

**A revision of Szépligeti's *Microchelonus* species  
described from Hungary (Hymenoptera: Braconidae: Cheloninae)**

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**Abstract** – Twelve species of *Microchelonus* SZÉPLIGETI, 1908 were described by SZÉPLIGETI in 1896, 1898 and 1908 from the historical Hungary (the Carpatho-Pannonicum zoogeographical district). These species were originally assigned to the genus *Chelonus* JURINE, 1801. In 1908 all but one species were transferred in his new genus *Chelonella* SZÉPLIGETI, 1908. Since 1951 the valid generic name is *Microchelonus* (= *Chelonella*) for these species. In the present paper the revision of the twelve *Microchelonus* species is presented. Their taxonomic status is either confirmed or changed. Male neotype is designated for the species *Chelonus sulcatus* JURINE. One new synonym is established as follows: *Microchelonus sulcatus* (JURINE, 1807) = *Chelonus rimulosus* THOMSON, 1874; taxonomic remark on *M. rugicollis* (THOMSON) as senior synonym of *M. temporalis* TOBIAS. Four *Microchelonus* species described by SZÉPLIGETI are considered as valid and eight species names are in synonymy. The species are redescribed under their valid names and differentiated from their nearest allies. With 169 figures.

**Key words** – Hymenoptera, Braconidae, *Microchelonus*, *Chelonus*, SZÉPLIGETI, Hungary, type designations, redescrptions.

## INTRODUCTION

The genus *Microchelonus* was set up by SZÉPLIGETI (1908) based on a species named *hungaricus* described at the same time. In 1896, 1898 and 1908 a total of 21 species of the genus *Chelonus* JURINE, 1801 were described by SZÉPLIGETI. In 1908 these 21 species were assigned to two genera: nine (plus one, see below) species remained in the genus *Chelonus* and ten species were transferred by SZÉPLIGETI to his new genus *Chelonella* SZÉPLIGETI, 1908. MUESEBECK & WALKLEY (1951) placed the generic name *Chelonella* in synonymy with *Microchelonus*.

The nine true or sensu stricto *Chelonus* species described by SZÉPLIGETI from the historical Hungary or from the Carpatho-Pannonicum zoogeographical district were recently revised by PAPP (2003). In the present paper I revise the ten species placed by SZÉPLIGETI in 1908 in the genus *Chelonella*, since 1951 these species belong to his other genus *Microchelonus* completed with the eleventh species *Che-*

*lonus pusillus* SZÉPLIGETI, 1908 which was incorrectly assigned to the genus *Chelonus* (SZÉPLIGETI 1908: 408) and, furthermore, the twelfth species, *Microchelonus hungaricus* SZÉPLIGETI, 1908.

Subsequently I present the checklist of the twelve *Microchelonus* species originating from the historical Hungary and described by SZÉPLIGETI. They are enumerated in alphabetic order of their species name with their valid taxonomic names:

### *Microchelonus* SZÉPLIGETI, 1908

- alboannulatus* (SZÉPLIGETI, 1896) – junior synonym of *Microchelonus pellucens* (NEES, 1816)  
*compressiscapus* (SZÉPLIGETI, 1898) – junior synonym of *Microchelonus contractus* (NEES, 1816)  
*curvisulcatus* (SZÉPLIGETI, 1896) – junior synonym of *Microchelonus sulcatus* (JURINE, 1807)  
*fissus* (SZÉPLIGETI, 1900) – junior synonym of *Microchelonus risorius* (REINHARD, 1867)  
*flavipalpis* (SZÉPLIGETI, 1896) – valid  
*hungaricus* (SZÉPLIGETI, 1896) – junior synonym of *Microchelonus erosus* (HERRICH-SCHÄFFER, 1838)  
*hungaricus* SZÉPLIGETI, 1908 – valid  
*minutus* (SZÉPLIGETI, 1898) – junior homonym of *Chelonus minutus* A. COSTA, 1884;  
 valid name: *Microchelonus vescus* (KOKUJEV, 1899)  
*pulchricornis* (SZÉPLIGETI, 1898) – junior synonym of *Microchelonus pellucens* (NEES, 1816)  
*pusillus* (SZÉPLIGETI, 1908) – valid  
*rimatus* (SZÉPLIGETI, 1896) – junior synonym of *Microchelonus sulcatus* (JURINE, 1807)  
*scabrosus* (SZÉPLIGETI, 1896) – valid

The generic conception of *Microchelonus* adopted here corresponds to that of TOBIAS (1995: 38–40) and PAPP (1995: 125–126, 1996: 142–143). The majority of the *Microchelonus* species unambiguously represent the generic features. However, a few species show transitional feature(s) between *Chelonus* and *Microchelonus*. TOBIAS (1995) recognized the transitionalities, and created three subgenera: *Microchelonus* s. str. (belonging here the majority of the species), *Parachelonus* TOBIAS and *Stylochelonus* HELLÉN (with a few species) within *Microchelonus* s. l.

*Abbreviations* – Ocelli: OOL = shortest distance between hind ocellus and compound eye; POL = shortest distance between hind two ocelli. – Fore wing venation (after VAN ACHTERBERG 1993: 5): *r* = first section of the radial or transverse vein; *1-R1* = first section of the metacarpal vein; *3-SR* and *4-SR* = second and third sections of the radial vein.

*Microchelonus (Microchelonus) erosus* (HERRICH-SCHAEFFER, 1838)  
(Figs 1–15)

*Chelonus erosus* HERRICH-SCHAEFFER, 1838: 153 ♀ (syntype series lost?), fig.; type locality: ?Regensburg (Germany). – SHENEFELT 1973: 898 (as synonym of *Microchelonus retusus* NEES, 1816).

*Microchelonus erosus* (HERRICH-SCHAEFFER, 1838): PAPP 1996: 144 (comb. n., synonyms, taxonomic remarks).

*Chelonus hungaricus* SZÉPLIGETI, 1896: 176 (in Hungarian) and 237 (in German), ♀, type locality: “Herkulesfürdő” or “Herkulesbad” in Transylvania (Romania), female holotype (designated by PAPP 1996: 144) in Hungarian Natural History Museum Budapest; examined.

*Chelonus (Chelonella) analipennis* FAHRINGER, 1934: 434, ♀, type locality: Piesting (Austria), female lectotype (designated by TOBIAS 1995: 48) in Naturhistorisches Museum Wien; not examined. – SHENEFELT 1973: 875 (as valid species *Microchelonus analipennis* comb. n.). TOBIAS 1995: 48 (as valid species, synonyms). PAPP 1996: 144 (synonymization).

*Microchelonus frivaldszkyi* SHENEFELT 1973: 887 (new name for *Chelonus hungaricus* SZÉPLIGETI, 1896 nec *Microchelonus hungaricus* SZÉPLIGETI, 1908). TOBIAS 1995: 48 (as synonym of *M. analipennis* FAHRINGER, taxonomic remarks).

*Type designation* – Designation of the female lectotype of *Chelonus hungaricus* SZÉPLIGETI: (first label) “Transylvania” (printed) “Herkulesfürdő / leg. Frivaldszky” (my handwriting); (second label, reverse below first label and with handwriting) “Herkf.”; third label is my lectotype card; fourth label is with the inventory number “Hym. Typ. No. 510”; fifth label (reverse below fourth label) is with the name “Chelonella hungaricus Sz. / det. Szépligeti” given by SZÉPLIGETI in 1908 and the label itself attached by me; sixth label is with the actual name *Microchelonus erosus* (HS.) given by me. – Lectotype is in quite poor condition: pair of flagelli, tibia + tarsus of left middle leg and fifth tarsomere of right hind tarsus missing.

*Material examined* (15 ♀♀ + 12 ♂♂) – Male lectotype of *Chelonus hungaricus*. 10 ♀♀ + 8 ♂♂ from 16 localities in Hungary. 3 ♀♀ + 2 ♂♂ from 5 localities in Romania (Transylvania). 1 ♀ + 1 ♂ from 2 localities in Serbia. 1 ♀ from Bulgaria. 1 ♂ from Georgia.

*Redescription of the female lectotype of Chelonus hungaricus* SZÉPLIGETI – Body 7 mm long. Scape almost three times as long as broad apically, apically obliquely truncate (Fig. 1). Pair of flagelli missing. Head in dorsal view (Fig. 2) transverse, 1.8 times as broad as long, eye just shorter than temple, temple moderately rounded, occiput deeply excavated. Ocelli medium sized, near to each other, imaginary tangent to fore ocellus touching hind pair of ocelli; OOL twice as long as POL. Eye in lateral view 1.8 times as high as wide, temple beyond eye one-third (or 1.4 times) wider than eye, ventrally broadening (Fig. 3, see arrows). Malar space slightly longer than basal width of mandible. Face 2.2 times as wide as high, inner margin of eyes somewhat divergent ventrally. Clypeus 1.6 times as wide as high, its lower margin truncate (Fig. 4). Face rugose, clypeus punctate, interspaces shiny and greater than punctures. Vertex with somewhat non-parallel striation (Fig. 2), occiput and temple with stronger striation.

Mesosoma in lateral view 1.3 times as long as high, areolate-rugose, mesoscutum rugo-rugulose, scutellum smooth and shiny with a few rugose elements. Propodeum with a transverse carina. Hind femur 2.7 times as long as broad medially (Fig. 5). Inner spur of hind tibia just shorter than half basitarsus. Hind basitarsus as long as tarsomeres 2–5 combined except claws.

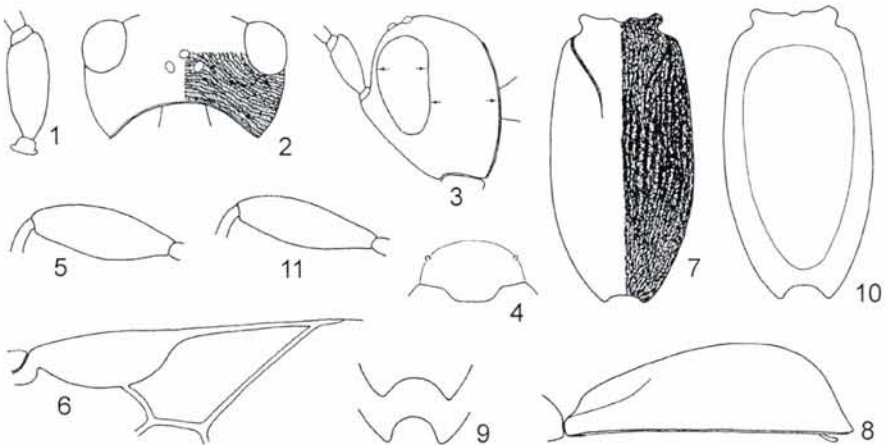
Fore wing somewhat shorter than body. Pterostigma (Fig. 6) 2.6 times as long as wide and issuing *r* distally from its middle, *3-SR* as long as *r*, *SRI* just bent inward, *1-R1* a bit shorter than pterostigma.

Carapace in dorsal view (Fig. 7) 1.87 times as long as broad posteriorly, slightly broadening posteriorly; apically incised (Fig. 9). Pair of basal keels converging and extending on basal third of carapace. Anterior half of carapace striate, its lateral side with more anastomoses, posterior half of carapace rugose (Fig. 7). Carapace in lateral view (Fig. 8) 3 times as long as high behind, its hind end somewhat pointed, ventrally not incurved. Ovipositor sheath short. In ventral view aperture of carapace almost as long as carapace itself (Fig. 10).

Body black. Mandible basally brown, apically yellow. Scape with very weak rusty suffusion. Palpi light brown. Tegula brown. Legs brown, tibiae yellow, distal half of tibiae 2–3 brownish to light brown, hind tibia proximally with a yellow ring, tarsi also light brown. Wings subhyaline, pterostigma brown, veins light brown, basally yellow.

*Variabilities of the females* – Body 6–7 mm long. Antenna about as long as body and with 16 antennomeres. First flagellomere 3.6–3.8 and penultimate flagellomere 2.1–2.5 times as long as broad, flagellomeres gradually shortening and attenuating distally. Head in dorsal view 1.8–1.9 times as broad as long. Hind femur 2.7–3.3 times as long as broad medially (Figs 5, 11). Pterostigma 2.5–2.6 times as long as wide, *SRI* usually bent, *1-R1* as long as pterostigma. Carapace in dorsal view 1.8–2 times as long as broad behind; in lateral view 2.7–3 times as long as behind (Fig. 12). Legs broad to black, light colour pattern yellow to reddish yellow, ring of hind tibia always yellow.

*Redescription of the male* – Similar to the female. Body 5.5–6.5(–7) mm long. Antenna about as long as body and with 25–27 antennomeres. First flagellomere 3.3(–3.4) times and penultimate flagellomere 1.6 times as long as broad. Head in dorsal view 1.85–1.95 times as broad as long. Hind femur 2.6–3.1 times as long as broad medially. Carapace in dorsal view (Fig. 13) 1.9–2 times as long as broad posteriorly, apically rounded to rather truncate; apical foramen small, 2.3–3 times as wide as



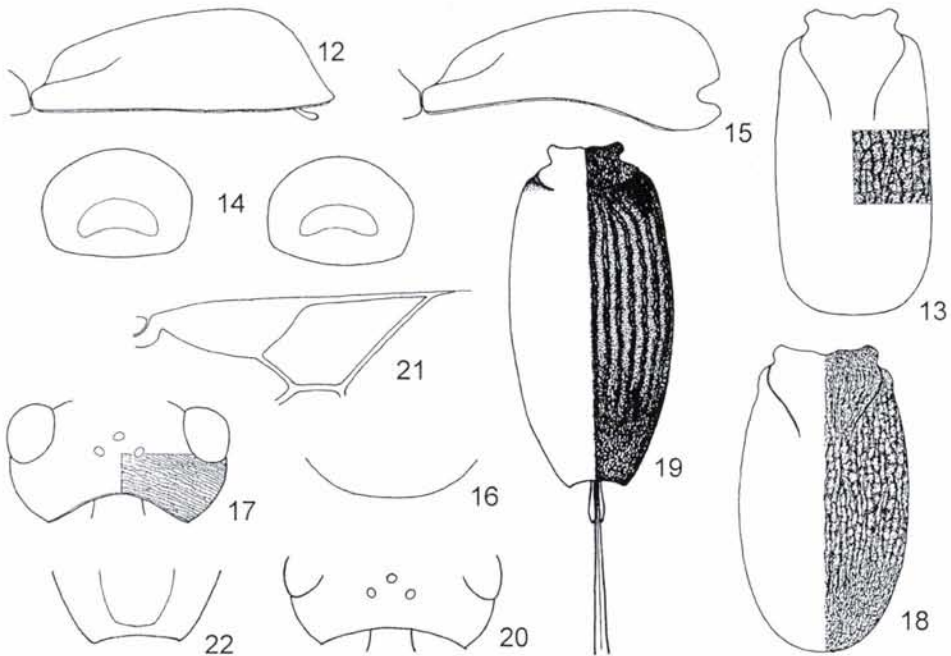
**Figs 1–11.** *Microchelonus erosus* (HERRICH-SCHAEFFER, 1838) ♀: 1 = scape, 2 = head in dorsal view with indication of its sculpture, 3 = head in lateral view, 4 = clypeus, 5 = hind femur, 6 = distal part of right fore wing, 7 = carapace in dorsal view with indication of its sculpture, 8 = carapace in lateral view, 9 = two forms of apical incision of carapace in dorsal view, 10 = carapace in ventral view, 11 = hind femur

high (Fig. 14). Carapace in lateral view (Fig. 15) 2.6–2.8 times as long as high behind. Brownish to brown colour of tibiae more extended.

*Distribution* – Germany, Austria, Hungary, Romania, Serbia, Bulgaria, Georgia (Sochi), Georgia.

*Remarks* – Of the *Microchelonus* species distributed in Europe *M. (Parachelonus) starki* (TELENGA, 1953) stands nearest to *M. (M.) erosus* considering their body-size; the two species are distinguished by the features as follows:

- 1 (2) Female: Antenna with 16 antennomeres (subgeneric feature), penultimate flagellomere 2.1–2.5 times as long as broad. Carapace apically incised (Fig. 9). F and m: temple in dorsal view moderately rounded, head above with relatively strong striation (Fig. 2). Striation of carapace strong and with less anastomoses (Fig. 7). Legs brown to black, tibiae 1–2 yellow to reddish yellow.



**Figs 12–22.** 12–15. *Microchelonus erosus* (HERRICH-SCHAEFFER, 1838): 12 = female carapace in lateral view, 13 = male carapace in dorsal view with indication of its sculpture, 14 = two forms of male apical foramen of carapace in facial view, 15 = male carapace in lateral view. – 16–18. *Microchelonus starki* (TELENGA, 1953) ♀: 16 = apical end of carapace, 17 = head in dorsal view with indication of its sculpture, 18 = carapace in dorsal view with indication of its sculpture. – 19–22. *Microchelonus retusus* (NEES, 1816) ♀: 19 = carapace in dorsal view with indication of its sculpture, 20 = head in dorsal view, 21 = distal part of right fore wing, 22 = apical end of carapace in ventral view

low, hind tibia dark brown to black with a proximal yellow ring. ♀: 6–7 mm, ♂: 5.5–6.5(–7) mm *M. (M.) erosus* (HERRICH-SCHAEFFER, 1838)

- 2 (1) Female: Antenna with 21–22 antennomeres (subgeneric feature), penultimate flagello-mere cubic. Carapace apically convex, i.e. not incised (Fig. 16). F and m: temple in dorsal view rounded, head above with relatively fine striation (Fig. 17). Striation of carapace less strong and with more anastomoses (Fig. 18). Scape and legs (except coxae) reddish yellow. ♀: (4–)4.5–5 (–5.3) mm *M. (P.) starki* (TELENGA, 1953)

*Microchelonus retusus* (NEES, 1816) is the only species in Europe which has a carapace with incised apex similar to *M. erosus* (Figs 9, 22); otherwise the two species are clearly different from each other:

- 1 (2) Sculpture of carapace strong (Fig. 7). Temple in dorsal view rounded (Fig. 7). *1–R1* of fore wing a bit shorter than pterostigma, pterostigma relatively wide (Fig. 6). Ovipositor sheath short. Apical end of female carapace as in Fig. 9. ♀: 6–7 mm, ♂: 5.5–6.5 mm  
*M. (M.) erosus* (HERRICH-SCHAEFFER, 1838)
- 2 (1) Sculpture of carapace less strong (Fig. 19). Temple in dorsal view receded (Fig. 20). *1–R1* of fore wing one-fourth shorter than pterostigma, pterostigma relatively narrower (Fig. 21). Ovipositor sheath long, as long as hind tibia (Fig. 19). Apical end of carapace as in Fig. 22. ♀♂: 3.8–4 mm  
*M. (M.) retusus* (NEES, 1816)

*Microchelonus (Microchelonus) flavipalpis* (SZÉPLIGETI, 1896)  
(Figs 23–32, 36)

*Chelonus flavipalpis* SZÉPLIGETI, 1896: 176 (in Hungarian) and 237 (in German) ♂ (syntype series one male), type locality: Budapest (Hungary), male lectotype (designated by PAPP in 1967, published 1996: 145) in Hungarian Natural History Museum Budapest; examined. –FAHRINGER 1934: 424 (in key) and 447 (redescription).

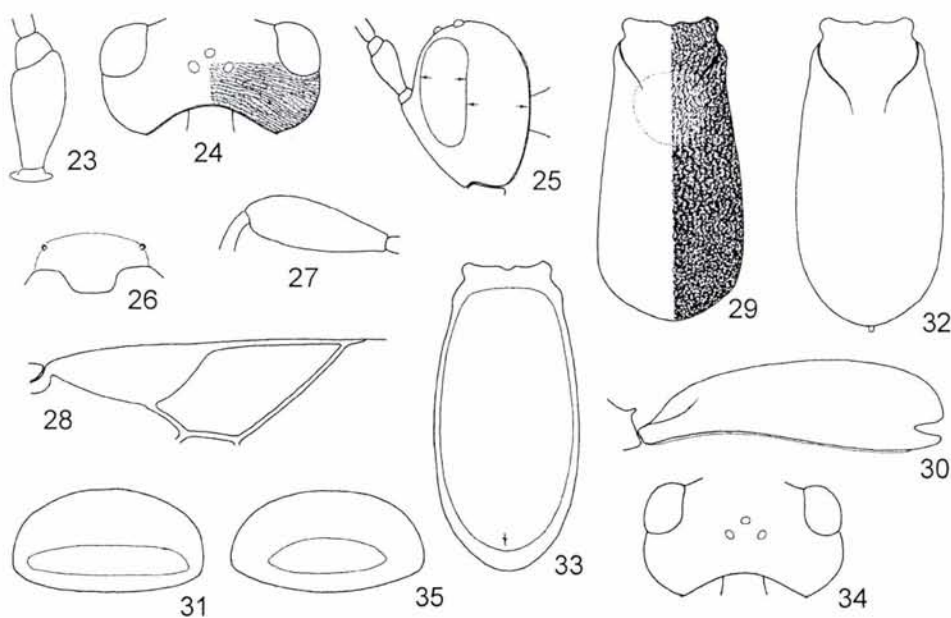
*Microchelonus flavipalpis* (SZÉPLIGETI): SHENEFELT 1973: 886 (comb. n., literature up to 1934). TOBIAS 1986a: 324 (♀) and 332 (♂) (in keys, in Russian); 2000: 501, 546, 549 (in key, in Russian).

*Type designation* – Designation of the male lectotype of *Chelonus flavipalpis* SZÉPLIGETI: (first label, handwriting): “Budapest”; second label is my lectotype card; third label is with the inventory number “Hym. Typ. No. 511”; fourth label is with the actual name *Microchelonus flavipalpis* given by me. – Lectotype is in poor condition: flagelli damaged, two fragments of flagelli glued separately; left hind wing shrivelled, pair of right wings cleaved; left middle leg glued separately; specimen itself glued on a pointed card.

*Material examined* (9 ♀♀). – 3 ♀♀ from 3 localities in Hungary. 1 ♀ from Georgia. 5 ♀♀ from 2 localities in Russia (Far East).

*Redescription of the male lectotype of Chelonus flavipalpis* SZÉPLIGETI – Body 3.8 mm long. Scape (Fig. 23) slightly swollen, twice as long as broad and obliquely truncate apically. Head in dorsal view (Fig. 24) transverse, twice as broad as long, eye a bit longer than temple, temple rounded, occiput excavated. Ocelli small and round, hind imaginary tangent to fore ocellus before hind pair of ocelli, OOL twice as long as POL. Eye in lateral view 2.3 times as high as wide, temple beyond eye one-fourth (or 1.3 times) wider than eye (Fig. 25). Malar space slightly shorter than basal width of mandible. Face 1.4 times as wide as high, inner margin of eyes faintly converging ventrally. Clypeus twice as wide as high, medially produced and its lower margin truncate (Fig. 26). Face rugose; clypeus punctate, interspaces shiny and about as great as punctures. Vertex and occiput finely striate (Fig. 24), temple also striate.

Mesosoma in lateral view 1.4 times as long as high, rugose, mesoscutum medially with striate elements, scutellum with strong punctures. Propodeum with a transverse carina ending in a pair of tubercules. Hind femur 3 times as long as broad somewhat distally (Fig. 27). Inner spur of hind tibia half as long as basitarsus. Hind basitarsus as long as tarsomeres 2–3 and one-third of tarsomere 4 combined.



**Figs 23–35.** 23–33. *Microchelonus flavipalpis* (SZÉPLIGETI, 1896): 23 = scape, 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 fore wing, 29 = male carapace in dorsal view with indication of its sculpture, 30 = male carapace in lateral view, 31 = apical foramen of male carapace in facial view, 32 = carapace in ventral view. – 34–35. *Microchelonus lugubris* (WESMAEL, 1835): 34 = head in dorsal view, 35 = apical foramen of male carapace in facial view

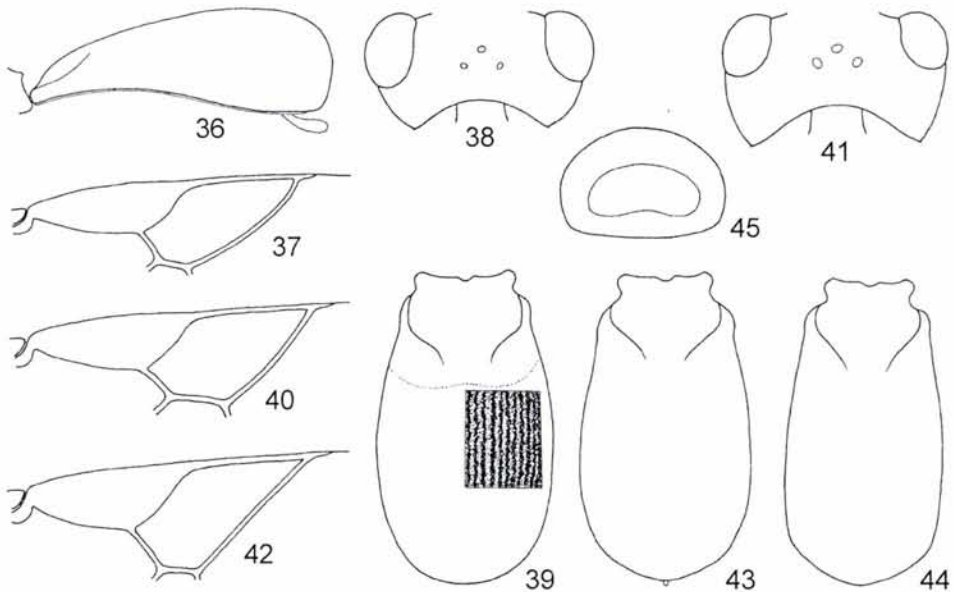
Fore wing just shorter than body. Pterostigma (Fig. 28) 2.5 times as long as wide and issuing *r* distally from its middle, *r* a bit shorter than  $3-SR$ ,  $SR-I$  just bent,  $I-R1$  somewhat shorter than pterostigma.

Carapace in dorsal view (Fig. 29) 2.1 times as long as broad posteriorly, slightly broadening posteriorly and faintly pointed apically. Pair of basal keels short, carapace rugose and anteriorly with weak striate elements (Fig. 29). Carapace in lateral view (Fig. 30) 3.4 times as long as high behind. Apical foramen of carapace six times as wide as high (Fig. 31).

Body black. Scape reddish yellow, flagellum blackish. Palpi yellow. Basal and nearly round macula of carapace pale yellow. Legs reddish yellow, hind coxae blackish, hind tibia brownish with a median yellow ring. Hind tarsus brownish. Wings brownish fumous, pterostigma and veins brown.

*Description of the females* (9 ♀♀) – Similar to the male. Body 3.6–3.8 mm long. Antenna somewhat longer than head + mesosoma combined and with 16 antennomeres. First flagellomere 3.3 times as long as broad apically and penultimate flagellomere cubic or just subcubic. – Head in dorsal view transverse, 1.8–2 times as broad as long.  $SR1$  either just bent or straight. Carapace in dorsal view 2–2.2 times as long as broad behind (Fig. 32). Carapace in lateral view (Fig. 36) 2.6–3 times as long as high behind. In ventral view aperture of carapace almost as long as carapace itself, i.e. carapace apically slightly incurved (Fig. 33, see arrow). Apex of hind femur eventually darkening. Palpi pale yellow.

*Distribution* – Hungary, Ukraine, Georgia, Russia, Mongolia (TOBIAS 1986: 324, 2000: 501).



**Figs 36–45.** 36 = *Microchelonus flavipalpis* (SZÉPLIGETI, 1896): carapace in lateral view. – 37 = *Microchelonus lugubris* (WESMAEL, 1835): distal part of right fore wing. – 38–40. *Microchelonus flavonaevulus* (ABDINBEKOVA, 1971): 38 = head in dorsal view, 39 = female carapace in dorsal view with indication of its sculpture, 40 = distal part of right fore wing. – 41–45. *Microchelonus rugicollis* (THOMSON, 1874): 41 = head in dorsal view, 42 = distal part of right fore wing, 43–44 = female (43) and male (44) carapace in dorsal view, 45 = apical foramen of male carapace in facial view



*Remarks* – *Microchelonus flavipalpis* stands nearest to *M. lugubris* (WESMAEL, 1835) (Belgium); as the latter species is known by the male only, the males of the two species are distinguished as follows:

1 (2) Male: Head in dorsal view somewhat more transverse, twice as broad as long, temple not bulging (Fig. 24). Pterostigma 2.5 times as long as wide, *l*–*RI* somewhat shorter than pterostigma (Fig. 28). Apical foramen of carapace six times as wide as high (Fig. 31). Palpi yellow. ♂: 3.6–3.8 mm

*M. (M.) flavipalpis* (SZÉPLIGETI, 1896)

2 (1) Male: Head in dorsal view somewhat less transverse, 1.8 times as broad as long, temple slightly bulging (Fig. 34). Pterostigma 3 times as long as wide, *l*–*RI* one-third shorter than pterostigma (Fig. 37). Apical foramen of carapace 3 times as wide as high (Fig. 35). Palpi brownish. ♂: 3.8 mm

*M. (M.) lugubris* (WESMAEL, 1835)

*Microchelonus flavipalpis* is very similar to *M. flavonaevulus* (ABDINBEKOVA, 1971) (Azerbaijan, Ukraine, Moldavia, European part of Russia, Hungary, Bulgaria). However, the two species are distinguished by a few clear-cut features as follows:

1 (2) Temple in dorsal view rounded (Fig. 24). Carapace in dorsal view not globose, 2–2.2 times as long as broad behind (Figs 29, 32). Penultimate flagellomere of female cubic or just subcubic. Pterostigma issuing *r* usually less distally from its middle, *r* only a bit shorter than 3–*SR*, *l*–*RI* somewhat shorter than pterostigma (Fig. 28). Apical foramen of male carapace six times as wide as high (Fig. 31). Palpi yellow to pale yellow, scape reddish yellow. ♀♂: 3.6–3.8 mm.

*M. (M.) flavipalpis* (SZÉPLIGETI, 1896)

2 (1) Temple in dorsal view receded (Fig. 38). Carapace in dorsal view somewhat globose, 1.6–1.7 times as long as broad about its middle (Fig. 39). Penultimate flagellomere of female 1.8–2 times as long as broad. Pterostigma issuing *r* usually more distally from its middle, *r* shorter than 3–*SR*, *l*–*RI* one-fourth shorter than pterostigma (Fig. 40). Palpi brown to light brown, scape black. ♀♂: 3–3.6 mm

*M. (M.) flavonaevulus* (ABDINBEKOVA, 1971)

In a few characters *M. rugicollis* (THOMSON, 1874) (Sweden, Austria, Slovakia, Romania: Transylvania) is reminiscent of *M. flavipalpis*; they are separated as follows:

1 (2) Temple in dorsal view a bit shorter than eye and relatively more rounded (Fig. 24). Pterostigma somewhat longer than *l*–*RI*, *r* a bit shorter than 3–*SR*,

pterostigma relatively less wide (Fig. 28). Carapace in dorsal view 2–2.2 times as long as broad (Fig. 29: f, Fig. 32: m); apical foramen of male six times as wide as high (Fig. 31). Scape reddish yellow, palpi yellow to pale yellow. ♀♂: 3.6–3.8 mm *M. (M.) flavipalpis* (SZÉPLIGETI, 1896)

- 2 (1) Temple in dorsal view 1.2–1.3 times as long as eye and relatively less rounded (Fig. 41). Pterostigma one-fourth longer than *I–RI*, *r* clearly longer than *3–SR*, pterostigma relatively wide (Fig. 42). Carapace in dorsal view 1.8–2 times as long as broad (Figs 43–44); apical foramen of male carapace 2.9–3.2 times as wide as high (Fig. 45). Scape dark brown to black, palpi brown to dark brown. ♀♂: (2.9–)3.5–4 mm  
*M. (M.) rugicollis* (THOMSON, 1874)

*Taxonomic remark to Microchelonus rugicollis* (THOMSON). – In my paper (PAPP 1990: 313) I placed in junior synonymy the name *M. temporalis* TOBIAS, 1986 with *M. rugicollis* (THOMSON, 1874). TOBIAS (1994: 170) disapproved this synonymization referring to certain features and one figure (Fig. 70) in my redescription of *M. rugicollis* (PAPP 1990). TOBIAS was right to lay particular stress to the features and figure in question which were my mistakes; subsequently I give a correction to my redescription for *M. rugicollis*: 1) head in dorsal view 1.7–1.8 times (and not twice) as broad as long, 2) temple in dorsal view 1.2–1.3 times as long as eye (and not twice as it is given in text and Fig. 5 by TOBIAS 1994) (see Fig. 41 instead of Fig. 70 in PAPP 1990), 3) apical foramen of male carapace (1.8–)2–2.2 times as wide as high (Fig. 45). With this emendation of my redescription the synonymization of the two names can be justified.

*Microchelonus (Microchelonus) hungaricus* SZÉPLIGETI, 1908  
(Figs 46–59)

*Microchelonus hungaricus* SZÉPLIGETI, 1908: 403 ♂ (syntype series one male), type locality: Áporka (Hungary), female holotype (designated by PAPP in 1967) in Hungarian Natural History Museum Budapest; examined. – SHENEFELT 1973: 888 (literature up to 1941). TOBIAS 1986a: 323 (♀) and 334 (♂) (in keys, in Russian); 1993: 101. PAPP 1996: 145.

*Microchelonus palpalis* TOBIAS, 1989: 446 ♀♂; synonymized by TOBIAS 1993: 101.

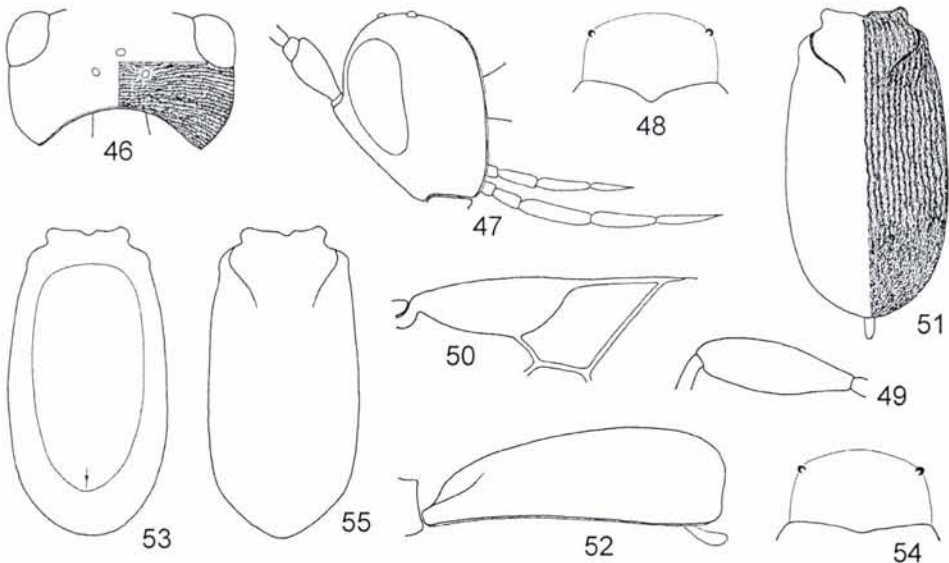
*Type designation* – Designation of the female holotype of *Microchelonus hungaricus* SZÉPLIGETI: (first label, printed) “Áporka / Sztudva”; (second label, printed) “Hungaria”; third label is my holotype card; fourth label is with the inventory number “Hym. Typ. No. 509”. – The holotype is in good condition: (1) left fore wing glued on a separate card, (2) distal third of left hind wing torn off and adhered to the fore wing, (3) right hind wing basally torn.

*Material examined* (13 ♀♀ + 5 ♂♂) – Female holotype as well as 12 ♀♀ + 4 ♂♂ from nine localities in Hungary. 1 ♂ from Mongolia.

*Redescription of the female holotype of Microchelonus hungaricus* SZÉPLIGETI – Body 3.3 mm long. Antenna as long as head and mesosoma combined and with 16 antennomeres. First flagellomere 3.1 times and penultimate flagellomere 1.5 times as long as broad apically, flagellum evenly thick, flagellomeres gradually shortening distally. Head in dorsal view (Fig. 46) less transverse, 1.66 times as broad as long, temple 1.4 times longer than eye, temple moderately rounded, occiput excavated. Ocelli small and round, fore ocellus far before imaginary tangent to hind ocelli, OOL 1.3 times as long as POL. Eye in lateral view 2.3 times as high as wide, temple beyond eye 1.4 times as wide as eye; Maxillary palp very long, one-sixth longer than height of head in lateral view (Fig. 47). Malar space a bit longer than basal width of mandible. Face nearly twice as wide as high, inner margin of eyes parallel. Clypeus 1.5 times as wide below as high medially, its lower margin medially somewhat pointed (Fig. 48). Face somewhat concentric strio-rugose, clypeus transversely strio-rugulose; head above (vertex + occiput) transversely striate (Fig. 46); temple rather finely striate and shiny.

Mesosoma in lateral view 1.7 times as long as high, scabrous; pronotum medially smooth and shiny, laterally uneven and subshiny; scutellum rather longitudinally rugulose. Hind femur 3.1 times as long as broad medially (Fig. 49). Inner spur of hind tibia somewhat longer than half basitarsus. Hind basitarsus as long as tarsomeres 2–4 combined.

Fore wing somewhat shorter than body. Pterostigma (Fig. 50) 2.6 times as long as wide and issuing *r* distally from its middle; 3-*SR* one-fourth longer than *r*, *SR1* almost straight, 1-*R1* half as long as pterostigma.



**Figs 46–55.** *Microchelonus hungaricus* SZÉPLIGETI, 1908: 46 = head in dorsal view with indication of its sculpture, 47 = head in lateral view, 48 = clypeus, 49 = hind femur, 50 = distal part of right fore wing, 51 = female carapace in dorsal view with indication of its sculpture, 52 = female carapace in lateral view, 53 = female carapace in ventral view, 54 = clypeus, 55 = male carapace in dorsal view

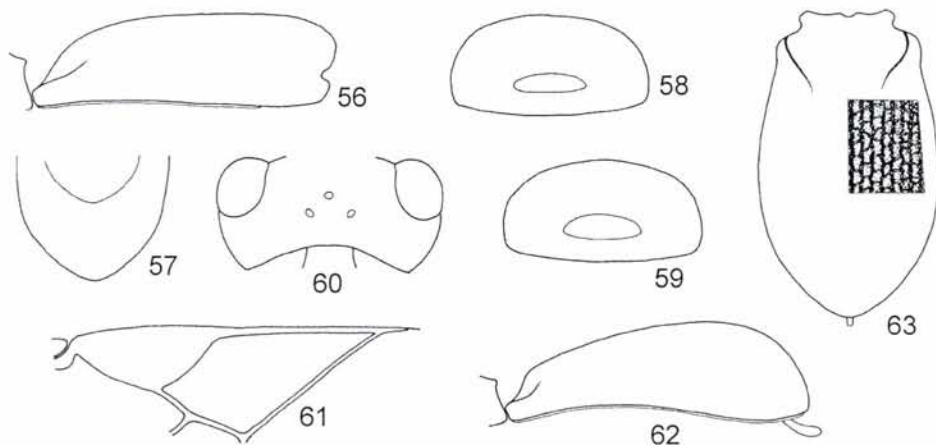
Carapace in dorsal view (Fig. 51) 1.9 times as long as broad medially, nearly parallel-sided, apically rounded. Pair of basal keels short. Anterior two-thirds of carapace longitudinally striate, rest of carapace densely rugulose. Carapace in lateral view (Fig. 52) 3 times as long as high behind, its hind end truncate. In ventral view aperture of carapace clearly shorter than carapace itself, i.e. carapace apically incurved (Fig. 53, see arrow).

Head and mesosoma black, carapace dark rusty, pronotum rusty. Scape and pedicel black and with very weak rusty suffusion, flagellum black. Palpi brownish. Legs brown, coxae dark brown, fore tibia + tarsus yellowish. Wings brownish fumous, pterostigma and veins brown.

*Variabilities of the twelve females* – Body (3.2–)3.3–3.8 mm long. Head in dorsal view 1.65–1.75 times, usually 1.7 times, as broad as long. Lower margin of clypeus medially weakly pointed (Fig. 54). Temple 1.1–1.2 times as long as eye. Hind femur 2.9–3.1 times as long as broad medially. *SRI* either straight or slightly bent. Carapace in dorsal view 1.8–1.95 times, usually 1.9 times, as long as broad medially, eventually somewhat more striate (4 f). Carapace in lateral view 2.9–3.2 times, usually 2.7 times, as long as high behind.

*Description of the male* (5 ♂♂) – Similar to the female. Body 3.4–3.9 mm long. Antenna somewhat longer than head + mesosoma combined and with 18 antennomeres. First flagellomere 3–3.1 times and penultimate flagellomere 1.6–1.7 times as long as broad. Head in dorsal view 1.6–1.7 times as broad as long. Hind femur 2.9(–3) times as long as broad medially. Carapace in dorsal view 1.9–2 times as long as broad posteriorly from its middle (Fig. 55). Carapace in lateral view 3–3.3 times as long as high behind (Fig. 56). Carapace apico-ventrally clearly incurved (Fig. 57). Apical foramen of carapace (2.8–)3.5–4 times as wide as high (Figs 58–59). Dark colour of legs more extended.

*Remarks* – *Microchelonus hungaricus* SZÉPLIGETI is nearest to *M. palpator* TOBIAS, 1989 (Russia: Far East Maritime Territory) considering their long maxillary palpi. They are distinguished by a few hardly verifiable differences (key after



**Figs 56–63.** 56–59. *Microchelonus hungaricus* SZÉPLIGETI, 1908: 56 = male carapace in lateral view, 57 = apical end of male carapace in ventral view, 58–59 = apical foramen of male carapace in facial view. – 60–63. *Microchelonus rostratus* (TOBIAS, 1966): 60 = head in dorsal view, 61 = distal part of right fore wing, 62 = female carapace in lateral view, 63 = female carapace in dorsal view with indication of its sculpture

TOBIAS 2000: 495 and 541). *M. palpator* is known to me on the basis of its description only.

- 1 (2) Malar space a bit longer than basal width of mandible. Head above with slightly rougher transverse striation (Fig. 46). At least distal third of female flagellum moderately compressed. Apical foramen of male carapace extending about 0.3 apical width of carapace (Figs 58–59). ♀: (3.2–)3.3–3.8 mm, ♂: 3.4–3.9 mm *M. (M.) hungaricus* SZÉPLIGETI, 1908
- 2 (1) Malar space a bit shorter than basal width of mandible. Head above with slightly weaker transverse striation. Distal half of female flagellum compressed. Apical foramen of male carapace extending 0.5 apical width of carapace. ♀: 3.4 mm, ♂: 3.3 mm *M. (M.) palpator* TOBIAS, 1989

*Microchelonus rostratus* (TOBIAS, 1966) (Hungary, western half of the former USSR) is related to *M. hungaricus* by its long maxillary palp, however, the two species are clearly separated by the features keyed:

- 1 (2) Temple in dorsal view rounded (Fig. 46). Vein *1-R1* half as long as pterostigma, i.e. marginal cell short; pterostigma wide, 2.6–2.8 times as long as wide and issuing *r* clearly distally from its middle (Fig. 50). Carapace in lateral view apically truncate (Figs 52, 56). Carapace in dorsal view less globose, its striation less strong (Fig. 51). Wings brownish fumous. ♀: (3.2–)3.3–3.8 mm, ♂: 3.4–3.9 mm *M. (M.) hungaricus* SZÉPLIGETI, 1908
- 2 (1) Temple in dorsal view receded (Fig. 60). Vein *1-R1* as long as pterostigma, i.e. marginal cell long; pterostigma wide, 2.3 times as long as wide and issuing *r* just distally from its middle (Fig. 61). Carapace in lateral view apically convex (Fig. 62). Carapace in dorsal view more globose, its striation strong (Fig. 63). Wings hyaline to subhyaline. ♀♂: 3.3–4 mm *M. (M.) rostratus* (TOBIAS, 1966)

*Microchelonus (Parachelonus) pellucens* (NEES, 1816)  
(Figs 64–76)

*Sigalphus pellucens* NEES, 1816: 271 ♀♂ (syntype series two females and two males), type locality: Sickershausen (Germany) (cf. NEES 1834: 295), male lectotype designated by TOBIAS (1995: 40) and one male + two female paralectotypes (present designations), types in Zoologisches Museum der Humboldt Universität Berlin; examined. – SHENEFELT 1973: 852 (as *Chelonus gravenhorsti* var. *pellucens*).

*Chelonus pellucens* (NEES, 1816): NEES 1834: 295 ♀♂.

- Microchelonus (Parachelonus) pellucens* (NEES, 1816): TOBIAS 1995: 40 (comb. n., subgeneric arrangement, taxonomic comments, male lectotype designation). PAPP 1996: 147 (taxonomic remarks); 1997: 14 (taxonomic comment on the subgeneric arrangement).
- Chelonus nitens* REINHARD, 1867: 360 ♂ (syntype series two males), type locality: (?)Germany, male lectotype designated by TOBIAS (1995: 40), types in Zoologisches Museum der Humboldt Universität Berlin; examined.
- Microchelonus nitens* (REINHARD, 1867): SHENEFELT 1973: 893 (comb. n., literature up to 1971). Synonymized with *M. pellucens* by TOBIAS (1995: 40).
- Chelonus alboannulatus* SZÉPLIGETI, 1896: 173 (in Hungary) and 234 (in Germany) ♀♂ (syntype series three females + one male; one female from Szeged and one male from Budapest lost), female lectotype (designated by PAPP in SHENEFELT 1973: 840) and one female paralectotype (present designation) in Hungarian Natural History Museum Budapest; examined. –PAPP 1971: 71 (synonymization with *Chelonus nitens* REINHARD). SHENEFELT 1973: 840 (as valid species) and 894 (indication of the synonymization by PAPP 1971: 71)
- Chelonus pulchricornis* SZÉPLIGETI, 1898: 207 (description), 211 (♀) and 215 (♂) (in keys) (in Hungarian) and 218 (description), 223 (♀) and 227 (♂) (in keys) (in German) ♀♂ (syntype series three females, one male lost or destroyed), type locality: Budapest (Hungary), female lectotype (designated by PAPP in SHENEFELT 1973: 863) and two female paralectotypes (present designation) in Hungarian Natural History Museum Budapest; examined. –PAPP 1971: 71 (synonymization with *Chelonus nitens* REINHARD). SHENEFELT 1973: 863 (as valid species) and 894 (indication of the synonymization by PAPP 1971: 71).

*Type designations.* – Designation of the female lectotype of *Chelonus alboannulatus* SZÉPLIGETI: (first label, printed) “Budapest / Svábhegy”; second label is my lectotype card; third label is with the inventory number “Hym. Typ. No. 479”; fourth label (reverse below third label) with the name *Chelonus alboannulatus* det. SZÉPLIGETI; fifth label is with the actual name *Microchelonus pellucens* (NEES) given by me. – Lectotype is in good condition: flagelli damaged.

Designation of the female paralectotype of *Chelonus alboannulatus* SZÉPLIGETI: (first label) “Budapest” (printed) / “Palatinus kert” (SZÉPLIGETI’s handwriting); (second label) [18]’95. VII. 18.” (SZÉPLIGETI’s handwriting) / “Szépligeti” (printed); third label is my paralectotype card; fourth label is with the inventory number “Hym. Typ. No. 480”; fifth label is with the actual name *Microchelonus pellucens* (NEES) given by me. – Paralectotype is in good condition: tarsus of right hind leg missing.

Designation of the female lectotype of *Chelonus pulchricornis* SZÉPLIGETI: (first label, printed) “Budapest / Szépligeti”; (second label with SZÉPLIGETI’s handwriting) “Sesia / stelidiformis” (a green card is attached to the second label indicating its rearing); third label is my lectotype card; fourth label is with the inventory number “Hym. Typ. No. 484”; fifth label (reverse below the fourth label) is GRAHAM’s provisional lectotype label; sixth label is with the actual name *Microchelonus pellucens* (NEES) given by me. – Lectotype is in good condition: flagelli damaged.

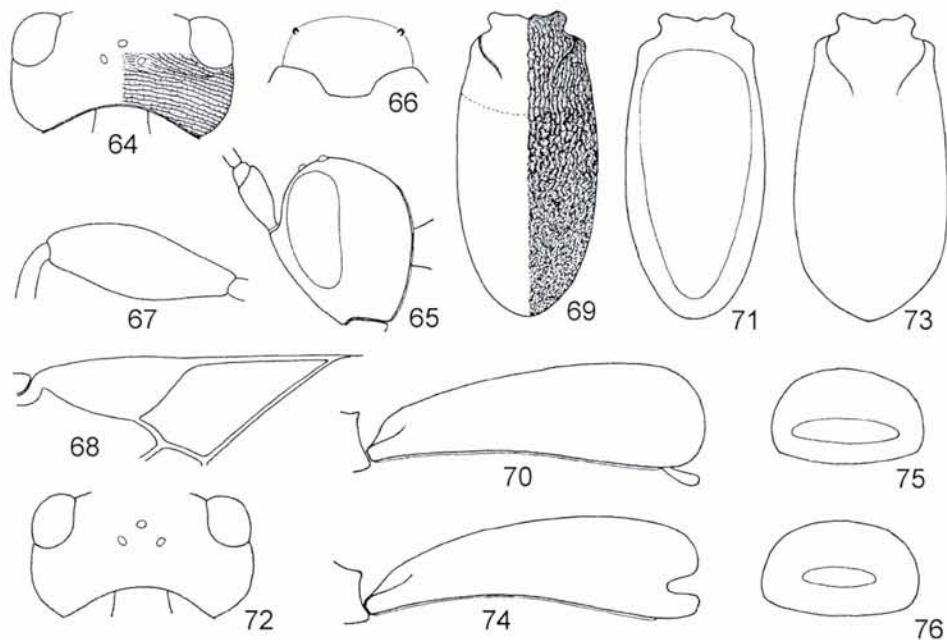
Designation of one female paralectotype of *Chelonus pulchricornis* SZÉPLIGETI: 1 – 5 labels identical with 1 – 4 and 6 labels of the lectotype; “Hym., Typ. No. 485”. – Paralectotype is in good condition: right flagellum damaged.

Designation of one female paralectotype of *Chelonus pulchricornis* SZÉPLIGETI: (first label, printed) “Budapest / Sashegy”; (second label) [18]’95. VII. 25” (SZÉPLIGETI’s handwriting) / “Szépligeti” (printed); third label is my paralectotype card; fourth label is with the inventory number “Hym. Typ. No. 486”; fifth label (reverse below fourth label) with the name *Chelonus pulchricornis* det. SZÉPLIGETI; sixth label is with the actual name *Microchelonus pellucens* (NEES) given by me. – Paralectotype is in good condition.

*Material examined* (109 ♀♀ + 111 ♂♂). – 87 ♀♀ + 86 ♂♂ from 76 localities in Hungary; 1 ♀ from England; 1 ♀ from France; 1 ♂ from Spain; 1 ♂ from Poland; 2 ♀♀ from Italy; 1 ♀ from Croatia; 1 ♀ from Romania (Transylvania); 2 ♀♀ + 3 ♂♂ from Bulgaria; 1 ♀ + 1 ♂ from Macedonia; 1 ♀ from Turkey; 1 ♀ + 3 ♂♂ from Armenia and 12 ♀♀ + 15 ♂♂ from Mongolia.

*Redescription of the two female types of Chelonus alboannulatus* – These are identical with the two female paralectotypes of *Sigalphus pellucens* NEES. Body 5.2 mm long. Antenna somewhat longer than head + mesosoma combined and with 22 antennomeres. First flagellomere 3.3 times and penultimate flagellomere subcubic (just longer than broad), flagellum proximo-distally attenuating. Head in dorsal view (Fig. 64) transverse, 1.8 times as broad as long, temple 1.3 times as long as eye, temple rounded, occiput excavated. Ocelli small and elliptic; hind imaginary tangent to fore ocellus before hind pair of ocelli; OOL almost twice as long as POL. Eye in lateral view 2.1 times as high as wide, temple beyond eye wide, i.e. 1.25 times as wide as eye, ventrally faintly narrowing (Fig. 65). Face 1.8 times as wide as high, inner margin of eyes parallel. Clypeus 1.8 times as wide as high, its lower median margin just convex (Fig. 66). Head above (Fig. 64) and temple striate, face strio-rugose; clypeus with dense punctation, i.e. interspaces shiny and shorter than punctures.

Mesosoma in lateral view 1.3 times as long as high; areolate rugose, mesoscutum rather rugose, scutellum smooth and shiny. Propodeum with a transverse carina laterally ending in a small tubercule. Hind femur (Fig. 67) 2.6 times as long as broad medially. Inner spur of hind tibia a bit longer than half basitarsus. Hind basitarsus as long as tarsomeres 2–4 combined.



**Figs 64–76.** *Microchelonus pellucens* (NEES, 1816): 64 = head in dorsal view with indication of its sculpture, 65 = head in lateral view, 66 = clypeus, 67 = hind femur, 68 = distal part of right fore wing, 69 = female carapace in dorsal view with indication of its sculpture, 70 = female carapace in lateral view, 71 = female carapace in ventral view, 72 = head in dorsal view, 73 = male carapace in dorsal view, 74 = male carapace in lateral view, 75–76 = apical foramen of male carapace in facial view

Fore wing about one-quarter shorter than body. Pterostigma (Fig. 68) 2.3 times as long as wide and issuing *r* distally from its middle; 3-SR 1.25 times as long as *r* and *r* somewhat curved; SR-1 faintly bent; 1-RI almost as long as pterostigma.

Carapace in dorsal view (Fig. 69) 2.1 times as long as broad medially, apically somewhat pointed, longitudinally rugose and on its hind part rugo-rugulose. Pair of basal keels short. Carapace in lateral view 3.2 times as long as high behind and apically rounded (Fig. 70). Ventral aperture of carapace almost as long as carapace itself, i.e. carapace apically somewhat incurved (Fig. 71). Ovipositor sheath short and concealed.

Body black, basal third of carapace reddish yellow. Scape black with weak rusty suffusion, flagellum blackish. Palpi dark rusty brown. Tegulae blackish. Coxae + trochanters black, femora blackish brown; distal half of fore femur, apex of middle femur, fore tibia + tarsus entirely testaceous; middle tibia yellowish, hind tibia dark brown with yellow ring; tarsi 2-3 reddish yellow and faintly brownish fumous. Wings subhyaline, pterostigma brown, veins brownish, basal veins yellow.

*Variabilities of the females* (109 ♀♀). – Similar to the two types of *Chelonus alboannulatus*. Body (4.5-)5-6 mm long. Antenna with (19-)20-22(-24) antennomeres, penultimate flagellomere subcubic to 1.3-1.5 times as long as broad. Head in dorsal view 2-2.1 times as broad as long, rarely between temples a bit broader than between eyes (Fig. 72). Hind femur 2.5-2.6 times as long as broad medially. Pterostigma 2.3-2.5 times as long as wide. Carapace in dorsal view 2-2.2 times as long as broad medially. Carapace in lateral view 3-3.2 times as long as high behind. Carapace frequently entirely black (var. *nitens* REINHARD) or feebly rusty or laterally with a pair of rusty to brownish maculae of variable size. Wings hyaline, subhyaline to faintly fumous.

*Deviating features of the male* (111 ♂♂). – Similar to the female. Body 4.5-6 mm long. Antenna as long as head, mesosoma and half of carapace combined, with 24-27 antennomeres. Flagellum attenuating, first flagellomere 3.7-3.8 times and penultimate flagellomere 1.7-1.8 times as long as broad. Eye usually somewhat longer than temple or, less usually, eye as long as temple. Ocelli a bit greater. Pterostigma 2.3-2.5 times as long as wide. Hind femur 2.6-2.7 times as long as broad medially. Carapace in dorsal view (Fig. 73) 1.8-2 times as long as broad behind, slightly broadening posteriorly. Carapace in lateral view 2.8-3.2 times as long as high behind (Fig. 74). Apical foramen of carapace 3-5 times as wide as high (Figs 75-76). Carapace entirely black, basally sometimes more or less rusty to reddish yellow.

*Host* – *Chamaesphexia tenthrediniformis* (DENIS et SCHIFFERMÜLLER, 1775) (= *Ch. steliiformis* FREYER, 1836) (Lepidoptera, Sesiidae).

*Distribution* – Palearctic Region.

*Remarks* – *Microchelonus pellucens* (NEES) is nearest to *M. starki* (TELENGA, 1953) (Hungary, Russia, Kazakhstan). Their distinction is as follows:

- 1 (2) Temple in dorsal view less rounded (Fig. 64). Vein *r* shorter than 2-SR (Fig. 68). Carapace in dorsal view 2-2.2 times (♀) or 1.8-2 times (♂) as long as broad and usually somewhat less broadening posteriorly, its sculpture somewhat less strong (Fig. 69). Penultimate flagellomere subcubic to 1.5 times as long as broad. Scape black with rusty suffusion, legs dark with rusty to reddish yellow pattern. ♀♂: 4.5-6 mm *M. (P.) pellucens* (NEES, 1816)
- 2 (1) Temple in dorsal view more rounded (Fig. 17). Vein *r* nearly as long as 3-SR (Fig. 77). Carapace in dorsal view 1.8-2 times (♀♂) as long as broad, usu-



ally somewhat more broadening, its sculpture somewhat stronger (Fig. 18). Penultimate flagellomere of female cubic. Scape and legs (except black coxae + trochanters) reddish yellow. ♀♂: 4–5.5 mm

*M. (P.) starki* (TELENGA, 1953)

*Microchelonus (Stylochelonus) pusillus* (SZÉPLIGETI, 1908)

(Figs 78–92)

*Chelonus pusillus* SZÉPLIGETI, 1908: 408 ♀♂ (syntype series two females + one male), type locality: Budapest (Hungary), female lectotype (designated by GRAHAM in 1954: in litt., published by SHENEFELT 1973: 863); 1 ♀ + 1 ♂ paralectotypes (designated by PAPP in 1965, published 1996: 148); examined. –SHENEFELT 1973: 863 (as *Chelonus pusillus*, literature up to 1958).

*Chelonus acuminatus* HERRICH-SCHAEFFER, 1840: 97 (syntype series lost?), type locality: ?Regensburg (Germany). –PAPP 1996: 148 (supposed senior synonymy over *Microchelonus pusillus*).

*Microchelonus pusillus* (SZÉPLIGETI, 1908): TOBIAS 1986a: 311 (♀) and 332 (♂) (in key in Russian). PAPP 1996: 148 (synonyms, taxonomic notes); 1997: 21 (in key).

*Microchelonus (Stylochelonus) pusillus*: TOBIAS 1995: 43 (in key ♀♂, in Russian).

*Microchelonus tuberculiventris* TOBIAS, 1986a: 311 (♀) and 333 (♂) (in key, in Russian); synonymized by TOBIAS 2000: 483 (in key, in Russian).

*Microchelonus furtivus* TOBIAS, 1986a: 332 ♂ (in key, in Russian); supposed synonymy by PAPP 1996: 148.

*Type designation* – Designation of the female lectotype of *Chelonus pusillus* SZÉPLIGETI: (first label, printed) “Budapest / Szépligeti”; (second label) [18]’97. VIII. 2.” (handwriting) “Szépligeti” (printed); third label is the lectotype card prepared by me but designated by M. W. R. DE V. GRAHAM in 1954 (indicated on the reverse side of the inventory number); fourth label is with the type inventory number “Hym. Typ. No. 536”; fifth label is with the actual (or valid) name *Microchelonus pusillus* given by me. – Lectotype is in good condition.

Designation of the female paralectotype of *Chelonus pusillus*: (first label, printed) “Fonyód / Szépligeti”; (second label, printed) “Hungaria”; third label is my paralectotype card; fourth label is with the type inventory number “Hym. Typ. No. 537”; fifth label is with the actual name as for the lectotype. – Paralectotype is in good condition: left flagellum missing, right flagellum damaged.

Designation of the male paralectotype of *Chelonus pusillus*: the labels are identical to those of the female paralectotype. – Paralectotype is in fairly good condition: left flagellum damaged, left fore leg (except coxa) and tarsus of right hind leg missing.

*Material examined* (21 ♀♀ + 1 ♂) – 17 ♀♀ + 1 ♂ from 12 localities in Hungary; 2 ♀♀ from 1 locality in Croatia; 1 ♀ from Georgia and 1 ♂ from Mongolia.

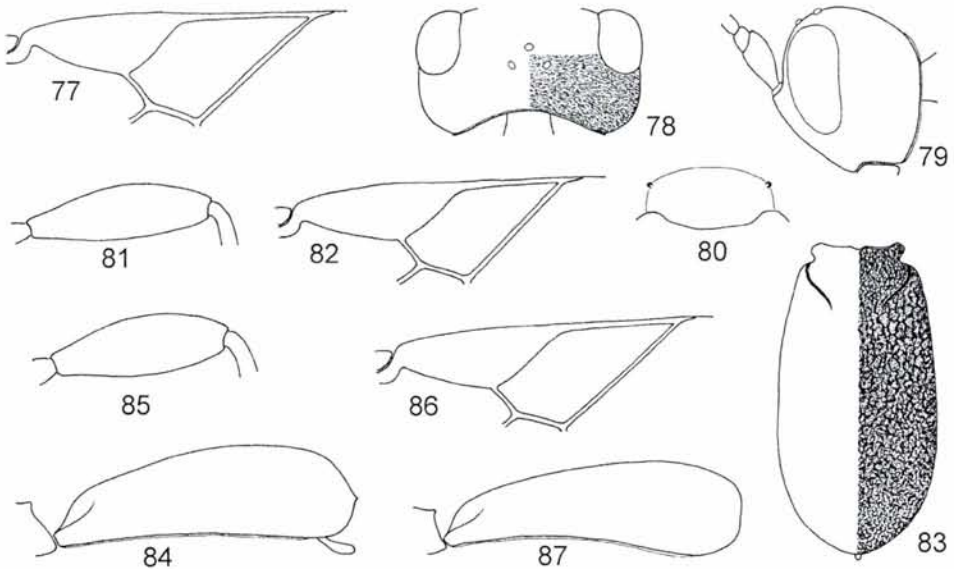
*Redescription of the female lectotype of Chelonus pusillus* SZÉPLIGETI – Body 3 mm long. Antenna slightly longer than head + mesosoma combined and with 19 antennomeres. First flagellomere 3.4 times as long as broad apically and penultimate flagellomere cubic, flagellum evenly thick, flagellomeres gradually shortening. Head in dorsal view (Fig. 78) transverse, 1.8 times as broad as long, eye 1.2 times as long as temple, temple rounded, occiput weakly excavated. Ocelli small and round, fore ocellus far before imaginary tangent to hind pair of ocelli, POL just shorter than OOL.

Eye in lateral view 2.1 times as high as wide, temple beyond eye one-third (or 1.5 times) wider than eye and ventrally somewhat narrowing (Fig. 79). Malar space a bit longer than basal width of mandible. Face 1.6 times as wide as high, inner margin of eyes faintly converging ventrally. Clypeus twice as wide as high medially, its lower margin convex (Fig. 80). Face somewhat concentric rugulostriolate, clypeus smooth and shiny and along lower margin strio-uneven. Head above (vertex + occiput) transversely rugulose (Fig. 78).

Mesosoma in lateral view 1.5 times as long as high, densely rugose, scutellum rugulose, propodeum with a weak transverse carina. Hind femur 3.3 times as long as broad medially (Fig. 81). Inner spur of hind tibia half as long as basitarsus. Hind basitarsus as long as tarsomeres 2–4 combined.

Fore wing about one-fifth shorter than body. Pterostigma (Fig. 82) 2.9 times as long as wide and issuing *r* clearly distally from its middle, *3-SR* 1.2 times as long as *r*, *SR-1* straight; pterostigma 1.5 times as long as *1-R1*.

Carapace in dorsal view (Fig. 83) 1.9 times as long as broad somewhat posteriorly from its middle, moderately broadening posteriorly, apically rounded. Pair of basal keels short. Carapace areolate-rugose, posteriorly rugo-rugulose. Carapace in lateral view (Fig. 84) 2.8 times as long as high behind, its hind end rounded, apically with a minute spicule, ventrally somewhat incurved. Ovipositor sheath short. In ventral view aperture of carapace nearly as long as carapace itself, i.e. carapace apically somewhat incurved (Fig. 88, see arrow).



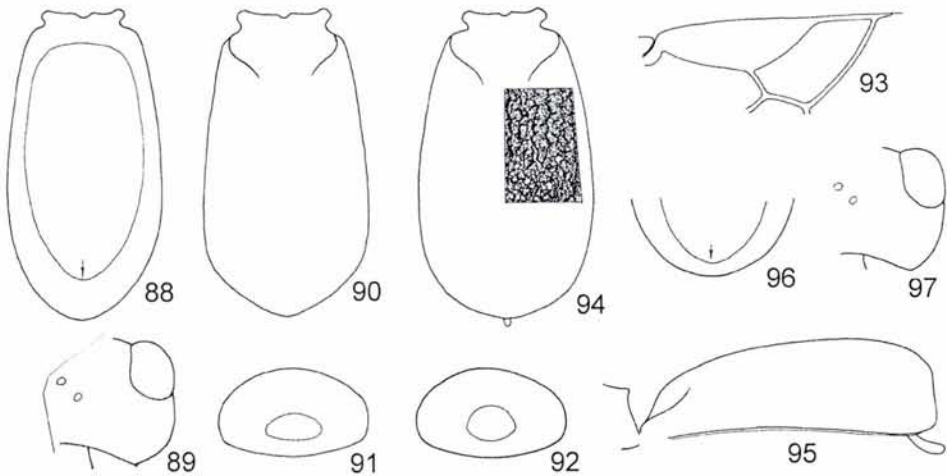
**Figs 77–87.** 77 = *Microchelonus starki* (TELENGA, 1953): distal part of right fore wing. – 78–87. *Microchelonus pusillus* (SZÉPLIGETI, 1908): 78 = head in dorsal view with indication of its sculpture, 80 = clypeus, 81 = hind femur of female lectotype, 82 = distal part of right fore wing of female lectotype, 83 = carapace of female lectotype in dorsal view with indication of its sculpture, 84 = carapace of female lectotype in lateral view, 85 = hind femur of female, 86 = distal part of right fore wing of female, 87 = male carapace in lateral view

Body black. Scape dark brown with faint rusty suffusion. Flagellum yellowish brown. Palpi brown. Tegulae brown, parategulae light brown. Coxae dark brown; femora brown, fore femur apically yellow; tibiae and tarsi yellow, tibiae 2–3 apically brown, tarsi with brownish tint. Wings subhyaline, pterostigma brown, veins light brown, parastigma yellow.

*Redescription of the female paralectotype of Chelonus pusillus* – Similar to the female lectotype. Body 2.8 mm long. Scutellum medially with a longitudinal rugulae, interspaces smooth and shiny, its margin rugose. Hind femur 2.7 times as long as broad medially.

*Redescription of the male paralectotype of Chelonus pusillus* – Similar to the female types. Body 3 mm long. Antenna as long as head, mesosoma and half of carapace combined and with 20 antennomeres. First flagellomere 2.5 times and penultimate flagellomere 1.5 times as long as broad, flagellum distally attenuating. Temple in dorsal view just bulging (Fig. 89). Hind femur 2.9 times as long as broad medially. 3–SR and r equal in length. Carapace in dorsal view (Fig. 90) 1.8 times as long as broad posteriorly, apical foramen small and elliptic, twice as wide as high (Fig. 91). Carapace in lateral view 3.2 times as long as high behind (Fig. 87). Legs entirely brown.

*Variabilities of the females* (21 ♀♀). – Similar to the female lectotype. Body (2.8–)3 mm long (according to TOBIAS 1.9–2.5 mm). Antenna with (16–)18–20, usually with 18, antennomeres. Head in dorsal view 1.7–2 times, usually 1.8 times, as broad as long. Eye just longer than temple (3 ♀♀). Temple in lateral view 1.3 times as wide as eye (2 ♀♀). Hind femur (2.9–)3.1–3.3 times, usually 3.1–3.2 times, as long as broad medially (Fig. 85). Pterostigma 2.8–3 times, usually 3 times, as long as wide, pterostigma 1.3–1.6 times as long as 1–R1 (Fig. 86). Carapace in dorsal view 1.8–2.1 times,



**Figs 88–97.** 88–92. *Microchelonus pusillus* (SZÉPLIGETI, 1908): 88 = carapace of female lectotype in ventral view, 89 = right half of head in dorsal view, 90 = carapace of male paralectotype in dorsal view, 91 = apical foramen of carapace of male paralectotype in facial view, 92 = apical foramen of male carapace. – 93–97. *Microchelonus luzhetzkji* (TOBIAS, 1966): 93 = distal part of right fore wing, 94 = female carapace in dorsal view with indication of its sculpture, 95 = male carapace in lateral view, 96 = apical end of female carapace in ventral view, 97 = right half of head in dorsal view

usually 1.8–1.9 times, as long as broad medially or somewhat posteriorly from its middle. Carapace in lateral view (2.7–)2.8–2.9 times as long as high behind.

*Variabilities of the males* (2 ♂♂). – Similar to the female. Body 3 mm long. Antenna with 18 (1 ♂) and 21 (1 ♂) antennomeres. Carapace in lateral view 3–3.2 times as long as high behind. Apical foramen of carapace 1.6 times as wide as high (Fig. 92).

*Remarks* – *Microchelonus pusillus* (SZÉPLIGETI) stands nearest to *M. luzhetzkji* (TOBIAS, 1966) (Ukraine, Armenia, Kazakhstan, Turkmenia). Their distinction is presented as follows:

- 1 (2) Pterostigma less than twice as long as *I–R1*, marginal cell not narrow (Figs 82, 86). Female carapace in dorsal view 1.8–2.1 times as long as broad (Fig. 83); in lateral view relatively less high, apically declivous and with a minute spinule (Fig. 84); in ventral view apically more incurved (Fig. 88, see arrow). Antenna with (16–)18–21 antennomeres (♀♂). Temple in dorsal view relatively less rounded (Fig. 78). Hind tibia usually with a yellow ring. Scape dark brown to black. ♀♂: (2.8–)3 mm

*M. (S.) pusillus* (SZÉPLIGETI, 1908)

- 2 (1) Pterostigma more than twice as long as *I–R1*, marginal cell narrow (Fig. 93). Carapace in dorsal view (1.6–)1.7 times as long as broad posteriorly (Fig. 94); in lateral view relatively higher, apically truncate and without minute spinule (Fig. 95); in ventral view apically less incurved (Fig. 96, see arrow). Antenna with 16 (♀) and 19–20 (♂) antennomeres. Temple in dorsal view relatively more rounded (Fig. 97). Hind tibia brown and at most with an indistinct light brownish ring. Scape sometimes reddish yellow. ♀♂ 2.2–3 mm

*M. (M.) luzhetzkji* (TOBIAS, 1966)

*Microchelonus (Microchelonus) risorius* (REINHARD, 1867)

(Figs 98–113)

*Chelonus risorius* REINHARD, 1867: 360 ♂, type locality: ?Dresden (Germany), syntype series one male in Zoologisches Museum Berlin; not examined.

*Microchelonus risorius* (REINHARD): SHENEFELT 1973: 899 (literature up to 1971). TOBIAS 1986a: 327 ♂ (in key, in Russian), 2000: 542 ♂ (in key, in Russian). TOBIAS & Lozan 2003: 244 (redescription).

*Chelonus fissus* SZÉPLIGETI, 1900: 214 (in Hungarian) and 218 (in German) ♂ (syntype series one male), type locality: Pilismarót (Hungary), male holotype (designated by PAPP 1996: 148) in Hungarian Natural History Museum Budapest; examined, synonymized by PAPP (1996: 148).

*Microchelonus risorius* var. *fissa* (SZÉPLIGETI): SHENEFELT 1973: 899 (literature up to 1934).

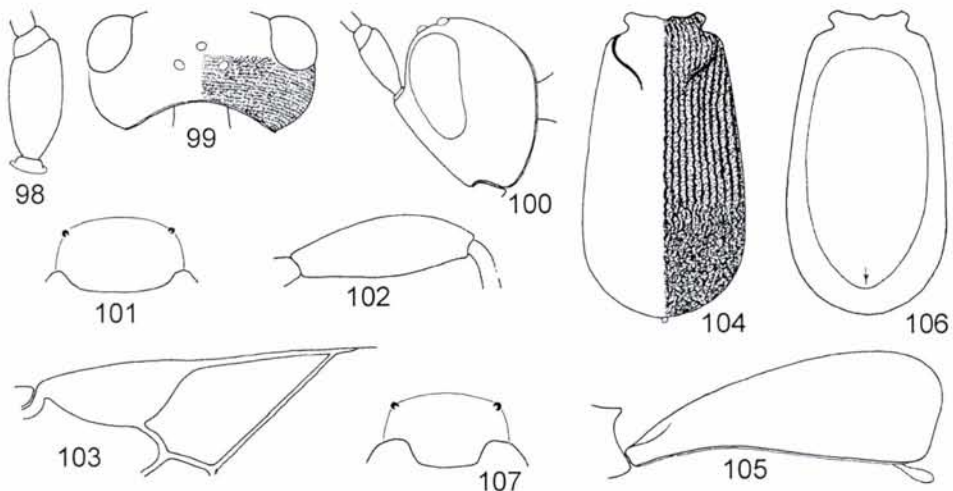
*Microchelonus magnifissus* TOBIAS, 1986a: 327 ♂ (replacement name for *Chelonus fissus* SZÉPLIGETI, 1900 not PROVANCHER, 1881; synonymized by PAPP (1996: 148).

*Neochelonella fissuralis* TOBIAS, 1964: 196 ♀♂, type locality: Tselinograd (Kazakhstan), holotype and paratypes in Zoological Institute Sankt Petersburg; female holotype and two female + two male paratypes examined. – TOBIAS 1986a: 327 as valid species under the name *Microchelonus fissuralis*; synonymized by TOBIAS 2000: 542.

*Type designation* – Designation of the male holotype of *Chelonus fissus* SZÉPLIGETI: (first label, printed) “P.Maróth” (=Pilismarót) / “Szépligeti”; (second label) [18]’95. VIII. 13.” (Szépligeti’s handwriting, not “1899 máj. 19” and “19. Mai 1899” as is given in the original description, present emendation); third label is my holotype card; fourth label is with the inventory number “Hym. Typ. No. 512”; fifth label is Szépligeti’s determination *Chelonella risoria* var *fissa*; sixth label is with the actual name *Microchelonus risorius* (REINHARD) given by me in 2000. – Holotype is in poor condition: head glued separately, left flagellum missing right flagellum damaged; right fore leg (except coxa) and tarsi of hind pair of legs missing.

*Material examined* (11 ♀♀ + 23 ♂♂). – Male holotype of *Chelonus fissus* from Hungary; female allotype and two female + two male paratypes of *Microchelonus fissuralis* from Kazakhstan; 3 ♀♀ + 17 ♂♂ from 13 localities in Hungary; 1 ♀ from Croatia; 1 ♀ from Italy (Sicily); 1 ♀ from Armenia; 1 ♀ + 2 ♂♂ from Kazakhstan; 1 ♀ + 1 ♂ from Mongolia and 1 ♂ from Turkey.

*Redescription of the female holotype of Neochelonella fissuralis* TOBIAS – Originally the female of *M. risorius* was described on the basis of the female holotype of *N. fissuralis*, consequently this specimen serves for the redescription of the female of *M. risorius* (which was described on the basis of the single male syntype specimen). The type specimen bears the the label “Allotypus”; however, in the original description by TOBIAS (1964: 196) this female specimen was designated as the



**Figs 98–107.** *Microchelonus risorius* (REINHARD, 1867) (98–106: female type of *Neochelonella fissuralis* TOBIAS, 1964): 98 = scape, 99 = head in dorsal view with indication of its sculpture, 100 = head in lateral view, 101 = clypeus, 102 = hind femur, 103 = distal part of right fore wing, 104 = female carapace in dorsal view with indication of its sculpture, 105 = carapace in lateral view, 106 = carapace in ventral view, 107 = clypeus

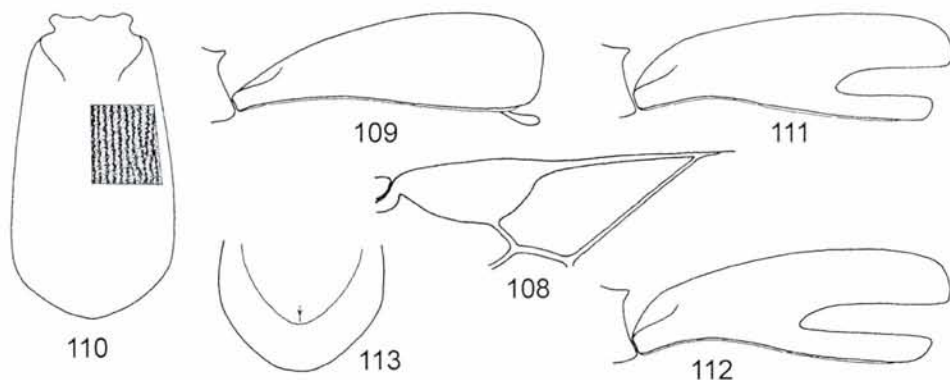
holotype. I attached the "Holotypus" label close below the allotype label correcting the type status of the allotype specimen of *N. fissuralis*. – Body 4.2 mm long. Antenna somewhat longer than head + mesosoma combined and with 16 antennomeres. Scape 2.1 times as long as broad medially (Fig. 98), first flagellomere three times and penultimate flagellomere 1.3 times as long as broad, flagellum gradually attenuating. Head in dorsal view (Fig. 99) transverse, twice as broad as long, eye a bit shorter than temple, temple rounded, occiput excavated. Ocelli far from each other, hind imaginary tangent to fore ocellus clearly before hind pair of ocelli, OOL 1.2–1.3 times as long as POL. Eye in lateral view clearly twice as high as wide, temple beyond eye one-third (1.4 times) wider than eye and ventrally somewhat narrowing (Fig. 100). Malar space 1.5 times as long as basal width of mandible. Face clearly twice as wide as high, inner margin of eyes parallel. Clypeus 1.7 times as wide below as high medially, its median lower margin truncate (Fig. 101). Head finely striate (Fig. 99), clypeus uneven and shiny.

Mesosoma in lateral view 1.5 times as long as high, areolate-rugose, mesoscutum behind with longitudinal striate elements, scutellum also striate. Transverse carina of propodeum medially with a pair of denticles, laterally ending in a tubercule. Hind femur 2.9 times as long as broad medially (Fig. 102). Inner spur of hind tibia shorter than half basitarsus, hind basitarsus as long as tarsomeres 2–4 combined.

Fore wing shorter than body. Pterostigma (Fig. 103) 2.35 times as long as wide and issuing *r* somewhat distally from its middle, *r* curved and as long as 3–*SR*, *SR*1 straight; *l*–*RI* somewhat shorter than length of pterostigma.

Carapace in dorsal view (Fig. 104) 1.8 times as long as broad behind, moderately broadening posteriorly, longitudinally striated, posteriorly rugose. Carapace in lateral view 2.6 times as long as high behind, apically truncate (Fig. 105). Ventral aperture of carapace slightly shorter than carapace itself, i.e. carapace apically slightly incurved (Fig. 106, see arrow). Ovipositor sheath short, concealed.

Body black. Antenna black with very weak brownish tint. Palpi brown, tegula dark brown. Legs black with light colour pattern. Apex of fore and middle femora and entire fore tibia yellow; middle tibia yellowish, dorso-distally brownish; hind tibia dark brown with a yellow ring. Tarsi yellowish with brownish suffusion. Wings subhyaline, pterostigma dark brown, basal veins yellow, otherwise veins brown.



**Figs 108–113.** *Microchelonus risorius* (REINHARD, 1867): 108 = distal part of right fore wing, 109 = female carapace in lateral view, 110 = male carapace in dorsal view with indication of its sculpture, 111–112 = male carapace in lateral view, 113 = apical end of male carapace in ventral view

*Deviating features of the females* (11 ♀♀). – Body (3.7–)4–4.3 mm long. Head in dorsal view (1.9–)2 times as broad as long, eye in dorsal view as long as or a bit longer than temple. Temple in lateral view beyond eye 1.4–1.5 times as wide as eye. Clypeus sometimes medially more protruding (Fig. 107). Pterostigma 2.3–2.4(–2.5) times as long as wide, *r* either more or less bent or almost straight, usually shorter than 3–SR; 1–R1 rarely as long as pterostigma (Fig. 108). Carapace in dorsal view 1.7–1.8(–1.9) times as long as broad behind; in lateral view 2.6–2.9 times as long as high behind (Fig. 109).

*Deviating features of the males* (24 ♂♂). – Similar to the female. Body (3.8–)4–4.5 mm long. Antenna as long as head, mesosoma and half of carapace combined. Head in dorsal view 1.9–2(–2.1) times as broad as long, eye and temple usually of equal length or one of them slightly longer. Carapace in dorsal view (Fig. 110) 1.7–1.9(–2) times as long as broad behind, apically faintly pointed, its striate sculpture usually somewhat less rough than that of female. Carapace in lateral view 2.5–2.6 times as long as high behind, its apical foramen extending posterior third (Fig. 111) to half of carapace (Fig. 112). Apical end of carapace in ventral view incurved (Fig. 113, see arrow).

*Hosts* – *Biorhiza terminalis* (FABRICIUS, 1798) and *Biorhiza pallida* (OLIVIER, 1791) (Hymenoptera, Cynipidae) (SHENEFELT 1973: 899).

*Distribution* – England, Germany, Czechia, Hungary, Croatia, Italy, Turkey, Armenia, Kazakhstan, Kirghizia, Mongolia, Russia.

*Remarks* – *Microchelonus risorius* (REINHARD) is nearest to *M. scabrosus* (SZÉPLIGETI) and *M. sulcatus* (JURINE), their distinction see at *M. sulcatus*.

### *Microchelonus (Microchelonus) scabrosus* (SZÉPLIGETI, 1896)

(Figs 114–131)

*Chelonus scabrosus* SZÉPLIGETI, 1896: 177 (in Hungarian) and 238 (in German) ♀♂ (syntype series two females, male(s) destroyed or lost), type locality: Budapest (Hungary), female lectotype (designated by PAPP in SHENEFELT 1973: 902) and one female paralectotype (designated by PAPP 1996: 149) in Hungarian Natural History Museum Budapest; examined. – TOBIAS 1976: 153 (♀) and 155 (♂) (in key, in Russian).

*Microchelonus scabrosus* (SZÉPLIGETI, 1896): SHENEFELT 1973: 902 (comb. n., literature up to 1941). TOBIAS 1986a: 326 (♀) and 331 (♂) (in key, in Russian); 2000: 530 (♀) and 551 (♂) (in key, in Russian). PAPP 1996: 149. TOBIAS & Lozan 2003: 249 (redescription).

*Type designation* – Designation of the female lectotype of *Chelonus scabrosus* SZÉPLIGETI: (first label, printed) “Budapest / Szépligeti”; second label is the lectotype card attached by me but designated by M. W. R. DE V. GRAHAM in 1954 (in litt.); third label is the type inventory number “Hym. Typ. No. 547”; fourth label (reverse below the third label) is with GRAHAM’s provisional lectotype designation; fifth label is with the actual name *Microchelonus scabrosus* given by me. – Lectotype in good condition.

Designation of the female paralectotype of *Chelonus scabrosus* SZÉPLIGETI. – Labels 1 – 4 identical with those of the lectotype, type inventory number “Hym. Typ. No. 548”. – Paralectotype in good condition: left pair of wings damaged by the micropin.

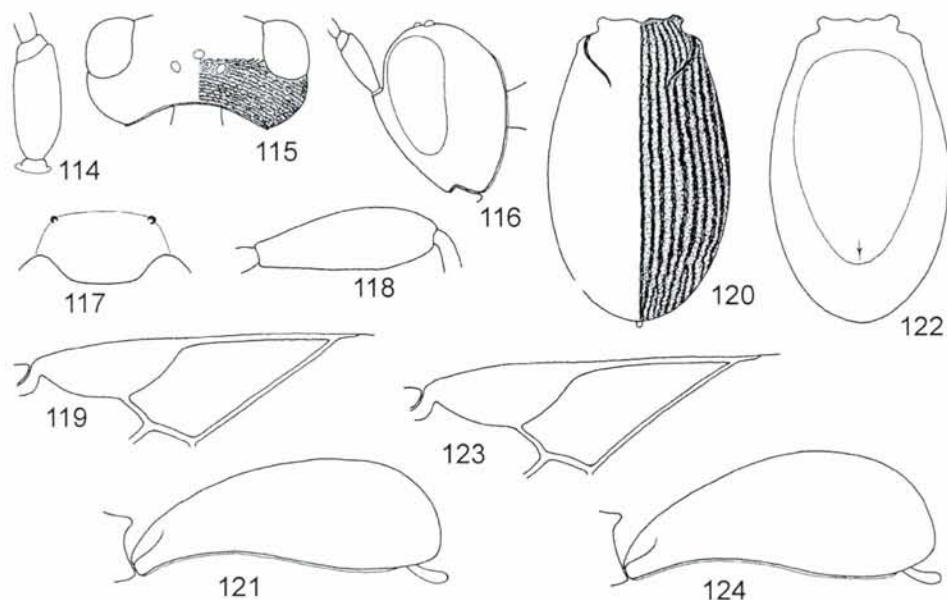
*Material examined* (5 ♀♀ + 6 ♂♂) – 2 ♀♀ + 6 ♂♂ from 8 localities in Hungary; 1 ♀ from Romania (Oltenia); 1 ♀ from Algeria and 1 ♀ from Mongolia.

*Redescription of the female lectotype of Chelonus scabrosus* SZÉPLIGETI – Body 4 mm long. Antenna as long as head and mesosoma combined and with 16 flagellomeres. Scape 2.5 times as long as broad apically and here obliquely truncate (Fig. 114). First flagellomere three times and penultimate flagellomere 1.4 times as long as broad, flagellomeres distally-gradually shortening and attenuating. Head in dorsal view (Fig. 115) transverse, twice as broad as long, eye 1.2 times as long as temple, temple rounded, occiput excavated. Ocelli middle sized and forming a low triangle, hind imaginary tangent to fore ocellus touching hind pair of ocelli; OOL = POL. Eye in lateral view (Fig. 116) 2.2 times as high as wide, temple beyond temple a bit wider than eye, evenly wide. Malar space 1.2 times as long as basal width of mandible. Face 1.7 times as wide as high, inner margin of eyes moderately converging ventrally. Clypeus (Fig. 117) 1.9 times as wide as high, its median lower margin faintly convex. Face with rather concentric fine striations with anastomoses, clypeus almost smooth and shiny, Vertex, occiput (Fig. 115) and temple with fine striation and less anastomoses.

Mesosoma in lateral view 1.6 times as long as high, areolate-rugose, mesoscutum rugose and medially striate, scutellum also striate. Propodeum with a less strong transverse carina ending laterally in a pair of tubercles. Hind femur 3.1 times as long as broad distally (Fig. 118). Inner spur of hind tibia half as long as basitarsus. Hind basitarsus as long as tarsomeres 2–4 combined.

Fore wing about one-third shorter than body. Pterostigma (Fig. 119) 2.5 times as long as wide and issuing *r* distally from its middle, *r* a bit shorter than 3–SR, SR1 straight, 1–R1 slightly shorter than pterostigma.

Carapace in dorsal view (Fig. 120) somewhat globose, 1.66 times as long as broad medially, apically rounded. Pair of basal keels short. Carapace strongly and longitudinally striate with less



**Figs 114–124.** *Microchelonus scabrosus* (SZÉPLIGETI, 1896) (114–122: female lectotype): 114 = scape, 115 = head in dorsal view with indication of its sculpture, 116 = head in lateral view, 117 = clypeus, 118 = hind femur, 119 = distal part of right fore wing, 120 = carapace in dorsal view with indication of its sculpture, 121 = carapace in lateral view, 122 = carapace in ventral view, 123 = distal part of right fore wing of female and male, 124 = female carapace in lateral view



anastomoses, its hind third rugose-striate. Carapace in lateral view (Fig. 121) 2.7 times as long as high behind, its hind end declivous. Ovipositor short and concealed. In ventral view aperture shorter than carapace itself, i.e. apically incurved (Fig. 122, see arrow).

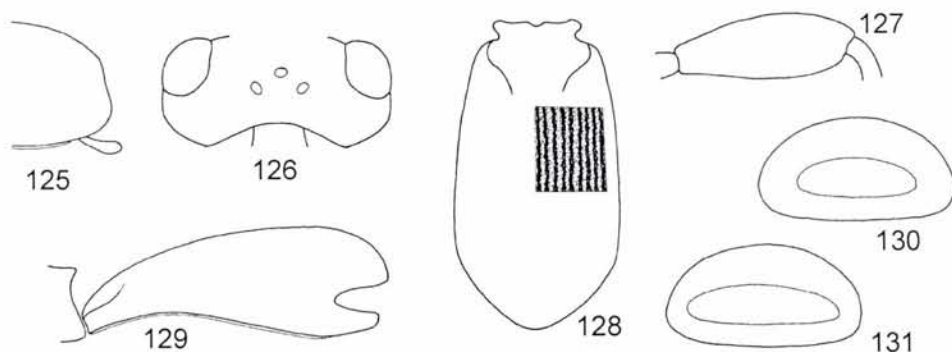
Body black. Scape reddish yellow, flagellum blackish. Palpi light brown. Tegula dark brown. Legs dark brown, fore femur apically and tibiae 1–2 yellow, hind tibia brown with proximal yellow ring, tarsi 1–2 weakly brownish, tarsus 3 brownish. Wings weakly brownish fumous, pterostigma brown, veins light brown, basally yellow.

*Deviating features of the female paralectotype of Chelonus scabrosus* SZÉPLIGETI – Similar to the female lectotype. Ocelli small, hind imaginary tangent to fore ocellus before hind pair of ocelli. Eye in lateral view 2.35 times as high as wide, temple beyond eye 1.2 times as wide as eye. Pterostigma 2.3 times as long as wide, issuing *r* somewhat less distally. Carapace in dorsal view somewhat more broadening, 1.6 times as long as broad medially. Palpi brown. Scape somewhat dark reddish yellow. Dark colour of legs more extended.

*Deviating features of female* (5 ♀♀). – Body 4–4.2 mm long. Eye in dorsal view just longer than temple (2 f). Pterostigma 2.3–2.6 times as long as wide, issuing *r* more or less distally from its middle, *r* shorter than to as long as 3–*SR*, *SR*–*l* straight or (1 ♀) faintly bent (Fig. 123). Carapace in lateral view 2.4–2.5 times as long as high behind (3 ♀♀) (Fig. 124), behind rather truncate (Fig. 125).

*Redescription of the male* (6 ♂♂). – Similar to the female. Body 3.8–4 mm long. Antenna somewhat longer than head + mesosoma combined and with 21 antennomeres. First flagellomere 3.7–3.8 times and penultimate flagellomere 1.6–1.7 times as long as broad. Head in dorsal view (Fig. 126) 2–2.1 times as broad as long, eye 1.1–1.2 times as long as temple, temple indistinctly swollen. Hind femur 2.9–3 times as long as broad medially (Fig. 127). Carapace in dorsal view not globose (Fig. 128), 1.8–1.9 times as long as broad behind, somewhat pointed apically and somewhat less strongly striate. Carapace in lateral view 2.7–2.8 times as long as high behind (Fig. 129). Apical foramen of carapace (2–)3–4 times as wide as high (Figs 130–131).

*Distribution* – Algeria, Czechia, Hungary, Romania, Moldavia, Russia (European part, Baikal Region), Uzbekistan, Kirghizia, Mongolia.



**Figs 125–131.** *Microchelonus scabrosus* (SZÉPLIGETI, 1896): 125 = posterior end of female carapace in lateral view, 126 = male head in dorsal view, 127 = hind femur of male, 128 = male carapace in dorsal view with indication of its sculpture, 129 = male carapace in lateral view, 130–131 = apical foramen of male carapace in facial view

*Remarks* – *Microchelonus scabrosus* (SZÉPLIGETI) is nearest to *M. sulcatus* (JURINE, 1807) (Europe) considering their strongly striate carapace. The distinction between the two species is presented as follows:

- 1 (2) Female carapace in dorsal view globose, its striation relatively less strong (Fig. 120). Penultimate flagellomere of female 1.3–1.4 times as long as broad. Apical foramen of male carapace (2–)3–4 times as wide as high (Figs 130–131); foramen in lateral view of carapace extending to its hind one-eighth (Fig. 129). Scape reddish yellow, palpi light brownish to brown. ♀: 4–4.2 mm, ♂: 3.8–4 mm *M. (M.) scabrosus* (SZÉPLIGETI, 1896)
- 2 (1) Female carapace in dorsal view rather less globose, its striation relatively stronger (Figs 150–151). Penultimate flagellomere of female cubic to subcubic. Apical foramen of male carapace 6–8(–9) times as wide as high (Figs 141 and 144); in lateral view of carapace foramen extending to its hind one-fifth to one-sixth (Figs 139, 143). Scape and palpi brown to black. ♀♂: 3–4(–4.3) mm *M. (M.) sulcatus* (JURINE, 1807)

*Microchelonus (Microchelonus) sulcatus* (JURINE, 1807)  
(Figs 132–154)

*Chelonus sulcatus* JURINE, 1807: 291 ♂ (syntype series male or males, lost, Dr. C. BESUCHET informed me in his letter of March 1985 that the syntype series of *Chelonus sulcatus* is not present in the Muséum d'Histoire Naturelle, Genève.), type locality: ?Switzerland. – Male neotype present designation to promote the objective distinction of the species *M. risorius* (REINHARD) and *M. scabrosus* (SZÉPLIGETI) closely related to *M. sulcatus*.

*Microchelonus sulcatus* (JURINE, 1807): PAPP 1967: 207 (comb. n.). SHENEFELT 1973: 904 (as valid species, literature up to 1971).

*Chelonus curvisulcatus* SZÉPLIGETI, 1896: 175 (description in Hungarian) and 236 (description in German) ♂ (syntype series one male, lost), type locality: Szeged (Hungary). – SHENEFELT 1973: 882 (as *Microchelonus curvisulcatus* valid species). TOBIAS 1986a: 323 (as synonym of *M. rimatus* SZÉPLIGETI).

*Chelonus rimatus* SZÉPLIGETI, 1896: 176 (description in Hungarian) and 236 (description in German) ♂ (syntype series one male), type locality: Budapest (Hungary), male lectotype designated by GRAHAM in 1954 (in litt.) and PAPP in 1967 (present designation) and in Hungarian Natural History Museum Budapest; examined. – SZÉPLIGETI 1898: 217 (in Hungarian) and 230 (in German) (in key). PAPP 1971: 84 (as *Microchelonus rimatus*); 1990: 311 (synonymization with *Ch. rimulosus* THOMSON, 1874). TOBIAS 1986a: 323 (♀) and 329 (♂) (as *Chelonus rimulosus* THOMSON).

*Chelonus rimulosus* THOMSON, 1874: 577, female lectotype and one male paralectotype in Universitetes Zoologiska Institutionen Lund; examined (cf. PAPP 1990: 311), **syn. n.** – SHENEFELT 1973: 899 (as valid species, literature up to 1958). TOBIAS 1986a: 318 (♀) (as valid species in key, in Russian); 2000: 489 (♀) and 546 (♂) (as valid species in key, in Russian).

*Type designation* – Designation of the male neotype of *Chelonus sulcatus* JURINE: (first label, printed) “Budapest / Hármashatárhegy” (Hungary); (second label, printed) “1972. VI. 6. / leg. Papp J.”; third label is my neotype card; fourth label is with the type inventory number “Hym. Typ. No. 10657.” and fifth label is with the actual name *Microchelonus sulcatus* (JURINE) given by me in 2003. – The species *Chelonus sulcatus* is very difficult to identify considering the original description which is merely a laconic sentence in French language as follows: “sulcatus Gravé / L’antenne qui est gravée / a coté de l’insecte est celle / d’une femelle” (JURINE 1807: 291). This “characterization” may refer to several *Microchelonus* species known so far. The figure added to this “description” on the plate 12 under the caption of figure “Gen. 41. Chelonus” is somewhat more informative, as it illustrates the whole wasp and, separately, the antenna and the mandible. The figure of the whole wasp represents the male. On the basis of this figure I could recognize the male of *M. sulcatus* in nature. Subsequently I present the redescription of the male of *M. sulcatus* by designation of its neotype (see above). The designation is justified by the strong striate sculpture of the carapace of the three *Microchelonus* species giving a high similarity to each other: *M. risorius* (REINHARD), *M. scabrosus* (SZÉPLIGETI) and *M. sulcatus* (JURINE), the first two species are fixed by their types, the fixation of *M. sulcatus* is supplied by its neotype.

Designation of the male lectotype of *Chelonus rimatus* SZÉPLIGETI: (first label, printed) “Budapest / Szépligeti”; (second label) [18]“96. V. 24” (Szépligeti’s handwriting) “Szépligeti” (printed); third label is my lectotype card; fourth label is with the type inventory number “Hym. Typ. No. 513”; fifth label (reverse below fourth label) is with GRAHAM’s provisional lectotype designation (with GRAHAM’s handwriting); sixth label is with the name *Microchelonus rimulosus* THOMSON given by me and indicating the comparison of the male lectotype of *Ch. rimatus* to the male paralectotype of *M. rimulosus*; seventh label is with the actual name *M. sulcatus* given by me.

*Material examined* (77 ♀♀ + 38 ♂♂). – 47 ♀♀ + 36 ♂♂ from many localities in Hungary; 9 ♀♀ + 1 ♂ from Turkey, 3 ♀♀ + 1 ♂ from Croatia; 5 ♀♀ from Russia; 3 ♀♀ from Sweden; 2 ♀♀ each from Greece and Bulgaria, 1 ♀ each from Armenia, Italy, Macedonia, Moldavia, Spain, Ukraine.

*Description of the male neotype of Chelonus sulcatus* JURINE – Body 4.4 mm long. Antenna nearly as long as body and with 22 antennomeres. Scape 2.6 times as long as broad proximally (Fig. 132). First flagellomere three times and penultimate flagellomere 1.6 times as long as broad apically, flagellum slightly attenuating distally. Head in dorsal view (Fig. 133) transverse, twice as broad between temples as long, between temples just broader than between eyes, temple widely rounded and one-fourth longer than (or 1.3 times as long as) eye, occiput excavated. Ocelli middle sized, round, hind imaginary tangent to fore ocellus just before hind pair of ocelli, OOL 1.6 times as long as POL. Eye in lateral view (Fig. 134) three times as high as wide, temple beyond eye twice as wide as eye, ventrally somewhat narrowing. Face 1.9 times as wide as high, inner margin of eyes parallel. Clypeus 1.7 times as wide as high, its lower median margin truncate (Fig. 135). Head finely striate (Fig. 133), clypeus with some-what rougher striation, medially almost smooth, shiny.

Mesosoma in lateral view 1.5 times as long as high, areolate-rugose, mesoscutum rugo-rugulose and behind with longitudinal striate elements, scutellum laterally with longitudinal rugae and medially subpunctate, shiny. Transverse strong carina of propodeum medially with a pair of fine denticles and laterally ending in a tubercle. Hind femur 2.9 times as long as broad medially (Fig. 136). Inner spur of hind tibia half as long as basitarsus; basitarsus as long as tarsomeres 2–4 combined.

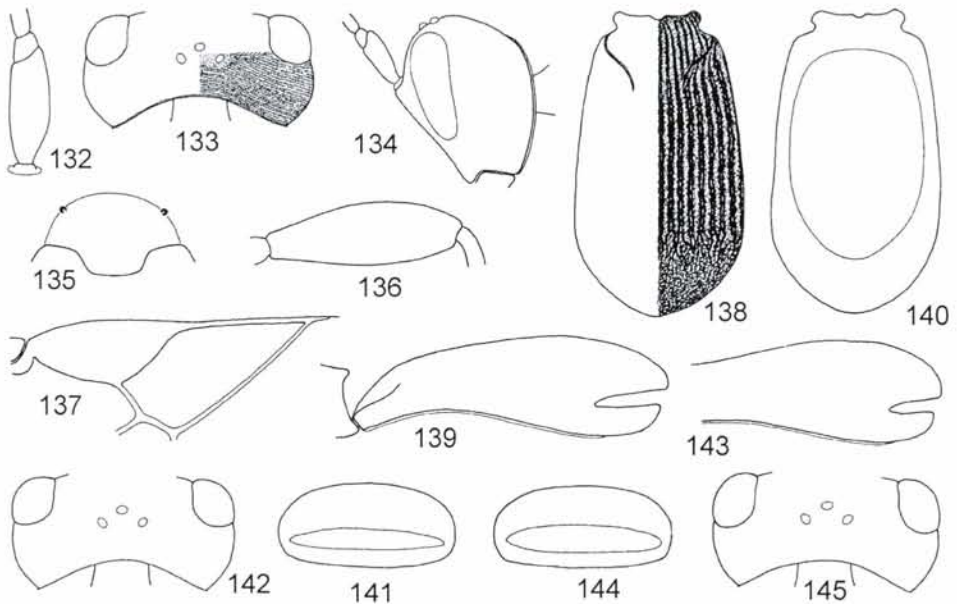
Fore wing 0.8 times as long as body. Pterostigma (Fig. 137) 2.35 times as long as wide and insuing *r* distally from its middle, *r* one-fifth longer than 3–SR, SR–I straight, I–RI one-fourth shorter than pterostigma.

Carapace in dorsal view (Fig. 138) 1.8 times as long as broad behind and somewhat broadening posteriorly, apically faintly pointed, longitudinally sulciform striate, interstriations uneven-subrugulose, behind rugo-rugulose. Carapace in lateral view (Fig. 139) 2.9 times as long as high, apical foramen extending to its posterior one-fifth. Ventral aperture of carapace shorter than carapace itself, i.e. carapace apically clearly incurved (Fig. 140). Apical foramen wide and narrow, 8 times wider than medially high (Fig. 141).

Body black. Scape black with weak rusty tint, flagellum black. Palpi brown, mandible brown, basally rusty. Legs blackish; fore femur apically and fore tibia entirely yellow, fore tarsus brownish, tibiae + tarsi 2–3 blackish brown, hind tibia with a short yellow ring. Wings faintly brownish fumous, pterostigma blackish brown and basally with a small pale spot, veins brown, basally yellow.

*Variable features of the male* – Body (3.8–)4.2–4.5 mm long. Antenna with 21–22 antennomeres. Head in dorsal view sometimes as broad between temples as between eyes (Fig. 142). Hind femur 2.5–3.2 times as long as broad distally. Pterostigma 2.2–2.5(–3) times as long as wide. Carapace in dorsal view 1.6–1.8 times as long as broad behind, its sculpture rarely less sulciform. Apical foramen of carapace in lateral view extending to its one-fifth to one-sixth behind (Figs 139, 143). Apical foramen 6–8(–9) times as wide as high medially (Figs 141, 144). Pterostigma entirely blackish brown to black. Legs entirely dark coloured.

*Description of the female* – Taxonomic remark: In the Hungarian Natural History Museum there are female specimens which have been collected in the same localities simultaneously with the



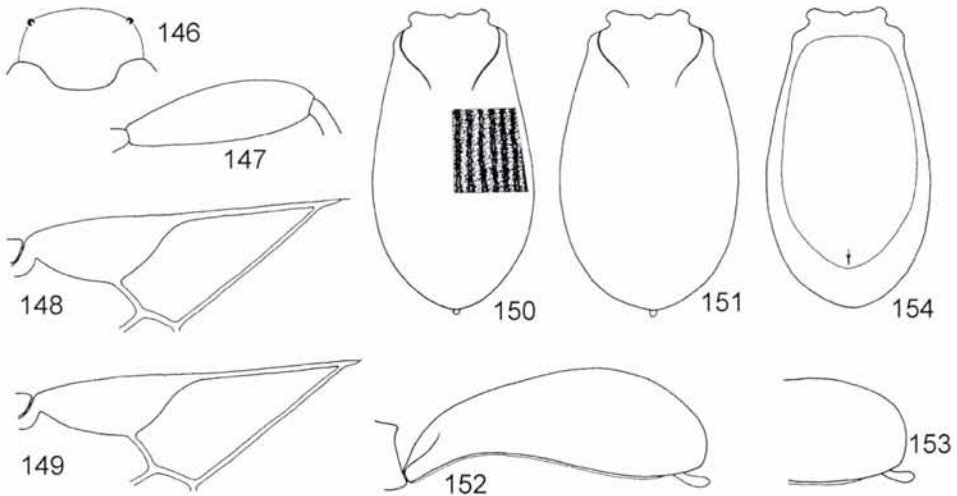
**Figs 132–145.** *Microchelonus sulcatus* (JURINE, 1807) (132–141: male neotype): 132 = scape, 133 = head in dorsal view with indication of its sculpture, 134 = head in lateral view, 135 = clypeus, 136 = hind femur, 137 = distal part of right fore wing, 138 = carapace in dorsal view with indication of its sculpture, 139 = carapace in lateral view, 140 = carapace in ventral view, 141 = apical foramen of male carapace in facial view, 142 = head in dorsal view, 143 = male carapace in lateral view, 144 = apical foramen of male carapace in facial view, 145 = female head in dorsal view

male specimens of *M. sulcatus*. My subsequent description of the female is based on these and further specimens which proved to represent the species in question. – Similar to the male. Body (3.6–)4–4.5 mm long. Antenna at most as long as head and mesosoma combined and with 16 antennomeres. First flagellomere usually three times, less usually 2.8–3.1 times, as long as broad and penultimate flagellomere subcubic to cubic. Head in dorsal view twice (sometimes 1.9–2.1 times) as broad as long, between temples usually just broader than between eyes (Fig. 133), less usually as broad between temples as between eyes (Figs 142, 145), temple either 1.2–1.3 times as long as eye (Fig. 142) or just longer than eye (Fig. 145). Clypeus as in Fig. 146, subpunctate and shiny. Hind femur 2.8–3(–3.2) times as long as broad somewhat distally (Fig. 147). Pterostigma usually 2.3 times, less usually 2.2–2.4 times, as long as wide, *r* either somewhat longer than or as long as 3–SR, 1–R1 either shorter than or, less usually, as long as pterostigma (Figs 148–149). Carapace in dorsal view 1.8 times, sometimes 1.7–1.9 times, as long as broad somewhat posteriorly, longitudinally sulciform striate without anastomoses, interstriations rugulo-subrugulose (Figs 150–151). Carapace in lateral view (2.7–) 2.8–2.85 times as long as high behind, apically declivous (Fig. 152) to rather truncate (Fig. 153). Ventral aperture of carapace somewhat shorter than carapace itself, i.e. carapace apically somewhat incurved (Fig. 154, see arrow). Ovipositor sheath very short, concealed. Pterostigma usually blackish brown to blackish.

*Hosts* – In SHENEFELT's catalogue (1973: 905) there are listed 16 insect species (mainly moths) which should be confirmed.

*Distribution* – Western Palaearctic Region, supposedly a Palaearctic species.

*Remarks* – 1) The male lectotype of *Chelonus rimatus* SZÉPLIGETI represents a form of *Microchelonus sulcatus*: (a) head in dorsal view as broad between temples as between eyes, (b) striation of carapace less sulciform, (c) pterostigma three times as long as wide, (d) legs entirely dark coloured.



**Figs 146–154.** *Microchelonus sulcatus* (JURINE, 1807) ♀: 146 = clypeus, 147 = hind femur, 148–149 = distal part of right fore wing, 150–151 = carapace in dorsal view with indication of its sculpture (150), 152 = carapace in lateral view, 153 = posterior end of carapace in lateral view, 154 = carapace in ventral view

2) The male paralectotype of *Ch. rimulosus* THOMSON is inappropriate for designation because it does not represent the true *Microchelonus sulcatus* considering its deviating features (see also PAPP 1990: 311): (a) pair of flagelli damaged, (b) eye as long as temple, (c) apical foramen (in PAPP as “aperture”) of carapace only five times as wide as high.

*Microchelonus risorius* (REINHARD, 1867) and *M. scabrosus* (SZÉPLIGETI, 1896) are similar to *M. sulcatus* (JURINE) considering their distinctly striate carapace. The three species are distinguished by the following features:

1 (4) Male: Apical foramen of carapace (in lateral view of carapace) extending at most its hind one-eighth to one-sixth, one-fifth (Figs 129, 139, 141); i.e. foramen (in facial view of carapace) restricting to apical end of carapace (Figs 130–131, 141, 144). Female: Carapace in dorsal view sulciform striate (Figs 120, 150); carapace in lateral view posteriorly declivous (Figs 121, 124, 152).

2 (3) Male: Apical foramen of carapace narrow and 6–8(–9) times as wide as high (Figs 141, 144), foramen (in lateral view of carapace) extending to one-fifth to one-sixth of carapace (Figs 139, 143). Female: Carapace in dorsal view less globose (Fig. 150), if globose (Fig. 151) then its strong striation (Fig. 150) is the only distinctive feature. Penultimate flagellomere subcubic to cubic. Both sexes: Temple in dorsal view either slightly swollen (Fig. 133) or not swollen and temple more or less longer than eye (Figs 142, 145); temple in lateral view clearly wider than eye, eye narrow (Fig. 134). Scape black to balckish with at least rusty tint. ♀♂: (3.6–)4–4.5 mm

*M. (M.) sulcatus* (JURINE)

3 (2) Male: Apical foramen of carapace less narrow and (2–)3–4 times as wide as high (Figs 130–131), foramen (in lateral view of carapace) extending to one-eighth of carapace (Fig. 129). Female: Carapace in dorsal view globose, its striation less strong (Fig. 120). Penultimate flagellomere 1.3–1.4 times as long as broad. Both sexes: Temple in dorsal view not swollen and shorter than eye (Fig. 115); temple in lateral view a bit wider than eye (Fig. 116). Scape reddish yellow. ♀♂: 3.8–4.2 mm *M. (M.) scabrosus* (SZÉPLIGETI)

4 (1) Male: Apical foramen of carapace (in lateral view of carapace) extending to hind third to half of carapace (Figs 111–112), i.e. foramen not restricting to apical end of carapace. Female: Carapace in dorsal view less sulciform striated (Fig. 104). Both sexes: Eye in dorsal view a bit shorter than temple

(minute deviations feasible); temple in lateral view one-third wider than eye (Fig. 100). Palpi light brown (♀) or brown (♂). ♀♂: (3.5–)4–4.5 mm

*M. (M.) risorius* (REINHARD)

*Microchelonus (Microchelonus) vescus* (KOKOUYEW, 1899)  
(Figs 155–166)

*Chelonus minutus* SZÉPLIGETI, 1898: 209 (description) and 218 (in key) (in Hungarian), 221 (description) and 230 (in key) (in German) ♂ (syntype series seven males), type locality: Pilismarót (Hungary), male lectotype (designated by GRAHAM in 1954 in litt. and PAPP in 1967 in litt.) and six male paralectotypes (present designations) in Hungarian Natural History Museum Budapest; examined.

*Chelonus vescus* KOKOUYEW, 1899: 62 (replacement name for *Ch. minutus* SZÉPLIGETI, 1898 junior homonym, nec *Ch. minutus* A. COSTA, 1884, senior homonym).

*Microchelonus vescus* (KOKOUYEW): SHENEFELT 1973: 906 (comb. n.). TOBIAS 1986a: 327 (♀) and 334 (♂) (in key, in Russian); 2000: 495 (♀) and 541 (♂) (in key, in subgenus *Microchelonus*, in Russian).

*Type designations* – Designation of the male lectotype of *Chelonus minutus* SZÉPLIGETI: (first label, printed) “Hungaria / Pilismarót / Szépligeti”; (second label, my handwriting) “1896 VII–VIII. / Szépligeti” (after the original description); third label is my lectotype card; fourth label is with the type inventory number “Hym. Typ. No. 549”; fifth label (reverse below the fourth label) is with GRAHAM’s provisional lectotype designation; sixth label is with the actual name *Microchelonus vescus* (KOKOUYEW) given by me. – Male lectotype is in good condition: prothorax somewhat parted from mesosoma.

Designation of the six male paralectotypes of *Chelonus minutus* SZÉPLIGETI: labels 1–4 identical to those of the lectotype, inventory numbers Hym. Typ. Nos 550–555; fifth label is with the actual name *M. vescus*. – Six paralectotypes are in fairly good condition: flagelli and legs partly damaged, head of one paralectotype (No. 555) missing; one male paralectotype (No. 550) in Zoological Institute Sankt Petersburg as exchange material.

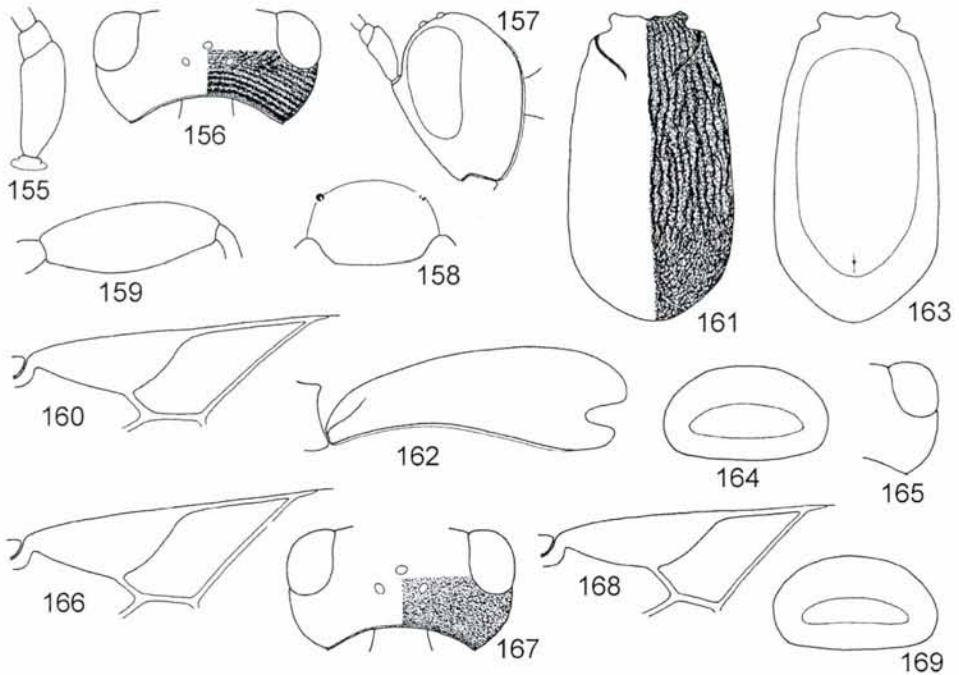
*Material examined* (7 ♂♂). – Male lectotype and five male paralectotypes of *Ch. minutus*; 1 ♂ from Hungary.

*Redescription of the male lectotype of Chelonus minutus* SZÉPLIGETI. – Body 3.2 mm long. Antenna as long as head, mesosoma and one-fourth of carapace combined, with 18 antennomeres. Scape 2.3 times as long as broad apically, somewhat bent, apically obliquely truncate (Fig. 155). First flagellomere 2.5 times and penultimate flagellomere 1.7 times as long as apically. Head in dorsal view (Fig. 156) transverse, twice as broad as long, eye a bit longer than temple, temple receded, occiput weakly excavated. Ocelli very small, far from each other, OOL 1.5 times as long as POL. Eye in lateral view 2.1 times as high as wide, temple beyond eye a bit wider than eye and evenly wide (Fig. 157). Malar space 1.6 times as long as basal width of mandible. Maxillary palp as long as height of head. Face clearly twice as wide as high, inner margin of eyes parallel. Clypeus (Fig. 158) 1.5 times as wide as high, its lower margin truncate, with very fine and disperse subpunctures, shiny. Head striate (Fig. 156).

Mesosoma in lateral view twice as long as high, rugose; mesoscutum posteriorly with striate elements, scutellum almost smooth and shiny; propodeum laterally with a pair of tubercles and without transverse carina. Hind femur 2.7 times as long as broad medially (Fig. 159). Inner spur of hind tibia half as long as basitarsus. Hind basitarsus as long as tarsomeres 2–4 combined.

Fore wing 0.7 times as long as body. Pterostigma (Fig. 160) 2.6 times as long as wide and issuing *r* just distally from its middle, *3-SR* almost twice as long as *r*, *SR1* slightly bent, *1-R1* one-fourth shorter than (or 0.75 times as long as) pterostigma.

Carapace in dorsal view (Fig. 161) 1.8 times as long as broad behind, moderately broadening posteriorly, apically hardly pointed. Pair of basal keels short. Carapace longitudinally and more or less parallel striated, its posterior fifth rugose (Fig. 161). Carapace in lateral view 2.8 times as long as high behind (Fig. 162). Ventral aperture of carapace somewhat shorter than carapace itself, i.e. carapace apically somewhat incurved (Fig. 163, see arrow). Apical foramen 3.3 times as wide as high (Fig. 164).



**Figs 155–169.** 155–166. *Microchelonus vescus* (KOKOUYEW, 1899) (155–164: male lectotype): 155 = scape, 156 = head in dorsal view with indication of its sculpture, 157 = head in lateral view, 158 = clypeus, 159 = hind femur, 160 = distal part of right fore wing, 161 = carapace in dorsal view with indication of its sculpture, 162 = carapace in lateral view, 163 = carapace in ventral view, 164 = apical foramen of carapace in facial view. – 165 = right half of male head in dorsal view, 166 = distal part of right fore wing of male. – 167–169. *Microchelonus minutus* (A. COSTA, 1884): 167 = male head in dorsal view with indication of its sculpture, 168 = distal part of right fore wing of male, 169 = apical foramen of male carapace in facial view



Body black. Antenna and legs dark brown, tibiae with yellowish brown pattern, tarsi brownish, fore tibia yellow. Tegula dark brown. Wings hyaline, pterostigma brown, veins light brown.

*Deviating features of the five male paralectotypes of Chelonus minutus.* – Similar to the male lectotype. Body 3–3.2 mm long. Penultimate flagellomere 1.7–1.8 times as long as broad. Temple in dorsal view less receded (1 ♂, Fig. 165). Hind femur 2.9 times as long as broad (2 ♂♂). Pterostigma 2.5 times as long as wide and issuing *r* from its middle (2 ♂♂), *l*–*Rl* somewhat longer than half the length of pterostigma (Fig. 166). Carapace in dorsal view 1.7–1.9 times as long as broad behind. Apical foramen of carapace 3–3.5 times as wide as high.

Female is unknown to me; in the Hungarian Natural History Museum there is no female of this species; in the key of TOBIAS (1986a: 327, 2000: 495) the female is included, see key couplets 116 (115) and 49 (48).

*Distribution* – Hungary, Armenia, Kazakhstan, Russia (Sakhalin).

*Remarks* – In a few respects *Microchelonus vescus* is similar to the male form of *M. minutus* (A. COSTA, 1884) (Italy, Hungary), however, the two species are clearly differentiated by the following features:

- 1 (2) Temple in dorsal view receded and head above striated (Fig. 156). Marginal cell less short, *l*–*Rl* about one-fourth shorter than pterostigma, *3*–*SR* distinctly longer than *r* (Figs 160, 166). Foramen of male carapace relatively high (Fig. 164). ♂: 3–3.2 mm *M. (M.) vescus* (KOKOUYEW)
- 2 (1) Temple in dorsal view rounded and head above rugo-rugulose, along hind margin finely striated (Fig. 167). Marginal cell short, *l*–*Rl* half as long as pterostigma, *r* and *3*–*SR* of equal length (Fig. 168). Foramen of male carapace relatively less high (Fig. 169). ♂: 3–3.2 mm *M. (M.) minutus* (A. COSTA)

\*

*Acknowledgements* – I am much indebted to the following persons: Dr. R. DANIELSSON (Museum of Zoology, Lund), Dr. M. FISCHER (Naturhistorisches Museum, Wien), Frau A. KLEINE-MÖLLHOFF (Zoologisches Museum, Berlin) and Miss S. LEWIS (The Natural History Museum, London). They have considerably been promoting my taxonomic work with lending type or authentic chelonine material frequently for a long time.

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