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Two new Afrotropical *Asobara* species (Hymenoptera: Braconidae) with complete notauli

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Abstract. Two new species of the genus *Asobara* Forster, 1862 (Hymenoptera: Braconidae: Alysiinae) from Africa with complete notauli reaching scutellar mid pit, *Asobara kenyaensis* sp. nov. (Kenya) and *A. turneri* sp. nov. (South Africa), are described and illustrated.

Key words. Hymenoptera, Braconidae, Alysiinae, *Asobara*, new species, taxonomy, Kenya, South Africa, Afrotropical Region

Introduction

The Alysiinae is a conspicuously diverse subfamily within the Braconidae (Dolphin & 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-miner hosts, predominantly of the families Agromyzidae, Ephydridae and Chloropidae (Diptera).

The genus *Asobara* Forster, 1862 is very similar to *Phaenocarpa* Foerster, 1862 and several authors (see Wharton 1980) have treated it as only subgenus of the latter. *Asobara* can be recognised amongst the genera of the tribe Alysiini by the first flagellomere distinctly shorter than second flagellomere, pterostigma of fore wing more or less narrow and merging imperceptible with R1, vein 3RSa usually longer than 2RS; m-cu antefurcal or (sometimes) interstitial; first subdiscal cell open, 2CU subinterstitial, hind wing with m-cu absent, r-m and M+CU much shorter than 1M, and ovipositor sheath sparsely setose throughout (Wharton 2002). The known hosts of the *Asobara* species belong mainly to the families Drosophilidae and Tephritidae (Yu et al. 2012).

This genus includes about 40 valid species distributed around the World, of which 12 species are known in the Afrotropical Region (Yu et al. 2012). In this paper, two new Afrotropical species of the genus *Asobara* with completely developed notauli reaching the mesoscutal mid pit are described and illustrated, viz. *A. kenyaensis* sp. nov. from Kenya and *A. turneri* sp. nov. from South Africa.

Material and methods

For the terminology of the morphological features and sculpture, measurements and wing venation nomenclature see Sharkey & Wharton (1997); for measurements of the length and width of mandibles and abbreviations for ocellar proportions see Peris-Felipo et al. (2013). The following abbreviations are used in the text:

OD maximum diameter of ocellus;
OOL ocular-ocellar line, shortest distance between outer margin of lateral ocellus and inner margin of eye;
POL post-ocellar line, shortest distance between inner margins of lateral ocelli.

Species were identified using the keys of *Asobara* species by Fischer (2007). The types of newly described species are deposited in the following collections:

BMNH Natural History Museum, London, United Kingdom;
ZISP Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia.

Taxonomy

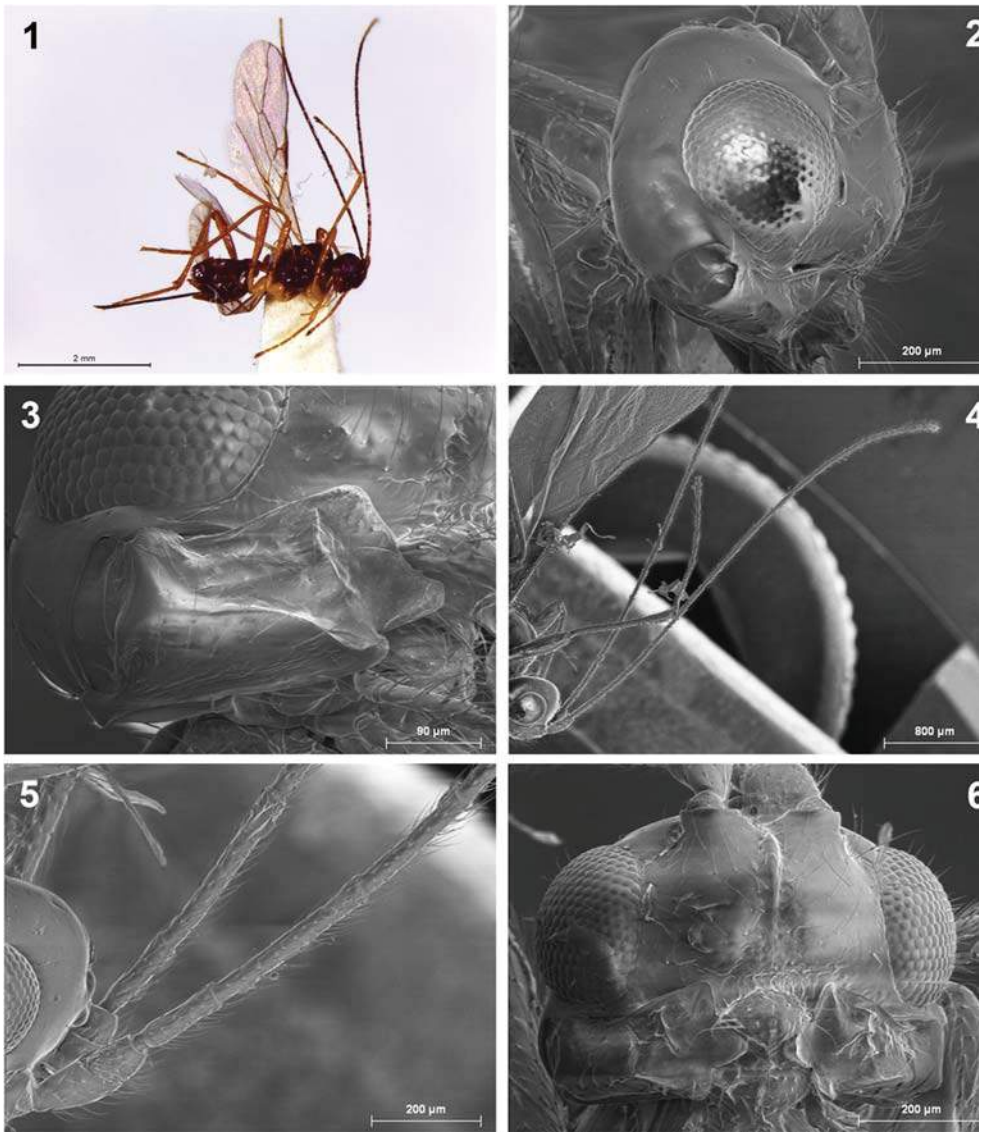
Asobara kenyaensis Peris-Felipo sp. nov.

(Figs 1–12)

Type material. Holotype: ♀, Kenya, Kakamega Forest, 20.xii.1970, B. M. 1972–211 (A. E. Stubbs leg.) (BMNH). Paratypes: 8 ♀♀, same data as holotype (BMNH, ZISP).

Description. ***Female.*** *Head* entirely smooth; in dorsal view 1.7 times as wide as median length, 1.5 times as wide as mesoscutum, with rounded temples behind eye. Eye in lateral view 1.15 times as high as wide and 2.1 times as wide as temple medially. POL 1.15 times OD; OOL 2.8 times OD. Face 1.45 times as wide as high; inner margins of eyes subparallel; face with median longitudinal carina. Clypeus slightly curved ventrally, 1.65 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 rounded apically. Antenna slender, 24-segmented. Scape 1.25 times as long as pedicel. First flagellomere 3.45 times as long as its apical width; second flagellomere 7.5 times as long as its maximum width; 2.15 times as long as first flagellomere. Third flagellomere 6.6 times as long as its width. Fourth to tenth flagellomeres 4.6–5.0 times, eleventh to fourteenth se flagellomeres 4.0–4.3 times, fifteenth to eighteenth flagellomeres 3.3–3.6 times, and nineteenth to twenty-first (apical) flagellomeres 1.3 times as long as their maximum width accordingly.

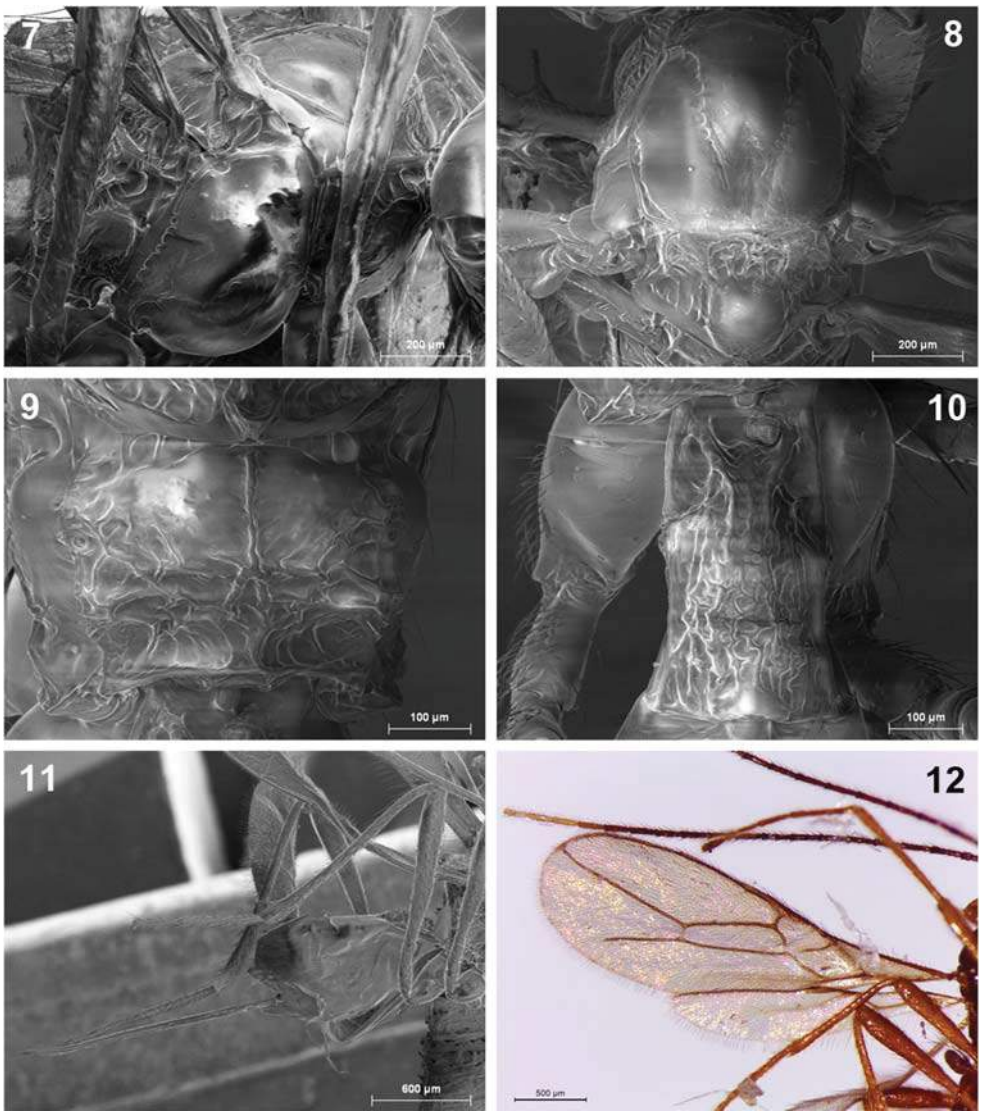
Mesosoma 1.3 times as long as high (lateral view). Mesoscutum as long as its maximum width. Notauli complete, crenulate, reaching mesoscutal mid pit. Mesoscutal mid pit rather long. Scutellar sulcus sculptured. Precoxal suture present, reaching anterior and posterior



Figs 1–6. *Asobara kenyaensis* Peris-Felipo sp. nov. (♀). 1 – habitus, lateral view; 2 – head, lateral view; 3 – mandible; 4 – antenna; 5 – basal segments of antenna; 6 – head, frontal view.

margins of mesopleuron. Posterior mesopleural furrow crenulate below. Propodeum sculptured, with long median longitudinal carina and small areola in posterior half, with apical half densely sculptured. Propodeal sides with lateral tubercles. Propodeal spiracle relatively small.

Wings. Length of fore wing 3.1 times its maximum width. Marginal cell reaching apex of wing, 4.15 times as long as its maximum width. Vein 3RSa 3.25 times as long as 2RS, 3.15



Figs 7–12. *Asobara kenyaensis* Peris-Felipo sp. nov. (♀). 7 – mesosoma, lateral view; 8 – mesonotum; 9 – propodeum; 10 – first metasomal tergum; 11 – hind legs, metasoma and ovipositor, lateral view; 12 – fore and hind wings.

times as long as r, 0.6 times as long as 3RSb. Second submarginal cell distinctly narrowed distally, 4.1 times as long as maximum width. Hind wing 5.8 times as long as its maximum width.

Legs. Hind femur 7.0 times as long as its maximum width. Hind tibia weakly widened towards apex, about 12.0 times as long as its maximum subapical width, 1.6 times as long as

hind tarsus. Basitarsus of hind tarsus 2.3 times as long as second segment.

Metasoma distinctly compressed. First tergum completely sculptured, weakly widened towards apex, 1.7 times as long as its apical width, 1.25 times as long as propodeum. Ovipositor 3.9 times as long as first tergum, distinctly longer than metasoma, 1.5 times as long as hind femur, 0.5 times as long as fore wing.

Colour. Body dark brown. Legs brown. Wings hyaline. Pterostigma brown.

Body length 2.7 mm; fore wing length 3.2 mm.

Variation. Body length 2.6–2.8 mm; fore wing length 3.1–3.3 mm. Antenna 23–25-segmented. Head in dorsal view 1.70–1.75 times as wide as median length. Eye in lateral view 2.0–2.1 times as wide as temple medially. POL 1.15–1.20 times as long as OD; OOL 2.80–2.85 times as long as OD. Mesosoma 1.25–1.30 times as long as high. Length of fore wing 3.00–3.15 times its maximum width.

Male. Unknown.

Differential diagnosis. According to the key by Fischer (2007), this new species is similar to *A. obliqua* (Papp, 1969), holotype of which was studied by the first author. *Asobara kenyaensis* sp. nov. differs from *A. obliqua* in having the first flagellomere 3.45 times as long as its maximum width (2.7 times in *A. obliqua*), second flagellomere 7.0 times as long as its maximum width (8.0 times in *A. obliqua*), second flagellomere 2.15 times as long as first flagellomere (2.5 times in *A. obliqua*), hind femur 7.0 times as long as its maximum width (5.5 times in *A. obliqua*), first metasomal tergum 1.7 times as long as its apical width (1.1 times in *A. obliqua*), and vein 3RSa 3.25 as long as 2RS (2.0 times in *A. obliqua*).

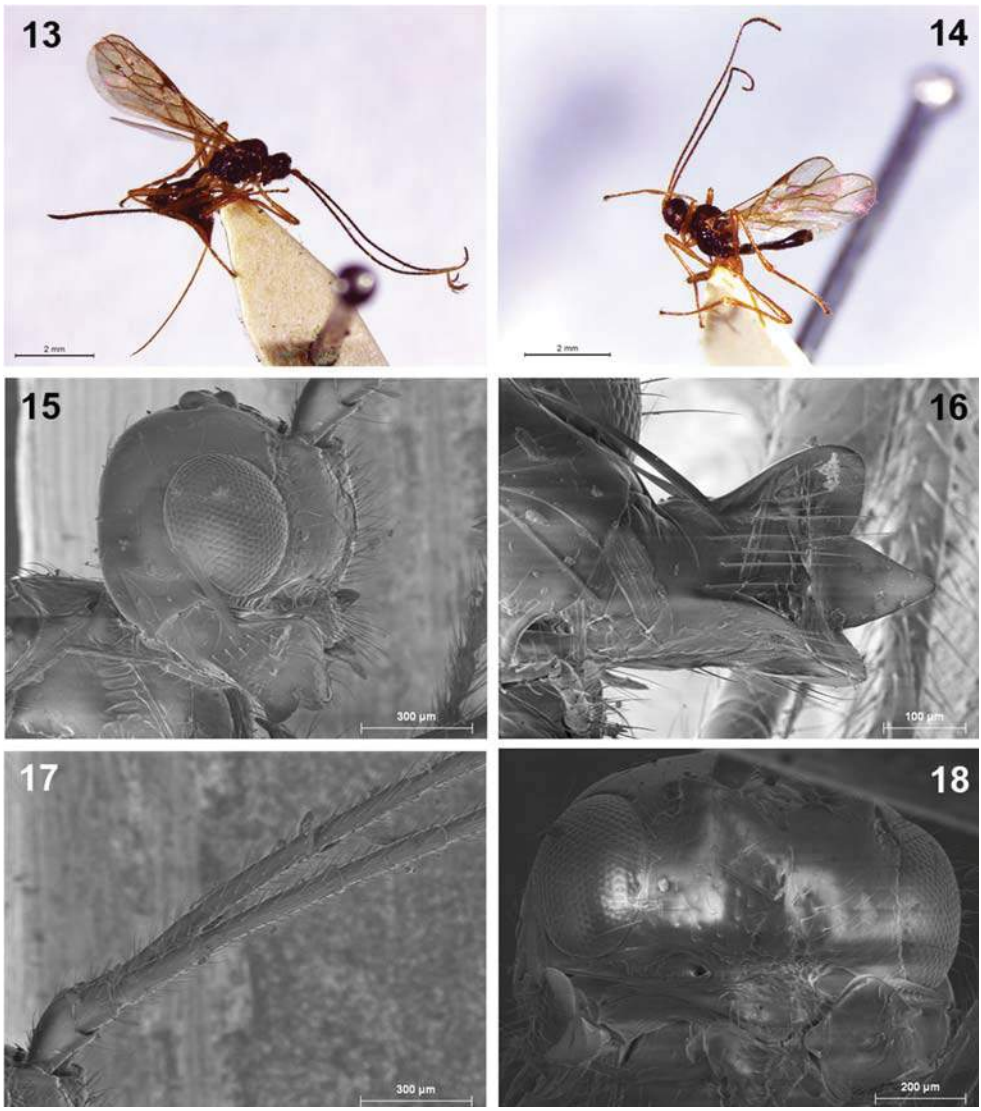
Etymology. Named after Kenya, the country of origin of this new species.

Asobara turneri Peris-Felipo sp. nov.

(Figs 13–24)

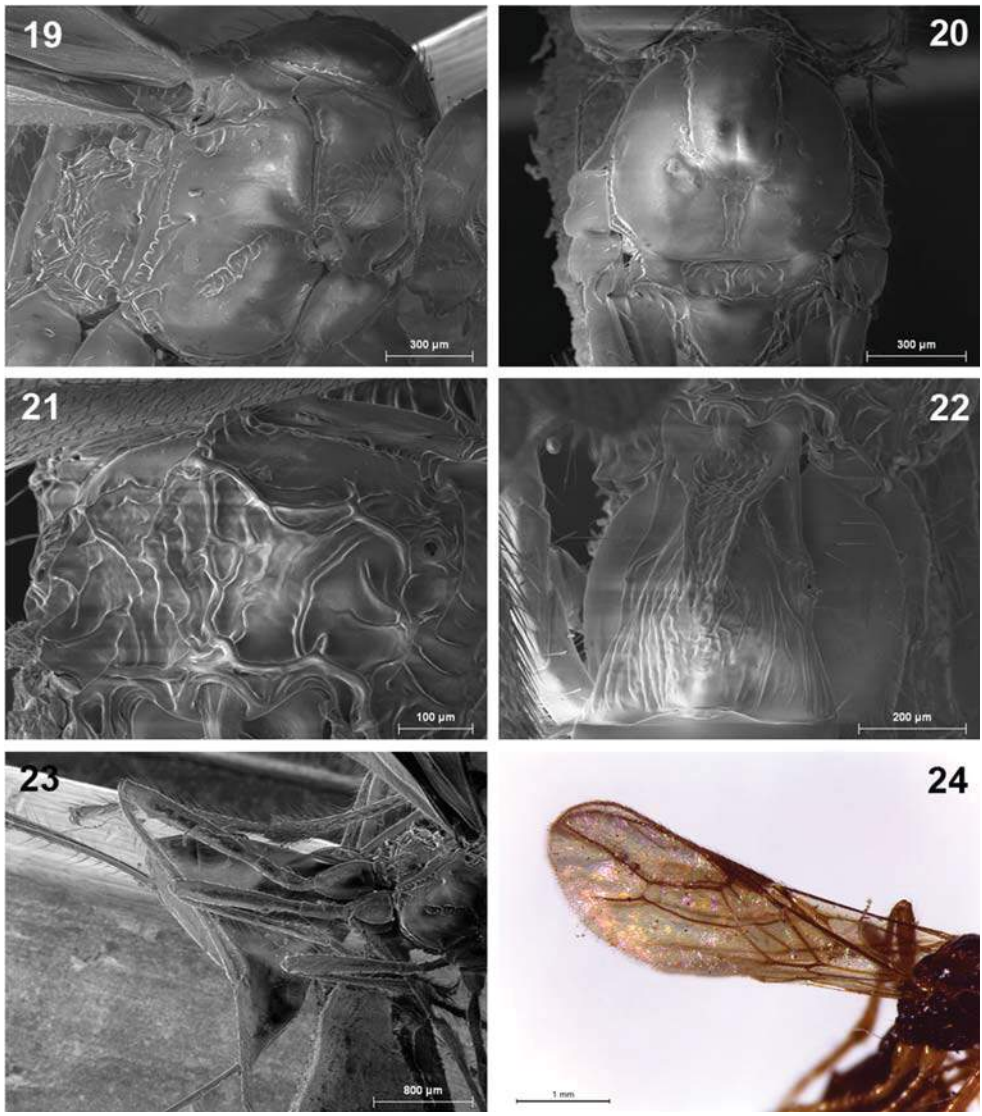
Type material. Holotype: ♀, South Africa, E. Cape Prov., Katberg, 4000 ft [= 1220 m a.s.l.], xii.1932, B. M. 1933–69 (R. E. Turner leg.) (BMNH). Paratypes: 1 ♀, South Africa, E. Cape Prov., Katberg, 19–26.ii.1933, B. M. 1933–175 (R. E. Turner leg.) (BMNH); 1 ♂, South Africa, Cape Province, Somerset East, 10–22.xii.1930, Brit. Mus. 1931–37 (R. E. Turner leg.) (BMNH).

Description. ***Female.*** *Head* entirely smooth; in dorsal view 1.65 times as wide as its median length, 1.3 times as wide as mesoscutum, with rounded temples behind eye. Eye in lateral view 1.2 times as high as wide and 1.75 times as long as temple medially. POL 1.15 times OD; OOL 2.9 times OD. Face 1.3 times as wide as high; inner margins of eyes subparallel. Clypeus slightly curved ventrally, 1.6 times as wide as high. Mandible widened towards apex, 1.1 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 rounded apically. Antenna thick, 28-segmented. Scape 1.3 times as long as pedicel. First flagellomere 3.65 times as long as its apical width; second flagellomere 6.5 times as long as its maximum width; 1.65 times as long as first flagellomere. Third flagellomere 4.8 times, fourth flagellomere 5.0 times, fifth to sixth flagellomeres 4.25 times, seventh to eleventh flagellomeres 3.6–3.7 times, twelfth to twenty-third flagellomeres 3.0–3.1 times, twenty-fourth to twenty-fifth flagellomeres 2.5 times, and twenty-sixth (apical) flagellomere 2.0 times as long as their maximum width accordingly.



Figs 13–18. *Asobara turneri* Peris-Felipo sp. nov. (13, 15–18 – ♀, 14 – ♂). 13, 14 – habitus, lateral view; 15 – head, lateral view; 16 – mandible; 17 – basal segments of antenna; 18 – head, frontal view.

Mesosoma 1.25 times as long as high (lateral view). Mesoscutum 1.1 times as long as maximum width. Notauli complete, finely crenulate, reaching anterior end of mesoscutal mid pit. Mesoscutal mid pit long. Scutellar sulcus sculptured, with lateral carinae. Precoxal suture present, not reaching anterior and posterior margins of mesopleuron. Posterior mesopleural furrow crenulate. Propodeum sculptured, with complete median longitudinal carinae crossing



Figs 19–24. *Asobara turneri* Peris-Felipo sp. nov. (♀). 19 – mesosoma, lateral view; 20 – mesonotum; 21 – propodeum; 22 – first metasomal tergum; 23 – legs and metasoma, lateral view; 24 – fore wing.

from anterior to posterior margins, completely sculptured in apical half. Propodeal spiracle relatively small.

Wings. Length of fore wing 3.3 times its maximum width. Marginal cell reaching apex of wing, 3.9 times as long as its maximum width. Vein 3RSa 1.75 times as long as 2RS, 7.0 times as long as r, 0.65 times as long as 3RSb. Second submarginal cell distinctly narrowed distally,

2.7 times as long as maximum width. Hind wing 5.7 times as long as its maximum width.

Legs. Hind femur 6.75 times as long as its maximum width. Hind tibia weakly widened towards apex, about 10.5 times as long as its maximum subapical width, 1.1 times as long as hind tarsus. Basitarsus of hind tarsus 2.25 times as long as second segment.

Metasoma distinctly compressed. First tergum sculptured, weakly widened towards apex, 1.3 times as long as its apical width, 0.5 times as long as propodeum. Ovipositor 5.9 times as long as first tergum, distinctly longer than metasoma, 2.8 times as long as hind femur, 0.6 times as long as fore wing.

Colour. Body dark brown. Legs brown. Wings hyaline. Pterostigma brown.

Body length 3.8 mm; fore wing length 4.7 mm.

Variation. Body length 3.65–3.80 mm; fore wing length 4.6–4.7 mm. Antenna 26–28-segmented. First flagellomere 3.55–3.65 times as long as its maximum width; second flagellomere 6.35–6.45 times as long as its maximum width. Length of fore wing 3.2–3.3 times its maximum width.

Male. Body length 3.7 mm; fore wing length 3.3 mm. Antenna 27-segmented. First flagellomere 3.5 times as long as its maximum width; second flagellomere 7.65 times as long as its maximum width, 2.2 times as long as first flagellomere. Hind femur 5.9 times as long as its maximum width.

Differential diagnosis. According to the key by Fischer (2007), this new species is similar to *A. kapiriensis* Fischer, 2007. *Asobara turneri* sp. nov. differs from *A. kapiriensis* in having the second flagellomere of female 6.4 times as long as its maximum width (6.0 times in *A. kaipiriensis*), hind femur of female 6.75 times as long as its maximum width (5.0 times in *A. kaipiriensis*), first metasomal tergum 1.3 times as long as its apical width (1.1 times in *A. kaipiriensis*), and head in dorsal view 1.65 times as wide as its median length (2.0 times in *A. kaipiriensis*).

Etymology. Named in honour R. E. Turner who collected specimens of this new species.

Update of the Fischer's (2007) key

The two new species can be accommodated into the key by Fischer (2007) as follows:

2. 3RSa 1.75–3.25 times as long as 2RS. 2a
– 3RSa 1.5 times as long as 2RS. 4
2a. Precoxal suture reaching anterior and posterior margins of mesopleuron. 3
– Precoxal suture not reaching anterior and posterior margins of mesopleuron. 3a
3. First flagellomere 3.45 times as long as its maximum width; second flagellomere 7.0 times as long as its maximum width, and 2.15 times as long as first flagellomere. Hind femur 7.0 times as long as its maximum width. First metasomal tergum 1.7 times as long as its apical width. Antenna 23–25-segmented. Body length 2.6–2.8 mm. Kenya. ..... ***A. kenyaensis*** Peris-Felipo **sp. nov.** (♀)
– First flagellomere 2.7 times as long as its maximum width, second flagellomere 8.0 times as long as its maximum width and 2.5 times as long as first flagellomere. Hind femur 5.5 times as long as its maximum width. First metasomal tergum 1.1 times as long as its apical width. Body length 3.8 mm. Peru, ? China. ..... ***A. obliqua*** (Papp, 1969) (♀)

3a. Hind femur of female 5.0 times as long as its maximum width. Second flagellomere of female 6.0 times as long as its maximum width. Head in dorsal view twice as wide as its median length. Body length 2.3 mm. Zambia. ..... ***A. kapiriensis*** Fischer, 2007 (♀)

– Hind femur of female 6.75 times as long as its maximum width. Second flagellar segment of female 6.5 times as long as its maximum width. Head in dorsal view 1.65 times as wide as its median length. Antenna 26–28-segmented. Body length 3.65–3.80 mm. South Africa. ..... ***A. turneri*** Peris-Felipo **sp. nov.** (♀♂)

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