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# Braconid wasps from the Cape Verde Islands 3. Braconinae, Cheloninae, Hormiinae, Microgastrinae and Opiinae

(Hymenoptera: Braconidae)

Jenő PAPP

Abstract: A total of 22 braconid species are reported from the Cape Verde Islands: five species are new to science and seventeen are known. The new species are as follows: *Hormius* (*Anhormius*) *harteni, Deuterixys x-formis, Dolichogenidea zeris, Iconella inula* and *Utetes* (*Merotrachys*) *adustus*. Their descriptions and nearest allies are presented. With 54 original linedrawn figures.

Zusammenfassung: Angaben zu insgesamt 22 Braconiden-Arten von den Kapverdischen Inseln werden präsentiert: fünf sind neu für die Wissenschaft, 17 sind bereits beschrieben. Die neuen Arten sind: *Hormius (Anhormius) harteni, Deuterixys x-formis, Dolichogenidea zeris, Iconella inula* und *Utetes* (*Merotrachys*) *adustus*. Die fünf neuen Arten werden detailliert beschrieben und mit ihren nächsten Verwandten verglichen. Mit 54 originalen Strichzeichnungen.

Key words: subfamilies, species, faunistics, description, taxonomic position.

## Introduction

The present (or third) paper is my concluding publication completing the work on the braconid material taken by A. VAN HARTEN in Cape Verde Islands during the years 1982–1985 and 1988–1990. The first two publications are PAPP (1996, 2003). The majority of the material is deposited in the Hungarian Natural History Museum (Magyar Termés-

zettudományi Múzeum), Budapest, and the rest of it in the Nationaal Natuurhistorisch Museum, Leiden. A total of 22 braconid species are reported. In the chapter ”Faunistic results” 17 known species are listed with their faunistic data (the five new species are here only indicated). Five species are new to science, their descripions are presented in the chapter ”Description of the new species”: The descriptions are compared with the nearest allies of the new species.

## Description of the New Species

In the descriptions the following abbreviations are applied (after VAN ACHTERBERG 1993: 5):

Eyes: OOL = ocellar-ocular line, i.e. shortest distance between hind ocellus and compound eye; POL = postocellar line, i.e. shortest distance between hind two ocelli.

Fore wing: *cu–a* = nervellus; *m–cu* = transverse medio-cubital vein (or nervus recurrens); *r* = transverse radial vein (or first section of the submarginal vein); *CU1a* = apical section of the subdiscoidal vein (or nervus parallelus); *R1* or *1–R1* = marginal vein (or metacarp) or first section of the marginal vein; *1–M* = basal vein; *1–CU1* and *1–CU2* = first and second sections of the discoidal vein; *2–SR* = first transverse cubital vein; *3–SR* = second section of the radial vein, *1–SR–M* = first section of the cubital vein.

## Hormiinae

### *Hormius* (*Anhormius*) *harteni* sp. n.

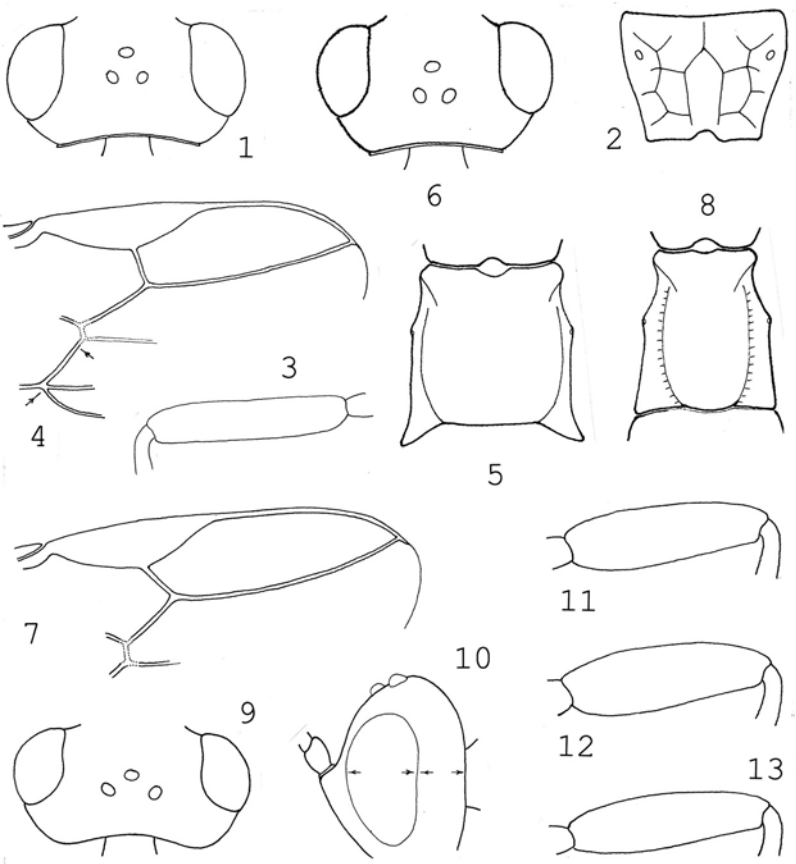
(Figs 1–5)

Material examined: Female holotype: Cape Verde Islands, São Jorge, June 1983, leg. A. VAN HARTEN (loc. no. 544).

Type condition and depository: Holotype is in good condition: (1) glued on pointed card, (2) hind right wing slightly creased. Holotype is deposited in the Magyar Természettudományi Múzeum, Budapest, Hym. Typ. No. 12050.

Etymology: The new species received the name "harteni", a dedication to its collector DR. ANTON VAN HARTEN, resolute explorer of the insects of Cape Verde Islands.

Description of the female holotype: Body 1.8 mm long. Antenna shorter than body and with 15 antennomeres. Flagellomeres long,




Figs 1–13. — Figs 1–5. *Hormius* (*Anhormius*) *harteni* sp. n.: 1 = head in dorsal view, 2 = propodeum, 3 = hind femur, 4 = distal part of right fore wing, 5 = first tergite. – Figs 6–8. *Hormius* (*Anhormius*) *propodealis* (Belokobylskij): 6 = head in dorsal view, 7 = distal part of right fore wing, 8 = first tergite. – Figs 9–13. *Deuterixys x-formis* sp. n.: 9 = head in dorsal view, 10 = head in lateral view, 11–13 = hind femur (11: female holotype, 12–13: female paratype).

first flagellomere three times, further flagellomeres attenuating so that penultimate flagellomere almost four times longer than broad. – Head in dorsal view 1.9 times as broad as long, eye four times longer than temple, temple receded (Fig. 1). Ocelli small, elliptic, POL somewhat shorter than OOL. Horizontal diameter of oral opening twice as long as shortest

distance between opening and eye. Inner margin of eyes weakly converging ventrally. Head polished.

Mesosoma in lateral view 1.4 times longer than high, polished. Notaulix distinct and restricted to anterior half of mesoscutum. Mesoscutal dimple linearform. Precoxal suture weakly distinct, smooth. Propodeum carinated, areola basalis present (Fig. 2). Hind femur five times longer than broad, parallel-sided (Fig. 3). Hind tibia somewhat longer than hind tarsus.

Fore wing somewhat shorter than body, 1.5 mm long. Pterostigma (Fig. 4) 3.6 times longer than wide and issuing *r* from its middle, *r* as long as width of pterostigma and somewhat oblique to fore margin of pterostigma; *1–R1* as long as pterostigma, *2–SR* twice as long as *r*, *SR1* straight and reaching tip of wing, *CU1a* interstitial (Fig. 4, see arrow below), *cu–a* postfurcal (Fig. 4, see arrow above).

First tergite quadrate (Fig. 5), as long as broad posteriorly, parallel-sided, pair of spiracles before middle of tergite, hind angle of tergite spineform pointed. Further tergites weakly sclerotized or creased, only lateral margin of tergites with usual sclerotization. Ovipositor sheath about as long as fore tibia.

Antenna straw yellow, distally faintly darkening brown. Head and mesosoma brown (head somewhat darker). Mandible yellow, palpi straw yellow. Tegula yellow. Metasoma: desclerotized part pale yellow, sclerotized part brownish to brown. Legs straw yellow, hind femur apically brownish. Wings hyaline, pterostigma: proximal half yellow, distal half brown.

Male and host unknown.

Distribution: Cape Verde Islands.

Taxonomic position: The new species, *Hormius* (*Anhormius*) *harteni*, is nearest to *H.* (*A.*) *propodealis* (BELOKOBYLSKIJ) viewing their comon feature: vein *r–m* missing (Fig. 4). The two species are distinguished by the following marks:

1 (2) Eye in dorsal view 2.4 times longer than temple, temple less receded; head in dorsal view 1.8 times broader than long (Fig. 6). Fore wing: pterostigma 3.3 times longer than wide, *1–R1* somewhat longer than pterostigma, *r* more oblique to fore margin of pterostigma and issuing clearly distally from middle of pterostigma, *2–SR* 1.6 times longer than *r* (Fig. 7). First tergite 1.2–1.5 times longer than broad behind, its sides broadening posteriorly, its hind

angle usual in form (Fig. 8). Pterostigma ochre yellow. ♀: 1.9–2.5 mm. — Australia, India, Tanzania, Turkey
..... *H.* (*A.*) *propodealis* (Belokobylskij, 1989)

2 (1) Eye in dorsal view four times longer than temple, temple more receded; head in dorsal view 1.9 times broader than long (Fig. 1). Fore wing: pterostigma four times longer than wide, *1–R1* as long as pterostigma, *r* less oblique and issuing just postfurcal from middle of pterostigma, *2–SR* twice as long as *r* (Fig. 4). First tergite quadrate, as long as broad behind and parallel-sided, its hind angle spineform pointed (Fig. 5). Pterostigma: proximal half pale yellow, distal half brown. ♀: 1.8 mm. — Cape Verde Islands
..... ***H.* (*A.*) *harteni* sp. n.**

## Microgastrinae

### *Deuterixys x-formis* sp. n.
(Figs 9–17)

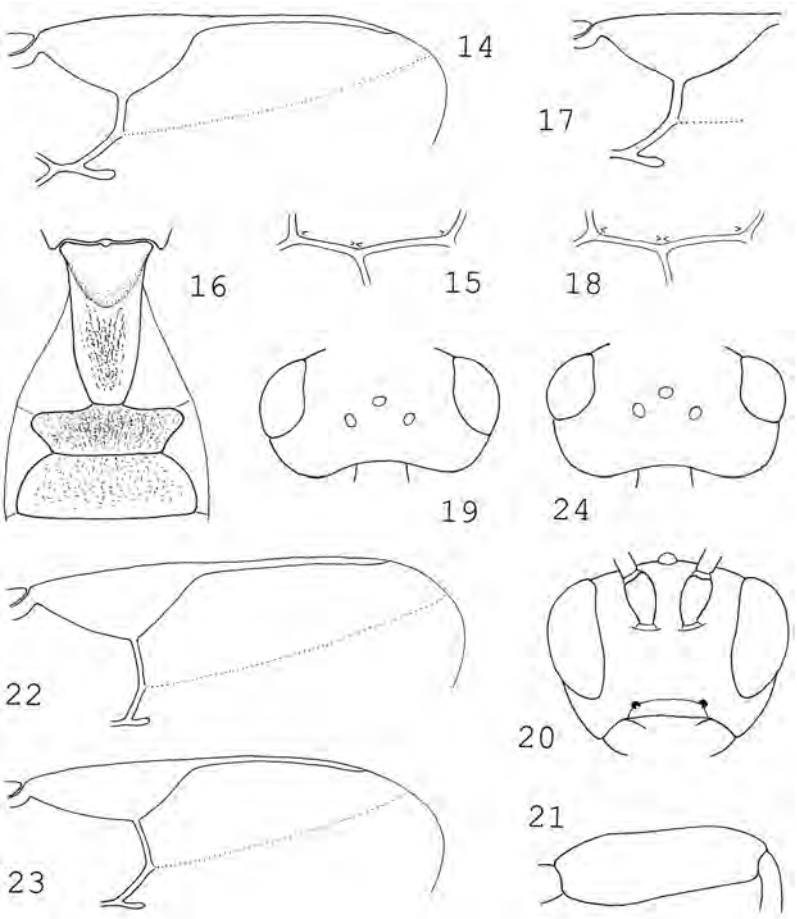
Material examined (6 ♀♀ + 3 ♂♂): Female holotype + 4 female and 3 male paratypes: São Jorge dos Orgaos, holotype: February 1990, paratypes: December 1983: 2 females, December 1989: 1 female + 2 males, April 1990: 1 female, March 1989: 1 male, all specimens taken with suction trap. 2 females: Baleia, host's foodplant *Zizyphus mauritania*, 16 March 1984, leg. A. VAN HARTEN.

Types condition: Female holotype and paratypes (6 females + 3 males) are glued on pointed cards by their ventral side of mesosoma. Holotype is in good condition: fore pair of legs somewhat less visible owing to their mounting. Paratypes are in fairly good condition: (1) four females with deficient flagellum apically, (2) legs partly deficient (1 female) or left hind tarsus missing (1 female).

Type depository: Holotype and two female + two male paratypes in Nationaal Natuurhistorisch Museum, Leiden; four female and one male paratypes in Magyar Természettudományi Múzeum, Budapest, Hym. Typ. Nos 12051–12055.

Etymology: The species name refers to the x-form sclerotized tergites 2–3 (Fig. 16).

Description of the female holotype: Body 1.9 mm long. Antenna one-fifth shorter than body. Second flagellomere 3.4 times and 14th flagellomere 1.6 times longer than broad. – Head in dorsal view transverse, twice as broad as long, eye 2.2 times longer than temple, temple




Figs 14–24. — Figs 14–17. (14–16: holotype, 17: paratype): *Deuterixys x-formis* sp. n.: 14 = distal part of rigt fore wing, 15 = *1–2CU1* with *cu–a*, 16 = tergites 1–3, 17 = pterostigma, *r* + *2–SR* of right fore wing. – Fig. 18. *Deuterixys pacifica* Whitfield: *1–2CU1* with *cu–a*. – Figs 19–22. *Dolichogenidea zeris* sp. n.: 19 = head in dorsal view, 20 = head in frontal view, 21 = hind femur, 22 = distal part of right fore wing. – Figs 23–24. *Dolichogenidea artissima* (Papp): 23 = distal part of right fore wing, 24 = head in dorsal view.

receded (Fig. 9). POL somewhat shorter than OOL. Face below toruli twice as wide as high, inner margin of eyes slightly converging ventrally.

Eye in lateral view 2.8 times as high as wide and somewhat wider than temple, temple beyond eye evenly wide (Fig. 10). Head shallowly and finely punctate, frons almost smooth, pruinose to subshiny.

Mesosoma in lateral view 1.2 times longer than high. Mesoscutum densely and finely punctate, interspaces dull and smaller than punctation. Scutellum with less densely punctures, interspaces about as large as punctures, subshiny. Propodeum polished and with a distinct medio-longitudinal carina. Hind femur 3.3 times longer than broad basally (Fig. 11). Inner spur of hind tibia less than half as long as basitarsus or as long as third tarsomere of hind tarsus. Hind basitarsus as long as tarsomeres 2–4 combined.

Fore wing slightly shorter than length of body. Pterostigma (Fig. 14) 2.1 times longer than wide and issuing *r* from its middle, *2–SR* almost twice as long as *r*, *R1* one-fifth longer than pterostigma; *cu–a* issuing clearly proximally from middle of *1–2CU1*, i.e. *1–CU1* shorter than *2–CU1* (Fig. 15, see arrows).

First tergite long and narrowing posteriorly (Fig. 16), 2.7 times as broad basally as apically, five times longer than broad apically, medially rugulose. Second and third tergites sclerotized x-form, i.e. pair of lateral notches between tergites 2–3 more evident, finely rugulose to uneven. Further tergites polished. Fourth tergite anteriorly and fifth tergite posteriorly weakly sclerotized. Hypopygium truncate, ovipositor sheath short and about as long as hind basitarsus.

Scape yellow, flagellum brownish yellow to brownish. Head and mesosoma blackish. Labrum yellow, palpi straw yellow. Tegula pale yellow, parategula light brown. Tergites 1–2 blackish, further tergites brown, desclerotized parts pale yellow. Sternites anteriorly pale yellow, posteriorly light brown. Legs yellow, hind tibia apically and entire tarsus brownish. Wings hyaline, pterostigma yellow, metacarp brownish, veins pale yellow.

Description of the six female paratypes: Similar to the female holotype. Body 1.7–1.9 mm long. Head 2–2.2 times as broad as long. Mesosoma in lateral view 1.2–1.3 times longer than high. Hind femur 3–3.3 times longer than broad basally (Figs 12–13). Pterostigma 2.1–2.3 times longer than wide (Fig. 17). First tergite 5–5.5 times longer than broad apically.

Description of the three male paratypes: Similar to the female. Body 1.5–1.8 mm long. Antenna somewhat longer than to as long as body, flagellomeres 3.5 times to twice as long as broad. Hind femur 2.8–3 times longer than broad basally. Yellow colouration with brownish tint.

Host unknown, host's foodplant of two females is *Zizyphus mauritanica*.

Distribution: Cape Verde Islands.

Taxonomic position: The new species, *Deuterixys x-formis*, is nearest to *D. pacifica* Whitfield considering their clearly narrowing first tergite, the two species are distinguished by the features keyed:

1 (2) Tergites 2–3 sclerotized subquadrate-form, i.e. pair of lateral notches between tergites 2–3 less evident (Fig. 5 in WHITFIELD 1985: 65; Fig 14 in WHITFIELD & OLTRA 2004: 144). First tergite wide, 3–3.4 times longer than broad posteriorly and 1.3–1.4 times longer than broad basally (Fig. 14 l.c.). Second flagellomere 2 to 3 times and 14th flagellomere 1.3–1.4 times longer than broad. Pterostigma 2.4–2.5 times longer than wide, *cu–a* issuing less proximally from middle of *1–2CU1* (Fig. 2 in WHITFIELD 1985: 62; Fig. 18). Pterostigma and costal vein dark brown, legs dark brown to black with little fulvous pattern. ♀♂: 1.6–1.9 mm. – Mexico (Michoakan), U.S.A. (California, New Mexico, Utah)
..... *D. pacifica* Whitfield, 1985

2 (1) Tergites 2–3 sclerotized x-form, i.e. pair of lateral notches between tergites 2–3 more evident; first tergite less wide, 5–5.5 times longer than broad posteriorly and 1.7–2 times longer than broad basally (Fig. 16). Second flagellomere 3–3.1 times and 14th flagellomere 1.5–1.6 times longer than broad. Pterostigma 2.1–2.3 times longer than wide (Fig. 14), *cu–a* issuing clearly proximally from middle of *1–2CU1* (Fig. 17). Pterostigma, costal vein and legs fully yellow. ♀: 1.7–1.9 mm, ♂: 1.5–1.8 mm. – Cape Verde Islands
..... ***D. x-formis* sp. n.**

***Dolichogenidea zeris* sp. n.**
(Figs 19–22, 25–28)

Material examined (1 ♀): Female holotype: Cape Verde Islands, Santa Cruz, taken with suction trap at night, August 1983, leg. A. VAN HARTEN.

Type condition and depository: Holotype is in good condition: (1) glued on a pointed card by mesosternum, (2) right hind tarsus missing, (3) wings distally somewhat creased. Holotype is deposited in the Magyar Természettudományi Múzeum, Budapest, Hym. Typ. No. 12056.

Etymology: The new species received the phantasy name "zeris".

Description of the female holotype: Body 2.2 mm long. Antenna rather short, as long as head, mesosoma and tergites 1–2 combined. First flagellomere 2.8 times longer than broad apically, further flagellomeres gradually shortening so that penultimate 3–4 flagellomeres cubic. – Head in dorsal view transverse, twice as broad as long, eye 2.7 times longer than temple, temple more rounded; POL slightly longer than OOL (Fig. 19). Inner margin of eyes weakly converging ventrally, face twice wider (close below antennal socket) than high (Fig. 20). Head subrugulose and subshiny.

Mesosoma in lateral view elongated, almost 1.7 times longer than high. Mesoscutum pruinose with distinct though shallow punctation, interspaces much shorter than punctures, notaulix distinct by somewhat crowded punctation. Scutellum polished. Metanotum medially not pointed posteriorly (Fig. 25). Propodeum rugose, with a rather weakly distinct transverse carina, areola (above lunule) missing. Hind femur thick, 2.8 times longer than broad proximally (Fig. 21). Inner spur of hind tibia half as long as basitarsus. Hind basitarsus just longer than tarsomeres 2–4 combined.

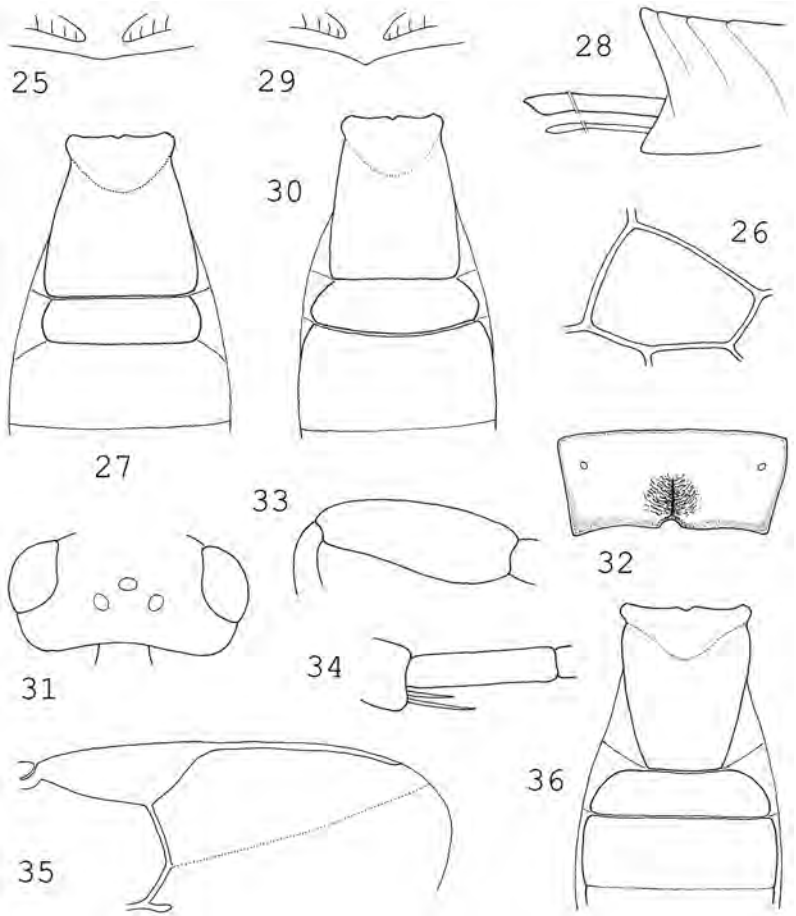
Fore wing as long as body. Pterostigma wide, 2.3 times longer than wide and issuing *r* slightly distally from its middle, *r* somewhat longer than *2–SR*, *R1* one-ninth (45:40) longer than pterostigma and approaching *3–SR + SR1*. First discal cell less high, *1–M* twice longer than *m–cu*, *1–SR–M* 1.3 times longer than *1–M*, *2–CU1* slightly longer than *1–CU1* (Fig. 26).

First tergite clearly broadening posteriorly, just longer than broad behind; second tergite transverse, 3.6 times broader behind than long medially; third tergite twice longer than second tergite (Fig. 27). First tergite rugose, second tergite rugulose to uneven, third and further tergites polished. Hypopygium small, truncate, pointed; ovipositor sheath long, as long as hind tibia (Fig. 28).

Male and host unknown.

Distribution: Cape Verde Islands.

Taxonomic remark: The two species, *Dolichogenidea artissima* and *D. zeris*, are forming a species-group within the genus *Dolichogenidea* Viereck. Though their rugose propodeum and first tergite are a "*Cotesia*-like feature" (i.e. transitional to this genus), the species-group is assigned to the genus *Dolichogenidea* viewing their more or less long ovipositor sheath, hypopygium weakly folded medio-longitudinally, second tergite clearly transverse (i.e. distinctly shorter than third tergite) and mesoscutum with discernible punctation.




Figs 25–36. — Figs 25–28. *Dolichogenidea zeris* sp. n.: 25 = metanotum, 26 = first discal cell of right fore wing, 27 = tergites 1–3, 28 = hind half of female metasoma in lateral view. – Figs 29–30. *Dolichogenidea artissima* (Papp): 29 = metanotum, 30 = tergites 1–3. – Figs 31–36. *Iconella inula* sp. n.: 31 = head in dorsal view, 32 = propodeum, 33 = hind femur, 34 = hind basitarsus with spurs in lateral view, 35 = distal part of right fore wing, 36 = tergites 1–3.

Taxonomic position: The new species, *Dolichogenidea zeris*, is near to *D. artissima* Papp (PAPP 1971: 312 description, 1978: 269 in key) considering their common features: propodeum and tergites 1–2 rugose,

hind femur broadest proximally and body black coloured, the two species differ from each other by a few though distinct marks:

1 (2) Female: First tergite faintly and evenly broadening posteriorly, 1.3 times longer than broad behind; second tergite slightly more transverse (Fig. 30). Pterostigma less wide, 2.8 times longer than wide, issuing *r* clearly distally from its middle, *r* slightly longer than *2–SR* (Fig. 23). Temple in dorsal view rounded (Fig. 24). Penultimate 3–4 flagellomeres 1.8–1.6 times longer than broad. Metanotum postero-medially pointed (Fig. 29). Ovipositor sheath short, two-thirds as long as hind basitarsus. Tegula black, parategula blackish brown. ♀: 2.8–3 mm. – Mongolia, Europe (= *abila* Nixon, 1972) ..... *D. artissimus* (Papp, 1971)

2 (1) First tergite clearly broadening posteriorly, just longer than broad behind; second tergite slightly less transverse (Fig. 27). Pterostigma wide, 2.3 times longer than wide, issuing *r* less distally from its middle, *r* longer than *2–SR* (Fig. 22). Temple in dorsal view more rounded (Fig. 19). Penultimate 3–4 flagellomeres cubic. Metanotum postero-medially not pointed (Fig. 25). Ovipositor sheath long, as long as hind tibia. Tegula yellow, parategula pale yellow. ♀: 2.2 mm. — Cape Verde Islands ..... ***D. zeris* sp. n.**

### *Iconella inula* sp. n.
(Figs 31–43)

Material examined (10 ♀♀ + 2 ♂♂): Female holotype + three female paratypes: Cape Verde Islands, Godim, host's foodplant: *Zyziphus mauritanica* (three microlepidopterous species were reared from it), 16 July 1984, leg. A. VAN HARTEN. Six female + two male paratypes: Cape Verde Islands, Achada Baleia, host's foodplant: *Zyziphus mauritanica*, 16 March 1984, leg. A. VAN HARTEN.

Types condition: Holotype is in good condition: (1) glued on a pointed card by mesosternum and hind pair of coxae, (2) pair of fore wings apically torn. Paratypes also in good condition: (1) glued on pointed cards, (2) tarsomeres more or less missing (4 ♀♀), (3) fore wings apically torn (1 ♀) or left fore wing missing (1 ♀).

Types depository: Holotype and six female + two male paratypes are deposited in the Magyar Természettudományi Múzeum, Budapest, Hym. Typ. Nos 12057 (holotype), 12058–12063 (paratypes); three female paratypes in Nationaal Natuurhistorisch Museum, Leiden.

Etymology: The new species received the name ”inula”, viewing its yellow, like the flower: *Inula*-like yellow, metasoma.

Description of the female holotype: Body 2.9 mm long. Antenna as long as head, mesosoma and first tergite combined. First flagellomere twice and penultimate flagellomere 1.3 times longer than broad, flagellum attenuating. – Head in dorsal view transverse, 2.1 times broader than long, eye 1.8 times longer than temple, temple rounded. Ocelli round, large and forming a low triangle, POL = OOL. Malar space as long as basal width of mandible. Head subrugulose, dull.

Mesosoma in lateral view 1.5 times longer than high. Mesoscutum subrugulose, dull. Scutellum polished. Propodeum also polished, around lunule rugo-rugulose (Fig. 32). Lateral wing of pronotum smooth and with furrow along margin. Inner spur of middle tibia as long as basitarsus. Hind femur 2.7 times longer than broad proximally (Fig. 33). Inner spur of hind tibia shorter than half length of basitarsus (Fig. 34).

Fore wing about as long as body. Pterostigma 2.6 times longer than wide, issuing *r* distally from its middle and as long as width of pterostigma, *r* somewhat longer than *2–SR*, somewhat bent and directed apically (Fig. 35). *R1* one-fifth longer than pterostigma, six times longer than its distance from apex of marginal cell.

First tergite twice longer than broad apically, evenly narrowing posteriorly, its hind part uneven; second tergite transverse, four times wider than long medially, together with further tergites polished. Third tergite 1.8 times longer than second tergite (Fig. 36). Hypopygium somewhat pointed, ovipositor sheath as long as tarsomeres 1–4 combined.

Scape, pedicel entirely and flagellomeres 1–4 ochre yellow, flagellum otherwise proximo-distally brown to dark brown. Head and mesosoma black. Palpi and tegula pale yellow. Metasoma and legs yellow (*Inula* yellow), distal two-thirds of hind tibia and entire hind tarsus dark brown. Ovipositor sheath brown. Wings hyaline. Pterostigma brown, costal and metacarpal vein yellow, other veins brownish.

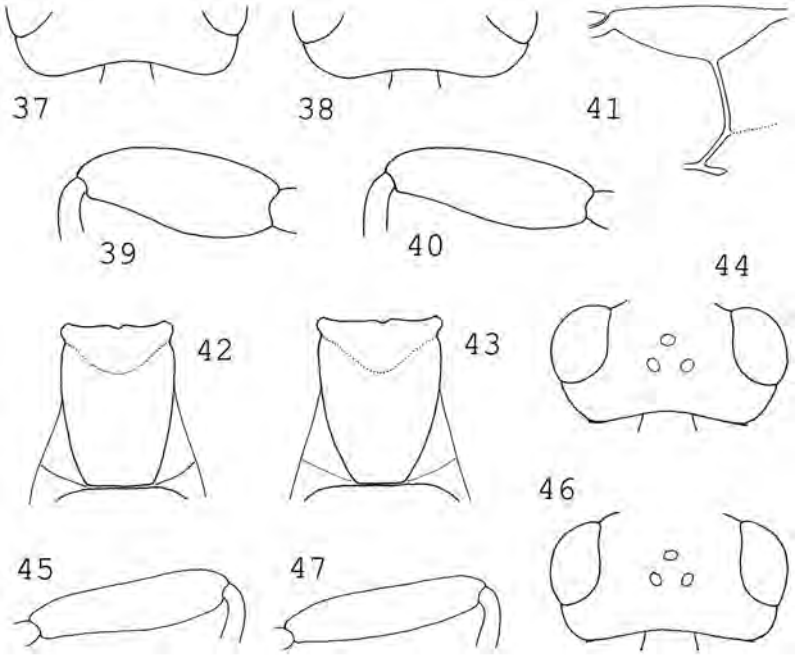
Deviating features of the nine female paratypes: Similar to the female holotype. Body 2.8–3 mm long. Temple in dorsal view moderately rounded (2 ♀♀, Figs 31, 37) to receded (Fig. 38). Hind femur 2.5 times (1 ♀, Fig. 39) to 2.6 times (2 ♀♀) as long as broad proximally. Inner spur of hind tibia slightly shorter than half basitarsus. Fore wing: Pterostigma 2.5 to 3 times (Fig. 41) as long as wide. First tergite proximally less narrowing (2 ♀♀, Fig. 42). Coxae 2–3 dark brown (8 ♀♀).

Description of the two male paratypes: Similar to the female types. Body 2.8–3 mm long. Flagellomeres long, first and penultimate

flagellomeres twice as long as broad, flagellum apically attenuating. Hind femur 2.9 times longer than broad basally (Fig. 40). First tergite more narrowing (Fig. 43). Metasoma brown, first tergite basally yellow. Legs 2–3 with much brown pattern.

Host unknown.

Distribution: Cape Verde Islands.




Figs 37–47. — Figs 37–43. *Iconella inula* sp. n.: 37–38 (female paratypes) = hind half of head in dorsal view, 39 (female paratype) – 40 (male paratype) = hind femur, 41 (female paratype) = pterostigma, *r* + *2–SR* of right fore wing, 42 (female paratype) – 43 (male paratype) = first tergite. – Figs 44–45: *Utetes* (*Merotrachys*) *adustus* sp. n.: 44 = head in dorsal view, 45 = hind femur. – Figs 46–47. *Utetes* (*Merotrachys*) *katonensis* (Fischer): 46 = head in dorsal view, 47 = hind femur.

Taxonomic position: The new species, *Iconella inula*, is nearest to three species: *I. salensis* (Hedqvist), *I. regalis* (De Saeger) and I. *hebrus* (Nixon) (DE SAEGER 1941, 1944; HEDQVIST 1965; NIXON 1965) on the

basis of their description (i.e. *I. salensis*, *I. regalis*, *I. hebrus* unknown for me in nature), they differ from *I. inula* only in a few features as follows:

**1.) Distinction between *I. salensis* and *I. inula*:**

1 (2) Fore wing: Metacarp clearly shorter than length of pterostigma (Fig. 21C in HEDQVIST 1965: 22). Propodeum with a medio-longitudinal carina, its anterior half punctate and its posterior half polished (Fig. 21A l.c.). Metasoma black, legs testaceous with more or less dark colour pattern. ♀: 2.5 mm. — Cape Verde Islands ..... *I. salensis* (Hedqvist, 1965)

2 (1) Fore wing: Metacarp clearly longer than length of pterostigma (Fig. 35). Propodeum polished, around lunule rugo-rugulose (Fig. 32). Metasoma inula yellow, legs yellow, distal two-thirds of hind tibia and entire tarsus dark brown. ♀: 2.8–3 mm. — Cape Verde Islands ..... ***I. inula* sp. n.**

**2.) Distinction between *I. regalis* and *I. inula*:**

1 (2) Propodeum carinated, dull and anteriorly punctate. Scutellum finely punctate. First tergite more narrowing posteriorly, second tergite less transverse, 2.8 times as broad behind as long medially (Fig. 7 in DE SAEGER 1941: 220). Tergites black with a few reddish yellow to rusty colour pattern. ♀: 3.5 mm. – Zaire ..... ..... *I. regalis* (De Saeger, 1941)

2 (1) Propodeum polished, around lunule rugo-rugulose (Fig. 32). Scutellum polished. First tergite less narrowing posteriorly, second tergite more transverse, four times as broad behind as long medially (Figs 36, 42, 43). Tergites inula yellow. ♀: 2.8–3 mm. – Cape Verde Islands ..... ***I. inula* sp. n.**

**3.) Distinction between *I. hebrus* and *I. inula*:**

1 (2) Propodeum with a distinct medio-longitudinal carina, micro-sculptured and dull. First tergite more narrowing posteriorly (Fig. 176 in NIXON 1965: 164). Inner spur of hind tibia about three-fourths length of basitarsus. "Lower side of flagellum ... with unusually long pubescence ..." (NIXON 1965: 152). Basal half of metasoma dull reddish. ♀: 2.5 mm. – Republic of South Africa ..... ..... *I. hebrus* (Nixon, 1965) comb. n.

2 (1) Propodeum around lunule rugo-rugulose, otherwise polished. First tergite less narrowing posteriorly (Figs 36, 42, 43). Inner spur of hind tibia shorter than half length of basitarsus (Fig. 34). Lower side of flagellum with short hairs as usually. Metasoma entirely inula yellow. ♀: 2.8–3 mm. – Cape Verde Islands ..... ..... ***I. inula* sp. n.**

## Opiinae

### *Utetes* (*Merotrachys*) *adustus* sp. n.

(Figs 44–45, 48–51)

Material examined: Female holotype: Cape Verde Islands, São Jorge dos Orgaos, taken with suction trap, November 1990, leg. A. VAN HARTEN (loc. no. 2453).

Type condition and depository: Holotype is in good condition: (1) glued on a pointed card by its right pleural side, (2) right antenna deficient: with 12 antennomeres. Holotype is deposited in Nationaal Natuurhistorisch Museum, Leiden.

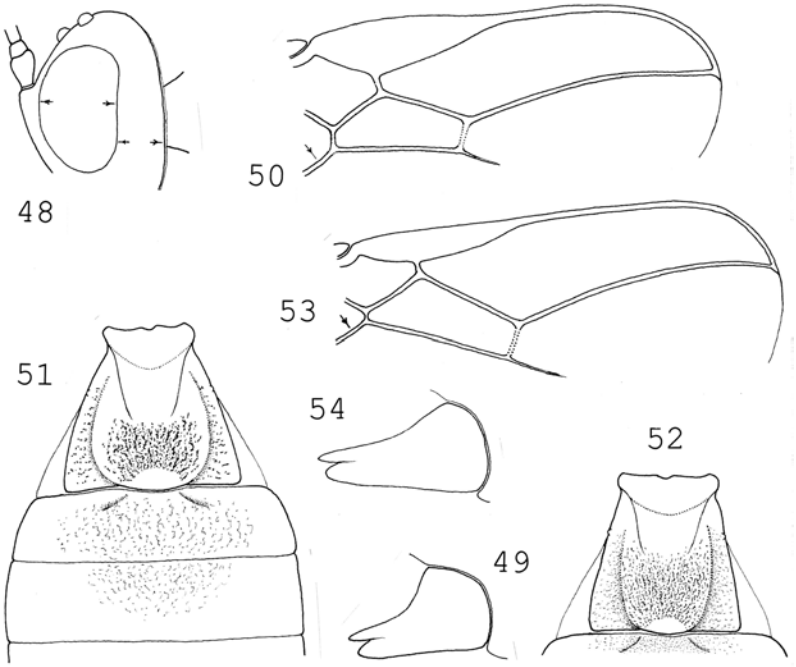
Etymology: The new species received the name ”adustus” referring to the brown pattern of its corporal colour.

Description of the female holotype: Body 2.1 mm long. Antenna (left one) about one-fourth longer than body and with 25 antennomeres. First flagellomere thrice as long as broad apically, further flagellomeres slightly shortening and attenuating so that penultimate flagellomere 2.5 times longer than broad. – Head in dorsal view transverse, 2.1 times as broad as long, eye almost twice as long as temple, temple receded (Fig. 44). Ocelli elliptic, middle sized, OOL nearly twice as long as POL. Occiput excavated, smooth; gena carinated. Eye in lateral view 1.6 times as high as wide and 1.7 times wider than temple, temple beyond eye slightly broadening ventrally (Fig. 48, see arrows). Mouth open, clypeus twice as wide as high, mandible basally thickening (Fig. 49). Maxillar palp shorter than height of head. Head polished.

Mesosoma in lateral view 1.6 times longer than high, polished. Notaulix indistinct. Mesoscutal dimple missing. Precoxal suture distinct, smooth. Propodeum uneven to smooth, shiny. Hind femur 3.8 times longer than broad distally (Fig. 45). Hind basitarsus as long as hind tarsomeres 2–3 combined.

Fore wing slightly longer than body. Pterostigma fairly wide, 2.9 times longer than wide, issuing *r* proximally from its middle; second

submarginal cell short: *3–SR* 1.4 times longer than *2–SR*, *SR1* bent, thrice as long as *3–SR* and reaching tip of wing (Fig. 50). Vein *m–cu* postfurcal (Fig. 50, see arrow); first subdiscal cell closed distally.




Figs 48–54. — Figs 48–51. *Utetes* (*Merotrachys*) *adustus* sp. n.: 48 = head in lateral view, 49 = mandible, 50 = distal part of right fore wing, 51 = tergites 1–3. – Figs 52–54. *Utetes* (*Merotrachys*) *katonensis* (Fischer): 52 = first tergite, 53 = distal part of right fore wing, 54 = mandible.

First tergite (Fig. 51) somewhat broader behind than long, clearly broadening posteriorly, pair of basal keels reaching middle of tergite, scutum longitudinally rugulose-uneven. Second tergite just shorter than third tergite, both tergites medially uneven, laterally smooth, subshiny to shiny. Further tergites polished. Ovipositor sheath short, as long as basitarsus of middle leg.

Scape and pedicel yellowish with brownish tint, flagellum light brownish. Head yellow, ocellar field black. Stipes and palps straw yellow.

Mesosoma reddish yellow; mesoscutum, scutellum and propodeum with brown(ish) pattern. Metasoma brown, second and sixth tergites medially distinctly brownish yellow. Legs straw yellow, tarsi 1–3 light brownish suffused. Wings hyaline. Pterostigma brown, veins brown to brownish.

Male and host unknown.

Distribution: Cape Verde Islands.

Taxonomic position: The new species, *Utetes* (*Merotrachys*) *adustus*, runs to *U.* (*M.*) *katonensis* (Fischer) with the help of FISCHER's keys (1987: 517, 1998: 33–35), the two species are distinguished by subtle features keyed:

1 (2) Temple slightly less receded, eye 2.3 times longer than temple (Fig. 46). Antenna with 32 antennomeres (♀). First tergite slightly longer than broad behind, somewhat less broadening posteriorly (Fig. 52). Hind femur 4.1 times longer than broad medially (Fig 47). Fore wing (Fig. 53): pterostigma narrow, 5.3 times longer than wide, *3–SR* 1.8 times longer than *2–SR*, *m–cu* just postfurcal (Fig. 53, see arrow). Mandible less broad, 1.8 times longer than broad basally (Fig. 54). Body yellow. ♀: 2.2–2.5 mm. — Tanzania ..... ..... *U.* (*M.*) *katonensis* (Fischer, 1961)

2 (1) Temple slightly more receded, eye almost twice as long as temple (Fig. 44). Antenna with 25 antennomeres (♀). First tergite slightly broader behind than long, somewhat more broadening posteriorly (Fig. 51). Hind femur 3.8 times longer than broad distally (Fig. 45). Fore wing (Fig. 50): pterostigma wide, 2.9 times longer than wide, *3–SR* 1.4 times longer than *2–SR*, *m–cu* postfurcal (Fig. 50, see arrow). Mandible broad, 1.6 times longer than broad basally (Fig. 49). Head yellow, meso- and metasoma brown(ish) with reddish or brownish yellow pattern. ♀: 2.1 mm. — Cape Verde Islands ..... ..... ***U. (M.) adustus* sp. n.**

## Faunistic Results

### Braconinae

*Bracon* (*Bracon*) *hieroglyphicus* **(**Brues, 1924**) –** 1 female: Godim, 16 July 1984. – Distribution: Republic of South Africa, new to Cape Verde Islands.

*Bracon* (*Bracon*) *simulator* Szépligeti, 1914 – 9 females, 7 males: Santa Cruz, ex *Ceratitis capitata* Wiedemann (Dipt. Tephritidae), host's

foodplant *Capsicum frutescens* Linnaeus, 30 October 1982, leg. et educ. R. GSELL. 3 females: São Jorge, 8 October 1983, leg. HARTEN. 1 female, 4 males: Moia-Moia, 18 October 1983, leg. R. GSELL. – Additional features: Body (2.8–)3–3.3 mm long. Antenna with 24–29 antennomeres (24: 1 female, 25: 2 females, 26: 2 females, 27: 3 females + 5 males, 28: 1 female + 1 male, 29: 2 males). Propodeum entirely or almost entirely polished, i.e. on a little field rugulose-subrugulose. Legs entirely yellow. One female is an albinotic form: ground colour of body more yellow, dark pattern light brown.

*Habrobracon somnialis* (Szépligeti, 1913) – 1 female, 1 male: São Jorge dos Orgaos, October 1989, leg. HARTEN. – Distribution: Eritrea, Ethiopia, new to Cape Verde Islands.

## Cheloninae

*Phanerotoma curvicarinata* Cameron, 1911 – 1 female: São Jorge dos Orgaos, May 1990, leg. HARTEN. – Distribution: Republic of South Africa, new to Cape Verde Islands.

## Hormiinae

*Hormius* (*Anhormius*) *harteni* sp. n.: Cape Verde Islands, São Jorge, June 1983, leg. A. VAN HARTEN. Its description see on page 118.

## Microgastrinae

*Apanteles bellatulus* De Saeger, 1944 – 8 females (2 females in Leiden): Boa Estrada, ex *Lamprosoma indicata* Fabricius (Lep. Pyraustidae) first known host, host's foodplant *Phaseolus vulgaris* Linnaeus, 26 July 1983, leg. et educ. HARTEN. – The species was described on the basis 2 females + 19 males from Zaire (DE SAEGER 1944: 250). The 8 females matching the original description. New to Cape Verde Islands.

*Apanteles galleriae* Wilkinson, 1932 – 3 females: São Jorge dos Orgaos, taken with suction trap, September 1989 and January 1990, leg. HARTEN. – A Cosmopolitan species, originally described from France, introduced into the continents by commercial trade.

*Apanteles xanthostigma* (Haliday, 1834) – 1 male: São Jorge dos Orgaos, 8 October 1983, leg. HARTEN. – In the Palaearctic Region frequent to common, distributed in the Ethiopian Region. New to Cape Verde Islands, nearest to it known in Portugal, Spain and Tunisia.

*Apanteles xerophila* Risbec, 1951 – 52 females (42 in Budapest, 10 in Leiden): São Jorge dos Orgaos, partly taken with suction trap, August–September 1988 21 females, September–December 1989 15 females, January–March 1990 16 females, leg. HARTEN. – Described from Senegal on the basis of a single female (RISBEC 1951: 453). In the original description the species was related to *A. bellatulus* De Saeger. Considering the literature (DE SAEGER 1944, NIXON 1965) it seems near to *Apanteles argiope* Nixon, 1965 (Indo-Australian Region) and *A. piceoventris* Muesebeck, 1920 (West Indies, tropical Africa, Indo-Australian Region).

*Cotesia leucaniae* (Wilkinson, 1937) – 4 females, 3 males: Ribeira Seca, ex *Heliothis armigera* Hübner (Lep. Noctuidae), host's foodplant *Lycopersicon esculentum* Miller, 8 June 1982 4 females + 2 males, 21 June 1982 1 male, leg. et educ. HARTEN. 2 females + 1 male: Aguada, 1 December 1982, leg. HARTEN. 1 female + 4 males: São Jorge dos Orgaos, 1–4 October 1983 1 female, 8 October 1983 4 males, leg. HARTEN. – Sporadic to fairly frequent in the Palaearctic Region. New to Cape Verde Islands.

*Deuterixys x-formis* sp. n.: São Jorge dos Orgaos, February 1990, December 1983, December 1989: 1 female + 2 males, April 1990: 1 female, March 1989: 1 male, all specimens taken with suction trap. 2 females: Baleia, host's foodplant *Zizyphus mauritania*, 16 March 1984, leg. A. VAN HARTEN. – Its description see on page 121.

*Dolichogenidea appellator* (Telenga, 1949) – 8 males: São Jorge dos Orgaos, 3 males July 1983**,** 5 males 8 October 1983, leg. HARTEN. – Widely distributed and less frequent in the Palaearctic Region. Known also in Cape Verde Islands.

*Dolichogenidea hellulae* (Risbec, 1951) – 1 female: São Jorge dos Orgaos, 10 November 1982, leg. HARTEN. – Described from Senegal on the basis of female specimen(s?) (RISBEC 1951: 441). New to Cape Verde Islands.

*Dolichogenidea litae* (Nixon, 1972) – 1 male: São Jorge dos Orgaos, ex *Plutella xylostella* Linnaeus (Lep. Plutellidae), June 1983, leg. et educ. HARTEN. 1 female: São Jorge dos Orgaos, ex *Olethreutes wahlbergiana* Zeller (Lep. Tortricidae), 10 April 1984, leg. HARTEN. 4 females + 2 males: São Jorge dos Orgaos, ex *Cryptophlebia leucotreta* Meyrick (Lep. Tortricidae), 3 females + 1 male 3 May 1984, 1 female + 1 male 9 April 1985, leg. HARTEN. 6 males: Island of Fogo, Cha da Caldeira, ex *Plutella xylostella* Linnaeus, host's foodplant *Diplotaxis* sp., 16 November 1982, leg. et educ. HARTEN. – In Europe fairly frequent, known in Cape Verde Islands. Very near to *D. appellator* (Telenga).

*Dolichogenidea zeris* sp. n.: Cape Verde Islands, Santa Cruz, taken with suction trap at night, August 1983, leg. A. VAN HARTEN. – Its description see on page 124.

*Iconella inula* sp. n.: (10 ♀♀ + 2 ♂♂): Female holotype + three female paratypes: Cape Verde Islands, Godim, host's foodplant: *Zyziphus mauritanica* (three microlepidopterous species were reared from it), 16 July 1984, leg. A. VAN HARTEN. Six female + two male paratypes: Cape Verde Islands, Achada Baleia, host's foodplant: *Zyziphus mauritanica*, 16 March 1984, leg. A. VAN HARTEN. – Its description see on page 127.

*Iconella robustus* (Hedquist, 1965) – 1 male: São Jorge dos Orgaos, 8 October 1983, leg. HARTEN. – The species is known only in Cape Verde Islands.

*Iconella subcamilla* (Tobias, 1976) – 4 males: São Jorge dos Orgaos, taken with suction trap at light (at night), 3 males 8 October 1983, 1 male 15 November 1983, leg. HARTEN. – Originally the species was described in the genus *Apanteles* (TOBIAS 1976: 201, 249). Following (MASON's) new generic conception the species was transferred into the genus *Iconella* Mason (PAPP 1988: 151). So far known in Azerbaijan, Iran, Israel. New to Cape Verde Islands.

*Protapanteles immunis* (Haliday, 1834) – 1 male: Santa Cruz, taken with suction trap at night, 14 June 1982, leg. HARTEN. 2 males: São Jorge dos Orgaos, 1 male: 8 October 1983, 1 male: 15 November 1983, leg. HARTEN. – Frequent to common in Europe, reported from Asiatic Russia. New to Cape Verde Islands.

## Opiinae

*Opius* (*Phaedrotoma*) *diversus* Szépligeti, 1896 – 15 females, 3 males: São Jorge dos Orgaos, February to June and December 1983, 1985, 1989, leg. HARTEN. – Earlier (PAPP 2003: 142) reported under the name of *Utetes* (*Merotrachys*) *melanagromyzae* (Fischer), a mis-identification by me. The species *O.* (*Ph.*) *diversus* is new to Cape Verde Islands. Described from Hungary, known in many countries of Europe, nearest to Cape Verde Islands known in Canary Islands. Considered as synonym of *O.* (*Ph.*) *exiguus* Wesmael, 1835, recently revalidated.

*Utetes* (*Merotrachys*) *adustus* sp. n.: Cape Verde Islands, São Jorge dos Orgaos, taken with suction trap, November 1990, leg. A. VAN HARTEN. – Its description see on page 131.

*Utetes* (*Merotrachys*) *melanagromyzae* (Fischer, 1966) – 1 female: São Jorge dos Orgaos, 2 September 1983, leg. HARTEN. 2 females: São

Jorge dos Orgaos, November 1987, taken with suction trap, leg. HARTEN. – Its report earlier (PAPP 2003: 142, 18 specimens: 15 females + 3 males) was discharged by my misidentification. Further comments see at *O.* (*Ph.*) *diversus* SZÉPLIGETI. Known in six countries of tropical Africa, also in Mauritius.

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## References

BELOKOBYLSKIJ, S. A. (1989): Braconids of the tribe Hormiini (Hymenoptera, Braconidae) of Australia. – Revue d'Entomologie de l'URSS **68**: 376–392. (in Russian with English title.)

DE SAEGER, H. (1941): Le genre *Apanteles* au Congo belge (Hym. Braconidae). Contribution à l'étude du genre (Suite). – Revue Zoologie et Botanique de l'Afrique **35**: 218–268.

DE SAEGER, H. (1944): Microgasterinae (Hymenoptera Apocrita) Fam. Braconidae. – Exploration du Parc National Albert **47**: 1–342 + I–XIII planches.

FISCHER, M. (1966): Studien über Braconiden (Hymenoptera). – Zeitschrift für angewandte Entomologie **53**(2): 215–236.

FISCHER, M. (1987): Opiinae III. – Äthiopische, orientalische, australische und ozeanische Region. – Das Tierreich, Lief. **104**: I–XV + 1–734.

FISCHER, M. (1998): Neue taxonomische Untersuchungen über Madenwespen der Alten Welt mit besonderer Berücksichtigung der Gattungen *Eurytenes* Foerster, *Aulonotus* Ashmead, *Biosteres* Foerster und der Untergattung *Gastrosema* Fischer (Hymenoptera, Braconidae: Opiinae). – Linzer biologische Beiträge **30**: 21–51.

HEDQVIST, K.-J. (1965): Braconidae from the Cape Verde Islands. – Commentationes Biologicae, Societas Scientiarum Fennica **28**(2): 1–28.

NIXON, G. E. J. (1965): A reclassification of the tribe Microgasterini (Hymenoptera: Braconidae). – Bulletin of the British Museum (Natural History), Suppl. **2**: 1–284.

PAPP, J. (1971): Ergebnisse der zoologischen Forschungen von Dr. Z. Kaszab in der Mongolei, 265. Braconidae (Hymenoptera) III. – Annales historico-naturales Musei nationalis hungarici **63**: 307–363.

PAPP, J. (1978): A survey of the European species of *Apanteles* Först. (Hymenoptera, Braconidae: Microgasterinae) II. The *laevigatus*-group, 1. – Annales historico-naturales Musei nationalis hungarici **70**: 265–301.

PAPP, J. (1988): A survey of the European species of *Apanteles* Först. (Hymenoptera, Braconidae: Microgastrinae) XI. „Homologization" of the species-groups of *Apanteles* s.l. with MASON's generic taxa. Checklist of genera. Parasitoid / host list 1. – Annales historico-naturales Musei nationalis hungarici **80**: 145–175.

PAPP, J. (1996): Braconid wasps from the Cape Verde Islands (Hymenoptera, Braconidae) 1. Cheloninae, Exothecinae, Homolobinae, Microgastrinae, Rogadinae. – Boletim do Museu Municipal do Funchal (História Natural) **48**(271): 197–216.

PAPP, J. (2003): Braconid wasps from the Cape Verde Islands (Insecta: Hymenoptera: Braconidae) 2. Doryctinae, Braconinae, Hormiinae, Rogadinae, Gnamptodontinae, Homolobinae, Opiinae, Alysiinae, Cheloninae, Adeliinae and Microgastrinae. – Faunistische Abhandlungen **24**: 137–167.

RISBEC, J. (1951): II. Les Microgastrinae D'A.O.F. – Memoires de l'Institut Français d'Afrique Noire **13**: 289–473.

TOBIAS, V. I. (1976): Braconidae of Caucasus (Hymenoptera, Braconidae). – Identification Keys to the Fauna of USSR, Leningrad, **110**: 1–257.

WHITFIELD, J. B. (1985): The Nearctic species of *Deuterixys* Mason (Hymenoptera: Braconidae). – Pan-Pacific Entomologist **61**(1): 60–67.

WHITFIELD, J. B. & OLTRA MOSCARDÓ, M. T. (2004): The Neotropical species of *Deuterixys* Mason (Hymenoptera: Braconidae). – Journal of Hymenoptera Research **13**(1): 134–148.

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