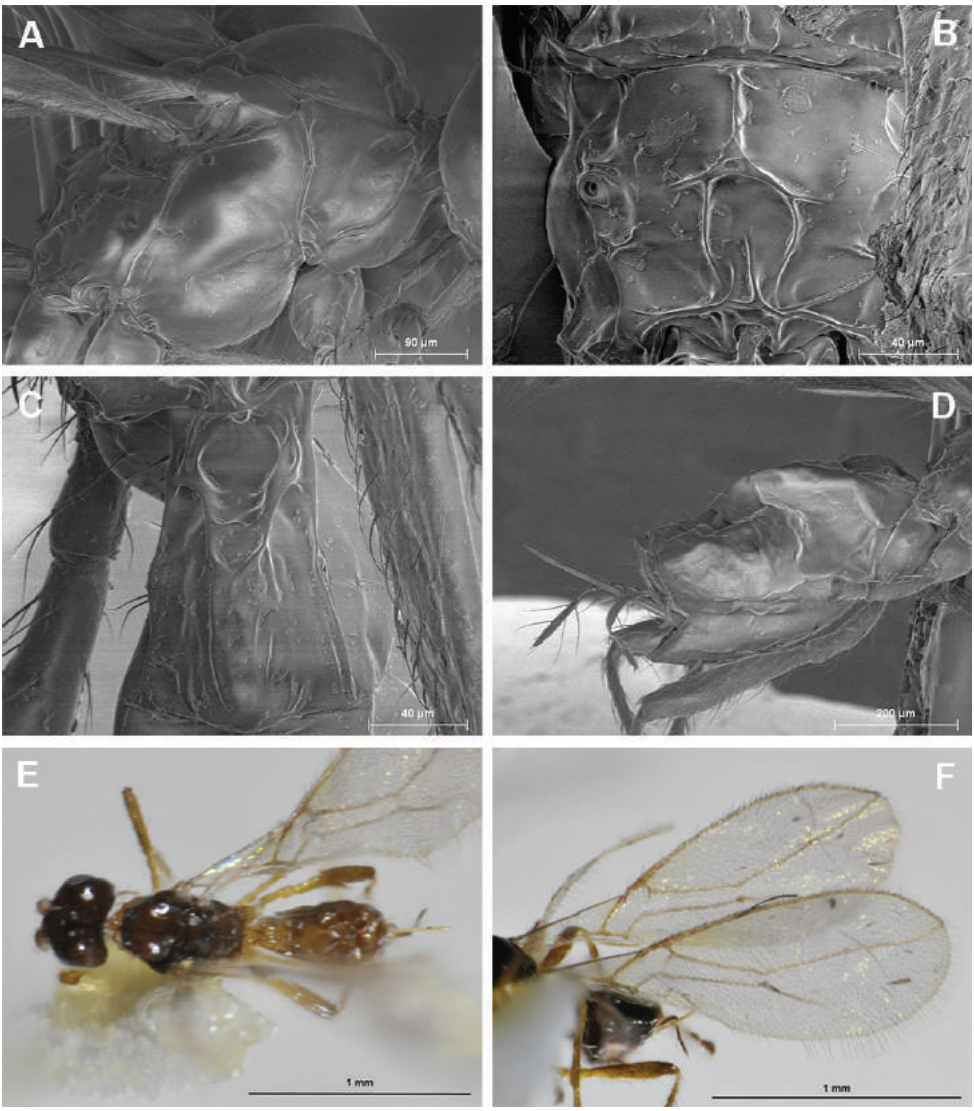

Figure 4. *Aphaereta elongata* Peris-Felipo, sp. n. (female) **A** Mesosoma, lateral view **B** Propodeum, dorsal view **C** First metasomal tergite **D** Metasoma, hind leg and ovipositor, lateral view **E** Habitus, dorsal view **F** Fore and hind wings.

Comparative diagnosis. This new species is similar to *A. mosselensis* Peris-Felipo, sp. n., but differs in having the eye in lateral view 1.9 times as wide as temple medially (1.2 times in *A. mosselensis*), clypeus 2.6 times as wide as high (4.0 times in *A. mosselensis*), mandible 1.8 times as long as its maximum width (1.4 times in *A. mosselensis*), first flagellar segment 4.5 times as long as its apical width (2.8 times in *A. mosselensis*), second flagellar segment 6.4 times as long as its maximum width (4.0 times in *A. mosselensis*), third flagellar segment 5.1 times as long as its width (3.0 times in *A. mosselensis*), hind

femur 4.4 times as long as its maximum width (5.0 times in *A. mosselensis*), and precoxal suture smooth, not reaching anterior and posterior margins of mesopectus (crenulate, reaching anterior margin of mesopectus in *A. mosselensis*).

Aphaereta hararensis Peris-Felipo, sp. n.

http://zoobank.org/B045F991-9C47-4A1B-9135-69D8D03FB45F
Figs 5–6

Etymology. Named after Harare, the type locality of this new species.

Type material. Holotype: female, Zimbabwe, nr Harare, vii.1982 (Watsham leg.) (BMNH). Paratypes: 2 females, same data as holotype (BMNH).

Description. Female (holotype).

Head entirely smooth; in dorsal view 1.8 times as wide as median length, 1.3 times as wide as mesoscutum, with rounded gena behind eye. Eye in lateral view as high as wide and 1.75 times as wide as temple medially. POL 1.5 times OD; OOL 3.0 times OD. Face 1.45 times as wide as high; inner margins of eyes subparallel. Clypeus slightly curved ventrally, 3.0 times as wide as high; its upper margin crenulate. Mandible widened towards apex, 1.5 times as long as its maximum width. Upper tooth of mandible longer than lower tooth; middle tooth wide basally and narrowed towards apex, rounded apically; lower tooth shorter than upper tooth, rounded apically. Antenna shorter than body, 19-segmented. Scape 1.5 times as long as pedicel. First flagellar segment 3.4 times as long as its apical width; second segment 4.7 times as long as its maximum width; 1.5 times as long as first segment. Third flagellar segment 2.9 times as long as its width. Fourth to sixth flagellar segments 2.7 times, seventh to tenth segments 2.4–2.5 times, eleventh to eighteenth segments 1.5–1.6 times, and nineteenth (apical) segment 3.6 times as long as their maximum width accordingly.

Mesosoma 1.2 times as long as high (lateral view). Mesoscutum 1.2 times as long as its maximum width. Notauli mainly absent on vertical surface of mesoscutum. Mesoscutal midpit absent. Prescutellar depression smooth, with lateral carinae. Precoxal suture present, reaching anterior margin of mesopectus and not reaching posterior margin of mesopectus. Mesepimeral sulcus crenulate below. Propodeum sculptured, with long median longitudinal carina, with apical half densely sculptured. Propodeal spiracle relatively small.

Wings. Length of fore wing 2.6 times its maximum width. Marginal cell reaching apex of wing, 3.4 times as long as its maximum width. Vein 3RSa 1.6 times as long as 2RS, 3.75 times as long as r, 0.45 times as long as 3RSb. Second submarginal cell 2.3 times as long as maximum width. Hind wing 5.1 times as long as its maximum width.

Legs. Hind femur 4.6 times as long as its maximum width. Hind tibia weakly widened towards apex, about 8.0 times as long as its maximum subapical width, as long as hind tarsus. First segment of hind tarsus (basitarsus) 2.25 times as long as second segment.

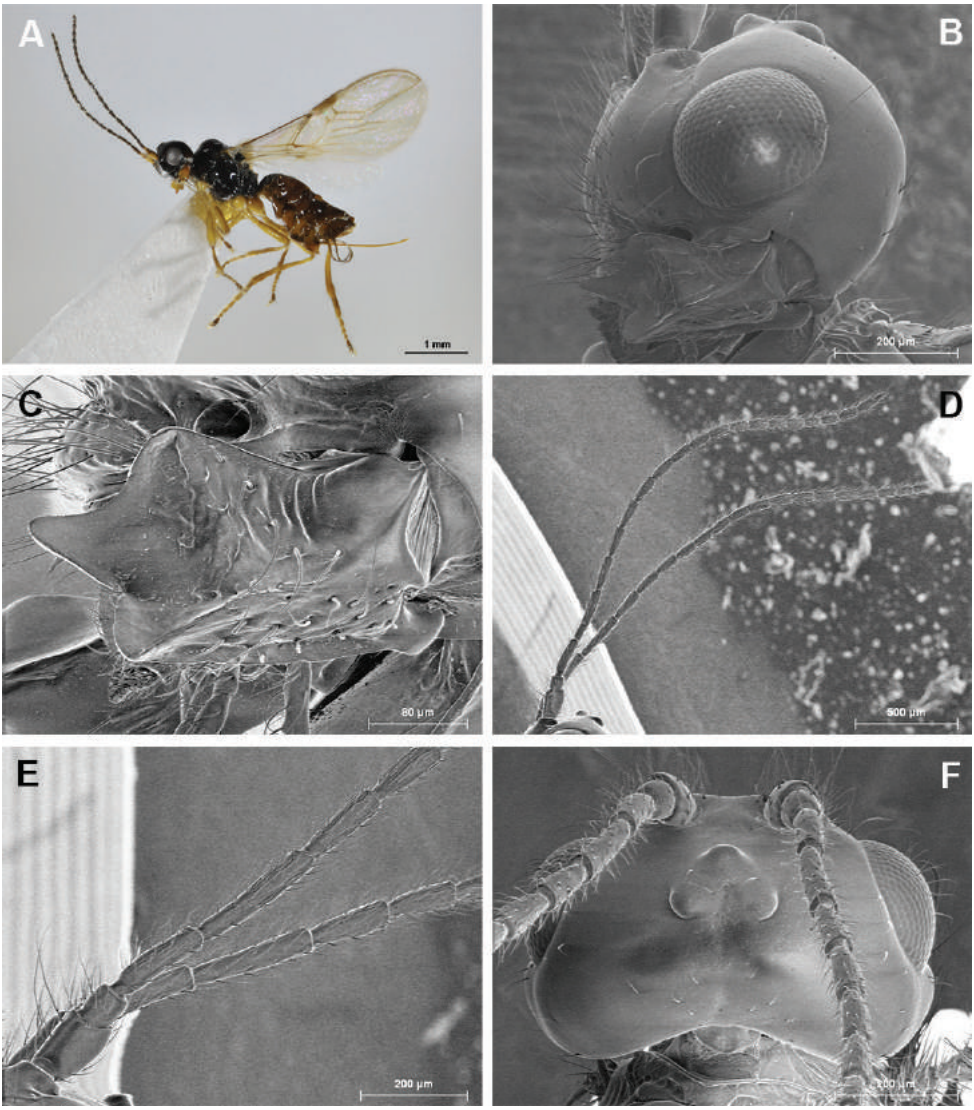

Figure 5. *Aphaereta hararensis* Peris-Felipo, sp. n. (female) **A** Habitus, lateral view **B** Head, lateral view **C** Mandible **D** Antenna **E** Basal segments of antenna **F** Head, dorsal view.

Metasoma distinctly compressed. First tergite striated in middle part, weakly widened towards apex, 1.25 times as long as its apical width. Ovipositor 2.9 times as long as first tergite, distinctly shorter than metasoma, 1.6 times as long as hind femur.

Colour. Head and mesosoma dark brown. Antenna and metasoma brown. Scape, pedicel, mandible, legs and ovipositor light brown to yellow. In dorsal view, head, mesosoma and first metasomal tergite dark brown; second and third tergites brown. First metasomal tergiter darker than second and third tergites. Wings hyaline. Pterostigma light brown to brown.

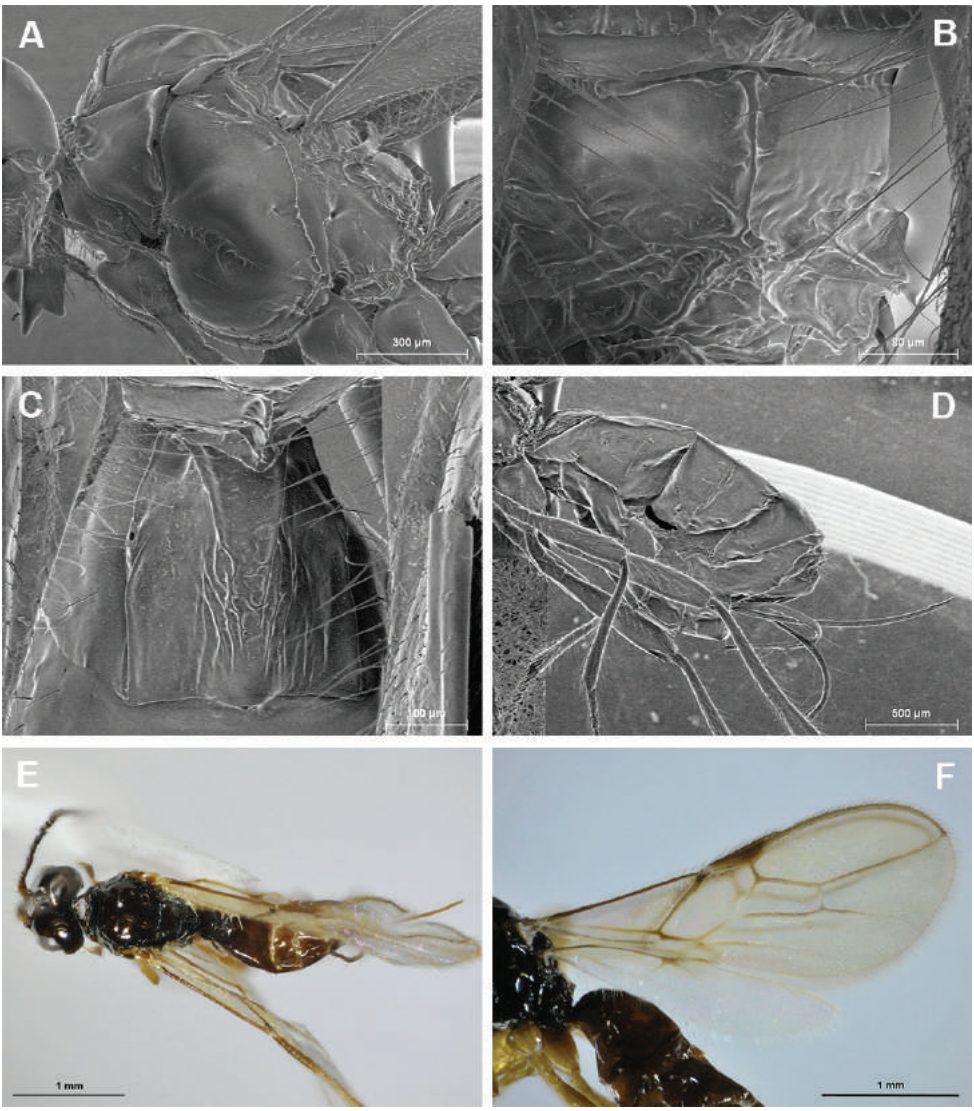

Figure 6. *Aphaereta hararensis* Peris-Felipo, sp. n. (female) **A** Mesosoma, lateral view **B** Propodeum, dorsal view **C** First metasomal tergite **D** Metasoma, hind leg and ovipositor, lateral view **E** Habitus, dorsal view **F** Fore and hind wings.

Body length 3.3 mm; fore wing length 3.2 mm.

Variation. Body length 3.3–3.4 mm; fore wing length 3.2–3.3 mm. Antenna 18–19-segmented. Vein 3RSa 1.5–1.6 times as long as 2RS, 3.7–3.8 times as long as r, 0.4–0.5 times as long as 3RSb.

Male. Unknown.

Comparative diagnosis. This new species is similar to *A. mosselensis* Peris-Felipo, sp. n. but differs in having the head, mesosoma and first metasomal tergite with simi-

lar colour; second and third metasomal tergites paler than head, mesosoma and first tergite (head, mesosoma and first, second and third metasomal tergites with same colour in *A. mosselensis*), first flagellar segment 3.4 times as long as its maximum width (2.75 times in *A. mosselensis*); second segment 4.7 times (4.0 times in *A. mosselensis*), hind femur 4.6 times as long as its maximum width (5.0 times in *A. mosselensis*), head in dorsal view 1.8 times as wide as median length (1.5 times in *A. mosselensis*), eye in lateral view 1.75 times as wide as temple medially (1.15–1.20 times in *A. mosselensis*), clypeus 3.0 times as wide as high (4.0 times in *A. mosselensis*), Mesepimeral sulcus crenulate below (smooth in *A. mosselensis*), prescutellar depression with lateral carinae (without in *A. mosselensis*), and ovipositor 2.9 times as long as first tergite (2.15 times in *A. mosselensis*).

Aphaereta mosselensis Peris-Felipo, sp. n.

http://zoobank.org/02E7089D-8C76-454B-A5FC-A85CDB310FFB

Figs 7–8

Etymology. Named after Mossel Bay, the type locality of this new species.

Type material. Holotype: female, South Africa, Cape province, Mossel Bay, 5–31.viii.1921, Brit. Mus. 1921–315 (R.E. Turner leg.) (BMNH). Paratype: 1 female, same locality as holotype but v.1932, Brit. Mus. 1932–206 (BMNH).

Description. Female (holotype).

Head entirely smooth; in dorsal view 1.5 times as wide as median length, 1.4 times as wide as mesoscutum, with rounded gena behind eye. Eye in lateral view 1.2 times as high as wide and 1.2 times as wide as temple medially. POL 2.0 times OD; OOL 3.5 times OD. Face 1.5 times as wide as high; inner margins of eyes subparallel. Clypeus slightly curved ventrally, 4.0 times as wide as high; its upper margin striated. Mandible widened towards apex, 1.4 times as long as its maximum width. Upper tooth of mandible longer than middle and lower tooth; middle tooth wide basally and narrowed towards apex, rounded apically; lower tooth shorter than upper tooth, rounded apically. Antenna as long as body, 16-segmented. Scape 1.4 times as long as pedicel. First flagellar segment 2.75 times as long as its apical width; second segment 4.0 times as long as its maximum width; 1.7 times as long as first segment. Third flagellar segment 3.0 times as long as its width. Fourth to fifth flagellar segments 2.5 times, sixth to eight segments 2.3 times, ninth to fifteenth segments 2.1 times, and sixteenth (apical) segment 2.6 times as long as their maximum width accordingly.

Mesosoma 1.2 times as long as high (lateral view). Mesoscutum 0.9 times as long as its maximum width. Notauli mainly absent on vertical surface of mesoscutum. Mesoscutal midpit absent. Prescutellar depression smooth, without lateral carinae. Precoxal suture present, reaching anterior margin of mesopectus and not reaching posterior margin of mesopectus. Mesepimeral sulcus smooth. Propodeum sculptured, with long median longitudinal carina, with emerging carinae in the middle part reaching propodeal edges and thin areola in posterior half. Propodeal spiracle relatively small.

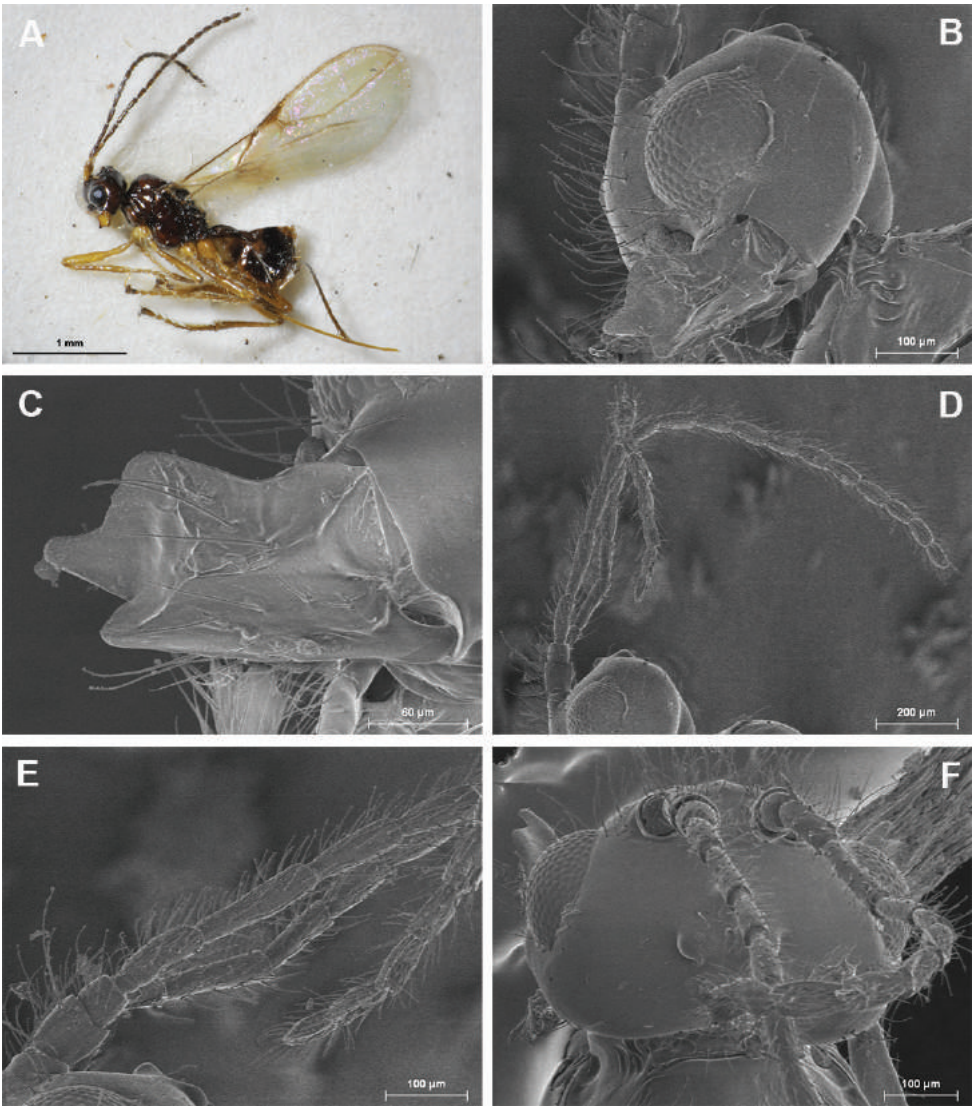

Figure 7. *Aphaereta mosselensis* Peris-Felipo, sp. n. (female) **A** Habitus, lateral view **B** Head, lateral view **C** Mandible **D** Antenna **E** Basal segments of antenna **F** Head, dorsal view.

Wings. Length of fore wing 2.8 times its maximum width. Marginal cell reaching apex of wing, 4.0 times as long as its maximum width. Vein 3RSa 2.3 times as long as 2RS, 5.5 times as long as r, 0.4 times as long as 3RSb. Second submarginal cell 3.6 times as long as maximum width. Hind wing 9.3 times as long as its maximum width.

Legs. Hind femur 5.0 times as long as its maximum width. Hind tibia weakly widened towards apex, about 10.0 times as long as its maximum subapical width, as long as hind tarsus. First segment of hind tarsus (basitarsus) 1.5 times as long as second segment.

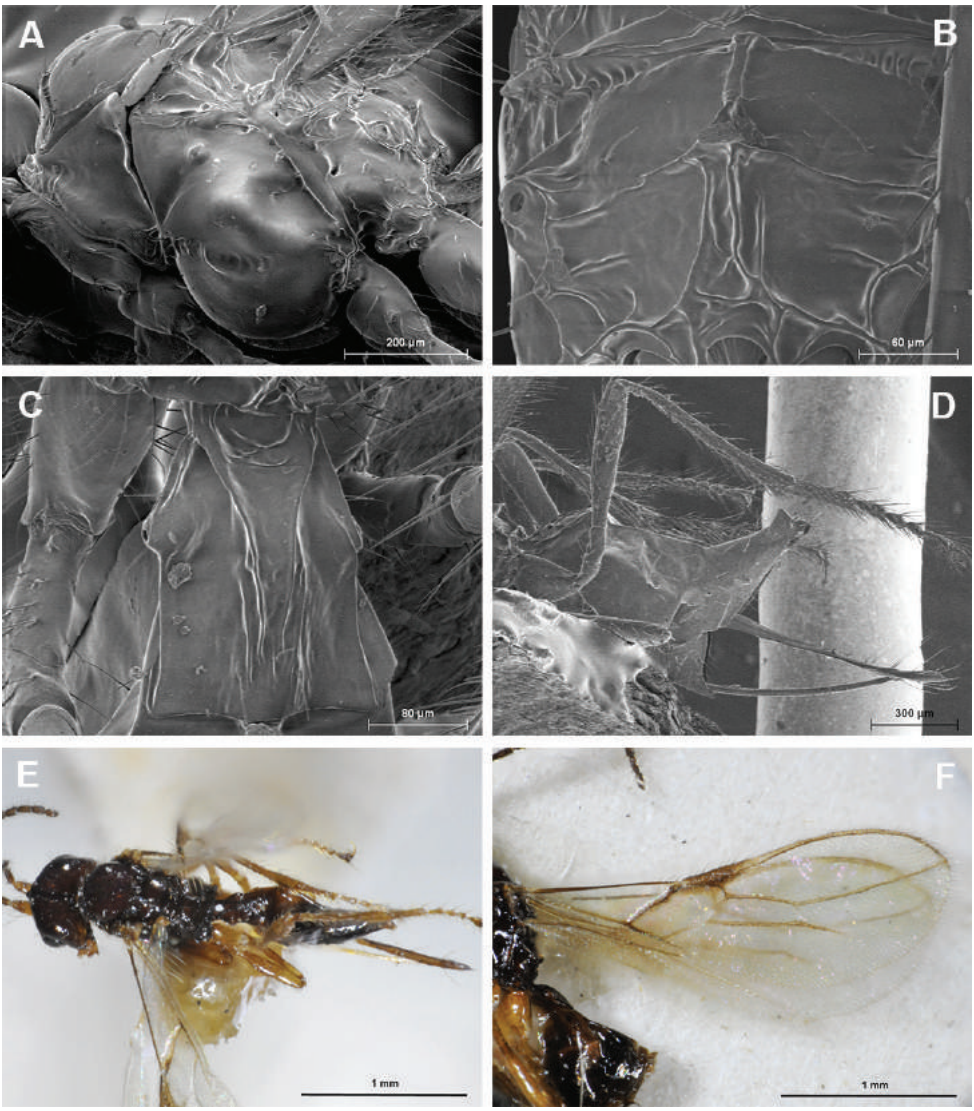

Figure 8. *Aphaereta mosselensis* Peris-Felipo, sp. n. (female) **A** Mesosoma, lateral view **B** Propodeum, dorsal view **C** First metasomal tergite **D** Metasoma, hind leg and ovipositor, lateral view **E** Habitus, dorsal view **F** Fore and hind wings.

Metasoma distinctly compressed. First tergite striated in the middle part, weakly widened towards apex, 1.5 times as long as its apical width. Ovipositor 2.2 times as long as first tergite, distinctly shorter than metasoma, 1.3 times as long as hind femur.

Colour. Body brown to dark brown. Scape, pedicel, mandible, legs and ovipositor brown light. In dorsal view, head, mesosoma and metasoma dark brown. Wings hyaline. Pterostigma light brown to brown.

Body length 2.0 mm; fore wing length 2.5 mm.

Variation. Body length 1.9–2.0 mm; fore wing length 2.5–2.6 mm. Antenna 15–16–segmented. Eye in lateral view 1.1–1.2 times as wide as temple medially.

Male. Unknown.

Comparative diagnosis. This new species is similar to *A. elongata* sp. n. and *A. hararensis* sp. n. Differences between these species are listed after description of the latter species.

Aphaereta sarcophagensis Shenefelt, 1974

Figs 9–10

Aphaereta sarcophagae Bridwell 1919: 177 [junior homonym]; Brues 1924: 149; 1926: 423; Thompson 1953: 89.

Aphaereta sarcophagensis Shenefelt 1974: 962; Fischer 1988: 95; Yu et al. 2012.

Type material. Holotype: locality of the type specimen is unclear (not examined).

Material examined. 2 females, South Africa, Cape province, Mossel Bay, 5–31. vii.1921, Brit. Mus. 1921–315 (R.E. Turner leg.) (BMNH); 2 females, same locality but 15–28.iii.1922, Brit. Mus. 1922–153 and iv.1921, Brit. Mus. 1921–294 (BMNH).

Re-description. Female.

Head entirely smooth; in dorsal view 1.85–2.00 times as wide as median length, 1.4 times as wide as mesoscutum, with rounded gena behind eye. Eye in lateral view as high as wide and 1.8–1.9 times as wide as temple medially. POL 1.75 times OD; OOL 2.9 times OD. Face 1.6 times as wide as high; inner margins of eyes subparallel. Clypeus slightly curved ventrally, 3.5 times as wide as high; its upper margin striated. Mandible widened towards apex, 1.5 times as long as its maximum width. Upper tooth of mandible longer than lower tooth; middle tooth wide basally and narrowed towards apex, pointed apically; lower tooth shorter than upper tooth, rounded apically. Antenna shorter than body, 18–20-segmented. Scape 1.4 times as long as pedicel. First flagellar segment 3.0 times as long as its apical width; second segment 4.7 times as long as its maximum width; 1.5 times as long as first segment. Third flagellar segment 3.3 times as long as its width. Fourth to ninth flagellar segments 2.4–2.5 times, tenth to eighteenth (apical) segments 2.1 times as long as their maximum width accordingly.

Mesosoma 1.3 times as long as high (lateral view). Mesoscutum 1.2 times as long as its maximum width. Notauli mainly absent on vertical surface of mesoscutum. Mesoscutal midpit absent. Prescutellar depression smooth, without lateral carinae. Precoxal suture present, long, reaching anterior margin of mesopectus and not reaching posterior margin of mesopectus. Mesepimeral sulcus slight crenulate below. Propodeum sculptured, with long median longitudinal carina, with apical half densely sculptured. Propodeal spiracle relatively small.

Wings. Length of fore wing 2.6 times its maximum width. Marginal cell reaching apex of wing, 3.4 times as long as its maximum width. Vein 3RSa 2.0–2.1 times as long

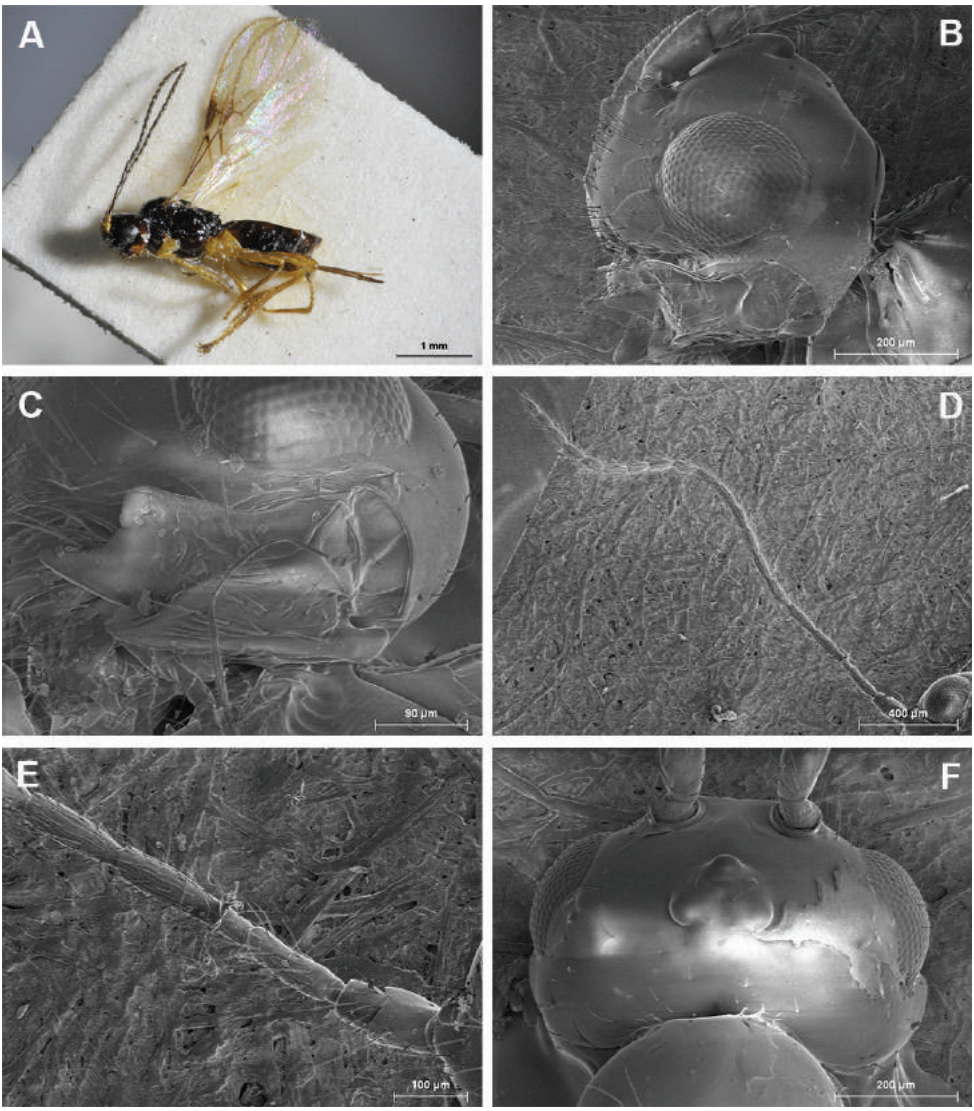

Figure 9. *Aphaereta sarcophagensis* Shenefelt (female) **A** Habitus, lateral view **B** Head, lateral view **C** Mandible **D** Antenna **E** Basal segments of antenna **F** Head, dorsal view.

as 2RS, 4.7 times as long as r, 0.4–0.5 times as long as 3RSb. Second submarginal cell 2.6 times as long as maximum width. Hind wing 4.8 times as long as its maximum width.

Legs. Hind femur 4.5 times as long as its maximum width. Hind tibia weakly widened towards apex, about 9.7 times as long as its maximum subapical width, 0.95 times as long as hind tarsus. First segment of hind tarsus (basitarsus) twice as long as second segment.

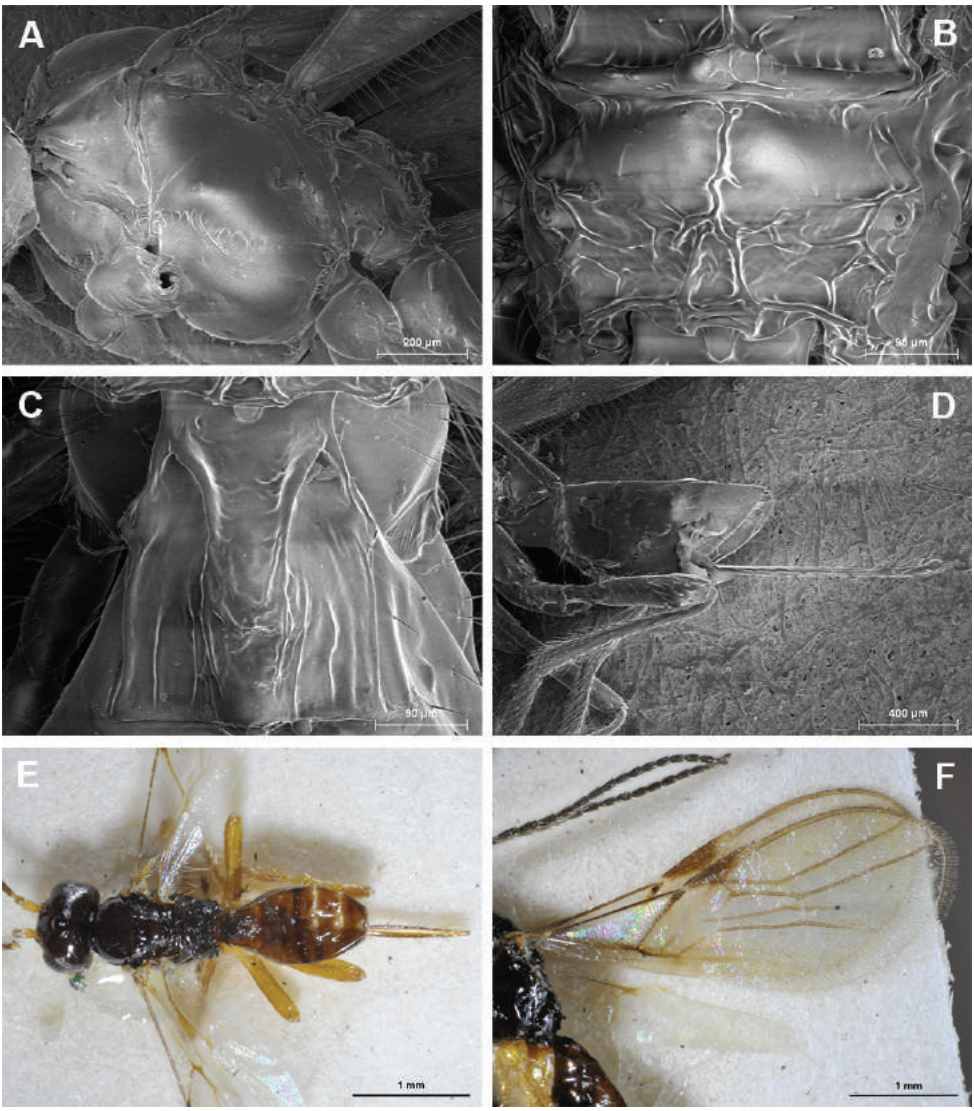

Figure 10. *Aphaereta sarcophagensis* Shenefelt (female) **A** Mesosoma, lateral view **B** Propodeum, dorsal view **C** First metasomal tergite **D** Metasoma, hind leg and ovipositor, lateral view **E** Habitus, dorsal view **F** Fore and hind wings.

Metasoma distinctly compressed. First tergite finely striated, weakly widened towards apex as long as its apical width. Ovipositor 3.4 times as long as first tergite, near as long as metasoma, 1.6 times as long as hind femur.

Colour. Body dark brown. Scape, pedicel, mandible, and legs brown light. In dorsal view, head and mesosoma dark brown; metasoma light brown. Wings hyaline. Pterostigma light brown – brown.

Body length 2.9–3.0 mm; fore wing length 3.2–3.3 mm.

Male. Unknown.

Comparative diagnosis. This species is similar to *A. basirufa* Granger. Differences between these species are listed after description of the latter species.

Key to Afrotropical (including Madagascar) species of the genus *Aphaereta* Förster

1 Second submarginal cell 5.5 times as long as maximum width (Fig. 4F). First flagellar segment 4.5 times, second segment 6.4 times and third segment 5.1 times as long as their maximum width accordingly (Fig. 3E). Mandible 1.8 times as long as its maximum width (Fig. 3C). Upper part of the clypeus not striate. Mesosoma (lateral view) 1.5 times as long as high (Fig. 4A). Precoxal suture smooth, not reaching anterior margin of mesopectus (Fig. 4A). Ovipositor as long as hind femur (Fig. 4D). Antenna 16-segmented. Body length 1.2 mm. Kenya ..... ***A. elongata* sp. n.**

– Second submarginal cell 2.3–3.6 times as long as maximum width. First flagellar segment 2.75–3.70 times, second segment 4.6–5.6 times and third segment 3.0–4.5 times as long as their maximum width accordingly. Mandible 1.3–1.5 times as long as its maximum width. Upper part of the clypeus striate. Mesosoma (lateral view) 1.1–1.3 times as long as high. Precoxal suture crenulate, reaching anterior margin of mesopectus. Ovipositor 1.3–1.8 times as long as hind femur **2**

2 First metasomal tergite as long as its apical width. Propodeum without areola **3**

– First metasomal tergite 1.25–1.50 times as long as its apical width. Propodeum with areola **4**

3 First metasomal tergite paler than second and third tergites (Fig. 2E). Hind femur 5.0–5.5 times as long as its maximum width (Fig. 2D). First flagellar segment 3.7–4.0 times, second segment 5.0–5.6 times and third segment 4.5 times as long as their maximum width accordingly (Fig. 1E). Head in dorsal view 1.6–1.8 times as wide as median length (Fig. 1F). Face twice as wide as high. Clypeus 2.4–3.0 times as wide as high. Antenna 22–25-segmented. Body length 2.7–3.0 mm. Madagascar ..... ***A. basirufa* Granger**

– Three basal tergites similarly coloured (Fig. 10A). Hind femur 4.5 times as long as its maximum width (Fig. 10D). First flagellar segment 3.0 times, second segment 4.6 times and third segment 3.3 times as long as their maximum width accordingly (Fig. 9E). Head in dorsal view 1.85–2.00 times as wide as median length (Fig. 9F). Face 1.6 times as wide as high. Clypeus 3.5 times as wide as high. Antenna 18-segmented. Body length 2.9–3.0 mm. South Africa ..... ***A. sarcophagensis* Shenefelt**

4 Second and third metasomal tergites paler than first tergite (Fig. 6E). First flagellar segment 3.4 times and second segment 4.7 times as long as their

maximum width accordingly (Fig. 5E). Hind femur 4.6 times as long as maximum width (Fig. 6D). Head in dorsal view 1.8 times as wide as median length (Fig. 5F). Eye in lateral view 1.75 times as wide as temple medially (Fig. 5B). Clypeus 3.0 times as wide as high. Mesepimeral sulcus crenulate below (Fig. 6A). Prescutellar depression with lateral carinae. Ovipositor 2.9 times as long as first tergite (Fig. 6D). Antenna 18–19-segmented. Body length 3.3–3.4 mm. Zimbabwe .....***A. hararensis* sp. n.**

– Three basal tergites similarly coloured (Fig. 8A). First flagellar segment 2.75 times and second segment 4.0 times as long as their maximum width accordingly (Fig. 7E). Hind femur 5.0 times as long as maximum width (Fig. 8D). Head in dorsal view 1.5 times as wide as median length (Fig. 7F). Eye in lateral view 1.15–1.20 times as wide as temple medially (Fig. 7B). Clypeus 4.0 times as wide as high. Mesepimeral sulcus entirely smooth (Fig. 8A). Prescutellar depression without lateral carinae. Ovipositor 2.15 times as long as first tergite (Fig. 8D). Antenna 15–16-segmented. Body length 1.9–2.0 mm. South Africa .....***A. mosselensis* sp. n.**

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References

Bridwell JC (1919) Descriptions of new species of Hymenopterous parasites of Muscoid Diptera, with notes on their habits. Proceedings of the Hawaiian Entomological Society 4: 166–179.

Brues CT (1924) Some South African parasitic Hymenoptera of the families Evaniidae, Braconidae, Alysiidae and Plumariidae in the South African Museum with a catalogue of the known species. Annals of the South African Museum 19: 1–150.

Brues CT (1926) Studies on Ethiopian Braconidae with a catalogue of the African species. Proceedings of the American Academy of Arts and Sciences 61: 206–436. doi: 10.2307/20026158

Dolphin K, Quicke DLJ (2001) Estimating the global species richness of an incompletely described taxon: an example using parasitoid wasps (Hymenoptera: Braconidae). Biological Journal of the Linnean Society 73: 279–286. doi: 10.1111/j.1095-8312.2001.tb01363.x

Fischer M (1988) Einzelheiten zur taxonomic exotischer Alysiinae der Gattungen Aphaereta Foerster, Asobara Foerster, Coelalysia Cameron und Phaenocarpa Foerster (Hymenoptera, Braconidae). Annalen des Naturhistorischen Museums in Wien 90: 93–130.

Fischer M (1994) Beitrag zur Kenntnis der Kieferwespen der Welt (Hymenoptera, Braconidae, Alysiinae: Alysiini). Linzer biologische Beiträge 26(2): 763–806.

Granger C (1949) Braconides de Madagascar. Memoires de l'Institut Scientifique de Madagascar (A) 2: 1–428.

Peris-Felipo FJ, Fischer M, Jiménez-Peydró R (2013) Five new Dinotrema species from Spain with mesoscutal pit and medially sculptured propodeum. Bulletin of Insectology 66(1): 59–71.

Shenefelt RD (1974) Pars 11. Braconidae 7. Alysiinae. In: Van der Vecht J, Shenefelt RD (Eds) Hymenopterorum Catalogus (nova edition). Dr. W. Junk. B. V. Junk, The Hague, 937–1113.

Sharkey MJ, Wharton RA (1997) Morphology and terminology. In: Wharton RA, Marsh PM, Sharkey MJ (Eds) Manual of the New World Genera of the Family Braconidae (Hymenoptera). International Society Hymenopterists, Washington D.C., 19–37.

Thompson WR (1953) Host of the Hymenoptera (Agaonidae to Braconidae). A catalogue of the parasites and predators of insect pests 2(2): 1–190.

Wharton RA (2002) Revision of the Australian Alysiini (Hymenoptera: Braconidae). Invertebrate Systematics 16: 7–105. doi: 10.1071/IT01012

Yoder MJ, Mikó I, Seltmann KC, Bertone MA, Deans AR (2010) A Gross Anatomy Ontology for Hymenoptera. PLoS ONE 5(12): e15991. doi: 10.1371/journal.pone.0015991

Yu DS, Achterberg C van, Horstman K (2012) Taxapad 2012, Ichneumonoidea 2011. Database on flash-drive. Ottawa, Ontario, Canada.