

**Ten new *Microchelonus* Szépligeti species
from the Neotropical Region
(Hymenoptera, Braconidae: Cheloninae)**

J. PAPP

*Department of Zoology, Hungarian Natural History Museum,
H-1088 Budapest, Baross utca 13, Hungary*

Abstract – Descriptions of ten new *Microchelonus* species and redescription of *M. buscki* (VIERECK, 1912), all from the Neotropical Region are given. Faunistic data are presented for three *Microchelonus* species. The present number of the *Microchelonus* species known from the Neotropical Region is 25. With 126 figures.

Key words – *Microchelonus*, new species, descriptions, faunistic data.

INTRODUCTION

In my earlier paper (PAPP 1999: 177–178) fourteen *Microchelonus* SZÉPLIGETI, 1908 species were recorded in the Neotropical Region, however, in the checklist the fourteenth species, *Microchelonus cautus* (CRESSON, 1872) distributed in the USA, Mexico, Honduras and Nicaragua, was not mentioned (a lapsus calami). In the present paper further ten new *Microchelonus* species are added. *M. buscki* (VIERECK) is redescribed. Faunistic contributions for three species, *M. blackburni* (CAMERON), *M. pectiniphorae* (CUSHMAN) and *M. ruficollis* (VIERECK), are presented.

In the aforementioned paper (PAPP 1999: 178) I incorrectly stated that presence of the apical foramen in female carapace was first observed by me. It was first mentioned by MCCOMB (1968: 4–5) in his key to the Nearctic species of the genus *Microchelonus*, namely in the couplets 1–7 he separated six species with this unusual feature of the female. Furthermore, in the descriptions of the six new species (*M. aberrans*, *M. absonus*, *M. brevicornis*,

M. longipalpis, *M. niger*, *M. paradoxus*) he consistently indicated the presence of a “small circular foramen in the apex of carapace” of the female. The two species, *M. subplanus* PAPP, 1999 and *M. townsendi* (VIERECK, 1912) described/redescribed by PAPP (1999) raise the number of the *Microchelonus* species with apical foramen in female carapace to eight.

Up to now the number of the *Microchelonus* species known from the Neotropical Region is 25. These are *M. angustus* PAPP, 1999, *M. blackburni* (CAMERON, 1886), *M. bolsoni* PAPP, 1999, *M. brasiliensis* (BRUES, 1912), *M. buscki* (VIERECK, 1912), *M. cacumenus* sp. n., *M. cautus* (CRESSON, 1872), *M. cavei* sp. n., *M. constrictus* sp. n., *M. effusus* sp. n., *M. fascis* sp. n., *M. flavopax* sp. n., *M. johni* (MARSH, 1979), *M. kelliiae* (MARSH, 1979), *M. parkeri* sp. n., *M. pectiniphorae* (CUSHMAN, 1931), *M. peruensis* SHENEFELT, 1973, *M. pyriformis* sp. n., *M. refluxus* sp. n., *M. rubescus* sp. n., *M. ruficollis* (VIERECK, 1912), *M. subplanus* PAPP, 1999, *M. topali* PAPP, 1999, *M. townsendi* (VIERECK, 1912) and *M. turgoclarus* sp. n. The distributional data of the known species were adopted after YU *et al.* (2005).

Depositories – The type material of the new species as well as the identified specimens of the known species are deposited in the following institutions: BMNH = The Natural History Museum (London, United Kingdom), EMUS = Department of Entomology, Utah State University (Logan, USA), HNHM = Hungarian Natural History Museum (Budapest, Hungary), MZLU = Zoological Museum, The University (Lund, Sweden), USNM = National Museum of Natural History (Washington D.C., USA), ZIN = Zoological Institute, Russian Academy of Sciences (St. Petersburg, Russia).

DESCRIPTIONS

Besides the description of the ten new *Microchelonus* species a redescription is given of *M. buscki* (VIERECK). In the descriptions the following abbreviations are applied (after VAN ACHTERBERG 1993):

Ocelli – 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.

Wing venation – *r* = first section of the radial vein; *1-R1* = first section of the metacarpal vein; *2-SR* = first transverse cubital vein; *3-SR* = second section of the radial vein; *SRI* = third section of the radial vein.

The denomination of the very variable surface microsculptures is adopted after EADY (1968) and HARRIS (1979).

Microchelonus buscki (VIERECK, 1912)
(Figs 1–11)

Chelonus (*Chelonella*) *buscki* VIERECK, 1912: 618, female (syntype series: ?two females), type locality: "Montserrat, Trinidad", lectotype (present designation) in USNM; examined.

Microchelonus buscki (VIERECK): SHENEFELT (1973: 878) (literature up to 1913).

Designation of the female lectotype – First label, printed: "Montserrat/Trinidad WI"; second label: "June" (printed) "29" (handwritten); third label, printed: "Aug. Busck/collector"; fourth red label: "Type/No." (printed) "14710" (handwritten)/"U.S.N.M." (printed); fifth label with VIERECK's handwriting: "Chelonus/buscki/Type female Vier."; sixth label is the lectotype card; seventh label is by me with the actual name *Microchelonus buscki* VIERECK. Further syntype specimens not available. – The lectotype is in fair condition: (1) glued on a pointed card by mesosternum; (2) right antenna deficient: only scape, pedicel and flagellomeres 1–2 present; (3) right pair of wings missing, left forewing with carpal vein broken, left hind wing glued apically to left forewing; (4) tarsi, except left fore tarsus, slightly to hardly visible owing to their mounting, tarsomeres 2–5 of left middle leg missing.

Material examined – 194 females + 19 males, in BMNH, EMUS, HNHM, MZLU, USNM and ZIN. *Costa Rica*. 7 females: Cart., Turialba, 26–29 June 1986, leg. G. BOHART & W. HANSON. 17 females: Ala., 20 km S Upala, May–November 1990 (6 females) and January–September 1991 (11 females), leg. F. D. PARKER. 9 females: Guan., 14 km S Cañas, January–October 1989, leg. F. D. PARKER. 2 females: Guan., LaTaboga, Forest Reserve, 9 km SW Cañas, taken with Malaise trap, February–March 1987, leg. W. L. RUBINK. 6 females: Her., LaSelva Research Station, 11–17 June 1986 (4 females) and 24–30 August 1988 (2 females), leg. W. J. HANSON & D. J. KERRER. 3 females: S.J., Escazu, December–January 1987–1988, leg. F. D. PARKER. 1 female: Lim., 7 miles N Guacimo, March 1988, leg. F. D. PARKER. 1 female: Her., Chilamate, August 1988, leg. W. J. HANSON. 13 females: Guan., 3 km SE river Naranjo, January–August 1991–1993, leg. F. D. PARKER. 3 females: Guan., Finca Montezuma, 3 km SE Rio Naranjo, January–May 1992, leg. F. D. PARKER. – *Honduras*. 2 females: Rosta Island, 27 February 1979, leg. G. E. BOHART. 8 females: Atlantida, Lancetilla Tela, 15°43'N/87°27'W, April and August–September 1995, leg. R. CAVE. 2 females: Cortés, Parque Nacional Cusuco, 5 km N Buenos Aires, 15°29'N/88°13'W, August 1995, leg. R. CAVE. 1 female: Olancho, Catacamas, 15°50'W/85°51'W, 10 July 1995, leg. R. CAVE. 1 female: Olancho, Parque Nacional La Muralla, 15 km N La Union, 15°07'W/86°45'W, 21 March 1995, leg. R. CAVE. 113 females + 18 males: Yoro, Palo de Comba, 15°11'N/87°39'W, August–September 1995, leg. R. CAVE. – *Panama*. 2 females: Chiri province, 25 miles NW David, 13 May 1960, leg. D. F. VRIES. 1 female: Canal Zone, Pipeline Road, 22 Mach 1982, leg. W. J. HANSON. 1 female: Canal Zone, Gamboz, 21–25 August 1986, leg. C. R. NELSON. – *Peru*. 2 females: Junin, Satipo, taken with Malaise trap, 21–24 January 1984, leg. J. HUGGERT. 1 male: Madre de Dios, Puerto Maldonado, 1 January 1984, leg. L. HUGGERT.

Redescription of the female holotype – Body 4 mm long. Left antenna nearly as long as body, with 16 antennomeres (right antenna missing). Flagellomeres elongate, first and second flagellomeres 4.2×, third flagellomere 2.7× and penultima flagellomere twice as long as broad, flagellomeres faintly attenuating (Fig. 1). Head transverse in dorsal view (Fig. 2), twice as broad as long, eye 1.7× as long as temple, temple rounded. Head dorsally transversely and densely rugose (Fig. 2). Ocelli medium sized, elliptic, OOL somewhat longer than POL. Eye in lateral view 2.1× as high as wide, temple beyond eye somewhat wider than eye (Fig. 3, see arrows). Clypeus 1.6× wider than high, ventrally truncate as in Fig. 4, its lower half densely and finely punctate, dull, its upper half finely punctate, interspaces shiny. Face densely rugose.

Mesosoma in lateral view 1.45× as long as high, scabrous. Scutellum scabrous. Propodeum with a transversal carina ending laterally in a pair of small tubercles. Hind femur almost 2.8× as long as broad medially (Fig. 5). Hind basitarsus as long as tarsomeres 2–4 combined.

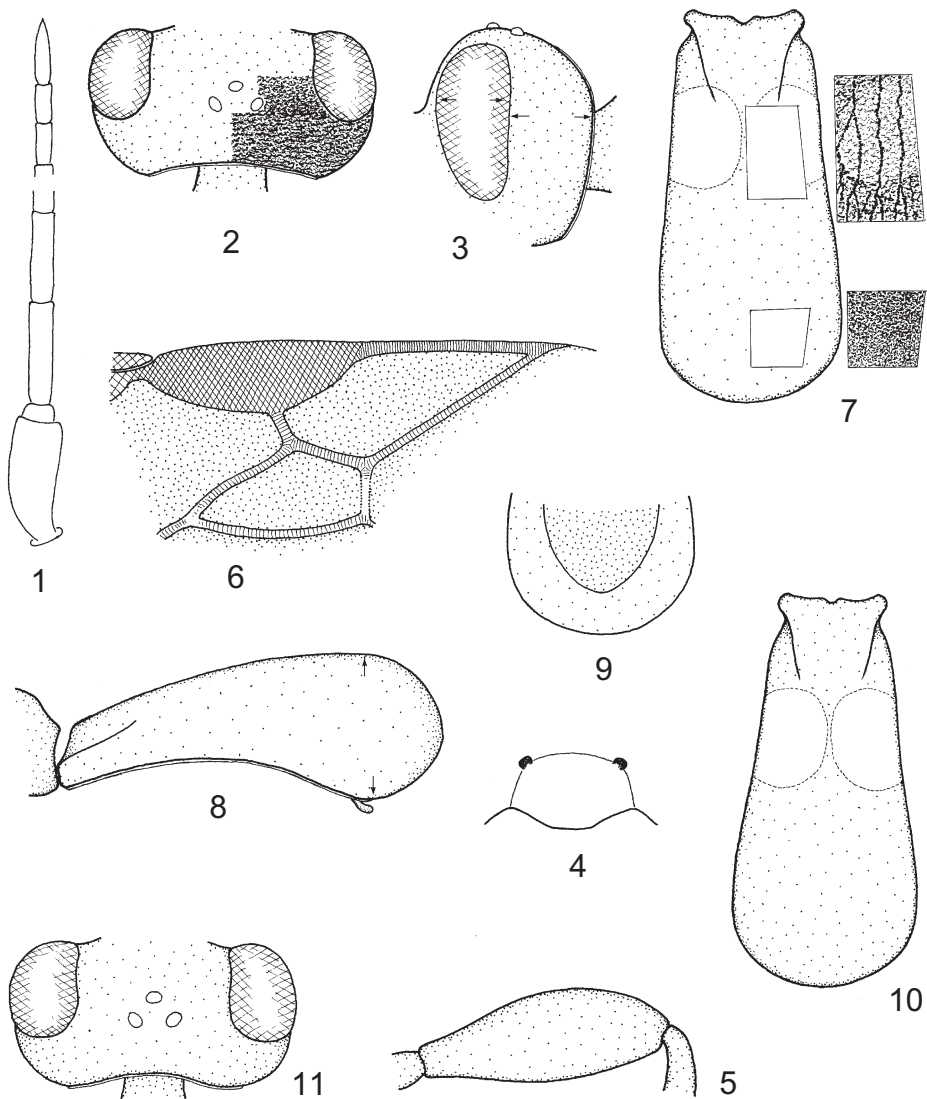
Forewing as long as three-fourths of body. Pterostigma (Fig. 6) wide, 2.6× as long as wide and issuing *r* distally from its middle, *r* less than half as long as width of pterostigma; 3–*SR* twice longer than *r*, *SRI* straight. 1–*RI* somewhat shorter than pterostigma.

Carapace in dorsal view long and broadening posteriorly, 2.1× longer than broad behind, anteriorly striate, posteriorly rugulose, pair of basal keels short (Fig. 7). Carapace in lateral view 2.6× as long as high behind, its posterior part rounded (Fig. 8, see arrows). Carapace in ventral view incurved apically (Fig. 9), ventral aperture shorter than length of carapace itself. Hypopygium and ovipositor sheath concealed.

Body black. Scape, pedicel and first flagellomere stramineous (i.e. brownish yellow), rest of flagellum darkening stramineous to blackish. Mandible light brown, palpi brown. Tegula blackish. Carapace black, anteriorly with a pair of large and round yellow maculae. Fore leg stramineous, tarsus brownish fumous. Middle leg blackish, coxa and trochanters pale yellow. Hind leg also black, trochanters yellow, basal ring of tibia white, tarsus brownish black. Wings proximally hyaline, distally brownish fumous; pterostigma dark brown, veins proximo-distally yellow, light brown to brownish.

Variable features of the female – 194 females. Similar to the female holotype. Body (3.6–)3.9–4.2(–4.5) mm long. Head in dorsal view 1.9–2(–2.1)× as broad as long. Eye in dorsal view usually 1.7–1.8×, rarely twice (Fig. 11) longer than temple. Hind femur 2.6–2.9, usually 2.7–2.8× as long as broad medially. Forewing: pterostigma 2.5–2.7, usually 2.6× as long as wide; *r* sometimes more than half (0.55–0.6×) as long as 3–*SR*. Carapace in dorsal view 2–2.1(–2.2)× as long as broad behind, usually clearly, less usually somewhat weakly striate.

Deviating features of the male – 19 males. Similar to the female. Body 4–4.2 mm long. Temple in dorsal view more or less rounded (Figs 2, 11). Hind femur 2.7–2.8(–2.9)× as long as broad medially. Pterostigma issuing *r* more or less distally from its middle. Pair of yellow maculae on carapace rarely less distinct to almost missing.



Figs 1–11. *Microchelonus buscki* (VIERECK, 1912) (1–9: female holotype, 10–11: female): 1 = scape, pedicel and flagellomeres 1–2 + 12–14, 2 = head in dorsal view with indication of its sculpture, 3 = head in lateral view, 4 = clypeus, 5 = hind femur, 6 = distal part of right fore wing, 7 = carapace in dorsal view with indication of its sculpture, 8 = carapace in lateral view, 9 = posterior part of carapace in ventral view, 10 = carapace in dorsal view (extreme variety), 11 = head in dorsal view

Distribution – Costa Rica, Honduras, Panama, Peru, Trinidad and Tobago (new to the fauna of the first four countries). It seems to be widely distributed in the Neotropical Region.

Remarks – Ten females represent an extreme variety of the species: (1) Carapace in dorsal view anteriorly a bit more narrowing (Fig. 10). (2) Scape, pedicel and first flagellomere yellow, flagellum yellow with brownish suffusion. (3) Vivid pale yellow: tegula together with the short section of the basal veins of fore wing, parastigma + end of carpal vein, basal pair of maculae on carapace, fore leg, middle and hind coxae + trochanters and basal ring of tibiae 2–3. (4) Body 3.9–4 mm long. Localities of these ten females are as follows. *Costa Rica*. 5 females: Guan., 3 km SE Rio Naranjo, May–July 1992–1993, leg. F. D. PARKER. – *Honduras*. 1 female: Atlantida, Lancetilla, Tela, 15°43'N/87°27'W, 4 April 1985, leg. R. CAVE. 3 females: Olancho, Catacamas, 15°50'N/85°51'W, July–August 1985, leg. R. CAVE. 1 female: Yoro, Palo de Comba, 15°11'N/87°39'W, 27 September 1995, leg. R. CAVE. Seven females in HNHM, three females in MZLU. Whether this extreme variety represents a new species is impossible to determine owing to the limited available material.

Microchelonus buscki (VIERECK) is near to *M. fascis* sp. n., the distinction of the two species is presented at the latter one. *M. buscki* was described on the basis of a few (?two) female specimens; its redescription is desirable for the following reasons: 1) the original description was confined mainly to colour differences; 2) the redescription is based on numerous specimens from many localities throughout the Neotropical Region; 3) and it is extended to several morphological (i.e. non-colour) features.

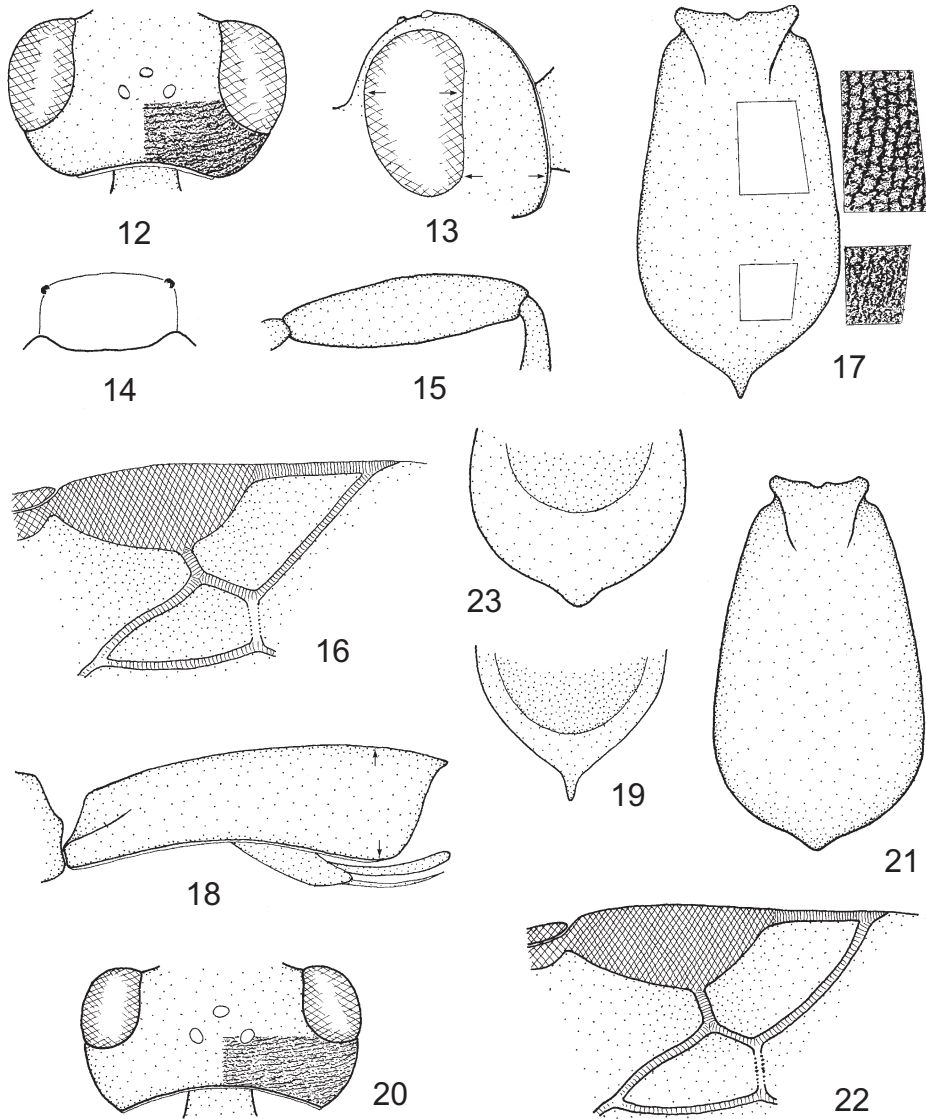
***Microchelonus cacumenus* sp. n.**

(Figs 12–19)

Material examined – Female holotype: Honduras, Atlantida, Lancetilla Tela, 15°43'N/87°27'W, taken with Malaise trap in lowland rain forest, 30 April 1995, leg. R. CAVE. Holotype is in good condition: glued on a pointed card by its right mesopleuron.

Type depository – Holotype is deposited in MZLU.

Description of the female holotype – Body 3 mm long. Antenna as long as head and mesosoma combined, with 16 antennomeres. First flagellomere 5.4×, further flagellomeres shortening and indistinctly attenuating so that penultimate flagellomere 2.2× as long as broad.



Figs 12–19. – *Microchelonus cacumenus* sp. n (female holotype): 12 = head in dorsal view with indication of its sculpture, 13 = head in lateral view, 14 = clypeus, 15 = hind femur, 16 = distal part of right forewing, 17 = carapace in dorsal view with indication of its sculpture, 18 = carapace in lateral view, 19 = posterior part of carapace in ventral view. – **Figs 20–23.** *Microchelonus acutigaster* (MCCOMB, 1968): 20 = head in dorsal view with indication of its sculpture, 21 = carapace in dorsal view, 22 = distal part of right forewing, 23 = posterior part of carapace in ventral view

Head in dorsal view transverse (Fig. 12), almost 1.8× as broad as long, eye 3× longer than temple, temple receded. Head above transversely rugulo-striate (Fig. 12). Ocelli small, elliptic, POL somewhat shorter than OOL. Eye in lateral view nearly 1.7× as high as wide, temple beyond eye widening ventrally, i.e. temple somewhat less broad than eye (Fig. 13, see arrows). Clypeus twice as wide than high, ventrally truncate (Fig. 14), densely transversely rugulose. Face densely rugulose.

Mesosoma in lateral view 1.6× as long as high, scabrous. Scutellum rugulose, uneven, dull. Propodeum with four small and blunt tubercles. Hind femur 3.6× as long as broad medially (Fig. 15). Hind basitarsus as long as tarsomeres 2–4 combined.

Forewing as long as head, mesosoma and half of carapace combined. Pterostigma (Fig. 16) 2.2× as long as wide and issuing *r* distally from its middle, *r* 0.3× as long as width of pterostigma. Pterostigma 1.6× longer than *1-R1*. Second submarginal cell usual in form: 3-SR 1.6× as long as *r* and 2-SR 1.8× longer than 3-SR; *SRI* straight and 3.5× as long as 3-SR (Fig. 16).

Carapace in dorsal view 1.9× as long as broad behind, its anterior striation less distinct posteriorly, apically pointed (Fig. 17). Carapace in lateral view 3.3× as long as high behind, apically obliquely truncate, pointed (Fig. 18). Carapace ventro-apically slightly incurved (Fig. 19). Hypopygium somewhat less pointed, ovipositor sheath as long as hind tarsomeres 1–2 combined (Fig. 18).

Body black. Scape and pedicel ochre, flagellum blackish. Mandible light brown, palpi pale yellow. Tegula brown. Legs dark brown to brown, tibiae yellow, apically brownish to brown. Fore tarsus yellow, middle and hind basitarsi pale yellow, rest of tarsi brownish fumous yellow. Wings hyaline, pterostigma dark brown, venation proximo-distally yellow to brownish.

Male and host unknown.

Distribution – Honduras.

Etymology – The specific epithet *cacumenus* refers to the spiniform tip on the apical end of carapace (Fig. 17).

Remarks – *Microchelonus cacumenus* sp. n. is most closely related to *M. acutigaster* (MCCOMB) considering their apically pointed carapace (Figs 17, 18), the most distinctive features between them are as follows:

1(2) Head in dorsal view 1.8× as broad as long, temple rounded, eye 3× longer than temple, vertex more roughly sculptured (Fig. 12). Carapace in dorsal view slightly less bellied, dorso-apically pointed (Figs 17–18). Forewing: pterostigma 1.6× longer than *1-R1*, *SRI* straight (Fig. 16). Carapace ventro-apically less incurved (Fig. 19). Striate sculpture of carapace less strong (Fig. 17). Scape ochre. Female: 3 mm. – Honduras

***M. cacumenus* sp. n.**

2(1) Head in dorsal view twice as broad as long, temple rounded, eye just longer than temple, vertex somewhat less roughly sculptured (Fig. 20). Carapace in dorsal view slightly more bellied, dorso-apically less pointed (Fig. 21). Forewing: pterostigma twice longer than $1-R_1$, SRI faintly bent (Fig. 22). Carapace ventro-apically more incurved (Fig. 23). Striate sculpture of carapace strong. Scape blackish with faint rusty tint. Female: 3.1–3.5 mm. – USA (California, Nebraska), Canada (British Columbia)
M. acutigaster (MCCOMB, 1968)

The new species is also related to *M. parkeri* sp. n., their distinction is discussed at the latter species.

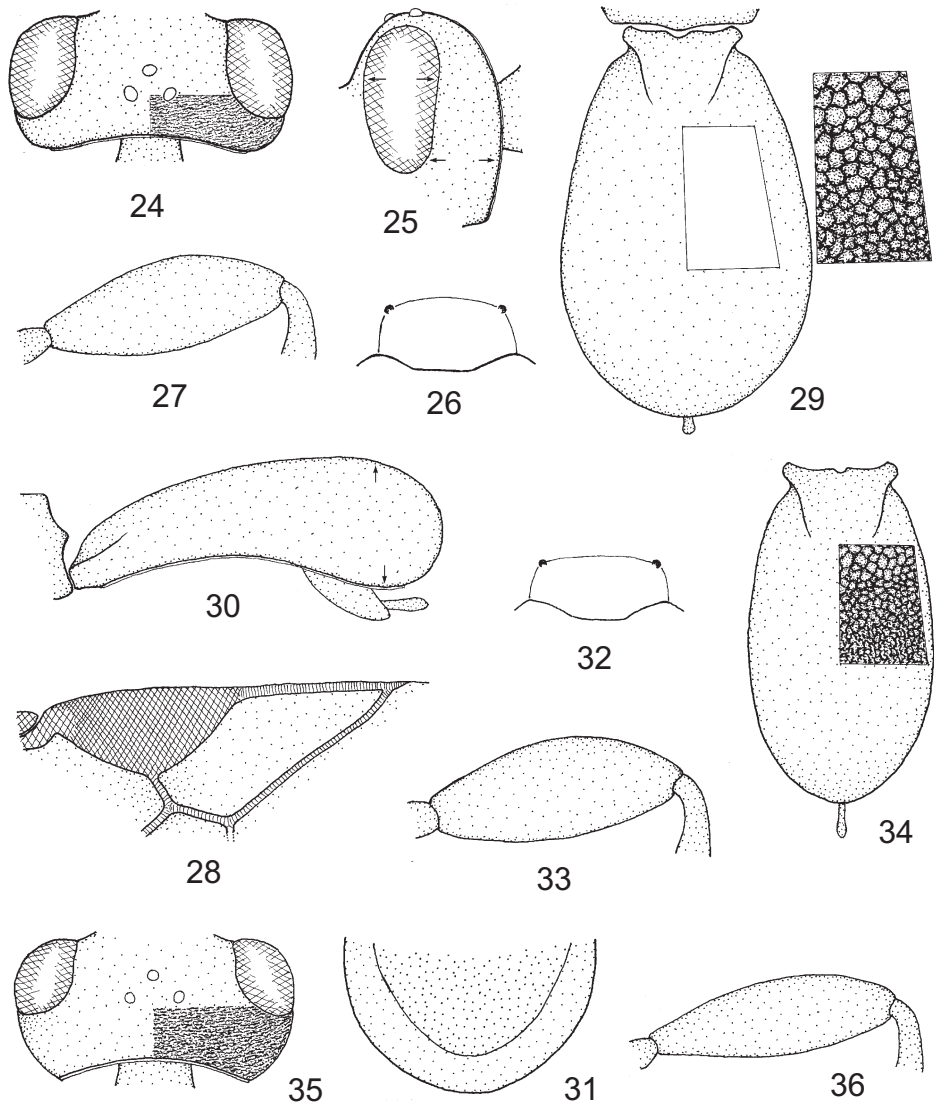
***Microchelonus cavei* sp. n.**

(Figs 24–33)

Material examined – 8 females. Female holotype + six female paratypes: Honduras, Olancho, Catacemas, 15°50'N / 85°51'W, taken with Malaise trap in lowland gallery forest, female holotype + one female paratype (in Lund): 30 July 1995, one female paratype (in Budapest): 10 July 1995, one female paratype (in Budapest): 17 August 1995, two female paratypes (in Lund): 1 February 1996, one female paratype (in Lund): taken with Malaise trap in mid-elevation secondary forest, 27 September 1995; all leg. R. CAVE. One female paratype (in Budapest): Costa Rica, Ala., 20 km S Upala, 11–21 June 1991, leg. P. D. PARKER. – Holotype is in good condition: glued on a pointed card by its right mesopleuron. Seven paratype are also in good condition: (1) six paratypes also glued like the holotype, one paratype glued directly to the insect pin by its mesopleuron; (2) four paratypes with deficient one flagellum.

Type depository – Female holotype and four female paratypes are deposited in MZLU. Three female paratypes are in HNHM, Hym. Typ. Nos 11661–11663.

Description of the female holotype – Body 2.6 mm long. Antenna short, a bit longer than head and mesosoma combined, with 16 antennomeres. First flagellomere 2.5× and penultimate flagellomere 1.7× as long as broad, flagellum attenuating distally. Head transverse in dorsal view (Fig. 24), 2.1× as broad as long, eye 2.5× longer than temple, temple constricted. Ocelli small, almost round, OOL 1.5× longer than POL. Eye in lateral view 1.9× as high as wide, temple beyond eye just less wide than eye (Fig. 25, see arrows). Clypeus twice as wide as high, its lower margin short and truncate (Fig. 26), transversely rugulose. Lower margin of eyes virtually on level of upper margin of clypeus. Head above with transverse rugulosity (Fig. 24), face densely rugulose.



Figs 24–33. *Microchelonus cavei* sp. n. (24–31: female holotype, 32–33: female paratype): 24 = head in dorsal view with indication of its sculpture, 25 = head in lateral view, 26 = clypeus, 27 = hind femur, 28 = distal part of right forewing, 29 = carapace in dorsal view with indication of its sculpture, 30 = carapace in lateral view, 31 = posterior part of carapace in ventral view, 32 = clypeus, 33 = hind femur. – **Figs 34–36.** *Microchelonus paululus* (MCCOMB, 1968): 34 = carapace in dorsal view with indication of its sculpture, 35 = head in dorsal view with indication of its sculpture, 36 = hind femur

Mesosoma in lateral view stout, 1.2× as long as high, scrobiculate to rugose, densely rugulose. Scutellum with rugose elements, with polished small fields between them. Propodeal four tubercles blunt, distinct. Hind femur 2.6× as long as broad medially (Fig. 27). Hind tibia distally thick, 3.3× longer than broad apically. Hind basitarsus as long as tarso-meres 2 + half tarsomere 3 combined.

Forewing shorter than body, i.e. as long as meso- and metasoma combined. Pterostigma (Fig. 28) 2.2× as long as wide and issuing *r* just distally from its middle, *r* 0.3× as long as width of pterostigma; 3-SR 1.7× longer than *r*, SR1 almost straight. I-R1 0.8× as long as pterostigma.

Carapace in dorsal view bellied, 1.5× as long as broad posteriorly, areolate-rugose, its hind third rugulose, pair of basal keels short (Fig. 29). Carapace in lateral view 3× longer than high behind, apically rounded (Fig. 30). Carapace apico-ventrally slightly incurved (Fig. 31). Hypopygium apically blunt, ovipositor sheath as long as hind basitarsus (Fig. 30).

Scape, pedicel and first flagellomere yellow, flagellomeres 2–4 darkening brown, rest of flagellum dark brown. Body black. Mandible brownish yellow, palpi straw yellow. Tegula brown, parategula yellow. Ground colour of legs yellow with much dark colour pattern: hind coxa brownish to brown, femora 1–2 with brownish pattern, hind femur medially and hind tibia apically brown; tarsi pale yellow, basitarsi brownish, hind basitarsus brown. Wings hyaline, pterostigma dark brown, basally with a pale yellow to yellow small macula, venation proximo-distally yellow to brownish.

Description of the seven female paratypes – Similar to holotype. Body 2.2 (1 female) and 2.6–2.8 mm long. Clypeus 2–2.3× as wide as high (Figs 26, 32). Hind femur 2.4–2.6× as long as broad medially. Pterostigma 2.2–2.3× as long as wide and issuing *r* from its middle (4 females) or just distally from its middle (3 females).

Male and host unknown.

Distribution – Costa Rica, Honduras.

Etymology – The new species is dedicated to its collector, Mr. R. CAVE.

Remarks – *Microchelonus cavei* sp. n. is most similar to *M. paululus* (MCCOMB) having examined a female paratype and original description (MCCOMB 1968: 11 in key couplets 76 and 92), the two species can be separated as follows:

- 1(2) Carapace in dorsal view bellied, 1.4–1.5× as long as broad posteriorly, areolate-rugose (Fig. 29). Head in dorsal view clearly transverse, 2.1–2.2× as broad as long, temple constricted (Fig. 24). Hind femur 2.4–2.6× as long as broad (Fig. 27). Hind tibia straw yellow, apico-laterally brownish to brown. Female: 2.2–2.8 mm. – Costa Rica, Honduras

***M. cavei* sp. n.**

- 2(1) Carapace in dorsal view less bellied, 1.7–1.8× as long as broad medially, rugulose (Fig. 34). Head in dorsal view transverse, twice as broad as long, temple rounded (Fig. 35). Hind femur 3.1× as long as broad (Fig. 36). Hind tibia yellow, apically brown to dark brown. Female: 2.2–2.3 mm. – USA (Florida) *M. paululus* (MCCOMB, 1968)

***Microchelonus effusus* sp. n.**
(Figs 37–46)

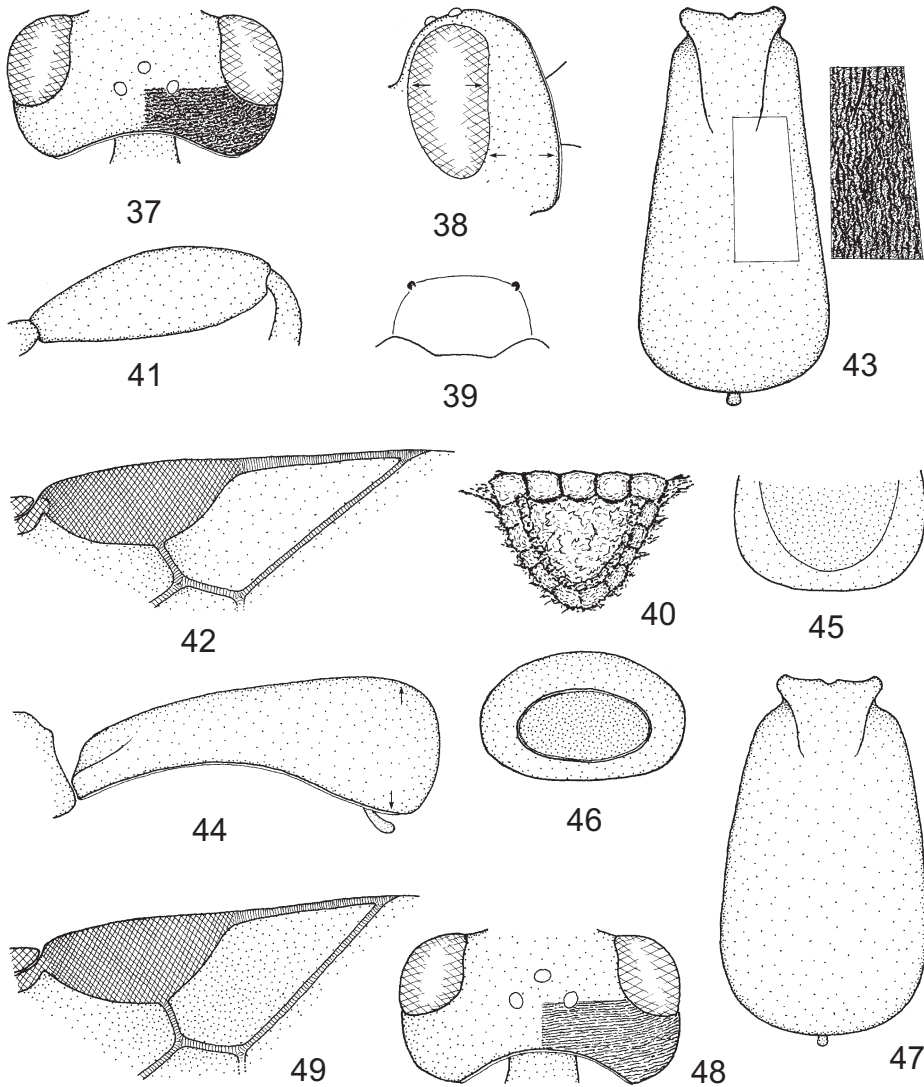
Material examined – 4 females + 2 males: Female holotype: Costa Rica, Ala., 20 km S, 20 November 1990, leg. F. D. PARKER. Two female paratypes: Costa Rica, San José, Escazu, 1 female (in USNM): 24–30 January 1988 and 1 female (in Budapest): 3–6 July 1988, leg. F. D. PARKER. One female paratype (in HNHM): Costa Rica, Guan., 3 km SE River Naranjo, April 1992, leg. F. D. PARKER. One male paratype (in HNHM): Costa Rica, San José, 2–5 August 1987, leg. F. D. PARKER. One male paratype (in HNHM): Costa Rica, Her., La Selva Research Station, 24–30 August 1988, leg. D. J. KELLER. – Holotype is in good condition: (1) glued directly to the insect pin by its right meso- and metapleuron; (2) left flagellum deficient, with only its first three flagellomeres; tarsus of right middle leg missing; (3) right fore tarsus less visible owing to the mounting. Paratypes are also in good condition: (1) glued as the holotype; (2) flagellum more or less deficient (2 females), legs partly deficient (1 female + 1 male).

Type depository – Holotype and one female paratype are deposited in USNM. Two female and two male paratypes are in HNHM, Hym. Typ. Nos 11664–11667.

Description of the female holotype – Body 4 mm long. Antenna nearly as long as body, with 16 antennomeres. First flagellomere 5×, further flagellomeres gradually shortening and indistinctly attenuating so that penultimate flagellomere twice as long as broad. Head in dorsal view transverse (Fig. 37), twice as broad as long, eye twice longer than temple, temple rounded. Ocelli almost round, POL equal to OOL. Eye in lateral view almost twice as high as wide, temple beyond eye widening ventrally and nearly as wide as eye (Fig. 38, see arrows). Clypeus 1.8× as wide as high, its lower margin weakly concave as in Fig. 39, with almost confluent punctuation. Head above transversely and densely rugulo-striate (Fig. 37). Face densely rugose.

Mesosoma in lateral view 1.3× as long as high, scrobiculate. Scutellum rugulose, its margin crenulate (Fig. 40). Propodeal four tubercles faintly distinct. Hind femur 2.8× as long as broad medially (Fig. 41). Hind basitarsus as long as tarsomeres 2–4 + half of 5th tarsomere combined.

Forewing shorter than body. Pterostigma (Fig. 42) 2.3× as long as wide and issuing *r* distally from its middle, *r* 0.6× as long as width of pterostigma. Pterostigma somewhat longer than *1-R1* or *1-R1* 0.87× as long as pterostigma. *3-SR* longer than *r*, *SR1* straight, nearly 1.3× longer than *1-R1* and 4× longer than *3-SR* (Fig. 42).



Figs 37–46. *Microchelonus effusus* sp. n. (37–45: female holotype, 46: male paratype): 37 = head in dorsal view with indication of its sculpture, 38 = head in lateral view, 39 = clypeus, 40 = scutellum, 41 = hind femur, 42 = distal part of right forewing, 43 = carapace in dorsal view with indication of its sculpture, 44 = carapace in lateral view, 45 = posterior part of carapace in ventral view, 46 = apical end of male carapace in frontal view. – **Figs 47–49.** *Microchelonus lavernae* (ASHMEAD, 1889): 47 = carapace in dorsal view, 48 = head in dorsal view with indication of its sculpture, 49 = distal part of right forewing

Carapace in dorsal view (Fig. 43) twice longer than broad apically, gradually broadening posteriorly, pair of basal keels long. Proximal half of carapace striate with anastomoses, posteriorly densely rugulose. Carapace in lateral view 3× as long as high behind, apically rather truncate (Fig. 44). Carapace apico-ventrally slightly incurved (Fig. 45). Hypopygium and ovipositor sheath concealed.

Body black. Scape and pedicel yellow, flagellum darkening brownish yellow to brownish. Palpi yellow, mandible yellowish brown. Tegula and legs lemon yellow, hind tibia apically brownish. Wings hyaline, pterostigma dark brown, parastigma yellow, venation proximo-distally yellow to light brown.

Description of the three female paratypes – Similar to holotype. Body 3.5 (1 female) and 4 mm (2 females) long. Hind femur 2.5–2.8× as long as broad medially. Pterostigma 2.8× as long as wide (1 female). Carapace in dorsal view 1.85× as long as broad apically (2 females). Hind tibia apically brownish (1 female) to brown (2 females).

Description of the two male paratypes – Similar to the female. Body 3.8–4 mm long. Head in dorsal view slightly less transverse, 1.9× as broad as long, temple somewhat less reeded. Apical foramen of carapace oval and fairly large, twice wider than high (Fig. 46).

Host unknown.

Distribution – Costa Rica.

Etymology – The specific epithet *effusus* refers to the broadening carapace (Fig. 43).

Remarks – *Microchelonus effusus* sp. n. is most similar to *M. cephalanthi* (MCCOMB) based on its original description, and the new species would run to this species in MCCOMB's (1968: 4–14) key; the females of the two species differ only in a few features because the original description in question does not allow to recognize more differences albeit certainly there are. Further good distinctive marks between them are the following:

1(2) Penultimate flagellomere twice longer than broad. Temple in dorsal view rounded, width of eye 1.4× greater than length of temple (Fig. 37). Forewing: *1-R1* almost, i.e. 0.87× as long as pterostigma (Fig. 42). Scutellum rugulose, its lateral margin crenulate (Fig. 40). Carapace black, legs fully yellow. Female: 3.5–4 mm. – Costa Rica

***M. effusus* sp. n.**

- 2(1) Penultimate flagellomere cubic, i.e. as long as broad. In dorsal view “temples ... receding very gradually from eye margins, at mid-eye point slightly less than maximum eye width;...” (MCCOMB 1968: 39). Forewing: *1-R1* as long as length of pterostigma (Fig. 88 in MCCOMB 1968: 141). “...scutellar disk rugulose laterally, medially weakly sculptured and shining, ...laterally immargined;...” (MCCOMB 1968: 39). Carapace ferruginous, legs not fully yellow, female: 2.8 mm. – USA (Texas)
M. cephalanthi (MCCOMB, 1968)

The new species is similar to *M. lavernae* (ASHMEAD) in the form of carapace, which is posteriorly broadening (Figs 43, 47). The distinctive marks between the females of the two species are the following:

- 1(2) Carapace in dorsal view more bellied, 1.7–1.8× as long as broad posteriorly (Fig. 47). Penultimate flagellomere cubic to 1.2× longer than broad. Head in dorsal view 1.8–1.9× as broad as long, eye 1.2–1.3× longer than temple, temple more rounded, vertex finely rugulo-striate (Fig. 48). Forewing: pterostigma 2.1–2.2× as long as wide, *1-R1* shorter than, i.e. 0.75× as long as pterostigma (Fig. 49). Tegula brownish ochre, legs brownish to blackish with less yellow(ish) pattern. Female: 3.2–3.5 mm. – USA (Alabama, Illinois, Missouri, New Jersey, Ohio), Canada (Ontario)
M. lavernae (ASHMEAD, 1889)
- 2(1) Carapace in dorsal view less bellied, (1.8)–2× as long as broad posteriorly (Fig. 43). Penultimate flagellomere twice as long as broad. Head in dorsal view twice as broad as long, eye twice longer than temple, temple rounded, vertex rugulo-striate (Fig. 37). Forewing: pterostigma 2.3–2.5(–2.8)× as long as wide, *1-R1* almost, i.e. 0.87× as long as pterostigma (Fig. 42). Tegula and legs lemon yellow. Female: 3.5–4 mm. – Costa Rica
***M. effusus* sp. n.**

***Microchelonus fascis* sp. n.**

(Figs 50–59)

Material examined – 7 females. Female holotype + five female paratypes: Honduras, Corbés, Parque Nacional Casuco, 5 km N Buenos Aires, 15°29'N/88°13'W, taken with Malaise trap in oak/pine cloud forest, 3 females (holotype + one paratype in MZLU, one

paratype in HNHM): 30 June 1995, one paratype (in MZLU): 15 July 1995, one paratype (in Budapest): 30 September 1995, leg. R. CAVE. One female paratype (in MZLU): Honduras, Atlantida, Lancetilla, Tela, 15°43'N / 87°27'W, taken with Malaise trap in lowland rain forest, 15 June 1995, leg. R. CAVE. One female paratype (in MZLU): Honduras, Yoro, Palo de Comba, 15°11'N/87°39'W, taken with Malaise trap in mid-elevation secondary forest, 12 September 1995, leg. R. CAVE. – Holotype is in good condition: (1) glued on a pointed card by its right mesopleuron; (2) left flagellum deficient: ultimate three flagellomeres missing. Six female paratypes are also in good condition: (1) glued on a pointed card either by mesosternum (2 females) or by mesopleuron (4 females); (2) one female with deficient flagellum, i.e. ultimate three flagellomeres missing.

Type depository – Holotype and four paratypes are deposited in MZLU. Two female paratypes are in HNHM, Hym. Typ. Nos 11774–11775.

Description of the female holotype – Body 3.3 mm long. Antenna long, somewhat longer than body. Flagellomeres unusually long: first flagellomere 7.5×, second flagellomere 6.2× and penultimate flagellomere 2.7× as long as broad (Fig. 50). Head in dorsal view transverse (Fig. 51), almost 1.9× as broad as long, eye 1.4× longer than temple, temple rounded. Ocelli elliptic, OOL nearly twice longer than POL. Clypeus high, one third wider than high (Fig. 52), rugulose and moderately shiny. Eye in lateral view clearly 2.3× as high as wide, temple ventrally widening and just wider than eye (Fig. 53, see arrows). Head above finely rugulo-striate (Fig. 51). Face densely rugulose.

Mesosoma in lateral view 1.5× as long as high, rugose. Scutellum also rugose. Propodeum rugose, its transverse carina less distinct. Hind femur thin, 4.5× as long as broad somewhat distally (Fig. 54). Hind basitarsus long, 3× longer than second tarsomere (Fig. 55).

Forewing almost as long as body. Pterostigma (Fig. 56) 2.8× as long as wide and issuing *r* distally from its middle, *r* shorter than width of pterostigma; 3–*SR* as long as *r*, *SRI* slightly bent. Vein 1–*RI* shorter than length of pterostigma.

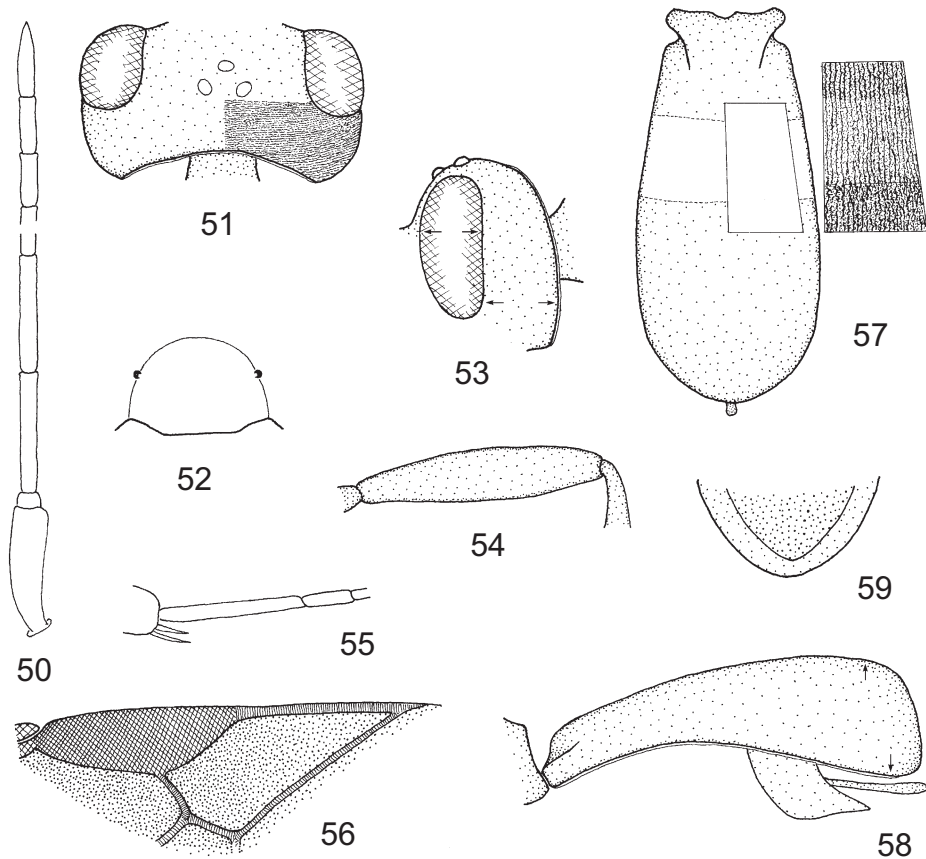
Carapace in dorsal view broadening posteriorly, 2.1× as long as broad behind, basal pair of keels short, anteriorly finely striate with a few anastomoses (Fig. 57), posteriorly densely rugulose. Carapace in lateral view less high, 3.2× as long as high behind, its posterior part rather truncate (Fig. 58, see arrows). Carapace apico-ventrally just incurved (Fig. 59), i.e. ventral aperture just shorter than carapace itself. Hypopygium pointed, ovipositor sheath short (Fig. 58).

Body black. Scape pale yellow, pedicel brown, flagellum blackish. Mandible rusty, palpi brownish yellow. Tegula blackish, parategula light brown. Carapace with a vivid light yellow band near its middle. Sternites anteriorly yellow, posteriorly brown. Fore leg brown to brownish, fore femur apically and fore tibia basally yellow. Middle and hind legs blackish, middle coxa and trochanter yellow, hind trochanter brown, hind femur basally and ring of hind tibia yellow. Tarsi 2–3 brownish black. Forewing brownish fumous, medially with a hyaline transverse streak, apically less fumous; pterostigma blackish brown, veins brown, proximal third to fourth of three veins yellow. Hind wing hyaline.

Description of the six female paratypes – Similar to holotype. Body 3.2–3.5 mm long. Eye in lateral view 1.9–2× as high as wide. Hind femur 4.2–4.5× as long as broad distally. Male and host unknown.

Distribution – Honduras.

Etymology – The specific epithet *fascis* refers to the transverse yellow band near the middle of the carapace.



Figs 50–59. *Microchelonus fascis* sp. n. (female holotype): 50 = scape, pedicel and flagellomeres 1–2 + 12–14, 51 = head in dorsal view with indication of its sculpture, 52 = clypeus, 53 = head in lateral view, 54 = hind femur, 55 = hind tarsomeres 1–2, 56 = distal part of right forewing, 57 = carapace in dorsal view with indication of its sculpture, 58 = carapace in lateral view, 59 = posterior part of carapace in ventral view

Remarks – *Microchelonus fascis* sp. n. is most closely related to *M. buscki* (VIERECK) sharing the following features: clearly rounded temple in dorsal view, elongate form of carapace and basal band or spot of carapace yellow. The females of the two species can be separated as follows:

- 1(2) Flagellum filiform, flagellomeres thin, first flagellomere $7.5\times$ and penultimate flagellomere $2.7\times$ as long as broad (Fig. 50). Carapace in lateral view less high, $3.2\times$ as long as high behind, apically rather truncate (Fig. 58, see arrows). Hind femur thin, $4.2\text{--}4.5\times$ as long as broad distally (Fig. 54). Sculpture of carapace less rough (Fig. 57). Transverse yellow band of carapace near middle (Fig. 57). Female: 3.2–3.5 mm. – Honduras
M. fascis sp. n.
- 2(1) Flagellum less filiform, flagellomeres thick, first flagellomere 4–4.5× and penultimate flagellomere 2–2.2× as long as broad (Fig. 1). Carapace in lateral view high, $2.6\times$ as long as high behind, apically rounded (Fig. 8, see arrows). Hind femur thick, $2.8\times$ as long as broad medially (Fig. 5). Sculpture of carapace rough (Fig. 7). Transverse yellow band carapace before middle. Female: 3.9–4 mm. – Central America, Peru
M. buscki (VIERECK, 1912)

Microchelonus flavopax sp. n.

(Figs 60–67)

Material examined – 3 females + 1 male. Female holotype and one female + one male paratypes: Ecuador, Napo, 5 km NE of El Chaco, 11 November 1983, leg. L. HUGGERT. One female paratype: Costa Rica, Her., Chilamate, 24–30 July 1993, leg. STEVEN KELLER. – Holotype is in good condition: (1) micropinned on polyporus stage; (2) hind pair of wings covered by fore pair of wing hence less visible. Paratypes are also in good condition: (1) 1 female + 1 male (from Ecuador) micropinned on polyporus stage and 1 female (from Costa Rica) glued directly to the insect pin by its right mesopleuron; (3) one female paratype (from Costa Rica) with deficient flagelli: left one with 12 and right one with 4 flagellomeres; one male paratype (from Ecuador) with deficient flagellum, i.e. with 19 flagellomeres.

Type depository – Female holotype and one male paratype are deposited in MZLU. Two female paratypes are in HNHM, Hym. Typ. Nos 11776–11777.

Description of the female holotype – Body 4.3 mm long. Antenna almost as long as body, with 16 antennomeres. First two flagellomeres $5\times$, fifth flagellomere $3\times$ and penultimate

flagellomere 1.8× as long as broad; flagellum filiform, attenuating distally and flagellomeres 1–5 long (cf. Fig. 50). Head in dorsal view (Fig. 60) less transverse, 1.7× as broad as long, eye and temple equal in length, temple moderately rounded. Ocelli small and elliptic, OOL 2.3× longer than POL. Eye in lateral view twice as high as wide, temple ventrally broadening and 1.4× wider than eye (Fig. 61, see arrows). Imaginary tangent to lowest point of eye just above upper margin of clypeus. Clypeus 1.7× as wide as high, its lower margin faintly concave, pair of tentorial pits deep (Fig. 62). Head finely punctate, interspaces shiny.

Mesosoma in lateral view 1.7× as long as high, scrobiculate. Notaulix distinct. Scutellum subpunctate, interspaces polished. Two pairs of tubercles on propodeal transverse carina small. Hind femur 3.6× as long as broad medially (Fig. 63). Hind basitarsus as long as tarsomeres 2–4 + half of fifth tarsomere combined.

Forewing shorter than body. Pterostigma (Fig. 64) 2.7× as long as wide and issuing *r* somewhat distally from its middle; *r* less than half as long as width of pterostigma, 3–*SR* one-fourth longer than *r*, 2–*SR* long: 2.2× longer than 3–*SR*, *SRI* faintly bent; 1–*RI* half as long as pterostigma (Fig. 64).

Carapace in dorsal view elongate (Fig. 65), almost 2.2× as long as broad behind, slightly broadening posteriorly, parallel-longitudinally striate, its hind fifth densely imbricate. Carapace in lateral view (Fig. 66) 3.8× as long as high behind, its posterior part rather truncate. Carapace apico-ventrally slightly incurved (Fig. 67), i.e. its ventral cavity almost as long as carapace itself. Hypopygium small, pointed, ovipositor sheath as long as hind tarsomeres 2–3 combined.

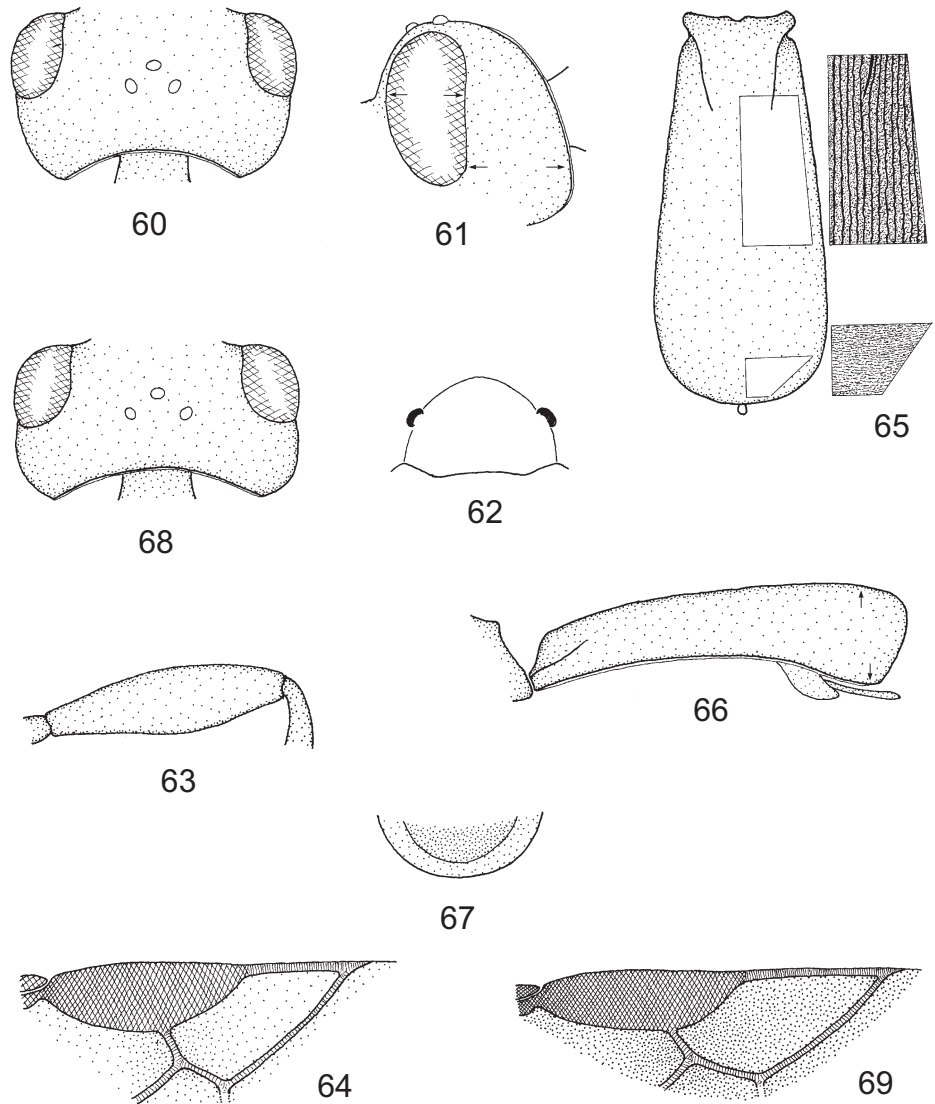
Ground colour of body black. Antenna black, scape with weak rusty tint. Pronotum and tegula stramineous. Fore leg yellow; middle leg: coxa + trochanter pale yellow, femur + tibia + tarsus dark brown, femur basally stramineous; hind leg: coxa + trochanter yellow with brown small macula, base of femur yellow, ring of tibia whitish, rest of leg blackish. Anterior two-thirds of carapace yellow. Wings subhyaline, pterostigma blackish, veins proximo-distally yellow, brownish to brown.

Description of the two female paratypes – Similar to holotype. Body 4.3–4.5 mm long. Head in dorsal view 1.7–1.8× as broad as long. Hind femur 3.8× as long as broad medially (1 female). Pterostigma 2.8× (1 female) and 3× (1 female) as long as wide. 1–*RI* 0.6× as long as pterostigma (1 female). Carapace in dorsal view almost 2.3× as long as broad behind, in ventral view carapace apically not incurved (1 female).

Description of the male paratype – Similar to the female types. Body 4.3 mm long. Antenna somewhat longer than body, with 24 antennomeres. Penultimate flagellomere 1.7× as long as broad. Head in dorsal view 1.75× as broad as long. Pterostigma 3.3× as long as wide. Hind femur 3.6× as long as broad medially. Carapace in dorsal view 2.6× as long as broad behind, apically without foramen.

Distribution – Costa Rica, Ecuador.

Etymology – The specific epithet *flavopax* (playful shortening of *flavocarapax*) refers to the carapace being yellow in its anterior two-thirds.



Figs 60–67. *Microchelonus flavopax* sp. n. (female holotype): 60 = head in dorsal view, 61 = head in lateral view, 62 = clypeus, 63 = hind femur, 64 = distal part of right forewing, 65 = carapace in dorsal view with indication of its sculpture, 66 = carapace in lateral view, 67 = posterior part of carapace in ventral view. – **Figs 68–69.** *Microchelonus carinatus* (PROVANCHER, 1881) (female): 68 = head in dorsal view, 69 = distal part of right forewing

Remarks – *Microchelonus flavopax* sp. n. is most closely related to *M. carinatus* (PROVANCHER) considering their elongate body form and antenna with long flagellomeres; the two species can be separated by the following features:

1(2) Head in dorsal view somewhat more transverse, $1.9(-2)\times$ as broad as long, eye somewhat longer than temple, temple just bulged (Fig. 68). Pterostigma long, $3.3-3.6\times$ as long as wide, issuing *r* clearly distally from its middle; *1-R1* long, $0.75\times$ as long as pterostigma (Fig. 69). Mesosoma punctate to rugose. Carapace anteriorly densely striate, posteriorly rugulose. Male carapace apically with foramen. Body entirely black, legs testaceous with few dark spots. Female and male: 4.7–6 mm. – Canada (Ontario), USA (many states)

M. carinatus (PROVANCHER, 1881)

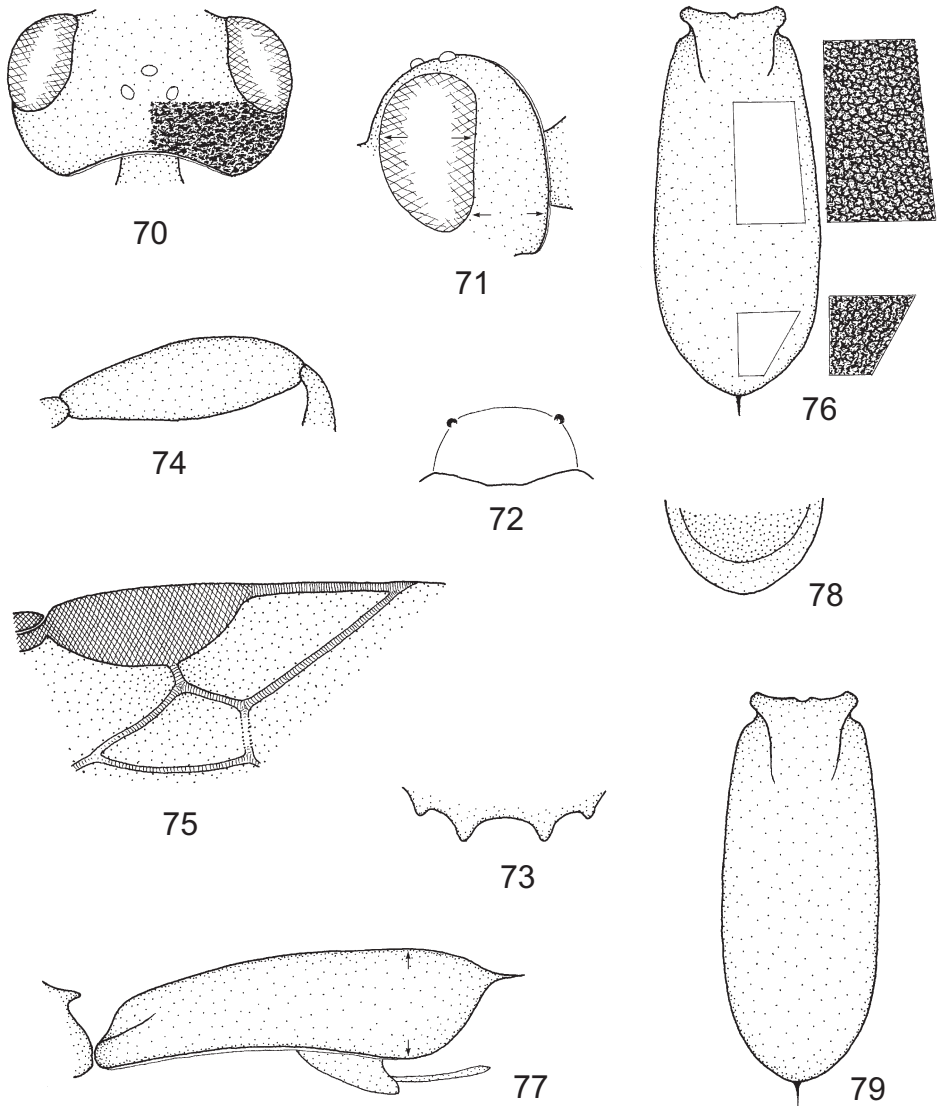
2(1) Head in dorsal view somewhat less transverse, $1.7-1.8\times$ as broad as long, temple moderately rounded and as long as eye (Fig. 60). Pterostigma less long, $2.7-3.3\times$ as long as wide, issuing *r* slightly distally from its middle; *1-R1* $0.5-0.6\times$ as long as pterostigma (Fig. 64). Mesosoma scrobiculate. Carapace densely striate, apically imbricate (Fig. 65). Male carapace apically without foramen. Body black, anterior two-thirds of carapace yellow, legs pale yellow to yellow with much dark pattern. Female and male: 4.3–4.5 mm. – Costa Rica, Ecuador

***M. flavopax* sp. n.**

***Microchelonus parkeri* sp. n.**

(Figs 70–79)

Material examined – 6 females + 1 male. Female holotype and three female + one male paratypes: Costa Rica, San José, Escazu, holotype: 8–18 March 1988, one female paratype: 1–7 February 1988, one female paratype: 29 March–3 April 1988, one female paratype: 2–13 May 1988, one male paratype: 7–14 February 1988, leg. F. D. PARKER. One female paratype: Costa Rica, Guan., 3 km SE Rio Naranjo, 19–22 February 1993, leg. F. D. PARKER. One female paratype: Costa Rica, Guan., S. Cañas, 7–10 March 1989, leg. F. D. PARKER. – Holotype and six paratypes are in good condition: (1) glued directly to the insect pins by their right (or left, 1 female) mesopleuron; (2) right flagellum deficient: 1 female; (3) fifth tarsomere of left hind leg missing: 1 female.



Figs 70–79. *Microchelonus parkeri* sp. n. (70–78: female holotype, 79: female paratype): 70 = head in dorsal view with indication of its sculpture, 71 = head in lateral view, 72 = clypeus, 73 = transverse keel of propodeum with four tubercles in dorsal view, 74 = hind femur, 75 = distal part of right forewing, 76 = carapace in dorsal view with indication of its sculpture, 77 = carapace in lateral view, 78 = posterior part of carapace in ventral view, 79 = carapace in dorsal view

Type depository – Holotype and one female paratype are deposited in USNM. Two female paratypes are in EMUS. Two female and one male paratypes are in HNHM, Hym. Typ. Nos 11778–11780.

Description of the female holotype – Body 3.4 mm long. Antenna almost as long as head and mesosoma combined, with 16 antennomeres. First and second flagellomeres 2.2×, further flagellomeres gradually shortening so that penultimate flagellomere cubic. Head in dorsal view transverse (Fig. 70), 1.7× as broad as long, eye 1.6× longer than temple, temple rounded. Ocelli small, elliptic, POL slightly shorter than OOL. Eye in lateral view 1.6× as high as wide, temple beyond eye ventrally widening and one-fourth shorter than width of eye (Fig. 71, see arrows). Clypeus ventrally with faintly convex margin as in Fig. 72, sub-punctate, interspaces moderately shiny. Head rugose.

Mesosoma in lateral view 1.6× as long as high. Mesoscutum rugose, scutellum rugulose, mesopleuron and horizontal part of propodeum rugose-lacunose, propodeal transverse keel with two pairs of spinules (Fig. 73). Hind femur almost 3.1× as long as broad medially (Fig. 74). Hind basitarsus nearly as long as tarsomeres 2–4 combined.

Forewing short, 0.6× as long as body. Pterostigma wide (Fig. 75), 2.5× as long as wide and issuing *r* distally from its middle, *r* short, 2–SR 1.8× as long as 3–SR, SR1 straight. Vein 1–R1 nearly 0.7× as long as length of parastigma.

Carapace in dorsal view long (Fig. 76), 2.3× as long as broad posteriorly, apically with a spinule, pair of basal keels short, carapace areolate-rugose, apically switching longitudinal rugosity. Carapace in lateral view (Fig. 77) 3.4× as long as high behind, apically truncate in "oblique" outline. Carapace apico-ventrally somewhat incurved (Fig. 78). Hypopygium small and apically blunt, ovipositor sheath short (Fig. 77).

Body black. Scape and pedicel stramineous, flagellum darkening stramineous to blackish. Mandible dark rusty, palpi ochre. Tegula and parategula brown. Legs 1–2 stramineous, middle coxa brownish. Hind leg: coxa blackish, femur dark brown, trochanters and tibia stramineous, tarsus yellow, tibia distally faintly brownish. Wings hyaline, pterostigma brown, veins yellow to brownish.

Description of the five female paratypes – Similar to holotype. Body 3.4–3.8 mm long. Carapace in dorsal view somewhat less bellied (Fig. 79), (2.3–)2.4× as long as broad medially. Hind femur 3–3.1× as long as broad medially. Hind tibia faintly brownish to brownish.

Description of the male paratype – Similar to the female types. Body 3.5 mm long. Antenna longer than head + mesosoma combined, with 21 antennomeres. Carapace apically without foramen.

Distribution – Costa Rica.

Etymology – The new species is dedicated to its collector, Mr F. D. PARKER.

Remarks – *Microchelonus parkeri* sp. n. is near to *M. cacumenus* sp. n. considering their apically pointed carapace and fairly wide pterostigma. The two species can be separated by the following features:

1(2) Head rugose above (Fig. 70). Carapace in dorsal view less bellied, 2.3–2.4× as long as broad, apically more pointed, areolate-rugose (Fig. 76). Forewing: *I–R1* 0.75× as long as pterostigma (Fig. 75). Clypeus as in Fig. 72. Hind femur thick, 3–3.1× as long as broad (Fig. 74). Fore femur stramineous. Female: 3.4–3.8 mm. – Costa Rica

M. parkeri sp. n.

2(1) Head transversely rugulo-striate above (Fig. 12). Carapace in dorsal view bellied, 1.9× as long as broad behind, apically less pointed, striate (Fig. 17). Forewing: *I–R1* 0.6× as long as pterostigma (Fig. 16). Clypeus as in Fig. 14. Hind femur less thick, 3.6× as long as broad (Fig. 15). Fore femur brown. Female: 3 mm. – Honduras

M. cacumenus sp. n.

Microchelonus pyriformis sp. n.

(Figs 80–87)

Material examined – 4 females. Female holotype and one female paratype: Honduras, Yoro, Palo de Comba, taken with Malaise trap in mid-elevation secondary forest, 15°11'N/87°39'W, 29 September 1995, leg. R. CAVE. Two female paratypes: Costa Rica, San José, Escazu, 14–25 May 1988 (1 female) and 22–27 May 1988 (1 female), leg. F. D. PARKER. – Holotype is in good condition: glued on a pointed card by its right metapleuron. Three female paratypes are also in good condition: (1) glued on a pointed card by the mesosternum (1 female from Honduras) and glued directly to the insect pin by right mesopleuron (2 females from Costa Rica); (2) last three flagellomeres of right antenna missing (1 female from Honduras).

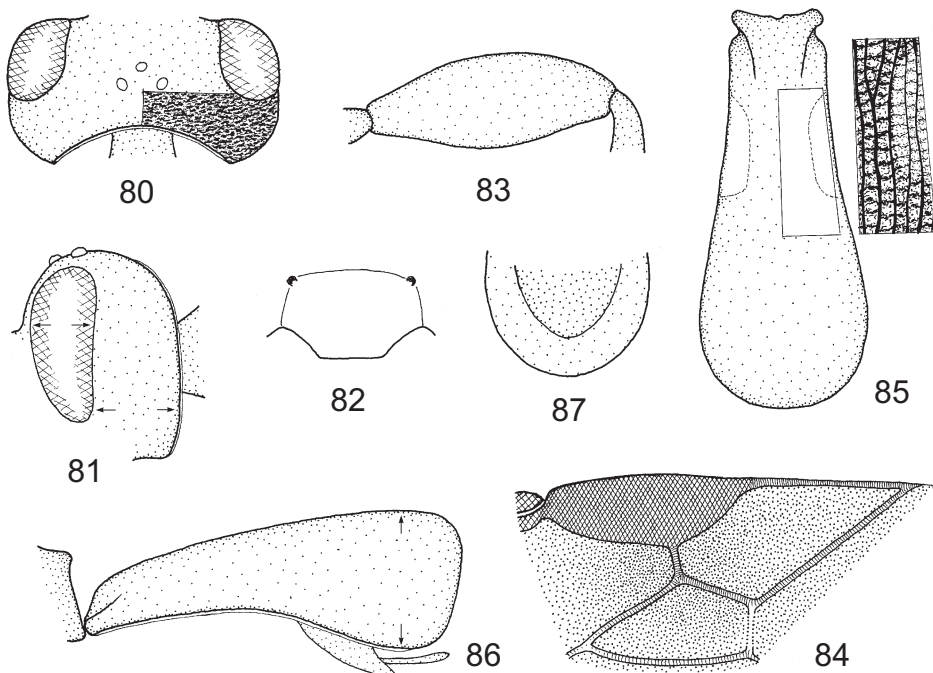
Type depository – Female holotype and one female paratype (from Honduras) are deposited in MZLU. Two female paratypes (from Costa Rica) are in HHNM, Hym. Typ. Nos 11781–11782.

Description of the female holotype – Body 5.5 mm long. Antenna about as long as head and mesosoma combined, with 16 antennomeres. First two flagellomeres 4× longer than broad, further flagellomeres shortening and slightly attenuating so that penultimate flagellomere twice as long as broad. Head in dorsal view transverse (Fig. 80), twice as broad as long, 1.3× longer than temple, temple moderately rounded. Ocelli small, subelliptic, OOL 1.6× longer than POL. Eye in lateral view 2.5× as high as wide, temple beyond eye broadening ventrally, i.e. almost 1.4× wider than eye (Fig. 81, see arrows). Clypeus clearly 1.5× as wide as high, its ventral margin truncate (Fig. 82). Head above transversely rugose (Fig. 80). Face rugulose.

Mesosoma in lateral view 1.4× as long as high, scabrous. Scutellum with three longitudinal crenulae. Propodeum with a less distinct transverse carina ending laterally in a pair of small tubercles. Hind femur fairly thick, 2.6× as long as broad medially (Fig. 83). Hind basitarsus as long as tarsomeres 2–5 combined.

Forewing about three-fourths as long as body. Pterostigma (Fig. 84) 2.8× as long as wide and issuing *r* distally from its middle, *r* 0.4× as long as width of pterostigma. Second submarginal cell usual in form: 3–*SR* more than twice as long as *r* and 2–*SR* almost 1.6× longer than 3–*SR*; *SRI* straight and 3.3× as long as 3–*SR*. Vein 1–*RI* somewhat shorter than pterostigma (Fig. 84).

Carapace in dorsal view pyriform (Fig. 85), long and broadening in a characteristic form posteriorly, 2.3× as long as broad apically, basal striation strong and rather straight. Carapace in lateral view (Fig. 86) 2.7× as long as high behind, apically truncate. Carapace apico-ventrally somewhat incurved (Fig. 87). Hypopygium pointed and ovipositor sheath shorter than hind basitarsus (Fig. 86).



Figs 80–87. *Microchelonus pyriformis* sp. n. (female holotype): 80 = head in dorsal view with indication of its sculpture, 81 = head in lateral view, 82 = clypeus, 83 = hind femur, 84 = distal part of right forewing, 85 = carapace in dorsal view with indication of its sculpture, 86 = carapace in lateral view, 87 = posterior part of carapace in ventral view

Body black. Scape and flagellum brownish black. Mandible dark rusty, palpi brown. Tegula black. Pair of basal maculae pale yellow. Fore leg brownish black, middle and hind legs black. Wings brownish fumous, below whitish parapterostigma a hyaline "fenestra", pterostigma black, veins blackish brown.

Variable features of the three female paratypes – Similar to holotype. Body 5–5.5 mm long. Head in dorsal view 1.9–2× as broad as long, eye somewhat to just longer than temple. Hind femur 2.8× as long as broad medially (1 female). Pterostigma 2.7–2.9× as long as wide. Carapace in lateral view 2.7–2.8× as long as high behind. Scape ochre (1 female: Honduras) to dark rusty (2 females: Costa Rica).

Male and host unknown.

Distribution – Costa Rica, Honduras.

Etymology – The specific epithet *pyriformis* refers to the pear-shaped carapace.

Remarks – *Microchelonus pyriformis* sp. n. is nearest to *M. buscki* (VIERECK) considering the sculpture of their carapace and venation of wings (Figs 6–7). The two species are distinguished by the following features:

- 1(2) Carapace in dorsal view pyriform, its basal striation somewhat stronger and more straight (Fig. 85). Eye in dorsal view slightly longer than temple, i.e. temple less rounded (Fig. 80). Carapace in lateral view truncate apically (Fig. 86). Coxae 1–2 yellowish brown to blackish. Female: 5–5.5 mm. – Costa Rica, Honduras ***M. pyriformis* sp. n.**
- 2(1) Carapace in dorsal view broadening posteriorly, its basal striation somewhat less strong and less straight (Fig. 7). Eye in dorsal view almost twice to twice longer than temple, i.e. temple more rounded (Figs 2, 11). Carapace in lateral view rounded apically (Fig. 8). Coxae 1–2 pale yellow. Female: 3.9–4.5 mm. – Central America, Peru

M. buscki (VIERECK, 1912)

***Microchelonus refluus* sp. n.**

(Figs 88–97)

Material examined – 4 females + 1 male. Female holotype: Honduras, Yoro, Palo de Comba, 15°11'N/87°39'W, taken with Malaise trap in mid-elevation secondary forest, 27 September 1995, leg. R. CAVE. Three female and one male paratypes: Same locality and collector, 1 female (in MZLU): 31 August 1995, 1 female (in MZLU): 12 September 1995 and 1 male (in HNHM): 27 September 1995 and 1 male (in HNHM): 29 September 1995.

– Holotype and four paratypes (3 females + 1 male) are in good condition: glued on a pointed card by their right mesopleuron.

Type depository – Holotype and two paratypes are deposited in MZLU. One female and one male paratypes are in HNHM, Hym. Typ. Nos 11783–11784.

Description of the female holotype – Body 4.8 mm long. Antenna short, reaching two-thirds of mesosoma, with 16 antennomeres. First flagellomere 3×, sixth flagellomere 1.6×, seventh to twelfth flagellomeres subequal in length and width, thirteenth flagellomere 1.5× as long as broad, fourteenth flagellum pointed, flagellum attenuating. Head in dorsal view transverse (Fig. 88), twice as broad as long, eye 1.6× longer than temple, temple rounded. Ocelli small, elliptic, OOL one-third longer than POL. Eye in lateral view 2.3× as long as wide, temple beyond eye broadening ventrally and 1.2 wider than eye (Fig. 89, see arrows). Imaginary tangent to lowest point of eye transecting upper part of clypeus. Lower margin of clypeus truncate, pair of tentorial pits small, clypeus 1.4× as wide below as high medially (Fig. 90). Head rugose, its upper part somewhat less strongly rugose and here shiny. Clypeus very fine punctation, interspaces shiny.

Mesosoma in lateral view 1.4× as long as high, scrobiculate. Notaulix distinct by crenulae. Scutellum roughly rugose. Transverse carina of propodeum weak, its four tubercles small. Hind femur broadening medially, 2.9× as long as broad (Fig. 91). Hind basitarsus as long as tarsomeres 2–4 + half of 5th tarsomere.

Forewing 0.7× as long as body. Pterostigma (Fig. 92) 2.8× as long as wide, issuing *r* slightly distally from its middle; *r* half as long as width of pterostigma, 3–*SR* 2.2× longer than *r*, 2–*SR* one-fifth longer than 3–*SR*, *SR1* straight; 1–*R1* almost as long as pterostigma (Fig. 92).

Carapace in dorsal view elongate (Fig. 93), 2.4× as long as broad, apically faintly pointed; fore half of carapace striate, hind half densely rugose to rugulose, apically without foramen. Carapace in lateral view (Fig. 94) 3.2× as long as high behind, apically "obliquely" truncate. Carapace apico-ventrally deeply incurved (Fig. 95), i.e. ventral cavity of carapace clearly shorter than carapace itself.

Ground colour of body black. Scape, pedicel and first flagellomere stramineous, flagellum darkening stramineous to dark brown. Palpi yellow, mandible rusty. Tegula dark brown, parategula brown. Basal pair of maculae of carapace straw yellow. Fore leg stramineous; middle leg: coxa + trochanter pale yellow, rest of leg brown; hind leg: coxa and femur brownish black, trochanter yellow, tibia dark brown, its ring whitish yellow, tarsus light brown. Wings proximally subhyaline, distally brownish fumous. Pterostigma blackish, veins brown, parastigma and 1–*M* (basal vein) yellow.

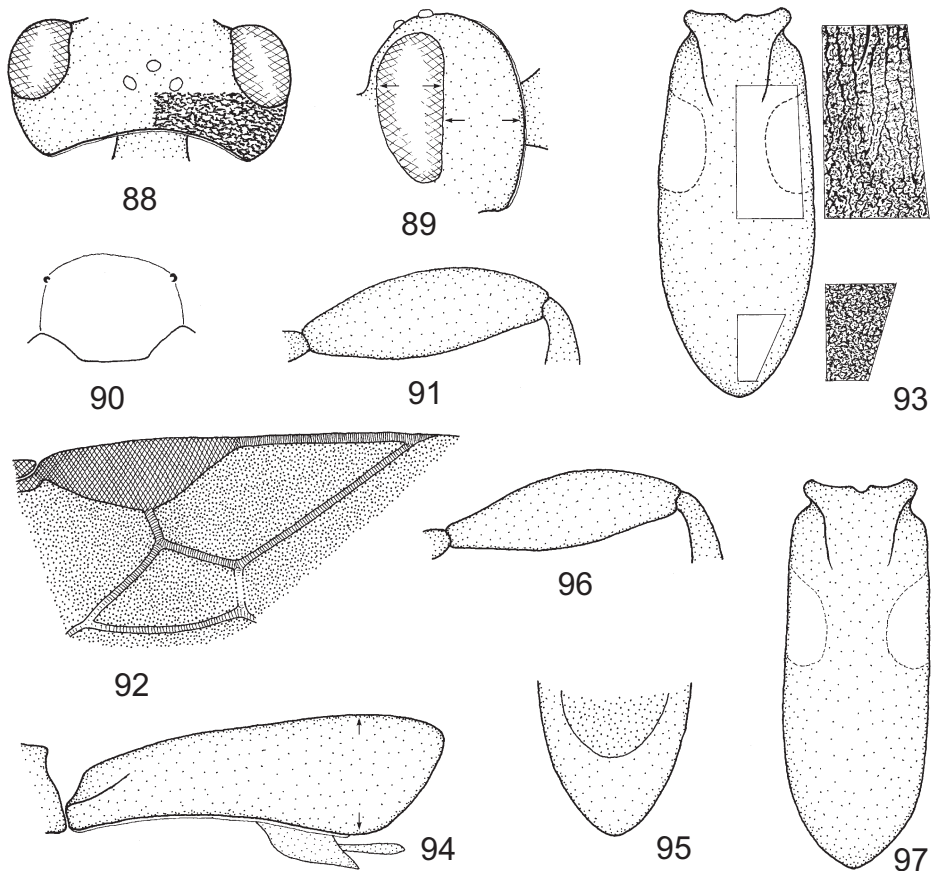
Description of the three female paratypes – Similar to holotype. Body 4.8 (2 females) and 4.9 (1 female) mm long. Hind femur 2.6× as long as broad (1 female). Pterostigma 3× as long as wide and 1–*R1* one-fourth shorter than pterostigma (1 female). Carapace in dorsal view 2.4–2.6× as long as broad.

Description of the male paratype – Similar to the female types. Body 4 mm long. Head in dorsal view slightly less transverse, $1.9\times$ as broad as long. Hind femur $3.1\times$ as long as broad (Fig. 96). Pterostigma $3\times$ as long as wide and issuing *r* slightly more distally. Carapace in dorsal view $2.6\times$ as long as broad, almost parallel-sided (Fig. 97), its basal pair of maculae small; carapace apically without foramen.

Host unknown.

Distribution – Honduras.

Etymology – The specific epithet *refluus* refers to the apico-ventrally deeply incurved carapace.



Figs 88–97. *Microchelonus refluus* sp. n. (88–95: female holotype, 96–97: male paratype): 88 = head in dorsal view with indication of its sculpture, 89 = head in lateral view, 90 = clypeus, 91 = hind femur, 92 = distal part of right forewing, 93 = carapace in dorsal view with indication of its sculpture, 94 = carapace in lateral view, 95 = posterior part of carapace in ventral view, 96 = hind femur, 97 = carapace in dorsal view

Remarks – *Microchelonus refluus* sp. n. is near *M. hadrogaster* (MCCOMB) as regards their elongate carapace. The two species can be separated by the following features:

- 1(2) Carapace in dorsal view elongate, apically slightly more pointed, anteriorly striate, posteriorly densely rugulose (Fig. 93). Hind femur thick, 2.6–2.9× (female) and 3.1× (male) as long as broad (Figs 91, 96). Forewing: pterostigma issuing *r* just distally from its middle, *1–RI* almost as long as pterostigma (Fig. 92). Head in dorsal view clearly twice as broad as long, temple slightly more rounded, vertex rugose (Fig. 88). Carapace with a pair of yellow maculae. Female: 4.8–4.9 mm, male: 4 mm. – Honduras ***M. refluus* sp. n.**
- 2(1) Carapace in dorsal view less elongate, apically slightly less pointed, striate with anastomoses (Fig. 108). Hind femur 3.8(–4)× (female) and 4.2× (male) as long as broad (Fig. 109). Forewing: pterostigma issuing *r* clearly distally from its middle, *1–RI* 0.6–0.75× as long as pterostigma (Fig. 110). Head in dorsal view just twice as broad as long, temple slightly less rounded, vertex transversely rugulo-striate (Fig. 111). Carapace entirely black. Female and male: 3.5–4.8 mm. – USA (North Dakota, Utah, Wyoming) *M. hadrogaster* (MCCOMB, 1968)

***Microchelonus rubescus* sp. n.**

(Figs 98–107)

Material examined – Female holotype: Costa Rica, Her., LaSelva Research Institute, 11–17 June 1986, leg. G. BOHART and W. HANSON. – Holotype is in good condition: glued directly to the insect pin by its right pronotum.

Type depository – Holotype is deposited in HNHM, Hym. Typ. No. 11668.

Description of the female holotype – Body 3.8 mm long. Antenna as long as head and mesosoma combined. First flagellomere 3×, second flagellomere 2.7× and penultimate four flagellomeres subequal in length and width, 1.5 to 1.1× as long as broad (Fig. 98). Head in dorsal view transverse (Fig. 99), 2.2× as broad as long, eye 2.3× longer than temple, temple receded. Ocelli small, almost round, OOL almost twice longer than POL. Clypeus 2.1× wider than high (Fig. 100), finely punctate-uneven. Eye in lateral view 1.7× as high as wide, temple ventrally broadening and almost as wide as eye (Fig. 101, see arrows). Head above finely striate (Fig. 99), face medially densely rugulose, laterally finely striate.

Mesosoma in lateral view $1.4\times$ as long as high, rugose. Scutellum rugose. Anterior (or horizontal) part of propodeum areolate, with rather weak transversal carina (Fig. 102). Hind femur $2.8\times$ as long as broad distally (Fig. 103). Hind basitarsus as long as tarsomeres 2–4 combined.

Forewing about three-fourths as long as body. Pterostigma (Fig. 104) fairly wide, $2.75\times$ as long as wide and issuing r distally from its middle; r short, $0.4\times$ as long as width of pterostigma, $3-SR$ twice longer than r , SRI straight and $4\times$ longer than $3-SR$. Vein 1–R1 somewhat shorter than pterostigma (Fig. 104).

Carapace in dorsal view (Fig. 105) broadening posteriorly, $1.8\times$ as long as broad behind, anteriorly striate without anastomoses, posteriorly weakly rugulose, pair of basal keels less distinct. Carapace in lateral view (Fig. 106) flattened, $3.3\times$ as long as high behind, its posterior part rounded. Carapace apico-ventrally slightly incurved (Fig. 107), i.e. ventral aperture of carapace slightly shorter than carapace itself. Hypopygium short, ovipositor sheath as long as tarsomeres 2–3 combined (Fig. 106).

Proximal half of antenna ochre, distal half darkening brown. Head black, mesosoma testaceous, carapace dark brownish black to black. Palpi ochre, mandible rusty. Tegula and legs yellow, hind tibia apically darkening brownish. Wings subhyaline, pterostigma brown, venation proximo-distally yellow to light brownish.

Male and host unknown.

Distribution – Costa Rica.

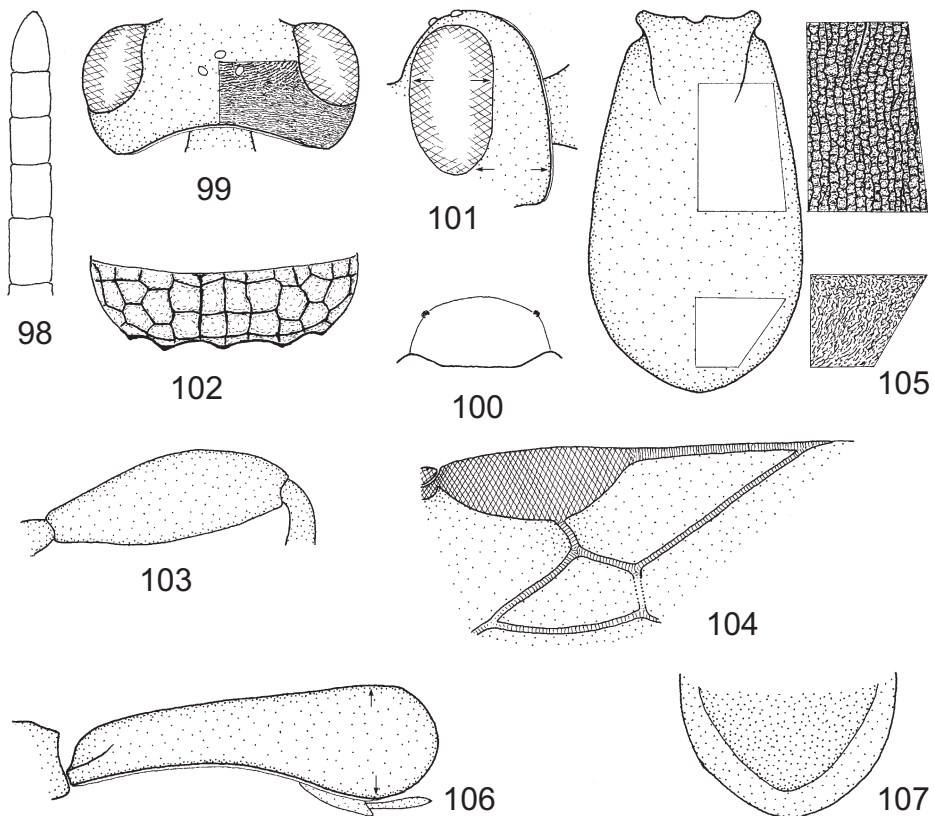
Etymology – The specific epithet *rubescus* refers to the testaceous colour of its mesosoma.

Remarks – *Microchelonus rubescus* sp. n. is most closely related to *M. ruficollis* (VIERECK) considering their common features: mesosoma testaceous or reddish and carapace apically rounded. Their distinguishing features are confined to the following:

1(2) Temple in dorsal view rounded, vertex with somewhat rougher rugosity (Fig. 112). Penultimate four flagellomeres as long as broad (Fig. 113). Carapace in dorsal view tapering apically (Fig. 114), more incurved apico-ventrally (Fig. 115). Striation of carapace restricted to its anterior half, with anastomoses, posteriorly densely rugulose (Fig. 114). Forewing: $1-R1$ $0.75\times$ as long as pterostigma, r slightly shorter than $3-SR$ (Fig. 116). Hind femur $3.2-3.3\times$ as long as broad (Fig. 117). Mesosoma reddish, propodeum black, legs yellow, tinged with brownish to brown pattern. Female: 3.5–4.5 mm. – Brazil, Costa Rica

M. ruficollis (VIERECK, 1912)

2(1) Temple in dorsal view receded, vertex with fine transversal rugulosity (Fig. 99). Penultimate four flagellomeres 1.5 to 1.1× longer than broad (Fig. 98). Carapace less incurved apico-ventrally (Fig. 107). Striation of carapace extending to its anterior two-thirds, apically weakly rugulose (Fig. 105). Forewing: *1-R1* almost as long as pterostigma, *r* half as long as 3-*SR* (Fig. 104). Hind femur 2.8× as long as broad (Fig. 103). Mesosoma entirely testaceous, legs entirely yellow. Female: 3.8 mm. – Costa Rica
***M. rubescus* sp. n.**



Figs 98–107. *Microchelonus rubescus* sp. n. (female holotype): 98 = penultimate four flagellomeres, 99 = head in dorsal view with indication of its sculpture, 100 = clypeus, 101 = head in lateral view, 102 = upper or horizontal part of propodeum, 103 = hind femur, 104 = distal part of right forewing, 105 = carapace in dorsal view with indication of its sculpture, 106 = carapace in lateral view, 107 = posterior part of carapace in ventral view

Microchelonus turgoclarus sp. n.

(Figs 118–125)

Material examined – Female holotype: Ecuador, Pichin, Rio Pisque, 5 km N Guallabamba, 25 February 1983, leg. L. HUGGERT. – Holotype is in good condition: (1) micropinned through the mesosoma, (2) right flagellum deficient, i.e. with three flagellomeres.

Type depository – Holotype is deposited in MZLU.

Description of the female holotype – Body 2.8 mm long. Antenna short, as long as head + mesosoma combined, with 16 antennomeres. First flagellomere 3× and penultimate flagellomere 1.45× as long as broad. Head in dorsal view transverse (Fig. 118), twice as broad as long, eye 1.3× as long as temple, temple rounded. Ocelli almost round, small, OOL 1.5× longer than POL. Eye in lateral view 2.1× as high as wide, temple beyond eye broadening ventrally and 1.4× wider than eye (Fig. 119, see arrows). Malar space twice as long as basal width of mandible. Lower margin of eye virtually slightly above upper part of clypeus. Lower margin of clypeus truncate, clypeus almost 1.6× wider than high (Fig. 120). Face and clypeus subpunctate, interspaces polished (Fig. 120). Head above with fine transverse substriation, shiny (Fig. 118).

Mesosoma in lateral view 1.3× as long as high, rugose to strongly rugose. Scutellum with disperse punctures, interspaces polished. Propodeal four tubercles faint. Hind femur 3.1× as long as broad medially (Fig. 121). Hind basitarsus just longer than tarsomeres 2–3 combined.

Forewing about as long as body. Pterostigma (Fig. 122) wide, 2.2× as long as wide and issuing r distally from its middle, r less than half as long as width of pterostigma. Pterostigma longer than $1-R1$, or $1-R1$ 0.6× as long as pterostigma. $3-SR$ just longer than r , SRI straight, 4× longer than $3-SR$.

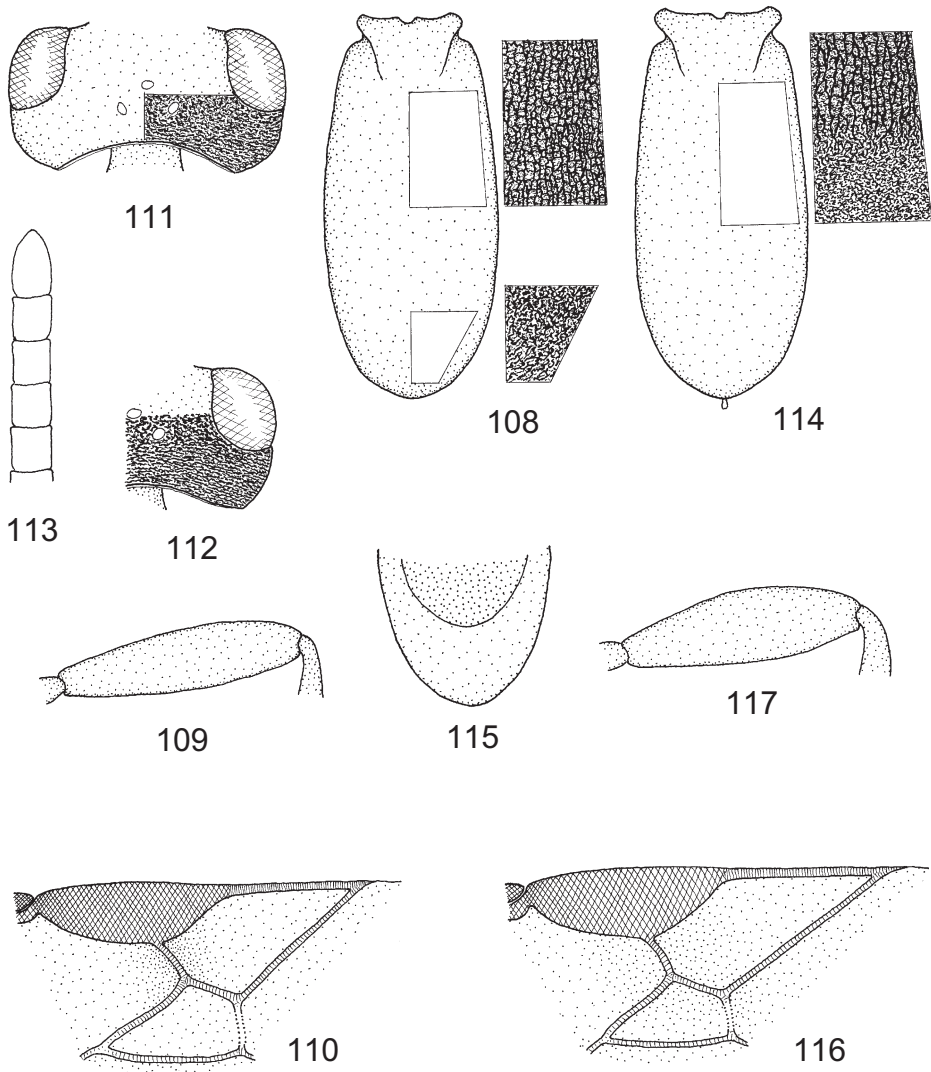
Carapace bellied, in dorsal view 1.6× longer than broad posteriorly. Pair of basal keels distinct and fusing into striation of carapace, apically (on declivous part) rugulose and here moderately shiny (Fig. 123). Carapace in lateral view 2.6× as long as high behind, apically rather truncate (Fig. 124). Carapace apico-ventrally not incurved (Fig. 125), i.e. ventral aperture of carapace as long as carapace itself. Hypopygium pointed, ovipositor sheath as long as hind basitarsus (Fig. 124).

Body black. Antenna black, scape with faint rusty tint. Tegula black, parategula brown. Legs blackish to dark brown, fore femur apically and fore tibia yellowish, middle tibia brown with yellowish brownish pattern, hind tibia brown with rusty suffusion. Wings hyaline, pterostigma dark brown, venation proximo-distally yellow, brownish to brown.

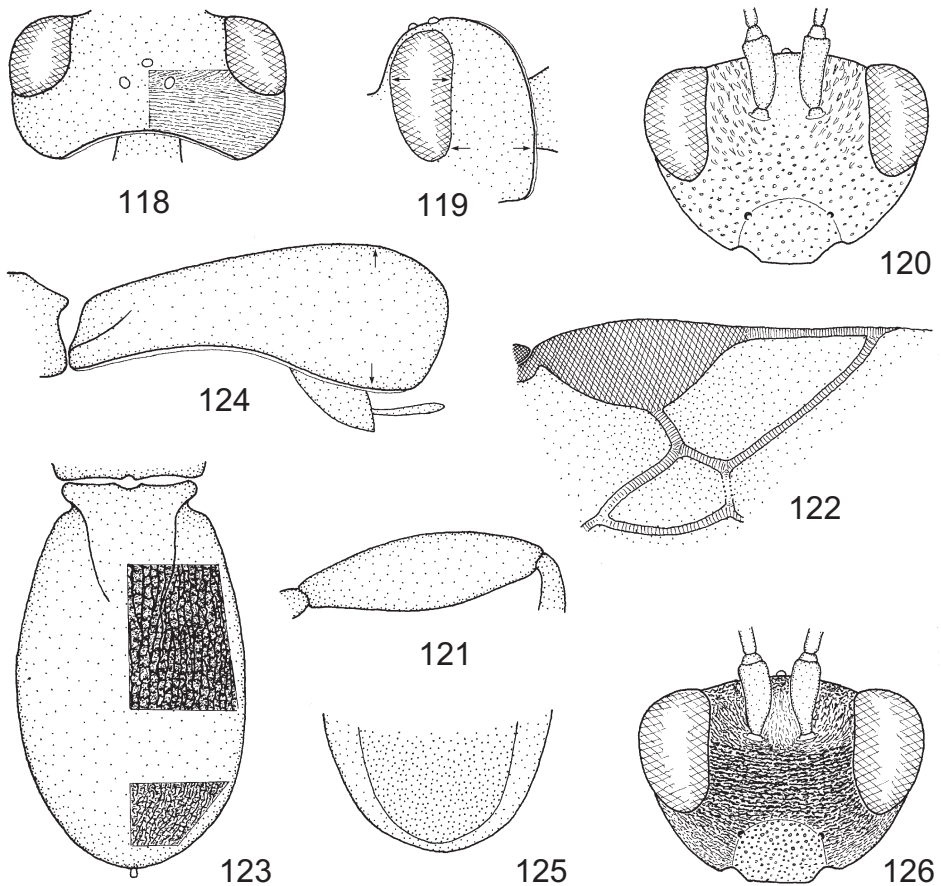
Male and host unknown.

Distribution – Ecuador.

Etymology – *Turgo* refers to the swollen carapace (Fig. 123) and *clarus* refers to the weakly sculptured and shiny head (Fig. 118).



Figs 108–111. *Microchelonus hadrogaster* (MCCOMB, 1968) (female): 108 = carapace in dorsal view with indication of its sculpture, 109 = hind femur, 110 = distal part of right forewing, 111 = head in dorsal view with indication of its sculpture. – **Figs 112–117.** *Microchelonus ruficollis* (VIERECK, 1912) (female): 112 = right half of head in dorsal view, with indication of its sculpture, 113 = penultimate four flagellomeres, 114 = carapace in dorsal view with indication of its sculpture, 115 = posterior part of carapace in ventral view, 116 = distal part of right fore wing, 117 = hind femur



Figs 118–125. *Microchelonus turgoclarus* sp. n. (female holotype): 118 = head in dorsal view with indication of its sculpture, 119 = head in lateral view, 120 = head in frontal view, 121 = hind femur, 122 = distal part of right forewing, 123 = carapace in dorsal view with indication of its sculpture, 124 = carapace in lateral view, 125 = posterior part of carapace in ventral view. – **Fig. 126.** *Microchelonus brasiliensis* (BRUES, 1912): head in frontal view

Remarks – *Microchelonus turgoclarus* sp. n. is most closely related to *M. brasiliensis* (BRUES) considering their common features: body 2.7–2.8 mm long, antenna short, scutellum smooth and shiny, carapace bellied, body dark coloured. The females of the two species differ by the following features:

- 1(2) Face and clypeus punctate, interspaces polished, head with weak sculpture and shiny (Fig. 120). Temple in dorsal view rounded, eye $1.3\times$ as long as temple (Fig. 118). Carapace in lateral view $2.6\times$ as long as behind (Fig. 124), in dorsal view broadest posteriorly, behind rounded (Fig. 123). Forewing: pterostigma $2.2\times$ as long as wide, $3-SR$ just longer than r (Fig. 122). Hind tibia brown with rusty suffusion. Female: 2.8 mm. – Ecuador ***M. turgoclarus* sp. n.**
- 2(1) Face transversely rugulose, dull (Fig. 126), head above densely rugulose (Fig. 17, in PAPP 1999: 183), temple densely punctate (Fig. 18, in PAPP 1999: 183). Temple in dorsal view receded, eye $2.3-2.4\times$ as long as temple (Fig. 17, in PAPP 1999: 183). Carapace in lateral view $2.3-2.4\times$ as long as high behind (Fig. 25, in PAPP 1999: 183), in dorsal view broadest near to middle, behind rather truncate (Fig. 24, in PAPP 1999: 183). Forewing: pterostigma $2.6-2.8\times$ as long as wide, $3-SR$ almost twice as long as r (Fig. 20, in PAPP 1999: 183). Hind tibia: basal two-thirds yellow to brownish yellow, distally brown. Female: 2.7–2.8 mm. – Brazil, Paraguay ***M. brasiliensis* (BRUES, 1912)**

FAUNISTIC DATA FOR THREE *MICROCHELONUS* SPECIES

Microchelonus blackburni (CAMERON, 1886)

Chelonus blackburni CAMERON, 1886: 242 female, type locality: “Oahu” (Hawaii, USA), syntype series in BMNH.

Microchelonus blackburni (CAMERON): SHENEFELT (1973: 877) (literature up to 1967).

Distribution – Mexico, Puerto Rico, U.S.A. (Arizona, California, Florida, Texas). New to Costa Rica, Honduras, Peru and India.

Material examined – 16 females + 10 males, in EMUS, HNHM, MZLU and USNM. *Costa Rica*. 3 females: San José, Escazu, January and July 1988, leg. F. D. PARKER. 1 female: Guan., 3 km SE Rio N Aranje, August 1912, leg. F. D. PARKER. 1 female: Her., La Selva Research Station, June 1986, leg. G. BOHART & W. HANSON. 1 female + 4 males: Surrubes. – *Honduras*. Females + 4 males: Yoro, Palo de Comba, $15^{\circ}11'N/87^{\circ}39'W$, 5 August–27 September 1995, leg. R. CAVE. 2 females: Olancho, Catacamas, $15^{\circ}50'N/85^{\circ}51'W$, 1 February 1996, leg. R. CAVE. 5 females + 2 females + 8 males: Atlantida, Lancetilla Tela, $15^{\circ}43'N/87^{\circ}27'W$, VIII–IX 1995, leg. R. CAVE. 1 female: Cortés, Parque Nacional Cusuco, 5 km N Buenos Aires, $15^{\circ}29'N/88^{\circ}13'W$, July 1995, leg. R. CAVE. 1 male: Francisco Morazan,

Parc Nacional La Tigra, 14°15'N / 87°05'W, 4 March 1996, leg. R. CAVE. 93 females + 10 males: Yoro, Palo de Combra, 15°11'N / 87°39'W, August–September 1995, leg. R. CAVE. – *Peru*. 1 female: Junin, Satipo, 24 January 1984, leg. L. HUGGERT. 1 male: Loreto, W of Iquitos, 4 February 1984, leg. L. HUGGERT. 3 females + 1 male: Madre de Dios, Puerto Maldonado, January 1984, leg. L. HUGGERT. – *India*. 1 male: Bombay, 3 July 1902, leg. L. BIRÓ.

Microchelonus pectiniphorae (CUSHMAN, 1931)

Chelonus (Chelonella) pectiniphorae CUSHMAN, 1931: 11, female & male (syntype series: at least two specimens), type locality: “Mokpo, Korea”, syntype series in USNM.

Microchelonus pectiniphorae (CUSHMAN): SHENEFELT (1973: 895) (literature up to 1968).

Distribution – China, Japan, Korea, Mongolia, Asian part of Russia; introduced to Mexico and USA (Texas). New to Costa Rica.

Material examined – 7 females + 1 male, in EMUS and HNHM. *Costa Rica*. 4 females: Guan., S. Cañas, January–March 1989, leg. F. D. PARKER. 1 female: Guan., La-Taboga, Forest Research Station, taken with Malaise trap, February 1987, leg. W. L. RUBINK. 2 females: San José, Escanzu, May and July 1988, leg. F. D. PARKER. 1 male: Her., Chilamate, August 1988, leg. W. J. HANSON.

Microchelonus ruficollis (VIERECK, 1912)

Chelonus (Chelonella) ruficollis VIERECK, 1912: 618, female & male (syntypes series: ?two females), type locality: “Pernambuco, Bonito Province, Brazil”, syntype series in USNM; examined.

Microchelonus ruficollis (VIERECK): SHENEFELT (1973: 901) (literature up to 1913).

Distribution – Brazil. New to Costa Rica.

Material examined – 7 females + 2 males, in EMUS and HNHM. *Costa Rica*. 7 females: Guan., 14 km S Cañas, February–May 1990, leg. F. D. PARKER. 1 male: Ala., 20 km S Upala, November 1990, leg. F. D. PARKER. – *Brazil*. 1 male: Manaus, leg. E. HORVÁTH.

*

Acknowledgements – My sincere thanks are due to Dr. R. DANIELSSON (Zoologisk Museum, Lund), to DR. W. J. HANSON (EMUS) and to Dr. R. KULA (USNM) for loan of

type specimens and Neotropic *Microchelonus* material. Their assistance essentially promoted my taxonomic work. My special thank should go to Dr. D. S. YU (Department of Entomology, University of Kentucky, Lexington), who kindly forwarded me the booklet and the DVD version of YU *et al.* (2005).

REFERENCES

- ACHTERBERG, C. VAN 1993: Illustrated key to the subfamilies of the Braconidae (Hymenoptera: Ichneumonoidea). – *Zoologische Verhandelingen* **283**: 1–189.
- CAMERON, P. 1886: in BLACKBURN, T. & CAMERON, P. 1886: On the Hymenoptera of the Hawaiian Islands. – *Memoirs and Proceedings of the Manchester Literary and Philosophical Society, 3rd series* **10**: 194–244.
- CUSHMAN, R. A. 1931: Descriptions of thirteen new American and Asiatic ichneumon flies, with taxonomic notes. – *Proceedings of the United States National Museum* **79**: 1–16.
- EADY, R. D. 1968: Some illustrations of microsculpture in the Hymenoptera. – *Proceedings of the Royal Entomological Society of London (A)* **43**(4–6): 66–72.
- HARRIS, R. A. 1979: A Glossary of Surface Sculpturing. – *Occasional Papers in Entomology (State of California, Department of Food and Agriculture)* **28**: 1–31.
- MCCOMB, C. W. 1968: A revision of the Chelonus subgenus *Microchelonus* in North America North of Mexico (Hymenoptera: Braconidae). – *University of Maryland, Agricultural Experiment Station, Bulletin A-149* [1967]: 1–148.
- PAPP, J. 1999: Five new *Microchelonus* species from the Neotropical Region (Hymenoptera: Braconidae: Cheloninae). – *Annales historico-naturales Musei nationalis hungarici* **91**: 177–197.
- SHENEFELT, R. D. 1973: Braconidae 6 Cheloninae. – In: VECHT, J. VAN DER & SHENEFELT, R. D. (eds): *Hymenopterorum Catalogus (nova edition), pars 10*. W. Junk, 's-Gravenhage, pp. 813–936.
- VIERECK, H. L. 1912: Contributions to our knowledge of bees and Ichneumon-flies, including the descriptions of twenty-one new genera and fifty-seven new species of Ichneumon-flies. – *Proceedings of the United States National Museum* **42**: 613–648.
- YU, D. S., ACHTERBERG, K. VAN & HORSTMANN, K. 2005: *World Ichneumonoidea 2004. Taxonomy, biology, morphology and distribution*. – Taxapad 2005: Scientific names for information management. <http://www.taxapad.com/local.php> [Accessed 4 May 2010.]