

The subgenera *Glabrobracon* Fahringer, *Lucobracon* Fahringer and *Uncobracon* Papp of the genus *Bracon* Fabricius (Hymenoptera, Braconidae, Braconinae) in China, with the description of eleven new species

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Abstract

The species of three subgenera of the genus *Bracon* Fabricius (Hymenoptera, Braconidae, Braconinae), i.e. *Glabrobracon* Fahringer, 1927; *Lucobracon* Fahringer, 1927; and *Uncobracon* Papp, 1996 from China are revised and 31 species are recognised, including 11 new species, i.e. *Bracon* (*Glabrobracon*) *indistinctus* sp. nov., *B. (G.) leptotes* sp. nov., *B. (G.) longistriatus* sp. nov., *B. (G.) megaventrtris* sp. nov., *B. (Lucobracon) brevicarinatus* sp. nov., *B. (L.) coarctatus* sp. nov., *B. (L.) curculiovorus* sp. nov., *B. (L.) flavitestaceus* sp. nov., *B. (L.) quadratus* sp. nov., *B. (Uncobracon) euryulcatus* sp. nov. and *B. (U.) longwangshanensis* sp. nov. The new species are described and illustrated. Keys to the subgenera of the genus *Bracon* and the Chinese species of three subgenera *Glabrobracon*, *Lucobracon* and *Uncobracon* are provided.

Key Words

Hymenoptera, Braconidae, Braconinae, Braconini, *Bracon*, *Glabrobracon*, *Lucobracon*, *Uncobracon*, new species, new record, China

Introduction

Bracon Fabricius, 1804 belongs to the subfamily Braconinae (Hymenoptera: Braconidae) and is currently represented by 16 subgenera: *Asiabracon* Tobias, 1957; *Bracon* Fabricius, 1804; *Cyanopterobracon* Tobias, 1957; *Foveobracon* Tobias, 1961; *Glabrobracon* Fahringer, 1927; *Habrobracon* Ashmead, 1895; *Lucobracon* Fahringer, 1927; *Ophthalmobracon* Tobias, 1957; *Orientobracon* Tobias, 2000; *Osculobracon* Papp, 2008; *Palpibracon* Papp, 2012; *Pigeria* van Achterberg, 1985; *Pilibracon* Tobias, 1961; *Punctobracon* Papp, 1996; *Sculptobracon*

Tobias, 1961 and *Uncobracon* Papp, 1996 (Yu et al. 2016; Samartsev 2019).

Glabrobracon Fahringer, 1927 and *Lucobracon* Fahringer, 1927 are two relatively-large subgenera in the genus *Bracon* Fabricius with 123 and 88 described species worldwide, respectively, mainly occurring in the Palaearctic region. *Uncobracon* Papp, 1996 is a small subgenus with three described species worldwide, occurring in the Oriental and Palaearctic regions (Yu et al. 2016). Most species of *Glabrobracon* and *Lucobracon* are idiobiont ectoparasitoids of Coleoptera (including species of Anobiidae, Attelabidae,

Brentidae, Buprestidae, Cerambycidae, Chrysomelidae and Curculionidae), Lepidoptera (including species of Tortricidae, Coleophoridae, Cosmopterigidae, Geometridae, Argyresthiidae, Gelechiidae, Nepticulidae, Noctuidae and Sesiidae), Diptera (including species of Anthomyiidae and Tephritidae) and Hymenoptera (including species of Cynipidae, Eurytomidae, Tenthredinidae and Cephidae) larvae (Yu et al. 2016). The biology of only one species of *Uncobracon* is known: *Bracon (Uncobracon) apoderi* Watanabe, 1933 has been reared as an ectoparasitoid of larvae of *Apoderus balteatus* (Roelofs, 1874) (Coleoptera: Attelabidae) (Watanabe 1933).

In the present paper, nineteen *Glabrobracon* species are reported from China, of which four species are new to science (*Bracon (Glabrobracon) indistinctus* sp. nov., *B. (G.) leptotes* sp. nov., *B. (G.) longistriatus* sp. nov. and *B. (G.) megaventris* sp. nov.). Eight *Lucobracon* species are found in China, of which five species are new to science (*B. (Lucobracon) brevicarinatus* sp. nov., *B. (L.) coarctatus* sp. nov., *B. (L.) curculiovorus* sp. nov., *B. (L.) flavitestaceus* sp. nov. and *B. (L.) quadratus* sp. nov.). Four *Uncobracon* species are found in China, of which two species are new to science (*B. (Uncobracon) eurysulcatus* sp. nov. and

B. (U.) longwangshanensis sp. nov.) and one species is new to China (*B. (U.) tricoloratus* Tobias, 2000)). The new species are described and illustrated and keys to the subgenera of the genus *Bracon* and to the Chinese species of three subgenera *Glabrobracon*, *Lucobracon* and *Uncobracon* are provided.

Materials and methods

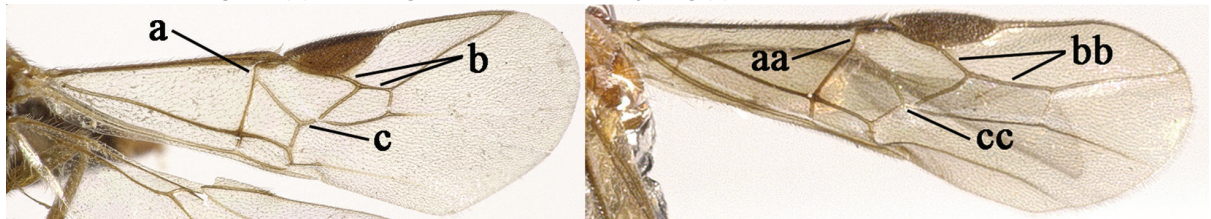
For the recognition of the subfamily Braconinae, see van Achterberg (1990, 1993) and Chen and van Achterberg (2019), for the terminology and measurements used in this paper, see van Achterberg (1988, 1993) and for additional references, see Yu et al. (2016). The medial length of the third metasomal tergite is measured from the posterior border of the second suture to the posterior margin of the tergite.

Photographs were taken with a Keyence VHX-2000 digital microscope and the photos were slightly processed (mainly cropped and the background modified) in Photoshop CS6. For the descriptions and measurements, a Leica M125 stereomicroscope was used. The specimens are deposited in Institute of Insect Sciences, Zhejiang University, Hangzhou (ZJUH).

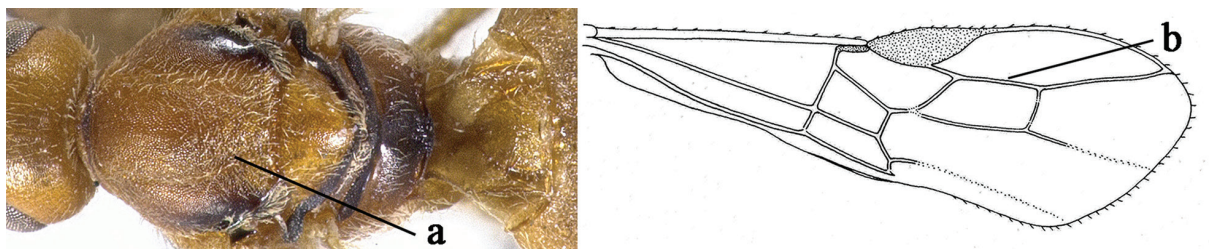
Results

Key to subgenera of genus *Bracon* Fabricius

- 1 Vein 1-SR of fore wing very short or absent (reduced) (a); fore wing vein 3-SR less than 1.5× longer than vein r, usually less than 1.2× as long as r (b); fore wing vein 2-SR+M relatively long (c) *Habrobracon* Ashmead, 1895



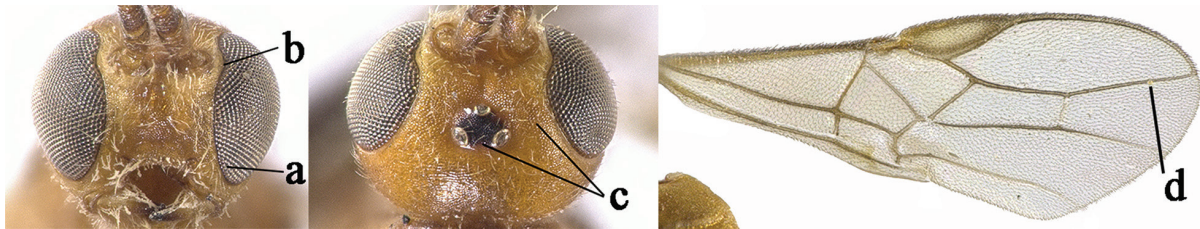
- Vein 1-SR of fore wing medium-sized (aa); fore wing vein 3-SR more than 1.6× longer than vein r, usually more than 1.9× longer (bb); fore wing vein 2-SR+M shorter (cc) 2
- 2 Mesosoma with granulate sculpture (a), matte, if lustrous, then weak, soft granulate sculpture always noticeable on mesopleuron and, as a rule, mesoscutum; metasoma always with granulate sculpture, sometimes weaker; body often with yellow spots; fore wing second submarginal cell more robust and often shorter, but vein 3-SR rarely longer than width of cell (b)..... 3



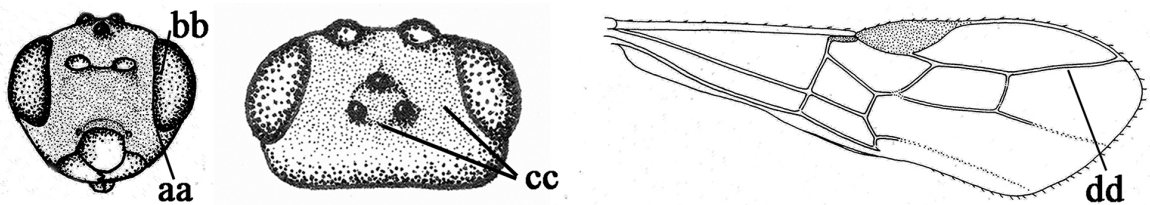
- Mesosoma smooth, lacking granulate sculpture (aa), lustrous, only sometimes pronotum with somewhat noticeable granulate sculpture (in that case, tergites in apical half smooth); if rarely mesosoma with granulate sculpture (subgenus *Lucobracon*) then fore wing marginal cell strongly reduced, body without yellow spots and metasoma often entirely or its apical half smooth; fore wing second submarginal cell more slender and much longer than width of cell, rarely shorter (bb) 4



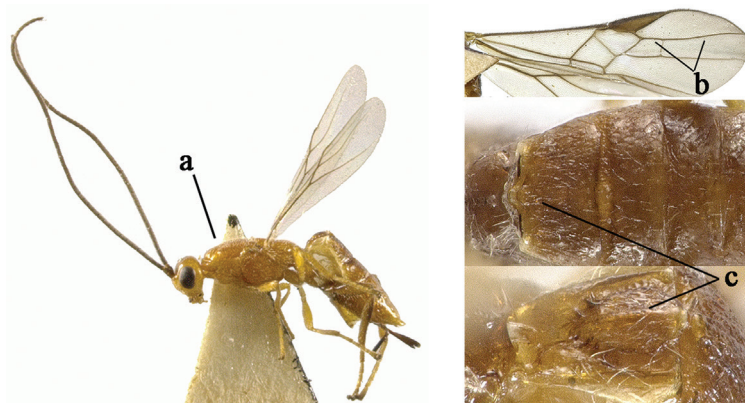
- 3 Eyes enlarged, almost touching base of mandible and length of malar space less than maximum length of clypeus (a); eyes distinctly concave at inner margins (b); ocellar triangle more than its distance from eye (c); second tergite medio-basally without small triangular area and laterally without deep depression; fore wing marginal cell reaching wing apex (d) *Ophthalmobracon* Tobias, 1957



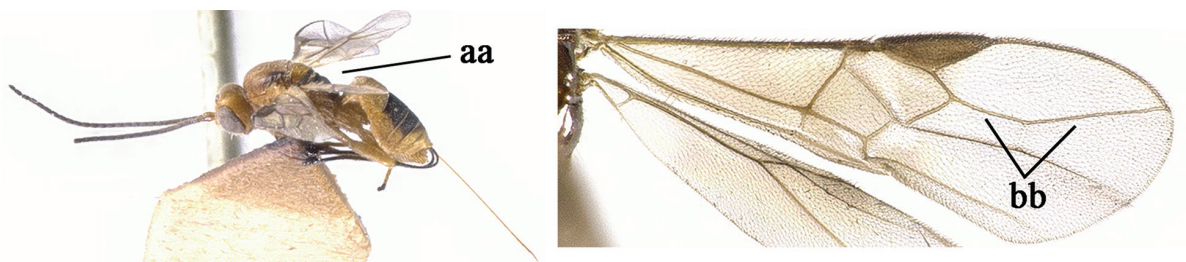
- Eyes medium-sized or small, far removed from base of mandible and length of malar space more than maximum length of clypeus (aa); eyes not or weakly concave at inner margins (bb); ocellar triangle as long as its distance from eye or less (cc); second tergite medio-basally with small triangular area bordered by a weak ridge, laterally with rather deep depressions bordering inner side with thin ridge (ridges convergent posteriorly); fore wing marginal cell terminating before wing apex (dd)..... *Asiabracon* Tobias, 1957



- 4 Mesosoma slender (its length more than 1.8× its height) (a); second submarginal fore wing cell quadrate, vein SR1 4.0–4.5× longer than the vein 3-SR, with weakly S-shaped bend (b); first and second tergites more or less with raised longitudinal ridge (c) *Orientobracon* Tobias, 2000



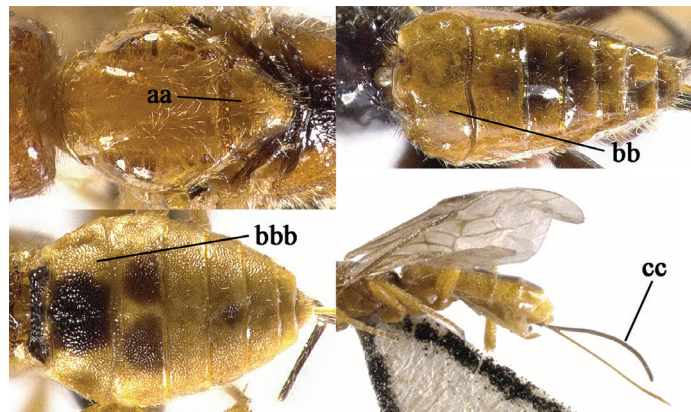
- Mesosoma less slender (its length less than 1.6× its height) (aa); second submarginal fore wing cell distinctly longer than wide, vein SR1 straight (bb); first and second tergites variable 5



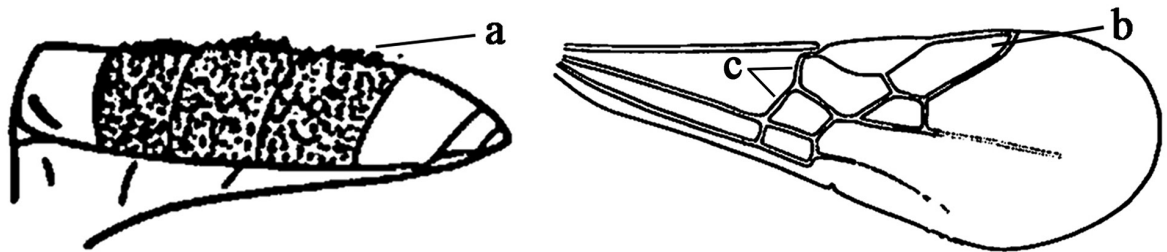
- 5 Scutellum usually with punctate depression (a); tergites often entirely with reticulate sculpture, middle of second tergite with slightly raised smooth longitudinal ridge (b); ovipositor short, slightly projecting beyond metasomal apex to about one-fourth length of metasoma (c)..... *Sculptobracon* Tobias, 1961



- Scutellum lacking punctate depression (aa), if with depression (*Foveobracon*), then third to seventh tergites smooth; tergites either entirely smooth or only in apical half (bb); if all tergites sculptured, then sculpture not reticulate (bbb); ovipositor relatively long, projecting well beyond metasomal apex, usually as long as metasoma or slightly shorter (cc)..... 6



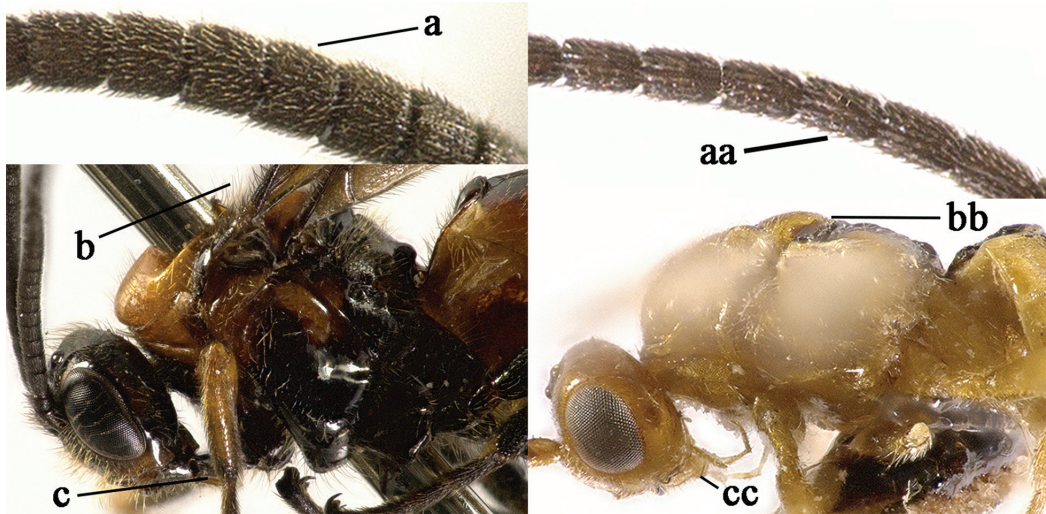
- 6 Third to fifth tergites in male with dense tuft of semi-apressed short setosity (a), densely punctate, tergites at base and apex of metasoma contrastingly smooth, always lacking setosity; female metasoma smooth and weakly pubescent, with medially deeply and laterally weakly impressed suture between second and third tergites; fore wing marginal cell rather short, vein 1-R1 as long as pterostigma, much shorter than its distance from wing apex (b); fore wing second submarginal cell small, vein 3-SR shorter than vein r; fore wing vein 1-SR approximately 0.7× as long as vein 1-M (c) *Pilibracon* Tobias, 1961



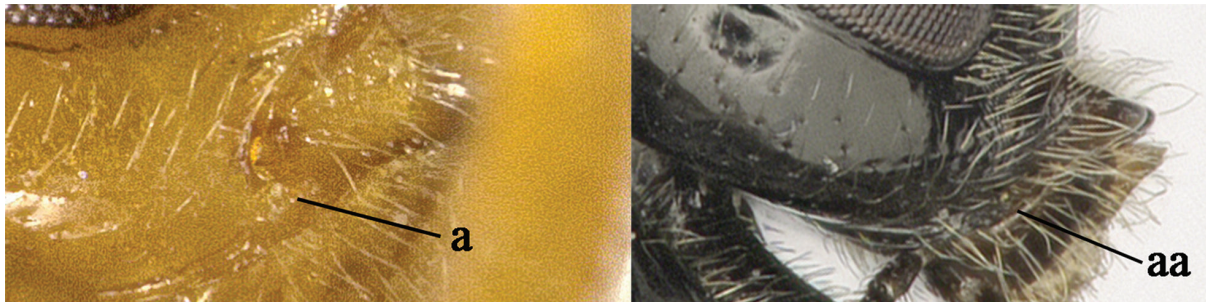
- Tergites in both male and female similarly pubescent and sculptured (aa), sometimes not distinctly pubescent and sculptured on middle tergites compared to basal and apical tergites; fore wing marginal cell rarely slightly reduced (bb), if distinctly reduced, then metasoma usually with sculpture on basal tergites; fore wing vein 1-SR less than 0.4× as long as vein 1-M (cc)..... 7



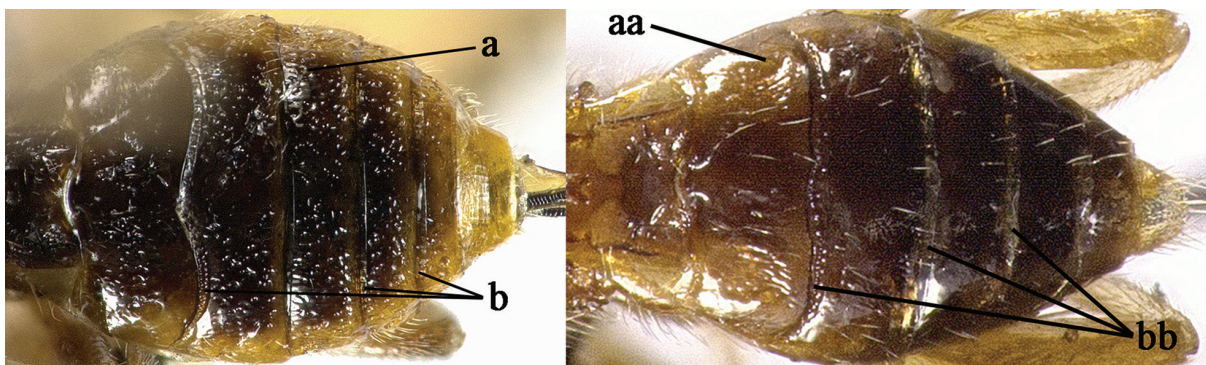
- 7 Antenna setiform, 28–70-segmented, flagellomeres quadrate (a); body with long, dark erected setae (b); labio-maxillary complex more or less elongate (c); metasoma strongly compressed and smooth, suture between second and third tergites shallow laterally, rather deep medially; hypopygium much shorter, not reaching metasomal apex; wing membrane distinctly infusate*Cyanopterobracon* Tobias, 1957



- Antenna filiform or weakly setiform, usually with less than 40-segments, flagellomeres often longer than width (aa), rarely quadrate, in that case usually moniliform; body with rarely short, light coloured, usually appressed setae (bb); labio-maxillary complex not elongate (cc); shape of metasoma and hypopygium and colour of wing membrane variable 8
- 8 In lateral view, malar space below with a hook-like process directed anteriorly (a); propodeum with a medio-longitudinal carina; second tergite with subfoveolate, or reticulate, or striate sculpture; third to sixth tergites with discrete and separate (not confluent) punctures and interspaces polished or with striae*Uncobracon* Papp, 1996

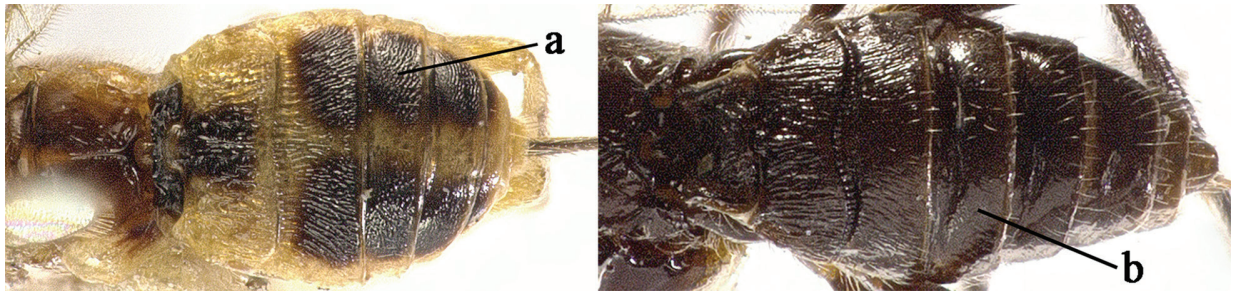


- In lateral view, malar space below without a hook-like process (aa); propodeum variable, with or without a medio-longitudinal carina; sculpture of tergites variable, smooth to distinctly sculptured 9
- 9 Second to sixth tergites with foveo-like punctures posteriorly becoming gradually denser, interspaces polished and usually greater than puncture diameter (a); anterior transverse grooves of third to fifth metasomal sutures between tergites crenulate (b)*Punctobracon* Papp, 1996

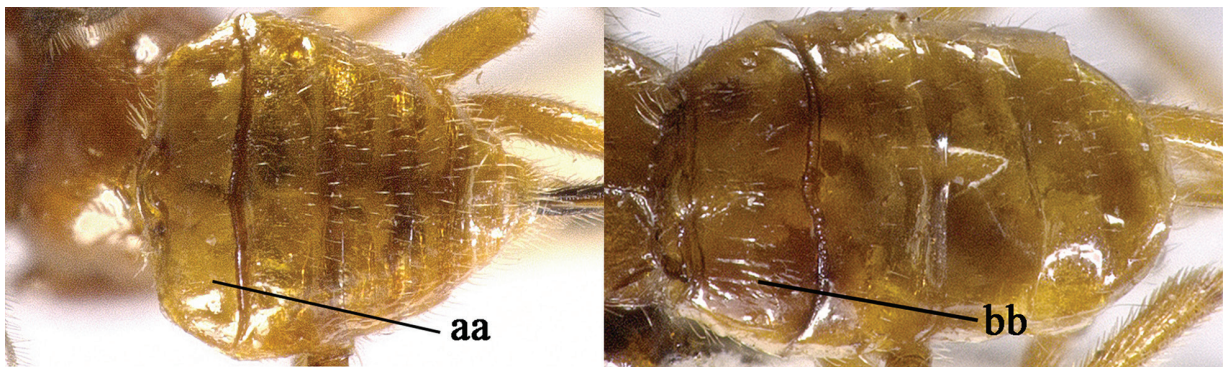


- Second to sixth tergites polished or without foveola-like punctures (aa), if present, then becoming gradually sparser posteriorly; anterior transverse grooves of third to fifth tergites smooth, at most second metasomal suture crenulate (bb) 10

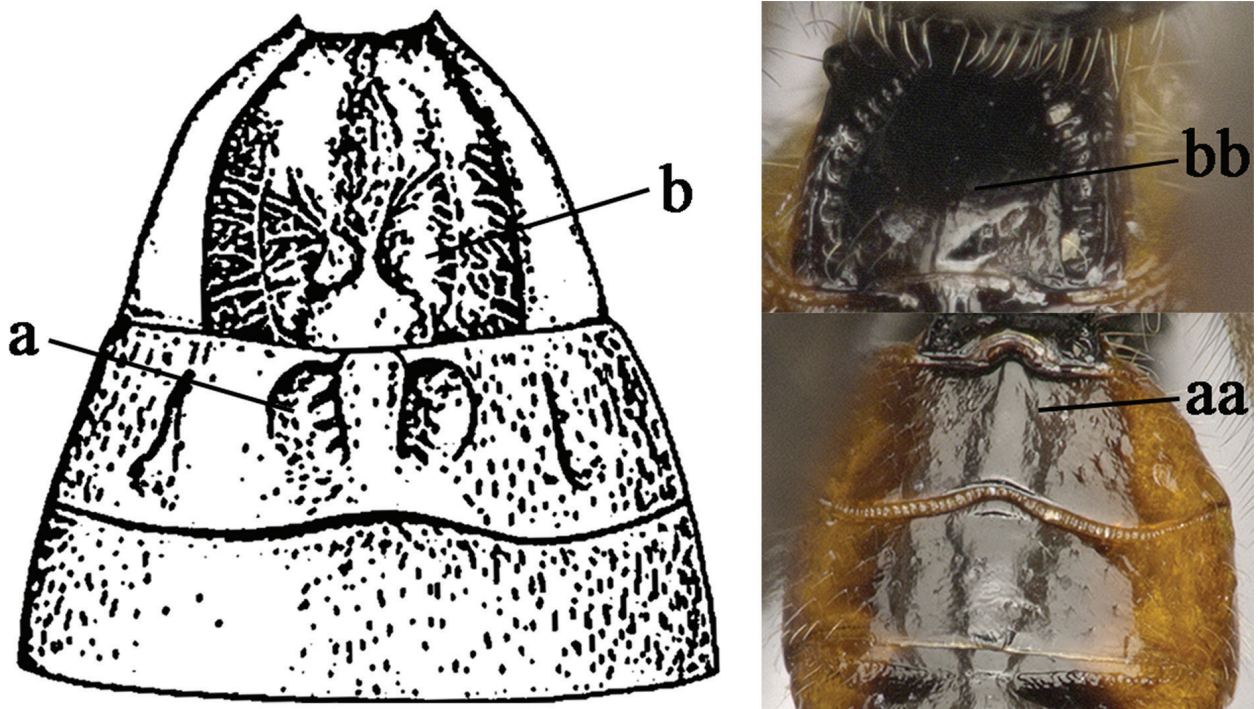
- 10 Tergites entirely sculptured (a) or at least basal tergites sculptured (b); ovipositor sheath as long as or slightly longer than metasoma; apical segment of hind tarsi not longer than second segment; antenna shorter than body, not thickened; first submarginal cell of fore wing reaching or almost reaching wing apex; (hypoclypeal depression not or only slightly wider than its distance from eye).....*Bracon* Fabricius, 1804 s. str.



- Tergites entirely smooth (aa) or second and third tergites sculptured (bb); if apical tergites also somewhat sculptured, then propodeum sculptured along middle (sometimes with longitudinal ridge) and ovipositor sheath clearly shorter than metasoma (some species in *Glabrobracon*) or first submarginal cell of fore wing reduced; pre-apical antennal segments somewhat thickened (*Lucobracon*) or maxillary palpi very long, longer than height of head (*Palpihracon*) 11

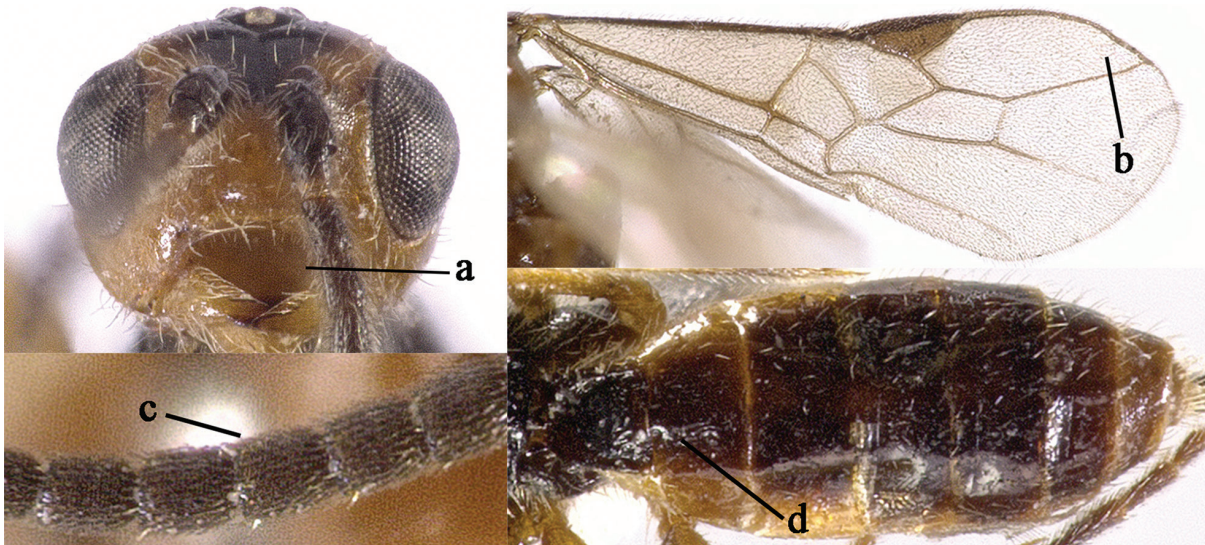


- 11 Second tergite with deep sculptured depressions on sides of small raised medial area, with lateral longitudinal furrows (a); first tergite coarsely rugose, its middle field smooth with rugose lateral depressions on narrow median prominence (b); (scutellum anteriorly often with a distinct puncture-like depression).....*Foveobracon* Tobias, 1961

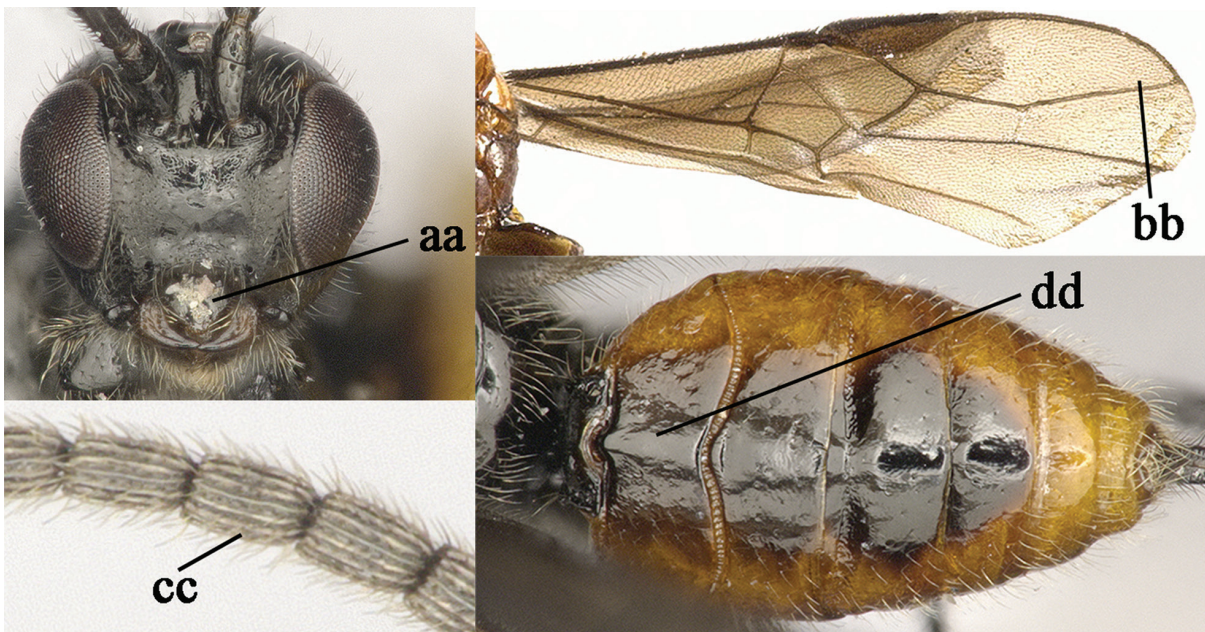


- Second tergite without depressions near medio-basal area (aa); first tergite often smooth (bb)..... 12

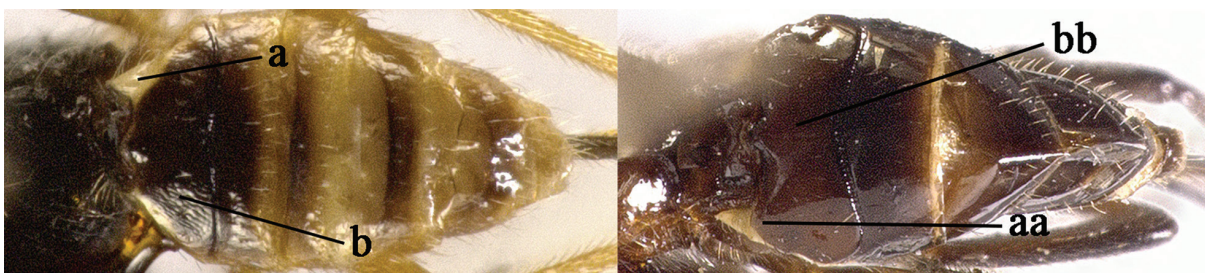
- 12 Hypoclypeal depression large, much wider than its distance from eye (a) and (or) first submarginal cell of fore wing reduced, terminating preapically (b); antenna often thickened, with quadrate flagellomeres (c); usually middle of second (to fourth) tergite(s) sculptured (d)..... *Lucobracon* Fahringer, 1927



- Hypoclypeal depression small, as wide as its distance from eye or slightly more (aa); first submarginal cell of fore wing usually not reduced, terminating at wing apex (bb); antenna long, usually as long as body, flagellomeres longer than wide (cc); second to fourth tergites smooth or weakly sculptured medially (dd)..... 13

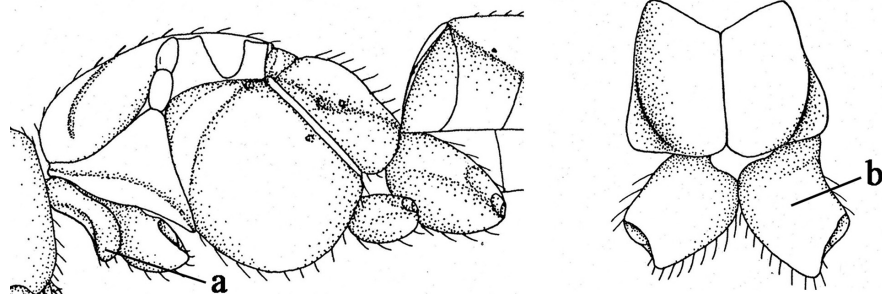


- 13 Basal tergites with coriaceous areas, especially first three tergites desclerotised (membraneous) and whitish or yellowish (a); second tergite usually smooth, but rather frequently (weakly) sculptured (b); (claws of fifth tarsomeres weakly curved) *Osculobracon* Papp, 2008



- Tergites smooth (bb), and without coriaceous areas (aa)..... 14

- 14 Propleuron concave in lateral view, with sublateral cariniform elevation posteriorly (a); fore coxae widened and flattened apically (b).....*Pigeria* van Achterberg, 1985

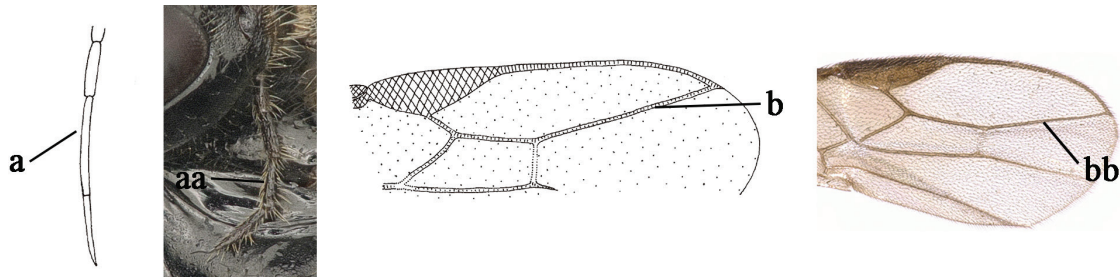


- Propleuron straight in lateral view, not concave and without cariniform elevation (aa); fore coxae usually globose, not flattened (bb)..... 15

- 15 Maxillary palpi at least as long as height of head or (usually) longer (a); fore wing vein SR1 more or less approaching, but not reaching tip of wing (b).....*Palpibracon* Papp, 2012



- Maxillary palpi usually shorter than height of head (aa); fore wing vein SR1 reaching tip of wing (bb).....
..... *Glabrobracon* Fahringer, 1927



Subgenus *Glabrobracon* Fahringer, 1927

Figs 1–12

Bracon (*Bracon*) *Glabrobracon* Fahringer, 1927: 281; Telenga 1936: 344.

Type species: *Bracon variator* Ness, 1811 (designated by Tobias 1959).

Bracon (*Glabrobracon*) Fahringer: Masi 1941: 46; Tobias 1957: 486, 1958: 95, 1959: 896; Papp 1962: 353; Tobias 1971: 214; Papp 1974: 415.

Bracon (*Orthobracon*) Fahringer, 1927: 232, 1928: 595; Tobias 1957: 443, 1971: 212; Papp 1974: 415. Type species: *Bracon exhilarator* Nees, 1834 (designated by Tobias 1959). Synonymised by Papp 2012.

Diagnosis. Antenna long, usually as long as body, flagellomeres longer than wide; hypoclypeal depression small, as wide as its distance from eye or slightly more; maxillary palpi moderately long, usually shorter than height of head; fore wing vein SR1 reaching tip of wing; second submarginal cell of fore wing usually medium-sized; metasomal tergites often entirely smooth or only basal tergites weakly sculptured, rarely apical tergites somewhat sculptured and propodeum sculptured along middle (sometimes with longitudinal ridge) and ovipositor clearly shorter than metasoma.

Biology. Most species are idiobiont ectoparasitoids of larvae of Lepidoptera (Tortricidae, Geometridae, Argyresthiidae, Gelechiidae), of Coleoptera (Cerambycidae, Curculionidae, Attelabidae, Brentidae) and of Diptera (Anthomyiidae, Tephritidae) and some species are parasitoids of larvae of Hymenoptera (Tenthredinidae, Cynipidae) (Fitch 1883; Möller 1886; Fahringer 1927; Barnes 1935; Telenga 1936; Fulmek 1968; Tobias 1986; Ghahari and Fischer 2012; Yu et al. 2016).

Distribution. Cosmopolitan.

Note. Of thirteen species including *Bracon* (*G.*) *ahngeri* Telenga, 1936, *Bracon* (*G.*) *arcuatus* Thomson, 1892, *Bracon* (*G.*) *bipartitus* Wesmael, 1838, *Bracon* (*G.*) *brevis* Telenga, 1936, *Bracon* (*G.*) *epitriptus* Marshall, 1885, *Bracon* (*G.*) *exhilarator* Nees, 1834, *Bracon* (*G.*) *flavinus* Fahringer, 1928, *Bracon* (*G.*) *minutator* (Fabricius, 1798), *Bracon* (*G.*) *obscurator* Nees, 1811, *Bracon* (*G.*) *parvulus* Wesmael, 1838, *Bracon* (*G.*) *picticornis* Wesmael, 1838, *Bracon* (*G.*) *reseri* Papp, 1989 and *Bracon* (*G.*) *zonites* Marshall, 1897, no specimens were available for this study; the distribution of these species is listed in the key.

Key to Chinese species of the subgenus *Glabrobracon* Fahringer

- 1 Tergites entirely smooth 2
 – First and second tergites usually distinctly sculptured, rarely also third tergite with fine sculpture medially 9
- 2 Tergites yellow to reddish-brown, without spots; second to fifth tergites with about same length, rarely second tergite slightly longer; wing membrane smoky brown, becoming paler apically; ovipositor sheath slightly shorter than metasoma *B. (G.) isomera*
 – Tergites yellowish-brown to brown, largely dark brown, reddish-yellow with black spots or (largely) black (sometimes with margins reddish-yellow); second to fifth tergites of different length; wing membrane colour and ovipositor sheath length variable 3
- 3 Fore wing vein SR1 approaching, but not reaching tip of wing 4
 – Fore wing vein SR1 reaching tip of wing 6
- 4 Fore wing vein SR1 approximately as long as vein 3-SR; head less quadrate, in dorsal view 1.7–1.8× as broad as long; ovipositor sheath about as long as or slightly longer than metasoma, 1.6–2.2× longer than hind tibia (distributed in China (Fujian), Hungary, Italy, Switzerland) *B. (G.) zonites*
 – Fore wing vein SR1 distinctly longer than vein 3-SR; head more quadrate, in dorsal view usually more than 1.8× as broad as long; ovipositor sheath about as long as metasoma to shorter than half length of metasoma 5
- 5 Head and mesosoma black, tergites reddish-yellow with black spots or almost entirely black; ovipositor sheath as long as first and second segments of hind tarsus (distributed in China (Gansu), Algeria, Armenia, Austria, Azerbaijan, Belarus, Belgium, Croatia, Cyprus, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iran, Ireland, Israel, Italy, Jordan, Kazakhstan, Latvia, Lithuania, Macedonia, Mongolia, Poland, Russia, Slovenia, Spain, Sweden, Switzerland, Tunisia, Turkey, Ukraine, United Kingdom, former Yugoslavia) *B. (G.) minutator*
 – Head and mesosoma yellowish-brown, first and second tergites and basal area of third tergite yellow and subsequent tergites brown; ovipositor sheath as long as half length of metasoma (distributed in China (Fujian, Hubei, Jilin), Korea, Russia) *B. (G.) ahngeri*
- 6 Fifth segment of hind tarsus longer than second segment and twice longer than third segment; setae of antennae short, nearly invisible; body, including legs and metasoma, black, fore leg, except coxa and trochanter, yellowish-brown; ovipositor sheath as long as metasoma [distributed in China (Sichuan)] *B. (G.) brevis*
 – Fifth segment of hind tarsus often as long as second segment and less than twice longer than third; setae of antennae moderately long; body colour variable, yellow or reddish-yellow or blackish-brown; ovipositor sheath shorter to slightly longer than metasoma 7
- 7 In dorsal view, temples strongly narrowed behind eyes; mesosoma largely reddish-yellow; second metasomal suture crenulate *B. (G.) indistinctus* sp. nov.
 – In dorsal view, temples approximately parallel-sided behind eyes; mesosoma almost entirely black; second metasomal suture smooth, without crenulae 8
- 8 Segments of hind tarsus with thick ventral bristles on ventral side; hind tibia and basitarsus somewhat swollen; head in dorsal view linearly narrowed below eyes; second metasomal suture medially straight (distributed in China (Jiangsu), Algeria, Belgium, Bulgaria, Croatia, Cyprus, Finland, France, Germany, Greece, Hungary, Iran, Italy, Macedonia, Mongolia, Netherlands, Romania, Russia, Spain, Syria, Turkey, Turkmenistan, Ukraine, United Kingdom, former Yugoslavia) *B. (G.) bipartitus*
 – Segments of hind tarsus without thick ventral bristles on ventral side; hind tibia and basitarsus not swollen; head in dorsal view roundly narrowed below eyes; second metasomal suture medially curved *B. (G.) variator*
- 9 Ovipositor sheath approximately as long as body, as long as or slightly shorter than twice length of hind tibia and tarsus combined; body blackish-brown, sometimes infusate; head in dorsal view with temples more or less parallel-sided behind eyes (distributed in China (Fujian, Hubei, Jilin), Armenia, Austria, Azerbaijan, Belgium, Croatia, Finland, France, Georgia, Germany, Greece, Hungary, Iran, Ireland, Italy, Latvia, Lithuania, Macedonia, Moldova, Netherlands, Poland, Romania, Russia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom, former Yugoslavia) *B. (G.) parvulus*
 – Ovipositor sheath at most as long as metasoma or as long as or slightly longer than hind tibia and tarsus combined; body colour variable, yellowish-brown to black; shape of temples variable 10
- 10 Second tergite with longitudinal striae, on each side with a triangular basal area or a small crest; third and fourth tergites dull, remainder of metasoma smooth and shiny; ovipositor sheath as long as metasoma; body black, scape, pedicel and legs yellow (distributed in China (Jilin), Japan, Korea) *B. (G.) flavinus*
 – Second tergite with variable sculpture, but without triangular field or crest; tergites often entirely smooth and shiny; ovipositor sheath variable, shorter or longer than metasoma; at least tergites only partly black 11
- 11 Fore wing vein SR1 not reaching tip of wing; vein 3-SR slightly longer than (rarely as long as) vein 2-SR; head in dorsal view 1.8–1.9× as broad as long; first tergite quadrate, slightly longer or as long as its apical width (distributed in China (Ningxia), Austria, Bulgaria, Croatia, Cyprus, Czech Republic, Germany, Greece, Hungary, Macedonia, Mongolia, Slovenia, Sweden, United Kingdom, former Yugoslavia) *B. (G.) arcuatus*
 – Fore wing vein SR1 reaching tip of wing; vein 3-SR usually distinctly longer than vein 2-SR; shape of head variable; first tergite slightly to distinctly longer apical width 12

- 12 In dorsal view, temples gradually to strongly narrowed behind eyes..... 13
 – In dorsal view, temples more or less parallel-sided behind eyes..... 15
- 13 Ovipositor sheath half as long as metasoma; hind femur relatively robust, 2.8× as long as its maximum width; second metasomal suture medially distinctly wider than laterally, nearly straight..... *B. (G.) megaventris* sp. nov.
 – Ovipositor sheath at least 0.7× as long as metasoma; hind femur relatively slender, 3.5–4.0× as long as maximum width; second metasomal suture medially weakly wider than laterally, slightly sinuate..... 14
- 14 In dorsal view, temples strongly narrowed behind eyes; length of eye 2.7–2.9× temple; median area of first tergite entirely smooth; legs largely pale yellow, but claws dark brown and hind tarsus infuscate*B. (G.) leptotes* sp. nov.
 – In dorsal view, temples gradually narrowed behind eyes; length of eye 2.0× temple; median area of first tergite with longitudinal striae posteriorly; legs largely dark yellow (distributed in China (Shanxi), Armenia, Austria, Azerbaijan, Belarus, Croatia, Czech Republic, Georgia, Germany, Greece, Hungary, Iran, Italy, Kazakhstan, Korea, Lithuania, Macedonia, Moldova, Mongolia, Netherlands, Poland, Romania, Russia, Slovenia, Switzerland, Turkey, Ukraine, United Kingdom, former Yugoslavia).....*B. (G.) epitriptus*
- 15 Median flagellomeres (6–8 to 22–24) of female subquadrate, at most somewhat longer than broad; those of male 1.3–1.4× longer than wide; fore wing first discal cell slightly less high, 1-M 1.5× as long as m-cu; legs blackish to black with pale pattern (distributed in China (Fujian), Switzerland) *B. (G.) reseri*
 – Median flagellomeres usually longer than broad; shape of fore wing first discal cell and colour of legs variable..... 16
- 16 Second tergite often smooth, exceptionally rugose medially; ovipositor sheath about as long as metasoma or metasoma and half of mesosoma combined; legs blackish to black; first tergite (1.2–) 1.4–1.8× longer than its apical width (distributed in China (Shanxi), Austria, Azerbaijan, Belgium, Bosnia Hercegovina, Bulgaria, Croatia, Cyprus; former Czechoslovakia, Denmark, Finland, France, Germany, Greece, Hungary, Iran, Israel, Italy, Kazakhstan, Korea, Macedonia, Moldova, Mongolia, Netherlands, Poland, Romania, Russia, Slovenia, Spain, Sweden, Switzerland, Tajikistan, Tunisia, Turkey, United Kingdom, former Yugoslavia)*B. (G.) obscurator*
 – Second tergite usually sculptured; ovipositor sheath shorter than metasoma; legs largely yellow to yellowish-brown; first tergite 1.1–1.5× longer than its apical width 17
- 17 Head in dorsal view 1.6× as broad as long; ovipositor sheath distinctly longer than hind tibia; hind femur 3.7× as long as its maximum width; second metasomal suture crenulate..... *B. (G.) longistriatus* sp. nov.
 – Head in dorsal view 1.7–1.9× as broad as long; ovipositor sheath as long as hind tibia or shorter; hind femur 2.8–3.1× as long as its maximum width; second metasomal suture smooth..... 18
- 19 Fore wing vein 1-M 1.5× as long as m-cu; mesosoma in lateral view 1.3× as long as high; pterostigma 4.0× as long as wide; second tergite as long as third tergite (distributed in China (Ningxia), Armenia, Austria, Belgium, Bulgaria, Cyprus, Czech Republic, former Czechoslovakia, Denmark, Finland, France, Georgia, Germany, Hungary, Iran, Italy, Kazakhstan, Korea, Latvia, Lithuania, Moldova, Mongolia, Netherlands, Norway, Poland, Romania, Russia, Slovakia, Slovenia, Switzerland, Turkey, Ukraine, United Kingdom, former Yugoslavia) *B. (G.) exhilarator*
 – Fore wing vein 1-M 2.0× as long as m-cu; mesosoma in lateral view 2.0× as long as high; pterostigma 2.8× as long as wide; second tergite slightly longer than third tergite (distributed in China (Fujian, Yunnan), Afghanistan, Armenia, Austria, Azerbaijan, Belgium, Bulgaria, Czech Republic, Denmark, Finland, France, Georgia, Germany, Greece, Hungary, Iran, Ireland, Italy, Kazakhstan, Korea, Lithuania, Moldova, Mongolia, Netherlands, Poland, Romania, Russia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom, former Yugoslavia)..... *B. (G.) picticornis*

***Bracon (Glabrobracon) indistinctus* sp. nov.**

<http://zoobank.org/9F9C597E-AF8F-4203-8E81-700170DE3FAD>

Figs 1, 2

Type material. *Holotype*. ♀, China, Zhejiang Prov., Mt. Tianmu, Laodian-Xianrending, 1250–1547 m alt., 17–18.V.1988, Fan Jinjiang, No. 884381 (ZJUH).

Diagnosis. This new species is very similar to *B. (G.) isomera* (Cushman, 1931), but can be separated from the latter by the following characters: metasomal tergites largely dark brown (yellow to reddish-brown in *B. isomera*); second metasomal suture crenulate and sinuate (smooth and straight or weakly sinuate); propodeum with short medio-longitudinal carina posteriorly (without short medio-longitudinal carina posteriorly); fore wing vein cu-a slightly postfurcal (interstitial).

Description. *Holotype*, ♀, length of body 4.1 mm, of fore wing 4.2 mm, of ovipositor sheath 2.1 mm.

Head. Antenna with 36 segments; apical antennal segment with a short spine apically, 2.9× longer than its maximum width (Fig. 2n); first flagellomere 2.1× longer than wide, 1.1 and 1.2× longer than second and third, respectively, the latter being 1.5× longer than wide; malar suture rather weak, with some short setae; clypeus height: inter-tentorial distance: tentorio-ocular distance = 5: 11: 6; clypeus densely short setose; eye not emarginate (Fig. 2g); face smooth, with some short setae laterally (Fig. 2g); eye height: shortest distance between eyes: head width = 13: 17: 32; frons largely smooth, except for a few weak striae laterally, slightly concave behind antennal sockets, with a rather weak median groove (Fig. 2h); vertex smooth, with sparse short setae; shortest distance between posterior



Figure 1. *Bracon (Glabrobracon) indistinctus* sp. nov., ♀, holotype, habitus lateral.

ocelli: minimum diameter of elliptical posterior ocellus: shortest distance between posterior ocellus and eye = 3: 3: 7; temples linearly narrowed behind eyes (Fig. 2h).

Mesosoma. Length of mesosoma 1.4× its height (Fig. 2c); notauli rather weak and only impressed anteriorly (Fig. 2d); mesoscutum smooth and with sparse setae along imaginary notaulic courses (Fig. 2d); scutellar sulcus deep, moderately wide, with crenulae (Fig. 2d); scutellum smooth, with some setae; metanotum moderately convex medially (Fig. 2d); propodeum largely smooth, with a short medio-longitudinal carina posteriorly and sparsely setose medially, with dense long setae laterally (Fig. 2j).

Wings. Fore wing (Fig. 2a): SR1: 3-SR: r = 40: 25: 11; 1-SR+M more or less straight, 1.4× longer than 1-M; 2-SR: 3-SR: r-m = 18: 25: 9; m-cu straight, 1.8× longer than 2-SR+M; angle between 1-SR and C+SC+R about 80°; cu-a weakly postfurcal. Hind wing (Fig. 2b): SC+R1: 2-SC+R: 1r-m = 18: 3: 10.

Legs. Length of fore femur: tibia: tarsus = 26: 29: 35; length of hind femur: tibia: basitarsus = 35: 45: 17; length of femur, tibia and basitarsus of hind leg 4.4, 9.0 and 6.8× their maximum width, respectively; hind tibial spurs 0.2 and 0.3× as long as hind basitarsus.

Metasoma. Length of first tergite 1.2× its apical width, median area convex, surface largely smooth, but well-defined grooves sparsely and weakly crenulate (Fig. 2k); lateral grooves of first tergite with sparse crenulae (Fig. 2k); medially second tergite approximately as long as third tergite; second metasomal suture narrow, sparsely and weakly crenulate, strongly curved medially (Fig. 2e); medially third tergite 0.3× as long as its apical width; second to seventh tergites smooth (Fig. 2e); setose part of ovipositor sheath 0.5× as long as fore wing.

Colour. Head largely blackish-brown, eye orbits and mandible (except its black apex) reddish-yellow (Fig. 2g, h); mesosoma largely reddish-yellow, propodeum anteriorly and posteriorly somewhat infuscate (Fig. 2c, d, j); legs largely blackish-brown, fore coxa and trochanter dark yellow; metasoma largely dark brown (Fig. 2e); first and second metasomal tergites relatively pale (Fig. 2e, k); ovipositor sheath black (Fig. 1); wing membrane infuscate, pterostigma and veins dark brown (Fig. 2a, b).

Biology. Unknown.

Distribution. China (Zhejiang).

Etymology. Named after the rather weakly developed notauli: “indistinctus” is Latin for “not distinct”.

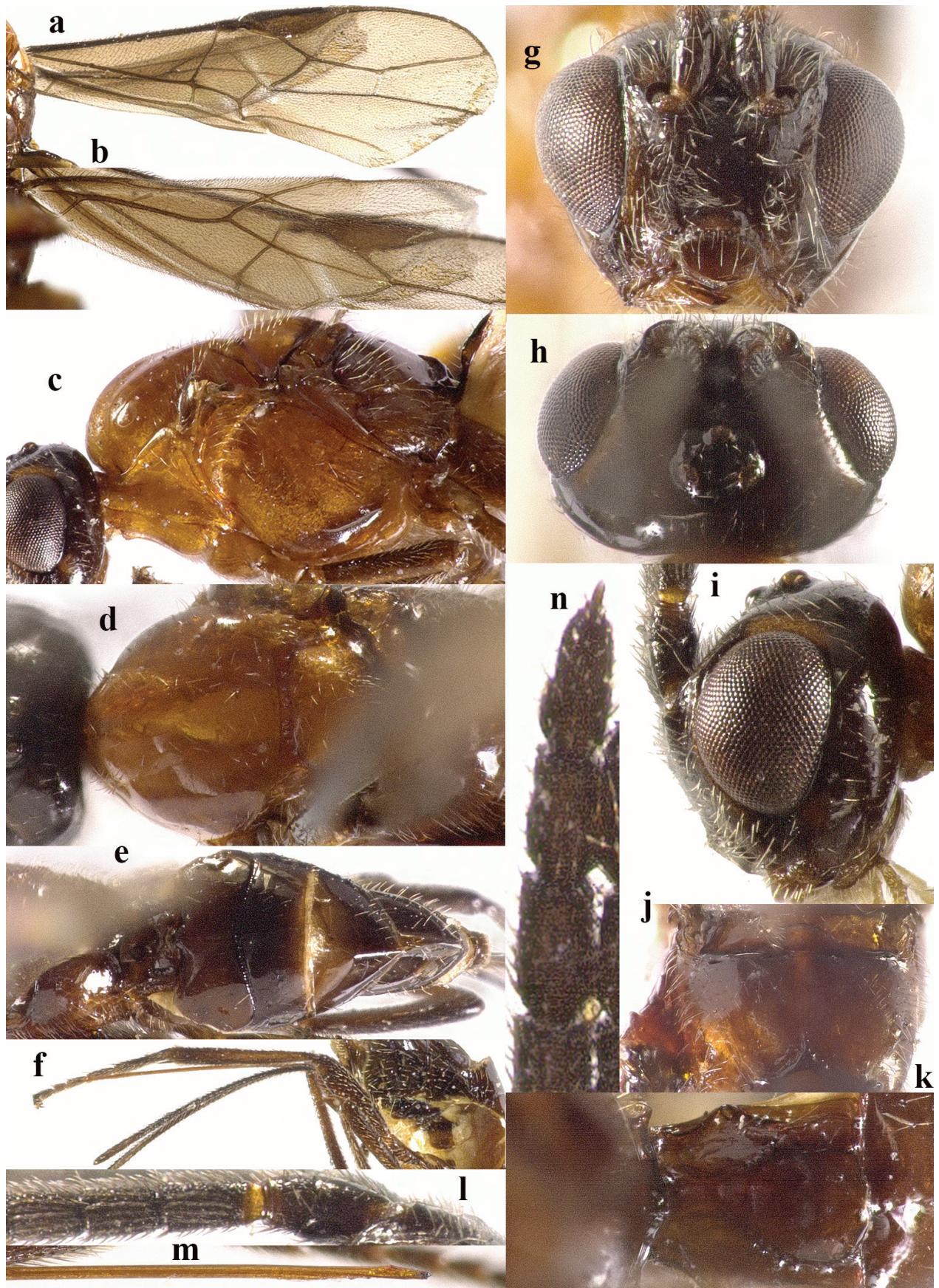


Figure 2. *Bracon (Glabrobracon) indistinctus* sp. nov., ♀, holotype. **a.** Fore wing; **b.** Hind wing; **c.** Mesosoma, lateral view; **d.** Mesosoma, dorsal view; **e.** Metasoma, dorsal view; **f.** Hind leg, lateral view; **g.** Head, front view; **h.** Head, dorsal view; **i.** Head, lateral view; **j.** Propodeum, dorsal view; **k.** First metasomal tergite, dorsal view; **l.** Scapus outer side, lateral view; **m.** Apex of ovipositor, lateral view.

***Bracon (Glabrobracon) isomera* (Cushman, 1931)**

Figs 3, 4

Microbracon isomera Cushman, 1931: 16; Chu 1935: 25.*Bracon isomera* (Cushman): Fahringer 1934: 338; Watanabe 1935: 43, 1937: 25; Shenefelt 1978: 1496; Chu et al. 1978: 50; You et al. 1994:

112; You et al. 2000: 395; He et al. 2004: 562; Chen and Yang 2006: 67.

Bracon (Glabrobracon) isomera (Cushman): Papp 1996: 154.

Material. 1♀, China, Jiangsu Prov., Sheyang, ??, 1957, Ren Xiaokuan, No. 5793.6, host: *Pectinophora gossypiella* (Saunders, 1844) (ZJUH); 6♀♀1♂, China, Zhejiang Prov., Xiaoshan, 5.VIII.1963, Ruan Yili, No. 63057.4, host: *Pectinophora gossypiella* (Saunders, 1844) (ZJUH); 2♀♀, China, Zhejiang Prov., Xiaoshan, 5.VIII.1963, Ruan Yili, No. 6315.1, host: *Pectinophora gossypiella* (Saunders, 1844) (ZJUH); 5♀♀4♂♂, China, Zhejiang Prov., Xiaoshan, 21–31.VII.1964, Jin Dengdi, No. 64055.8, 64056.3, host: *Pectinophora gossypiella* (Saunders, 1844) (ZJUH); 4♀♀2♂♂, China, Zhejiang Prov., Xiaoshan, ??, 1963, Jin Dengdi, No. 73016.15, host: *Pectinophora gossypiella* (Saunders, 1844) (ZJUH); 1♀1♂, China, Zhejiang Prov., Xiaoshan, 20.VI.1979, Gao Wenbin, No. 790681, host:

Pectinophora gossypiella (Saunders, 1844) (ZJUH); 3♀♀, China, Zhejiang Prov., Cixi, ?.X.1964, Chen Qihu, No. 64061.7, 64061.9, host: *Pectinophora gossypiella* (Saunders, 1844) (ZJUH); 7♀♀, China, Shanghai, ??, 1978, Zhang Xuefang, No. 780745, 780746, 780747, 780748, host: *Pectinophora gossypiella* (Saunders, 1844) (ZJUH); 1♀1♂, China, Hubei Prov., Jingzhou, ??, 1963, Wu Sixun, No. 63059.8, host: *Pectinophora gossypiella* (Saunders, 1844) (ZJUH); 2♀♀, China, Hubei Prov., Mianyang, ??, 1976–77, Mao Hongshu, No. 780069, host: *Pectinophora gossypiella* (Saunders, 1844) (ZJUH).

Biology. Parasitoid of *Pectinophora gossypiella* (Saunders, 1844) (Cushman 1931; Watanabe 1935, 1937; You et al. 1994).

Distribution. China (Fujian, Hubei, Hunan, Jiangsu, Shanghai, Sichuan, Zhejiang); Korea.

Note. Li (1935) reported this species from Jiangsu and Zhejiang and Chu et al. (1978) from Zhejiang. He and Wang (1987) also reported species from Zhejiang; You et al. (1994) reported this species from Hunan, He et al. (2004) from Hubei, Hunan, Jiangsu, Shanghai, Sichuan and Zhejiang and Chen and Yang (2006) from Fujian and Hubei.



Figure 3. *Bracon (Glabrobracon) isomera* (Cushman, 1931), ♀, habitus lateral.

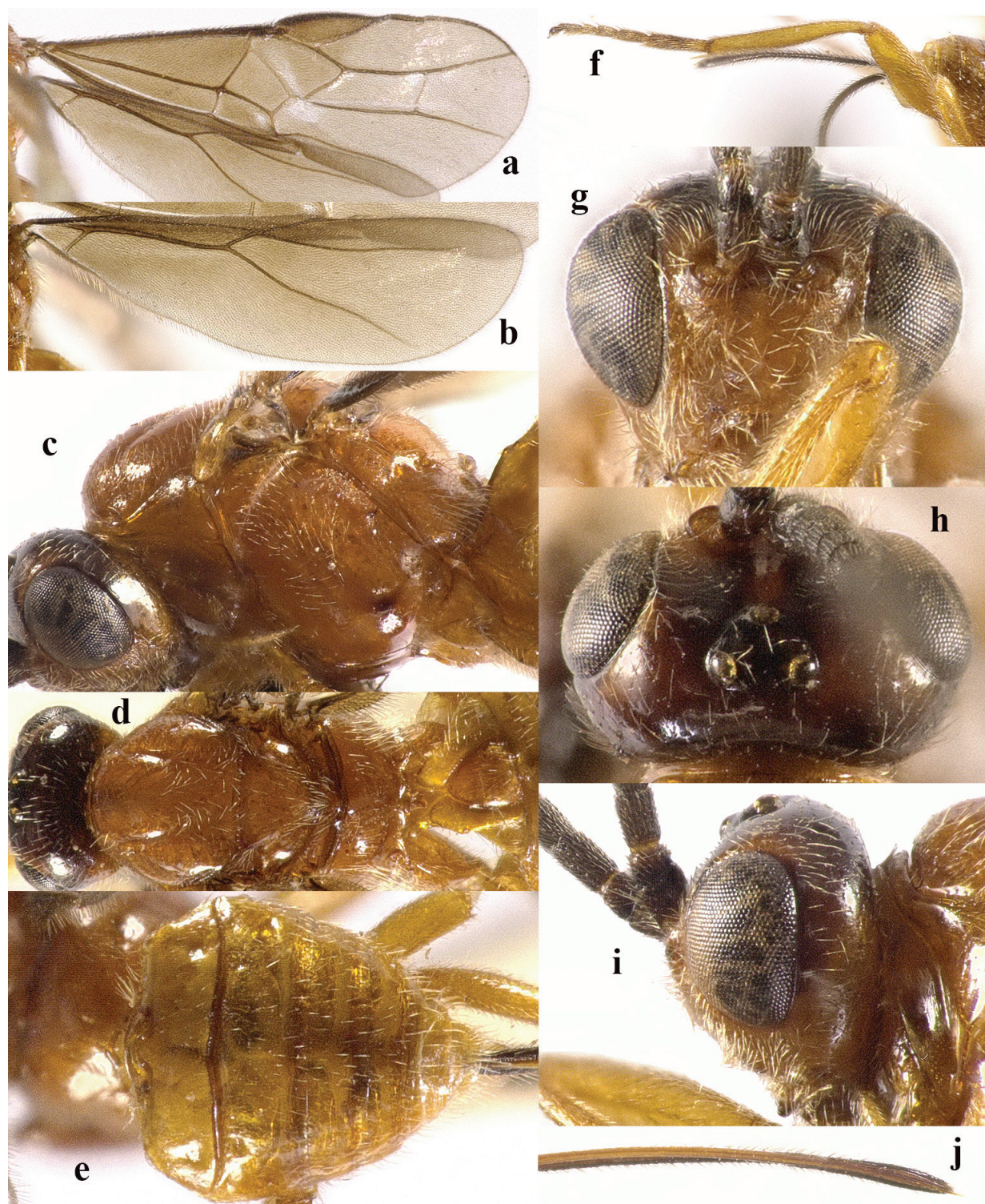


Figure 4. *Bracon (Glabrobracon) isomera* (Cushman, 1931). ♀. **a.** Fore wing; **b.** Hind wing; **c.** Mesosoma, lateral view; **d.** Mesosoma, dorsal view; **e.** Metasoma, dorsal view; **f.** Hind leg, lateral view; **g.** Head, front view; **h.** Head, dorsal view; **i.** Head, lateral view; **j.** Apex of ovipositor, lateral view.

***Bracon (Glabrobracon) leptotes* sp. nov.**

<http://zoobank.org/E993AF44-E544-4319-8705-F5BEA77E7123>

Figs 5, 6

Type material. *Holotype*. ♀, China, Fujian Prov., Mt. Wuyi, Tongmu, 14.VII.1994, Chen Xuexin, No. 942349 (ZJUH). *Paratype*. 1♀, same data as holotype, No. 942303 (ZJUH).

Diagnosis. This new species is very similar to *B. (G.) arcuatus* Thomson, 1892, but can be separated from the latter by the following characters: fore wing second submarginal cell medium-sized, vein 3-SR 1.7× as long as vein 2-SR (short, vein 3-SR slightly longer than (rarely as long as) vein 2-SR in *B. (G.) arcuatus*); setose part of ovipositor sheath distinctly longer than hind tibia +



Figure 5. *Bracon (Glabrobracon) leptotes* sp. nov., ♀, holotype, habitus lateral.

basitarsus combined, as long as or slightly longer than hind tibia + tarsus combined (as long as hind tibia + basitarsus combined and shorter than hind tibia + tarsus combined); first metasomal tergite $1.2\times$ longer than its apical width, lateral grooves with sparse crenulae, remainder of tergite smooth (quadrate or nearly so, slightly longer than or as long as its apical width, lateral grooves with distinct crenulae and tergite with median and lateral areas rugose).

Description. *Holotype*, ♀, length of body 2.5 mm, of fore wing 3.0 mm, of ovipositor sheath 1.1 mm.

Head. Antenna with 28 segments; apical antennal segment strongly acute, $3.3\times$ longer than its maximum width (Fig. 6k); first flagellomere $2.5\times$ longer than wide, 1.2 and $1.3\times$ longer than second and third, respectively, the latter being twice longer than wide; malar suture rather weak, with some short setae; clypeus height: inter-tentorial distance: tentorio-ocular distance = 3: 8: 4; clypeus sparsely short setose; eye not emarginate (Fig. 6g); face largely smooth except for a few weak punctures laterally and anteriorly and with sparse short setae (Fig. 6g); eye height: shortest distance between eyes: head width = 14: 14: 29; frons largely smooth except for a few weak punctures anteriorly, slightly concave behind antennal sockets, with a rather weak median groove (Fig. 6h); vertex smooth, with sparse short setae; shortest distance between posterior ocelli: minimum diameter of elliptical posterior ocellus: shortest distance between posterior ocellus and eye = 4: 3: 6; temples strongly narrowed behind eyes (Fig. 6h).

Mesosoma. Length of mesosoma $1.6\times$ its height (Fig. 6c); notauli only impressed anteriorly (Fig. 6d); mesoscutum smooth, with sparse setae posteriorly and along imaginary notaulic courses (Fig. 6d); scutellar sulcus

deep, narrow, with crenulae (Fig. 6d); scutellum smooth, with some setae; metanotum moderately convex medially (Fig. 6d); propodeum largely smooth, with a short medio-longitudinal carina posteriorly and sparsely setose medially, with dense long setae laterally (Fig. 6d).

Wings. Fore wing (Fig. 6a): SR1: 3-SR: r = 26: 15: 5; 1-SR+M straight, $1.3\times$ longer than 1-M; 2-SR: 3-SR: r-m = 9: 15: 5; m-cu straight, $2.0\times$ longer than 2-SR+M; angle between 1-SR and C+SC+R about 80° ; cu-a interstitial. Hind wing (Fig. 6b): SC+R1: 2-SC+R: 1r-m = 19: 4: 11.

Legs. Length of fore femur: tibia: tarsus = 17: 20: 29; length of hind femur: tibia: basitarsus = 21: 26: 10; length of femur, tibia and basitarsus of hind leg 3.8, 8.2 and $4.7\times$ their maximum width, respectively; hind tibial spurs 0.2 and $0.3\times$ as long as hind basitarsus.

Metasoma. Length of first tergite $1.2\times$ its apical width; first tergite concave medio-basally, median area convex and smooth (Fig. 6j); lateral grooves of first tergite very wide, with sparse crenulae (Fig. 6j); second tergite largely smooth except for some striae medially (Fig. 6e); median length of second tergite slightly longer than that of third tergite; second metasomal suture moderately wide, crenulate, weakly curved medially (Fig. 6e); third to seventh tergites smooth (Fig. 6e); ovipositor sheath $0.4\times$ as long as fore wing.

Colour. Largely blackish-brown (Fig. 5); scapus, mandible (but apically black) and legs (but claws dark brown, hind tarsus somewhat infuscate) yellow (Figs 5, 6f, g); first metasomal tergite yellow, but median area brown (Fig. 6j); second tergite laterally yellow; ovipositor sheath black (Fig. 6e); wing membrane pale yellow, pterostigma and veins dark brown (Fig. 6a, b).

Variation. Length of body of female 2.5–3.2 mm, of fore wing of female 3.0–3.1 mm and of ovipositor sheath

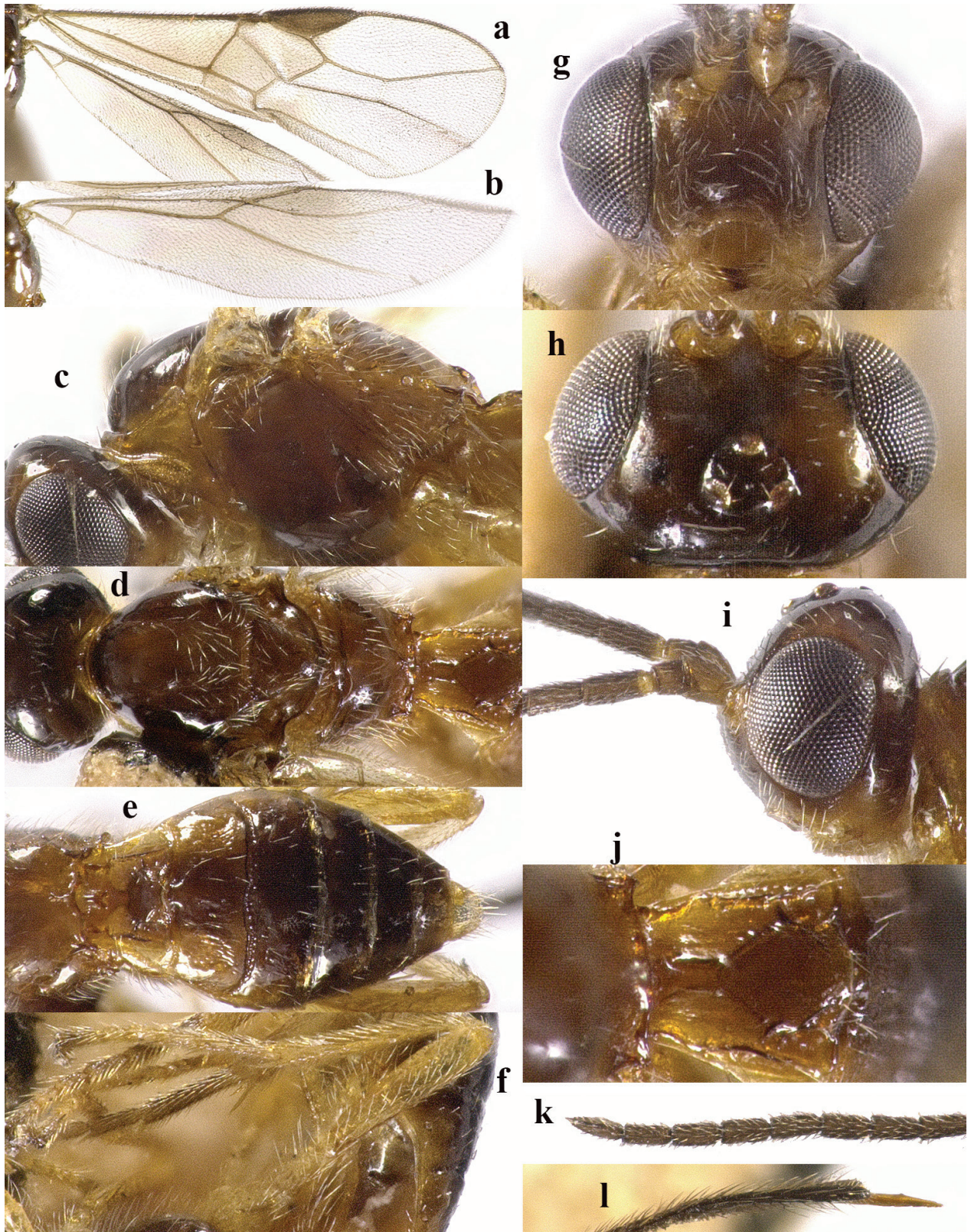


Figure 6. *Bracon* (*Glabrobracon*) *leptotes* sp. nov., ♀, holotype. **a.** Fore wing; **b.** Hind wing; **c.** Mesosoma, lateral view; **d.** Mesosoma, dorsal view; **e.** Metasoma, dorsal view; **f.** Hind leg, lateral view; **g.** Head, front view; **h.** Head, dorsal view; **i.** Head, lateral view; **j.** First metasomal tergite, dorsal view; **k.** Apex of antenna; **l.** Apex of ovipositor, lateral view.

1.1–1.4 mm; antenna of female with 28–31 segments; third metasomal tergite weakly rugose medially; ovipositor sheath 0.4–0.5× as long as fore wing; second metasomal tergite uniformly black brown.

Biology. Unknown.

Distribution. China (Zhejiang).

Etymology. Named after the slender ovipositor: “leptotes” is Greek for “slenderness”.

***Bracon (Glabrobracon) longistriatus* sp. nov.**

<http://zoobank.org/9D9986AE-1975-4716-A0F0-4F48895326BB>

Figs 7, 8

Type material. *Holotype*. ♀, China, Heilongjiang Prov., Yichun, 1985, Jin Liyuan, No. 864358 (ZJUH). *Paratypes*. 12♀♀9♂♂♂, China, Heilongjiang Prov., Yichun, 1985, Jin Liyuan, No. 864365, 864737, 864740, 864739, 864358 (17 specimens) (ZJUH); 26♀♀28♂♂♂, China, Heilongjiang Prov., Yichun, 1985.VII, Jin Liyuan, No. 851834 (20 specimens) (host *Pissodes nitidus* Roelofs), No. 864359 (21 specimens), 864303 (4 specimens), 864296 (5 specimens); 4♀♀5♂♂♂, China, Heilongjiang Prov., Yichun, 19??, Jin Liyuan, No. 850134 (9 specimens) (host *Pissodes* sp.) (ZJUH).

Diagnosis. This new species is very similar to *B. (G.) instabilis* Marshall, 1897, but can be separated from the latter by the following characters: in dorsal view, temples gradually narrowed behind eyes and length of eye 1.4× temple (temples strongly narrowed behind eyes and length of eye more than twice as long as temple in *B. (G.) instabilis*); first metasomal tergite (except median area), second tergite (but infuscate medially) reddish-yellow, third tergite sometimes reddish-yellow basally (metasomal tergites often entirely blackish-brown); legs yellow and only claws dark brown (legs blackish-brown with yellow or yellowish-brown pattern); first metasomal tergite 1.0–1.1× longer than its apical width (1.2–1.4 times).

Description. *Holotype*, ♀, length of body 3.0 mm, of fore wing 3.2 mm, of ovipositor sheath 1.1 mm.

Head. Antenna incomplete, only remaining are scapus and pedicel; malar suture indistinct, with some short setae; clypeus height: inter-tentorial distance: tentorio-ocular distance = 2: 11: 6; clypeus sparsely short setose; eye not emarginate (Fig. 8g); face largely smooth, except for a few weak punctures and with sparse short setae (Fig. 8g); eye height: shortest distance between eyes: head width = 12: 16: 31; frons smooth, slightly concave behind antennal sockets, with a rather weak median groove (Fig. 8h); vertex smooth, with sparse short setae; shortest distance between posterior ocelli: minimum diameter of elliptical posterior ocellus: shortest distance between posterior ocellus and eye = 8: 5: 8; temples subparallel immediately behind eyes (Fig. 8h).

Mesosoma. Length of mesosoma 1.6× its height (Fig. 8c); notauli relatively deeply impressed anteriorly, shallow posteriorly (Fig. 8d); mesoscutum largely smooth except for a few weak punctures posteriorly, with sparse setae posteriorly (Fig. 8d); scutellar sulcus deep, wide, with crenulae (Fig. 8d); scutellum smooth, with dense setae posteriorly; metanotum moderately convex medially (Fig. 8d); propodeum largely smooth, with a short medio-longitudinal carina posteriorly and sparsely setose medially, with dense long setae laterally (Fig. 8d).

Wings. Fore wing (Fig. 8a): SR1: 3-SR: r = 19: 9: 5; 1-SR+M more or less straight, 1.3× longer than 1-M; 2-SR: 3-SR: r-m = 13: 18: 9; m-cu straight, 1.7× longer



Figure 7. *Bracon (Glabrobracon) longistriatus* sp. nov., ♀, holotype, habitus lateral.

than 2-SR+M; angle between 1-SR and C+SC+R about 80°; cu-a more or less interstitial. Hind wing (Fig. 8b): SC+R1: 2-SC+R: 1r-m = 19: 3: 8.

Legs. Length of fore femur: tibia: tarsus = 25: 27: 31; length of hind femur: tibia: basitarsus = 24: 35: 14; length of femur, tibia and basitarsus of hind leg 3.7, 7.0 and 4.7× their maximum width, respectively; hind tibial spurs 0.3 and 0.4× as long as hind basitarsus.

Metasoma. Length of first tergite 1.1× its apical width; first tergite concave medio-basally, median area convex and with some striae (Fig. 8j); lateral grooves of first tergite moderately narrow, with sparse and weak crenulae (Fig. 8j); second tergite largely with striae, but laterally and posteriorly smooth (Fig. 8e); median length of second and third tergites about equal; second metasomal suture moderately narrow, crenulate, weakly curved medially (Fig. 8e); third to seventh tergites smooth (Fig. 8e); ovipositor sheath 0.3× as long as fore wing.

Colour. Largely blackish-brown (Fig. 7); pedicel apically, mandible (except for apically black brown) and legs (but claws dark brown) yellow (Figs 7, 8f, g); first metasomal tergite (but median area blackish-brown), second tergite (but medio-anteriorly blackish-brown) yellowish-brown (Fig. 8e, j); ovipositor sheath black (Fig. 7); wing membrane pale yellow, pterostigma yellow and veins dark brown (Fig. 8a, b).

Variation. Length of body of female 3.0–4.5 mm, of fore wing of female 3.1–4.2 mm and of ovipositor sheath 1.0–2.0 mm; antenna of female with 28 segments; apical antennal segment acute, 2.6× longer than its maximum width; first flagellomere 2.0× longer than wide, 1.1 and 1.2× longer than second and third, respectively, the latter being 1.6× longer than wide; length of mesosoma 1.4–1.6× its height; length of first tergite 1.0–1.1× its apical width; ovipositor sheath 0.3–0.5× as long as fore wing; third metasomal tergite sometimes basally yellowish-brown; pterostigma and veins yellowish-brown to dark brown.

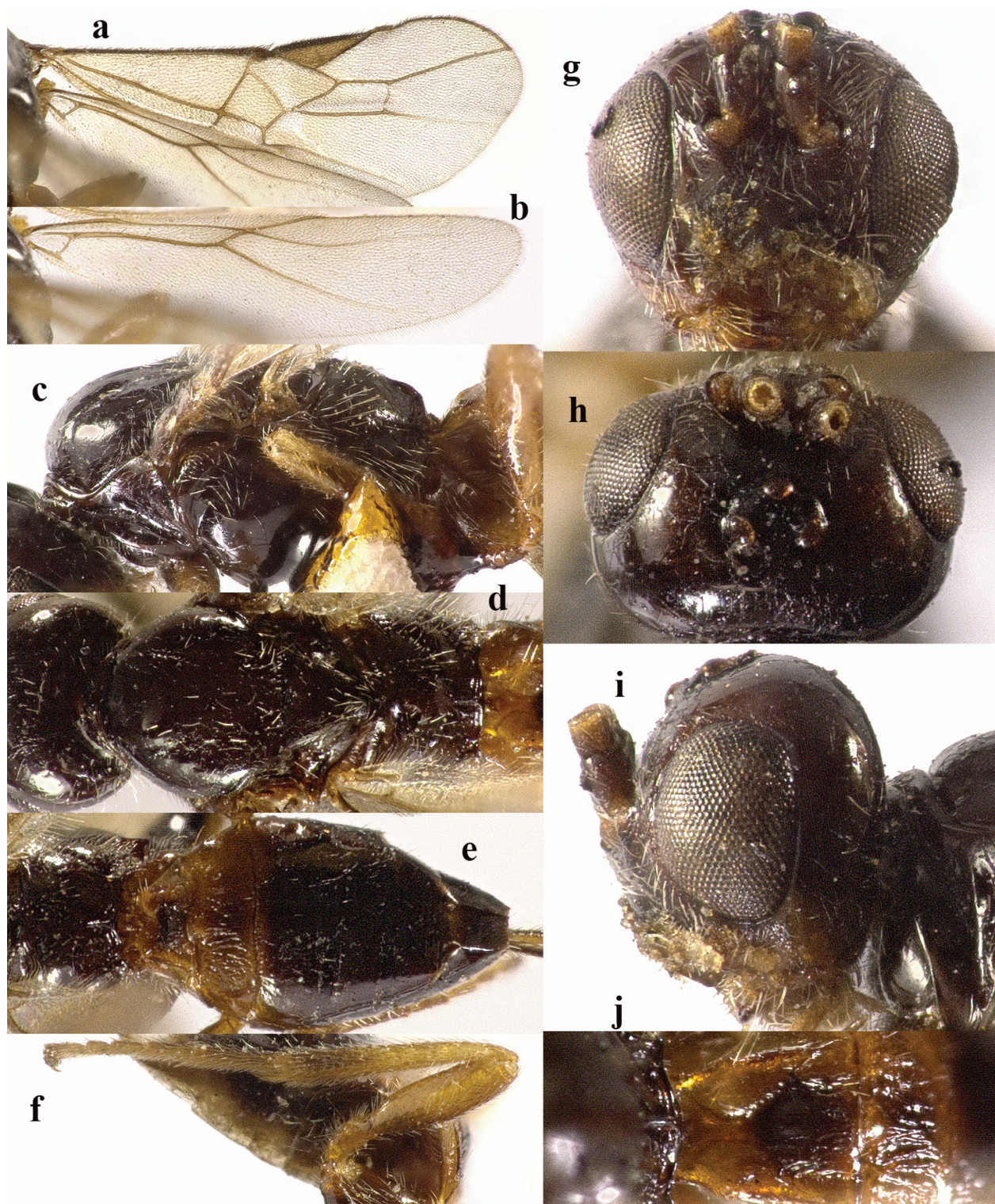


Figure 8. *Bracon (Glabrobracon) longistriatus* sp. nov., ♀, holotype. **a.** Fore wing; **b.** Hind wing; **c.** Mesosoma, lateral view; **d.** Mesosoma, dorsal view; **e.** Metasoma, dorsal view; **f.** Hind leg, lateral view; **g.** Head, front view; **h.** Head, dorsal view; **i.** Head, lateral view; **j.** First metasomal tergite, dorsal view.

Male. Length of body of male 2.3–3.3 mm, of fore wing of male 2.0–2.9 mm; metasomal tergites sometimes uniformly black brown.

Biology. The type series has been reared from *Pissodes* sp. and *Pissodes nitidus* Roelofs (Coleoptera: Curculionidae).

Distribution. China (Heilongjiang).

Etymology. Named after the largely striate median area of the first metasomal tergite and the second tergite: “longus” is Latin for “long” and “striata” is Latin for “with striae”.



Figure 9. *Bracon (Glabrobracon) megaventris* sp. nov., ♀, holotype, habitus lateral.

***Bracon (Glabrobracon) megaventris* sp. nov.**

<http://zoobank.org/A9CE8B6C-766A-4C9D-AE3C-AB5BDBA4ED27>
Figs 9, 10

Type material. *Holotype*. ♀, China, Henan Prov., Mt. Jigong, 11.VII.1997, Chen Xuexin, No. 973791 (ZJUH).

Diagnosis. This new species is very similar to *B. (G.) leptotes* sp. nov., but can be separated from the latter by the following characters: ovipositor sheath 0.1× as long as fore wing (0.4× in *B. (G.) leptotes*); hind femur relatively robust, 2.8× as long as maximum width (slightly

more slender, 3.8× as long as maximum width); second metasomal suture medially distinctly wider than laterally, nearly straight (medially slightly wider than laterally and slightly sinuate); mesosoma in lateral view 1.9× as long as high (1.6 times).

Description. *Holotype*, ♀, length of body 3.5 mm, of fore wing 3.6 mm, of ovipositor sheath 0.4 mm.

Head. Antenna with 35 segments; apical antennal segment with a short spine apically, 3.1× longer than its maximum width (Fig. 10l); first flagellomere 2.3× longer than wide, 1.2× longer than second and third, respectively,

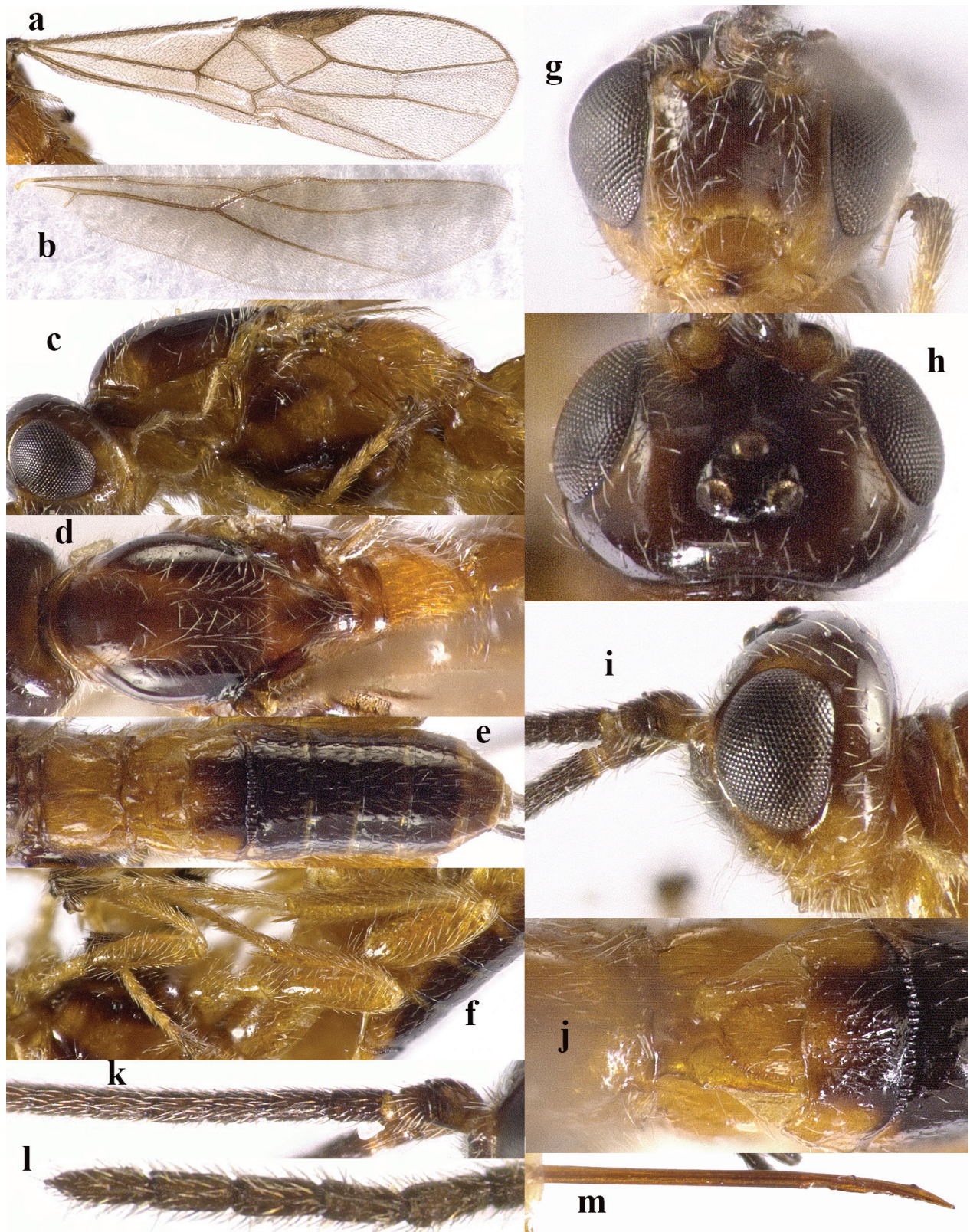


Figure 10. *Bracon (Glabrobracon) megaventris* sp. nov., ♀, holotype. **a.** Fore wing; **b.** Hind wing; **c.** Mesosoma, lateral view; **d.** Mesosoma, dorsal view; **e.** Metasoma, dorsal view; **f.** Hind leg, lateral view; **g.** Head, front view; **h.** Head, dorsal view; **i.** Head, lateral view; **j.** First metasomal tergite, dorsal view; **k.** Scapus outer side, lateral view; **l.** Apex of antenna; **m.** Apex of ovipositor, lateral view.

the latter being 1.9× longer than wide; malar suture rather weak, with some short setae; clypeus height: inter-tentorial distance: tentorio-ocular distance = 3: 8: 4; clypeus sparsely short setose; eye not emarginated (Fig. 10g); face

smooth and with some long setae laterally (Fig. 10g); eye height: shortest distance between eyes: head width = 4: 5: 10; frons smooth, slightly concave behind antennal sockets, with a rather weak median groove (Fig. 10h); vertex

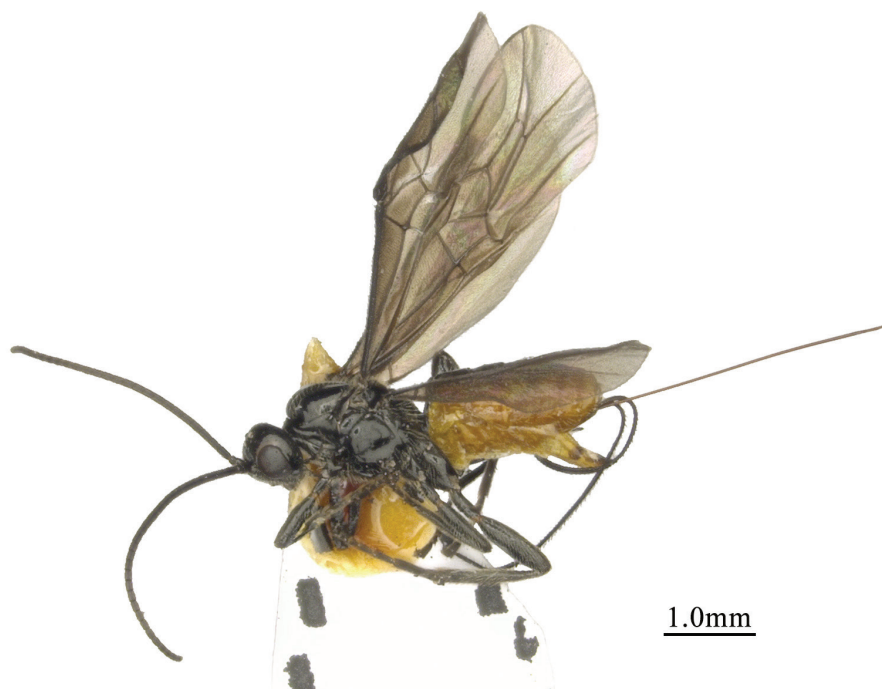


Figure 11. *Bracon (Glabrobracon) variator* Nees, 1811, ♀, habitus lateral.

smooth, with sparse short setae; shortest distance between posterior ocelli: minimum diameter of elliptical posterior ocellus: shortest distance between posterior ocellus and eye = 5: 5: 8; temples linearly narrowed behind eyes (Fig. 10h).

Mesosoma. Length of mesosoma 1.9× its height (Fig. 10c); notauli only impressed anteriorly (Fig. 10d); mesoscutum smooth, with sparse long setae posteriorly and along imaginary notaulic courses (Fig. 10d); scutellar sulcus deep, narrow, with crenulae (Fig. 10d); scutellum smooth, with dense short setae posteriorly; metanotum moderately convex medially (Fig. 10d); propodeum largely smooth, with a short medio-longitudinal carina posteriorly and sparsely setose medially, with dense long setae laterally (Fig. 10d).

Wings. Fore wing (Fig. 10a): SR1: 3-SR: r = 19: 12: 4; 1-SR+M more or less straight, 1.3× longer than 1-M; 2-SR: 3-SR: r-m = 2: 3: 1; m-cu straight, 2.3× longer than 2-SR+M; angle between 1-SR and C+SC+R about 70°; cu-a more or less interstitial. Hind wing (Fig. 10b): SC+R1: 2-SC+R: 1r-m = 15: 3: 8.

Legs. Length of fore femur: tibia: tarsus = 17: 20: 26; length of hind femur: tibia: basitarsus = 11: 16: 6; length of femur, tibia and basitarsus of hind leg 2.8, 7.1 and 4.8× their maximum width, respectively; hind tibial spurs 0.3 and 0.4× as long as hind basitarsus.

Metasoma. Length of first tergite 1.5× its apical width; first tergite concave medio-basally, median area convex and smooth (Fig. 10j); lateral grooves of first tergite moderately narrow, with distinct crenulae (Fig. 10j); second tergite rugose except for laterally and posteriorly smooth (Fig. 10e); median length of second to sixth tergites approximately similar; second metasomal suture moderately wide, crenulate, more or less straight medially (Fig. 10e); third to seventh tergites smooth (Fig. 10e); setose part of ovipositor sheath 0.1× as long as fore wing.

Colour. Largely blackish-brown (Fig. 9); scapus basally, mandible (but apically blackish-brown), face posteriorly, middle lobe of mesoscutum posteriorly, lateral lobes anteriorly, pronotum laterally, mesopleuron anteriorly, scutellum anteriorly and laterally, metanotum, metapleuron anteriorly, legs (but claws and telotarsus dark brown), first metasomal tergite, second tergite medio-anteriorly and laterally and third to seventh tergites laterally yellow (Figs 9, 10c–g, i, j); ovipositor sheath black (Fig. 9); wing membrane infusate, pterostigma dark brown, veins yellow to dark brown (Fig. 10a, b).

Biology. Unknown.

Distribution. China (Henan).

Etymology. Named after the large metasoma: “mega” is Greek for “large” and “venter” is Latin for “belly”.

Bracon (Glabrobracon) variator Nees, 1811

Figs 11, 12

Bracon variator Nees, 1811: 7, 1834: 77; Wesmael 1838: 53; Szépligeti 1901: 269.

Bracon (Glabrobracon) variator Nees: Fahringer 1928: 496, 1929: 83; Telenga 1936: 224; Tobias 1961: 162; Papp 1966: 392; Shenefelt 1978: 1584; Tobias 1986: 134; Tobias and Belokobylskij 2000: 143.

Glabrobracon variator Nees: Kolubajiv 1934: 68.

Microbracon variator (Nees): Thompson 1953: 152.

Bracon collinus Szépligeti, 1896: 292, 1901: 270.

Bracon (Glabrobracon) collinus: Fahringer 1927: 348; Telenga 1936: 298. Synonymised by Papp 1966: 392.

Bracon guttator Panzer, 1804: no. 92.8. Synonymised by Nees 1834: 81; but disagrees with figure and status of this taxon is uncertain.

Material. 1♀, China, Ningxia Prov., Agriculture Bureau of Guxian, 2.VII.2019, Xia Gucheng (ZJUH).

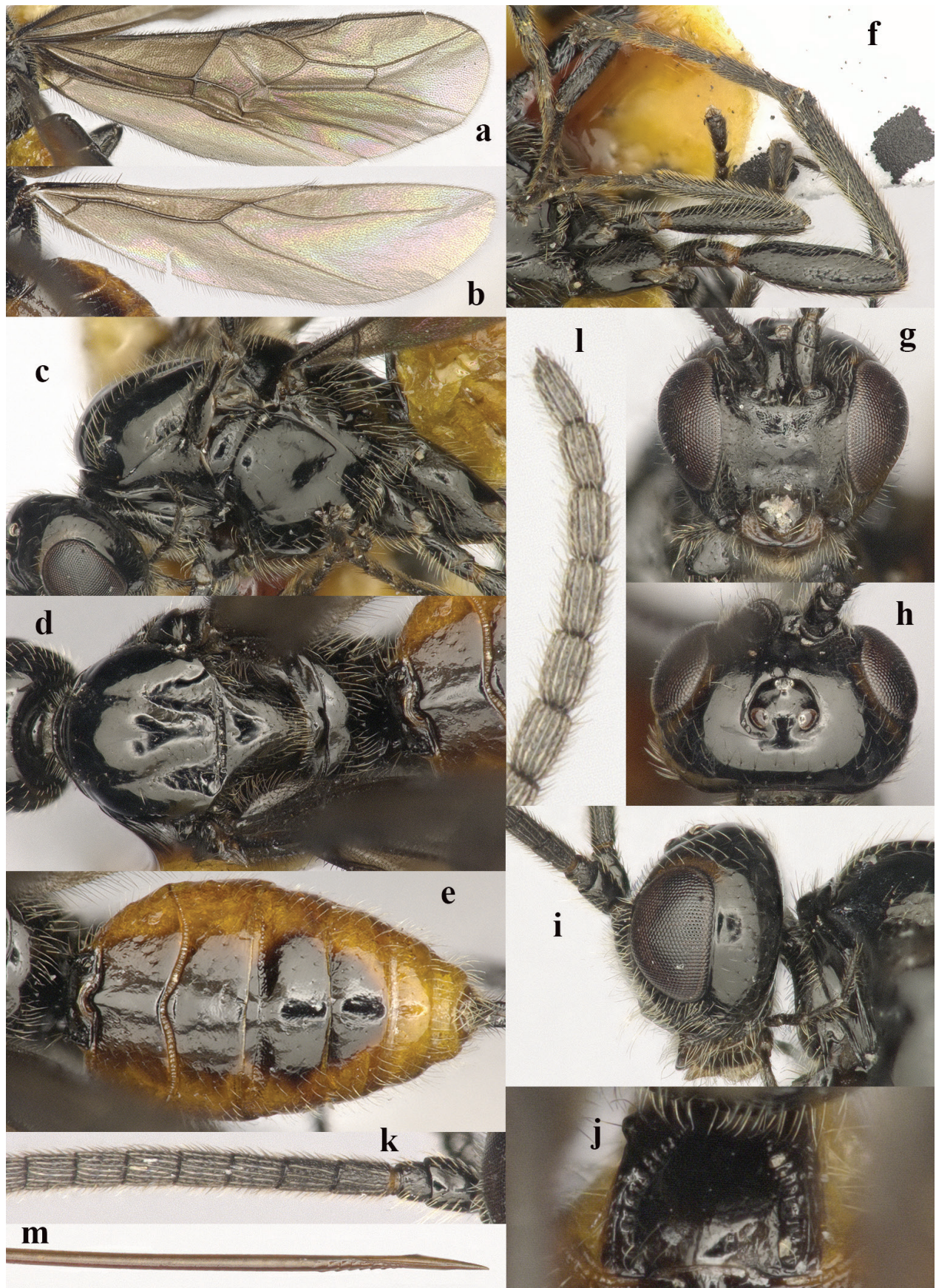


Figure 12. *Bracon (Glabrobracon) variator* Nees, 1811, ♀. **a.** Fore wing; **b.** Hind wing; **c.** Mesosoma, lateral view; **d.** Mesosoma, dorsal view; **e.** Metasoma, dorsal view; **f.** Hind leg, lateral view; **g.** Head, front view; **h.** Head, dorsal view; **i.** Head, lateral view; **j.** First metasomal tergite, dorsal view; **k.** Scapus outer side, lateral view; **l.** Apex of antenna; **m.** Apex of ovipositor, lateral view.

Biology. The hosts include *Ernobius nigrinus* (Sturm, 1837) (Anobiidae, Coleoptera); *Bruchidius lividimanus* (Gyllenhal, 1833), *Bruchidius poupillieri* (Allard, 1868), *Bruchus atomarius* (Linnaeus, 1761), *Bruchus laticollis* (Boheman), *Bruchus lentis* Froelich, 1799, *Bruchus viciae* (Olivier, 1795) (Chrysomelidae, Coleoptera); *Anthonomus pomorum* (Linnaeus, 1758), *Baris chlorizan* (Germar, 1837), *B. cuprirostris* (Fabricius), *B. laticollis* (Marsham, 1802), *Ceutorhynchus punctiger* Gyllenhal, 1837, *Gymnetron asellus* (Gravenhorst, 1807), *G. campanulae* (Linnaeus, 1767), *G. netum* (Germar, 1821), *G. tetrum* (Fabricius, 1792), *Larinus flavescens* Germar, 1824, *L. jaceae* (Fabricius, 1775) *L. turbinatus* Gyllenhal, 1836, *Magdalis rufa* Germar, 1824, *Microlarinus lareynii* (Jacquelin du Val, 1852), *Mononychus punctumalbum* (Herbst, 1784), *Pissodes validirostris* Gyllenhal, 1836, *Sibinia viscaria* (Linnaeus, 1761), *Sitona longulus* Gyllenhal, 1834 (Curculionidae, Coleoptera); *Carposina niponensis* Walsingham, 1900 (Carposinidae, Lepidoptera); *Coleophora coronillae* Zeller, 1849, *C. medelichensis* Krone, 1908 (Coleophoridae, Lepidoptera); *Mesophleps corsicella* (Herrich-Schäffer, 1856), *Pexicopia malvella* (Hübner, 1805), *Platyedra subcinerea* (Haworth, 1828) (Gelechiidae, Lepidoptera); *Perizoma lugdunaria* (Herrich-Schäffer, 1855) (Geometridae, Lepidoptera); *Phyllonorycter mespilella* (Hübner, 1805) (Gracillariidae, Lepidoptera); *Gortyna xanthenes* Germar, 1842, *Hadena bicruris* (Hufnagel, 1766) (Noctuidae, Lepidoptera); *Dioryctria abietella* (Denis & Schiffermüller, 1775), *Etiella zinckenella* (Treitschke, 1832), *Myelois circumvoluta* (Fourcroy, 1785) (Pyralidae, Lepidoptera); *Barbara herrichiana* Obraztsov, 1960, *Cydia funebrana* (Treitschke, 1835), *C. strobilella* (Linnaeus, 1758), *Dichrorampha petiverella* (Linnaeus, 1758), *Eucosma cana* (Haworth, 1811), *Gypsonoma aceriana* (Duponchel, 1843), *Pandemis cerasana* (Hübner, 1786), *Rhopobota naevana* (Hübner, 1817), *Rhyacionia resinella* (Linnaeus, 1758) (Tortricidae, Lepidoptera); *Synanthedon andrenaeformis* (Laspeyres, 1801) (Sesiidae, Lepidoptera); *Lampides boeticus* (Linnaeus, 1767) (Lycaenidae, Lepidoptera); *Vanessa cardui* (Linnaeus, 1758) (Nymphalidae, Lepidoptera); *Anthomyia albimana* (Zetterstedt), *Botanophila seneciella* (Meade, 1892) (Anthomyiidae, Diptera); *Chaetostomella cylindrica* (Robineau-Desvoidy, 1830), *Noeeta pupillata* (Fallén, 1814), *Sphenella marginata* (Fallén, 1814), *Tephritis leontodontis* (DeGeer, 1776), *Urophora cuspidata* (Meigen, 1826) (Tephritidae, Diptera); *Mikiola fagi* (Hartig, 1839) (Cecidomyiidae, Diptera); *Caliroa cerasi* (Linnaeus, 1758), *Hoplocampa brevis* (Klug, 1814), *H. flava* (Linnaeus, 1761) (Tenthredinidae, Hymenoptera) (Reinhard 1856; Kieffer 1891; Rudow 1908; Kolubajiv 1934; Telenga 1936; Wiackowski 1959; Sytenko 1960; Tobias 1961, 1976,

1986; Fulmek 1968; Sinacori 1985; Balevski 1989, 1999; Vidal 1993; Diaconu and Lozan 2000).

Distribution. China (Ningxia), Albania, Algeria, Armenia, Austria, Azerbaijan, Belgium, Bosnia Hercegovina, Bulgaria, Canary Islands, Croatia, Cyprus, Czech Republic, Denmark, Finland, France, Georgia, Germany, Greece, Hungary, Iran, Ireland, Israel, Italy, Jordan, Kazakhstan, Korea, Latvia, Lithuania, Macedonia, Moldova, Netherlands, Poland, Romania, Russia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Syria, Tajikistan, Tunisia, Turkey, Turkmenistan, Ukraine, United Kingdom, Uzbekistan, former Yugoslavia.

Subgenus *Lucobracon* Fahringer, 1927

Figs 13–22

Bracon (Lucobracon) Fahringer, 1927: 248; Type species: *Bracon lautus* Szépligeti, 1901 (Designated by van Achterberg & Polaszek, 1996: 26; existing designation of *Bracon suchorukovi* Telenga, 1936, is invalid because it was not included by Fahringer).

Bracon (Lucobracon) Fahringer: Tobias 1957: 497, subgeneric rank; Tobias 1958: 82, 1959: 887; Papp 1966: 374, 1974: 415; Shenefelt 1978: 1615; Tobias 1986: 137.

Lucobracon Fahringer: Tobias 1969: 424, 1971: 212, 1972: 585.

Diagnosis. Antenna usually distinctly shorter than body, often thickened, with quadrate flagellomeres; hypoclypeal depression large, usually much wider than its distance from eye; maxillary palpi usually shorter than height of head; first submarginal cell of fore wing vein SR1 often reduced, terminating preapically, rarely reaching tip of wing; second submarginal cell of fore wing small to medium-sized; middle of second to fourth metasomal tergites usually sculptured, rarely entirely smooth; ovipositor sheath often shorter than metasoma, at least clearly shorter than body.

Biology. Most species are idiobiont ectoparasitoids of larvae of Coleoptera (Anobiidae, Buprestidae, Cerambycidae, Chrysomelidae, Curculionidae) and of Lepidoptera (Coleophoridae, Cosmopterigidae, Gelechiidae, Nepticulidae, Noctuidae, Sesiidae, Tortricidae) and some species are parasitoids of larvae of Diptera (Tephritidae) and of Hymenoptera (Cynipidae, Eurytomidae, Tenthredinidae, Cephidae) (Yu et al. 2016).

Distribution. Afrotropical; Oriental; Palaearctic.

Note. Of three species including (viz. *Bracon (L.) infernalis* Telenga, 1936, *Bracon (L.) jacobsoni* Telenga, 1936, and *Bracon (L.) mirus* Szépligeti, 1901), no specimens were available for this study and the distribution of these species is listed in the key.

Key to Chinese species of the subgenus *Lucobracon* Fahringer

- 1 First to third tergites granulate (sometimes third tergite weakly so); propodeum granulate or rugose; body reddish-yellow or dark reddish-brown and with spots 2
- First to third tergites smooth or sculptured, but not granulate; propodeum largely smooth, sometimes with a medio-longitudinal carina; body colour variable, reddish-yellow or yellow brown to blackish-brown 3

- 2 Propodeum uniformly rugose; setose part of ovipositor sheath as long as body; body reddish-yellow, with three spots on mesoscutum, pronotum ventro-laterally, prosternum, mesopleuron ventrally, scutellum, metanotum, propodeum, first tergite, spots on second tergite, fourth and subsequent tergites black (distributed in China (Fujian), Czech Republic, Georgia, Hungary, Kazakhstan, Mongolia, Netherlands, Sweden, Turkey) *B. (L.) mirus*
- Propodeum granulate; setose part of ovipositor sheath half as long as metasoma; body dark reddish-brown, head dark brown, eye orbits yellow (distributed in China (Fujian), Uzbekistan)..... *B. (L.) jacobsoni*
- 3 Body with long erect grey setae; tergites entirely smooth 4
- Body with short semi-appressed setae; at least first and second tergites sculptured..... 5
- 4 Face 3.0–4.0× wider than high; body entirely black; setose part of ovipositor sheath about as long as metasoma (distributed in China (Jilin), Armenia, Cyprus, Greece, Kazakhstan, Russia, Turkey)..... *B. (L.) infernalis*
- Face less than 2.5× wider than high; body reddish-yellow with black maculae; setose part of ovipositor sheath about 2/3 as long as metasoma *B. (L.) curculiovorus* sp. nov.
- 5 Setose part of ovipositor sheath 0.1× as long as fore wing; medio-longitudinal carina present beyond middle of propodeum; second metasomal suture relatively wide, crenulate and distinctly sinuate *B. (L.) flavitestaceus* sp. nov.
- Setose part of ovipositor sheath 0.5–0.7× as long as fore wing; propodeum without medio-longitudinal carina or medio-longitudinal carina remaining far from middle of propodeum; second metasomal suture narrow, smooth or crenulate, straight or weakly sinuate 6
- 6 Hind femur 3.4× longer than its maximum width; in dorsal view, length of eye 1.3× temple; basal segments of antenna yellow (scape and pedicel infusate), apical segments brown *B. (L.) quadratus* sp. nov.
- Hind femur 2.9–3.1× longer than its maximum width; in dorsal view length of eye 1.6–1.7× temple; antenna uniformly blackish-brown 7
- 7 Mesosoma in lateral view 1.7× as long as high; fore wing vein 3-SR 1.25× longer than vein 2-SR; first tergite as long as its apical width; body mainly yellowish-brown *B. (L.) brevicarinatus* sp. nov.
- Mesosoma in lateral view 2.2× as long as high; fore wing vein 3-SR 1.5× longer than vein 2-SR; first tergite 1.2× as long as its apical width; body mainly blackish-brown *B. (L.) coarctatus* sp. nov.

***Bracon (Lucobracon) brevicarinatus* sp. nov.**

<http://zoobank.org/2ACD0695-3311-407A-849B-8A402A6BA09B>

Figs 13, 14

Type material. *Holotype*. ♀, China, Liaoning Prov., Shenyang, 26.VIII.1994, Lou Juxian, No. 975731 (ZJUH).

Paratypes. 1♀3♂, China, Liaoning Prov., Shenyang, VI–VII.1995, Lou Juxian, No. 975749, 975601, 975756, 975773 (ZJUH).

Diagnosis. This new species is very similar to *B. (L.) flavitestaceus* sp. nov., but can be separated from the latter by the following characters: ovipositor sheath 0.7× as long as fore wing (0.1× in *B. (L.) flavitestaceus*);

mesoscutum yellowish-brown, middle lobe anteriorly and lateral lobes with a blackish-brown spots, respectively (without spots); medio-longitudinal carina short, remaining far from middle of propodeum (long and beyond middle of propodeum); in dorsal view, length of eye 1.7–1.8× temple (1.4–1.5 times).

Description. *Holotype*, ♀, length of body 3.9 mm, of fore wing 3.5 mm, of ovipositor sheath 2.6 mm.

Head. Antenna with 29 segments; apical antennal segment acute, twice longer than its maximum width (Fig. 14l); first flagellomere 1.9× longer than wide, 1.1 and 1.2× longer than second and third, respectively, the latter being 1.4× longer than wide; malar suture rather weak, with dense short setae; clypeus height: inter-tentorial distance: tentorio-ocular distance = 4: 10: 5; clypeus sparsely short setose; eye not emarginated (Fig. 14g); face weakly granulate and with dense short setae laterally (Fig. 14g); eye height: shortest distance between eyes: head width = 13: 18: 33; frons smooth slightly concave behind antennal sockets, with a rather weak median groove (Fig. 14h); vertex smooth, with sparse short setae; shortest distance between posterior ocelli: minimum diameter of elliptical posterior ocellus: shortest distance between posterior ocellus and eye = 3: 2: 5; temples linearly narrowed behind eyes (Fig. 14h).

Mesosoma. Length of mesosoma 1.7× its height (Fig. 14c); notauli impressed anteriorly, rather shallow posteriorly (Fig. 14d); mesoscutum smooth, with dense long setae along notaulic courses (Fig. 14d); scutellar sulcus deep, moderately wide, with crenulae (Fig. 14d);



Figure 13. *Bracon (Lucobracon) brevicarinatus* sp. nov., ♀, holotype, habitus lateral.

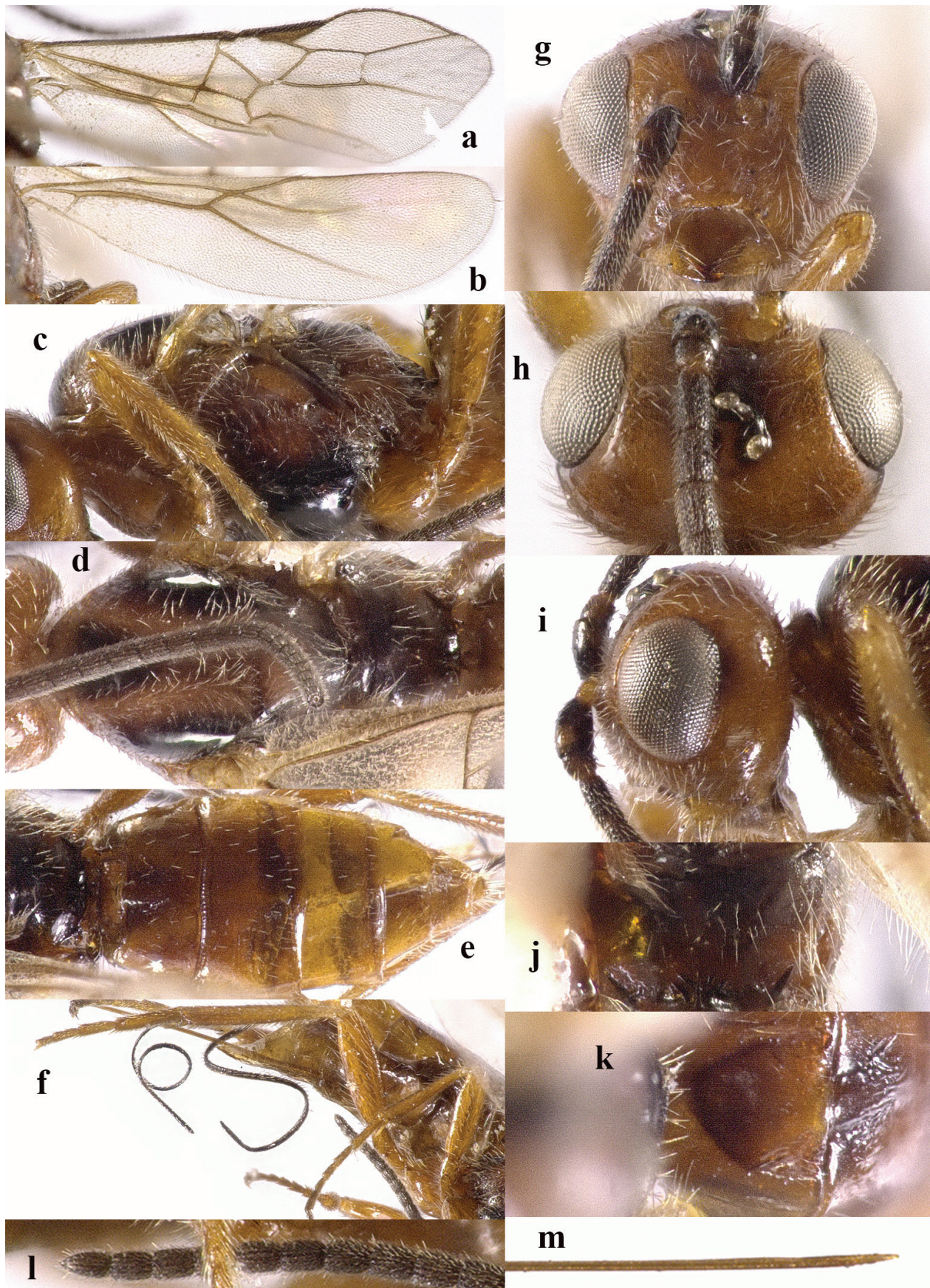


Figure 14. *Bracon (Lucobracon) brevicarinatus* sp. nov., ♀, holotype. **a.** Fore wing; **b.** Hind wing; **c.** Mesosoma, lateral view; **d.** Mesosoma, dorsal view; **e.** Metasoma, dorsal view; **f.** Hind leg, lateral view; **g.** Head, front view; **h.** Head, dorsal view; **i.** Head, lateral view; **j.** Propodeum, lateral view; **k.** First metasomal tergite, dorsal view; **l.** Apex of antenna; **m.** Apex of ovipositor, lateral view.

scutellum smooth, with dense setae posteriorly; metanotum moderately convex medially (Fig. 14d); propodeum largely smooth, with a short medio-longitudinal carina posteriorly and sparsely setose medially, with dense long setae laterally (Fig. 14j).

Wings. Fore wing (Fig. 14a): SR1 not reaching tip of wing; SR1: 3-SR: r = 25: 15: 7; 1-SR+M straight, 1.6× longer than 1-M; 2-SR: 3-SR: r-m = 12: 15: 8; m-cu straight, 1.2× longer than 2-SR+M; angle between 1-SR and C+SC+R about 80°; cu-a more or less interstitial. Hind wing (Fig. 14b): SC+R1: 2-SC+R: 1r-m = 13: 5: 6.

Legs. Length of fore femur: tibia: tarsus = 20: 24: 29; length of hind femur: tibia: basitarsus = 25: 37: 14; length of femur, tibia and basitarsus of hind leg 3.1, 9.3 and 5.6× their maximum width, respectively; hind tibial spurs 0.3 and 0.4× as long as hind basitarsus.

Metasoma. First tergite as long as its apical width; first tergite concave medio-basally, median area convex and largely smooth but weakly rugose laterally (Fig. 14k); lateral grooves of first tergite moderately wide, with sparse crenulae (Fig. 14k); second tergite largely smooth but medio-anteriorly rugose (Fig. 14e); median length of second tergite slightly longer than that of third tergite; second metasomal suture moderately narrow, crenulate, more or less straight medially (Fig. 14e); third to seventh tergites smooth (Fig. 14e); ovipositor sheath 0.7× as long as fore wing.

Colour. Largely yellowish-brown (Fig. 13); antenna, eyes, mandible apically, frons medially, stemmaticum, middle lobe of mesoscutum posteriorly, notaulic courses, mesopleuron posteriorly, scutellum posteriorly and laterally, metanotum, propodeum, claws and ovipositor sheath blackish-brown (Figs 13, 14c, d, f–h, j); median area of first metasomal tergite, second tergite medio-anteriorly and third to fourth tergites posteriorly infuscate (Fig. 14e, k); wing membrane pale yellow, pterostigma dark brown and veins yellowish-brown to dark brown (Fig. 14a, b).

Variation. Length of body of female 3.6–3.9 mm, of fore wing of female 2.9–3.5 mm and of ovipositor sheath 2.0–2.6 mm; second metasomal tergite medio-anteriorly blackish-brown.

Male. Length of body of male 3.1–3.4 mm, of fore wing of male 2.3–2.9 mm; antenna relatively longer, with 27 segments; second metasomal tergite sometimes largely rugose; body colour variable; head sometimes largely blackish-brown dorsally; middle lobe of mesoscutum sometimes yellowish-brown, without blackish-brown spot; third to sixth metasomal tergites sometimes blackish-brown posteriorly (fourth tergite sometimes black brown medially).

Biology. Unknown.

Distribution. China (Liaoning).

Etymology. Named after the short medio-longitudinal carina posteriorly on the propodeum: “brevis” is Latin for “short” and “carina” is Latin for “ridge”.

***Bracon (Lucobracon) coarctatus* sp. nov.**

<http://zoobank.org/DC616BD4-CF09-47CB-BC72-FF850DBBA3CA>
Figs 15, 16

Type material. *Holotype*. ♀, China, Jilin Prov., Mt. Changbai, 4–20.VIII.1993, Lou Juxian, No. 976388 (ZJUH).

Diagnosis. This new species is very similar to *B. (L.) histeromeroides* Sarhan & Quicke, 1990, but can be separated from the latter by the following characters: mesosoma in lateral view 2.2× as long as high (1.4× in *B. (L.) histeromeroides*); second metasomal tergite with longitudinal striae medio-basally (slightly “pinched-up” medio-basally, otherwise without sculpture); setose part of ovipositor sheath about as long as metasoma (half as long as metasoma); metasomal tergites largely blackish-brown, second to seventh tergites yellow laterally (entirely darkish brown).

Description. *Holotype*, ♀, length of body 3.4 mm, of fore wing 2.6 mm, of ovipositor sheath 1.7 mm.

Head. Antenna with 25 segments; apical antennal segment slightly acute, 1.8× longer than its maximum width (Fig. 16m); first flagellomere 1.6× longer than wide, 1.0 and 1.1× longer than second and third, respectively, the latter being 1.3× longer than wide; malar suture rather weak, with dense short setae; clypeus height: inter-tentorial distance: tentorio-ocular distance = 3: 13: 5; clypeus sparsely short setose; eye not emarginate (Fig. 16g); face largely weakly granulate, but medially smooth and with sparse short setae laterally (Fig. 16g); eye height: shortest distance between eyes: head width = 12: 17: 30; frons weakly granulate, hardly concave behind antennal sockets, with a rather weak median groove (Fig. 16h); vertex smooth, with sparse short setae; shortest distance between posterior ocelli: minimum diameter of elliptical posterior ocellus: shortest distance between posterior ocellus and eye = 4: 3: 8; temples weakly narrowed behind eyes (Fig. 16h).

Mesosoma. Length of mesosoma 2.2× its height (Fig. 16c); notauli impressed anteriorly, rather shallow posteriorly (Fig. 16d); mesoscutum smooth, with sparse short setae along notaulic courses (Fig. 16d); scutellar sulcus deep, moderately wide, with crenulae (Fig. 16d); scutellum smooth, with some short setae posteriorly; metanotum moderately convex medially (Fig. 16d); propodeum largely smooth, with a short



Figure 15. *Bracon (Lucobracon) coarctatus* sp. nov., ♀, holotype, habitus lateral.

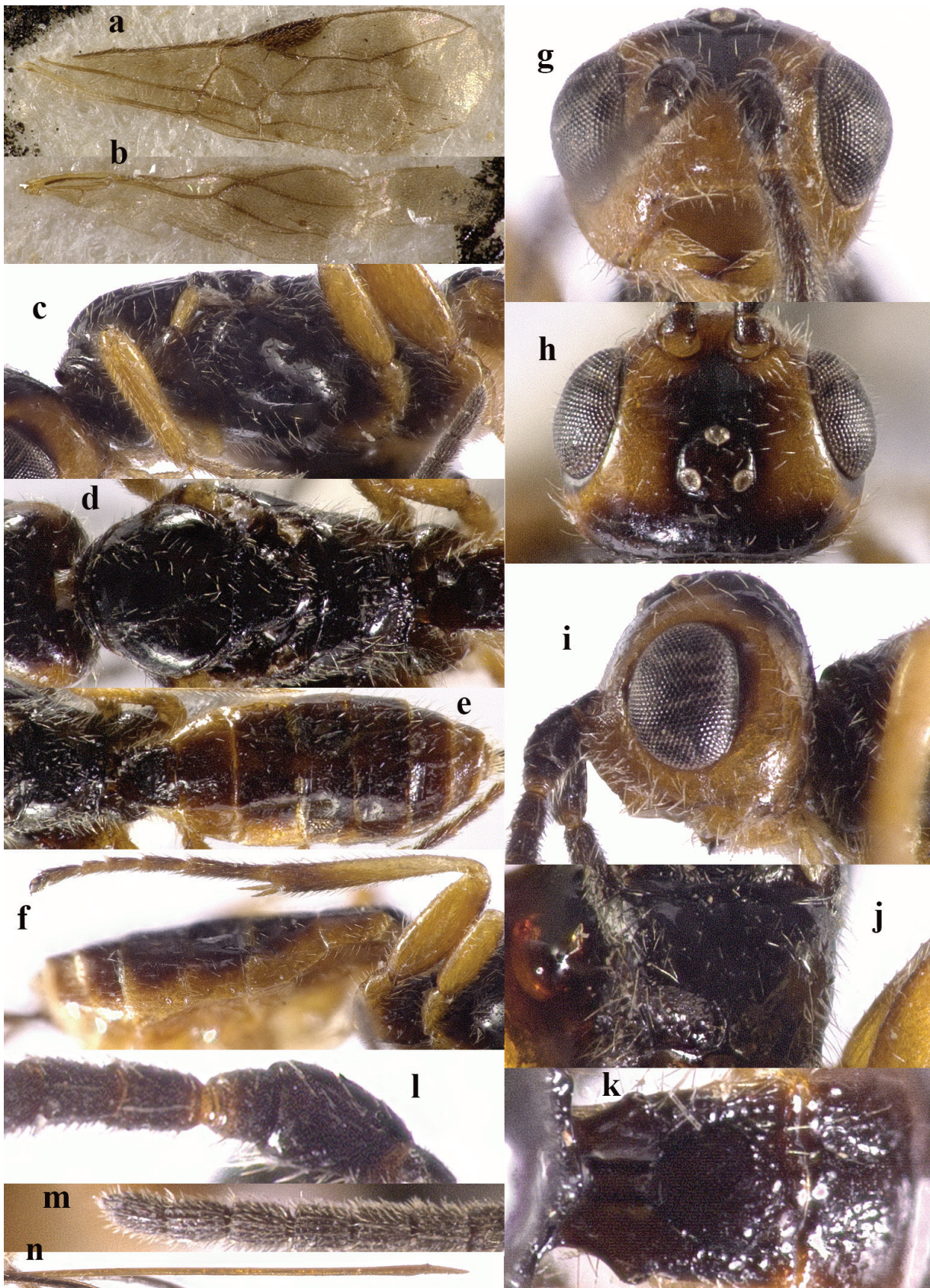


Figure 16. *Bracon (Lucobracon) coarctatus* sp. nov., ♀, holotype. **a.** Fore wing; **b.** Hind wing; **c.** Mesosoma, lateral view; **d.** Mesosoma, dorsal view; **e.** Metasoma, dorsal view; **f.** Hind leg, lateral view; **g.** Head, front view; **h.** Head, dorsal view; **i.** Head, lateral view; **j.** Propodeum, lateral view; **k.** First metasomal tergite, dorsal view; **l.** Scapus outer side, lateral view; **m.** Apex of antenna; **n.** Apex of ovipositor, lateral view.

medio-longitudinal carina posteriorly and sparsely setose medially, with dense long setae laterally (Fig. 16j).

Wings. Fore wing (Fig. 16a): SR1 not reaching tip of wing; SR1: 3-SR: r = 26: 15: 6; 1-SR+M more or less straight, 1.8× longer than 1-M; 2-SR: 3-SR: r-m = 10: 15: 6; m-cu straight, 1.8× longer than 2-SR+M; angle between 1-SR and C+SC+R about 80°; cu-a more or less interstitial. Hind wing (Fig. 16b): SC+R1: 2-SC+R: 1r-m = 11: 3: 4.

Legs. Length of fore femur: tibia: tarsus = 14: 18: 21; length of hind femur: tibia: basitarsus = 23: 36: 15; length of femur, tibia and basitarsus of hind leg 2.9, 9.0 and 7.5× their maximum width, respectively; hind tibial spurs 0.3 and 0.4× as long as hind basitarsus.

Metasoma. Length of first tergite 1.2× its apical width; first tergite concave medio-basally, median area convex and largely smooth, but rugose posteriorly (Fig. 16k); lateral grooves of first tergite moderately wide, with sparse crenulae (Fig. 16k); second tergite largely smooth but medio-anteriorly rugose (Fig. 16e); median length of second tergite slightly shorter than that of third tergite; second metasomal suture narrow, only crenulate medially, straight medially (Fig. 16e); third to seventh tergites smooth (Fig. 16e); setose part of ovipositor sheath 0.7× as long as fore wing.

Colour. Largely blackish-brown (Fig. 15); head largely yellow, antenna, eyes, mandible apically, frons medially, surroundings of stemmaticum and temples (but laterally yellow) blackish-brown (Fig. 16g, h); legs largely yellow, claws, hind tibia apically and hind tarsus dark brown (Fig. 16f); second to seventh metasomal tergites laterally yellow (Fig. 16e); wing membrane pale yellow, pterostigma dark brown and veins yellowish-brown to dark brown (Fig. 16a, b).

Biology. Unknown.

Distribution. China (Jilin).

Etymology. Named after the compressed mesosoma: “coarctatus” is Latin for “compressed”.

Bracon (Lucobracon) curculiovorus sp. nov.

<http://zoobank.org/399A7E96-6BBB-4988-ACE2-B3B6F205B19A>

Figs 17, 18

Type material. *Holotype*. ♀, China, Neimenggu Prov., West area, 17.V.1985, Wu Mingzhuo, No. 853213 (host *Curculio* spp.) (ZJUH). *Paratypes*. 2♀♀9♂♂, same data as holotype, No. 853213 (2 specimens), 853214 (9 specimens) (host *Curculio* spp.) (ZJUH).

Diagnosis. This new species is very similar to *B. (L.) histeromeroides* Sarhan & Quicke, 1990, but can be separated from the latter by the following characters: temples slightly convex behind eyes (approximately parallel-sided behind eyes in *B. (L.) histeromeroides*); metasomal tergites yellow, second to seventh tergites with blackish-brown spots (entirely dark brown); fore wing vein SR1 1.7× longer than vein 3-SR (2.0 times);

propodeum without medio-longitudinal carina (with short medio-longitudinal carina posteriorly and with striae laterally); setose part of ovipositor sheath about 2/3 length of metasoma (half as long as metasoma).

Description. *Holotype*, ♀, length of body 5.0 mm, of fore wing 4.0 mm, of ovipositor sheath 1.8 mm.

Head. Antenna short, approximately as long as head and mesosoma combined, with 22 segments; apical antennal segment slightly acute, 1.8× longer than its maximum width (Fig. 18k); first flagellomere 1.4× longer than wide, 1.1 and 1.2× longer than second and third, respectively, the latter being 1.1× longer than wide; malar suture rather weak, with dense short setae; clypeus height: inter-tentorial distance: tentorio-ocular distance = 3: 14: 5; clypeus sparsely short setose; eye not emarginate (Fig. 18g); face largely smooth except for a few weak punctures and with long setae especially laterally (Fig. 18g); eye height: shortest distance between eyes: head width = 12: 19: 34; frons smooth, nearly not concave behind antennal sockets, median groove strongly reduced (Fig. 18h); vertex smooth, with sparse short setae; shortest distance between posterior ocelli: minimum diameter of elliptical posterior ocellus: shortest distance between posterior ocellus and eye = 3: 3: 8; temples weakly expanded behind eyes (Fig. 18h).

Mesosoma. Length of mesosoma 1.5× its height (Fig. 18c); notauli impressed anteriorly, shallow posteriorly (Fig. 18d); mesoscutum smooth, with dense long setae along notaulic courses (Fig. 18d); scutellar sulcus deep, moderately wide, with crenulae (Fig. 18d); scutellum smooth, with dense short setae posteriorly; metanotum moderately convex medially (Fig. 18d); propodeum smooth, without medio-longitudinal carina posteriorly and sparsely setose medially, with dense long setae laterally (Fig. 18d).

Wings. Fore wing (Fig. 18a): damaged apically; SR1 not reaching tip of wing; SR1: 3-SR: r = 40: 24: 15; 1-SR+M more or less straight, 1.4× longer than 1-M; 2-SR: 3-SR: r-m = 22: 24: 15; m-cu straight, 2.1× longer



Figure 17. *Bracon (Lucobracon) curculiovorus* sp. nov., ♀, holotype, habitus lateral.

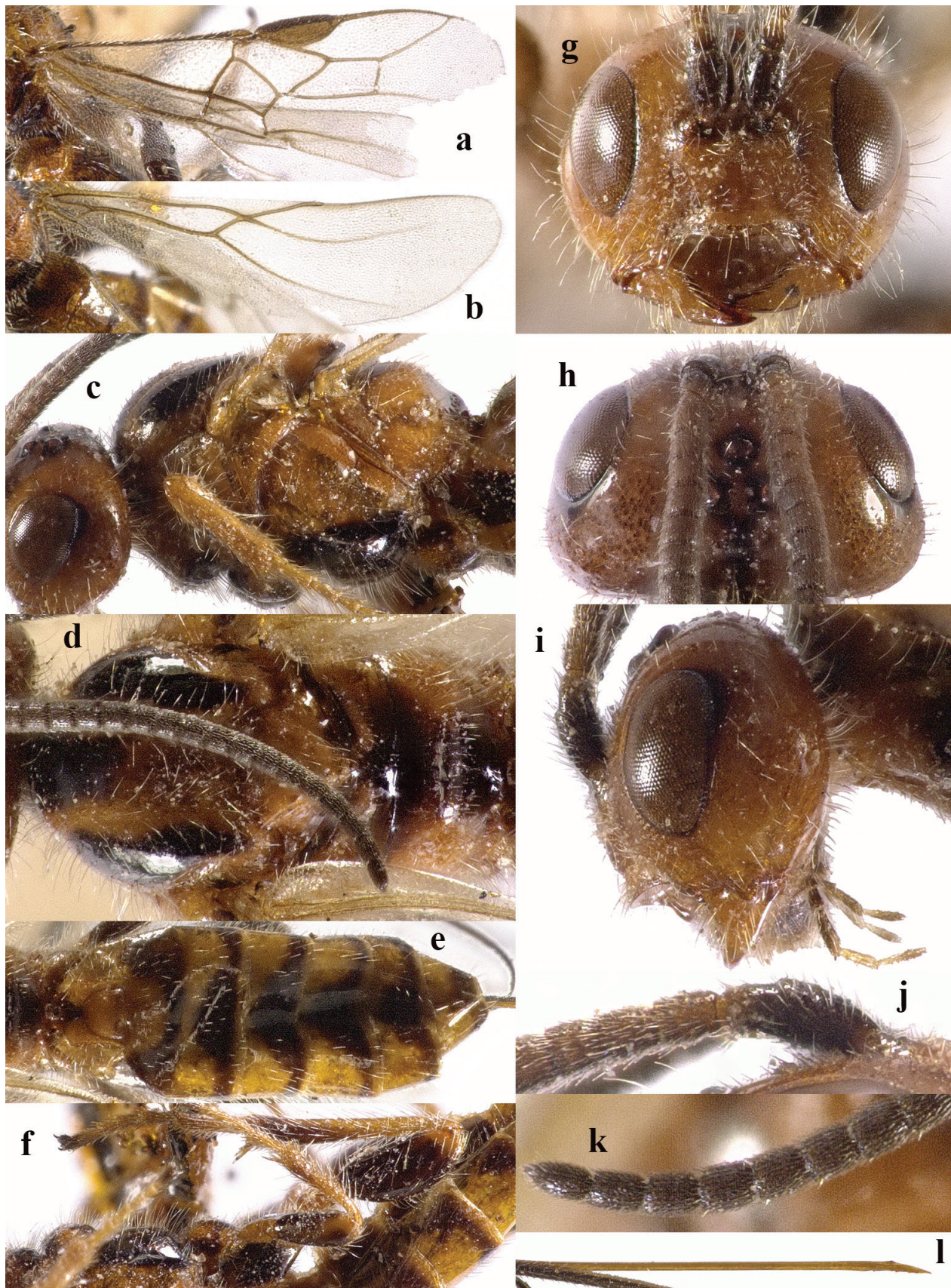


Figure 18. *Bracon (Lucobracon) curculiovorus* sp. nov., ♀, holotype. **a.** Fore wing; **b.** Hind wing; **c.** Mesosoma, lateral view; **d.** Mesosoma, dorsal view; **e.** metasoma, dorsal view; **f.** Hind leg, lateral view; **g.** Head, front view; **h.** Head, dorsal view; **i.** Head, lateral view; **j.** Scapus outer side, lateral view; **k.** Apex of antenna; **l.** Apex of ovipositor, lateral view.

than 2-SR+M; angle between 1-SR and C+SC+R about 80°; cu-a weakly postfurcal. Hind wing (Fig. 18b): SC+R1: 2-SC+R: 1r-m = 14: 3: 7.

Legs. Length of fore femur: tibia: tarsus = 16: 20: 25; length of hind femur: tibia: basitarsus = 25: 42: 14; length of femur, tibia and basitarsus of hind leg 2.3, 7.0 and 4.0× their maximum width, respectively; hind tibial spurs 0.3 and 0.4× as long as hind basitarsus.

Metasoma. Length of first tergite 1.4× its apical width; first tergite concave medio-basally, median area convex and smooth (Fig. 18e); lateral grooves of first tergite narrow, only with a few weak crenulae medially (Fig. 18e); median length of second and third tergites about equal; second metasomal suture narrow and shallow, without crenulate, straight medially (Fig. 18e); second to seventh tergites smooth, with some short setae posteriorly and laterally (Fig. 18e); setose part of ovipositor sheath 0.5× as long as fore wing.

Colour. Head and mesosoma largely reddish-brown (Fig. 17); antenna, eyes, mandible apically, stemmaticum, middle lobe of mesoscutum anteriorly, lateral lobes, median area of metanotum, propodeum medially blackish-brown (Fig. 18c, d, g, h); legs largely yellow, claws, middle and hind femur (but apically yellow), hind tibia apically dark brown (Figs 17, 18f); metasomal tergites largely yellow, first tergite medio-basally, second tergite (but medio-basally yellow), third to sixth tergites laterally and posteriorly, seventh tergite posteriorly blackish-brown (Fig. 18e); ovipositor sheath blackish-brown (Fig. 17); wing membrane pale yellow, pterostigma and veins yellowish-brown (Fig. 18a, b).

Variation. Length of body of female 4.8–5.5 mm, of fore wing of female 3.9–4.5 mm, and of ovipositor sheath 1.8–2.0 mm; antenna with 22–26 segments; fore wing vein m-cu 1.7–2.1× longer than vein 2-SR+M; fore wing vein cu-a interstitial or weakly postfurcal; third–seventh segments of antenna sometimes paler than of holotype.

Male. Length of body of male 3.9–4.5 mm, of fore wing of male 3.1–3.5 mm; antenna relatively longer, with 38–40 segments, uniformly black brown; head dorsally largely blackish-brown; scutellum, metanotum and propodeum uniformly blackish-brown; second metasomal tergite sometimes without blackish-brown spot; blackish-brown spots of third to sixth tergites sometimes relatively small.

Biology. The type series has been reared from *Curculio* spp. (Coleoptera: Curculionidae).

Distribution. China (Neimenggu).

Etymology. Named after the generic name of the host (*Curculio* spp.) and “voro” (Latin for “devour”).

***Bracon (Lucobracon) flavitestaceus* sp. nov.**

<http://zoobank.org/973B2484-A7F6-4A69-BEBA-9CE9053A9E15>

Figs 19, 20

Type material. *Holotype*. ♀, China, Jilin Prov., Tonghua, 1.VIII.1994, Lou Juxian, No. 976765 (ZJUH). *Paratypes*.

1♀, China, Liaoning Prov., Shenyang Dongling, 6.V.1994, Lou Juxian, No. 947493 (ZJUH); 1♂, China, Jilin Prov., Antu, 5–6.VIII.1994, Lou Juxian, No. 977054 (ZJUH).

Diagnosis. This new species is very similar to *B. (L.) fortipes* (Wesmael, 1838), but can be separated from the latter by the following characters: third metasomal tergite smooth (coarsely sculptured in *B. (L.) fortipes*); hind femur 3.5× longer than its maximum width (2.5 times); fore wing vein SR1 2.2× longer than vein 3-SR (1.5 times); setose part of ovipositor sheath distinctly shorter than hind tibia (as long as hind tibia + first and second of tarsus combined); body largely yellowish-brown (largely reddish-brown).

Description. *Holotype*, ♀, length of body 2.9 mm, of fore wing 2.8 mm, of ovipositor sheath 0.4 mm.

Head. Antenna with 25 segments; apical antennal segment acute, 2.3× longer than its maximum width (Fig. 20l); first flagellomere 2.2× longer than wide, 1.1 and 1.2× longer than second and third, respectively, the latter being 1.6× longer than wide; malar suture rather weak, with some short setae; clypeus height: inter-tentorial distance: tentorio-ocular distance = 4: 12: 5; clypeus sparsely short setose; eye not emarginate (Fig. 20g); face largely weakly granulate and with dense short setae laterally (Fig. 20g); eye height: shortest distance between eyes: head width = 11: 15: 28; frons weakly granulate, weakly concave behind antennal sockets, with a rather weak median groove (Fig. 20h); vertex smooth, with sparse short setae; shortest distance between posterior ocelli: minimum diameter of elliptical posterior ocellus:



Figure 19. *Bracon (Lucobracon) flavitestaceus* sp. nov., ♀, holotype, habitus lateral.

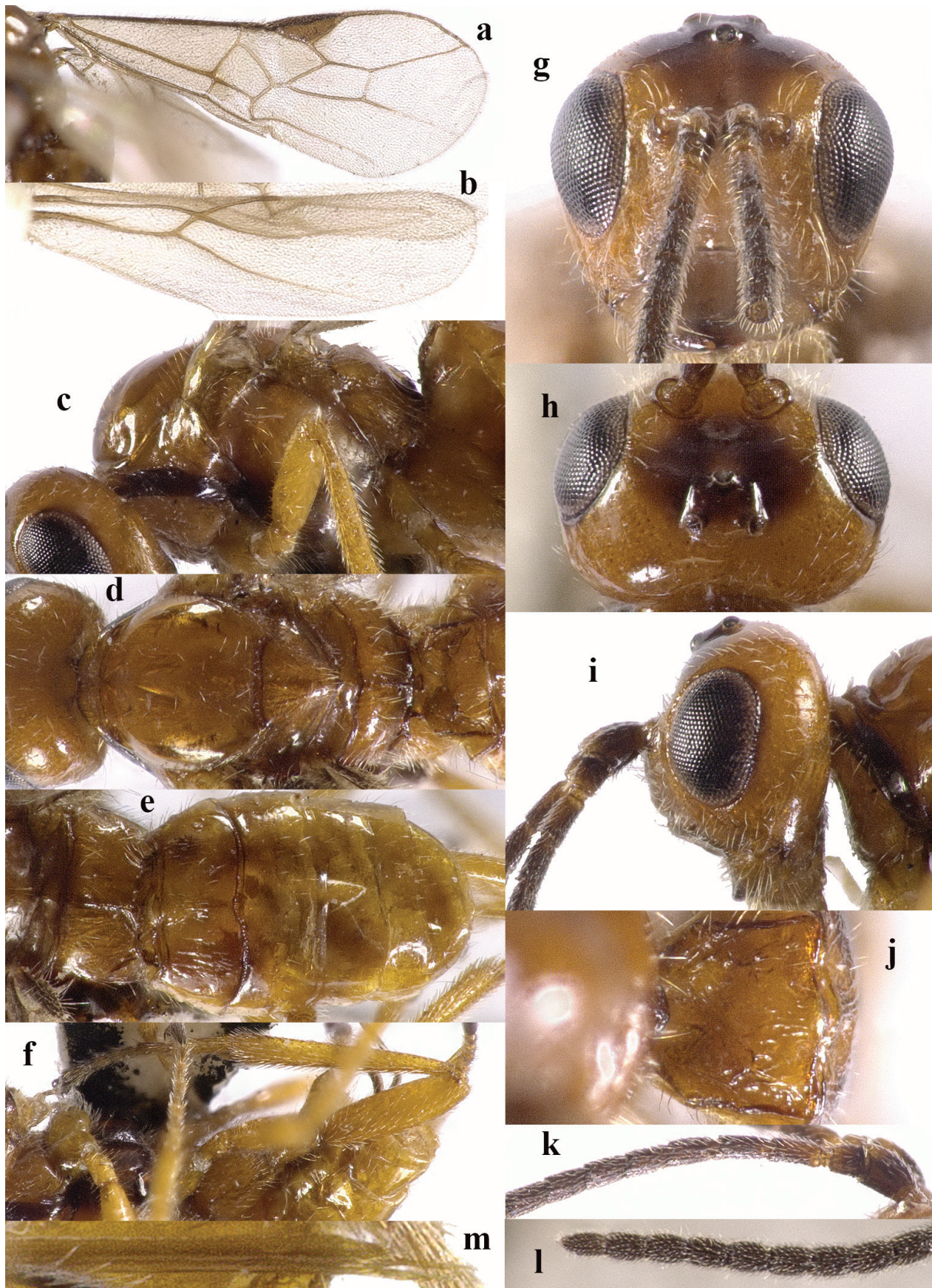


Figure 20. *Bracon (Lucobracon) flavitesticus* sp. nov., ♀, holotype. **a.** Fore wing; **b.** Hind wing; **c.** Mesosoma, lateral view; **d.** Mesosoma, dorsal view; **e.** Metasoma, dorsal view; **f.** Hind leg, lateral view; **g.** Head, front view; **h.** Head, dorsal view; **i.** Head, lateral view; **j.** First metasomal tergite, dorsal view; **k.** Scapus outer side, lateral view; **l.** Apex of antenna; **m.** Apex of ovipositor, lateral view.

shortest distance between posterior ocellus and eye = 5: 3: 7; temples subparallel-sided behind eyes (Fig. 20h).

Mesosoma. Length of mesosoma 1.4× its height (Fig. 20c); notauli only impressed anteriorly (Fig. 20d); mesoscutum smooth, with sparse short setae along imaginary notaulic courses (Fig. 20d); scutellar sulcus deep, moderately wide, with crenulae (Fig. 20d); scutellum smooth, with some short setae posteriorly; metanotum moderately convex medially (Fig. 20d); propodeum largely smooth, with medio-longitudinal carina beyond middle of propodeum (but absent anteriorly) and sparsely setose medially, with dense long setae laterally (Fig. 20e).

Wings. Fore wing (Fig. 20a): SR1 not reaching tip of wing; SR1: 3-SR: r = 36: 16: 9; 1-SR+M more or less straight, 1.5× longer than 1-M; 2-SR: 3-SR: r-m = 15: 16: 10; m-cu straight, 1.5× longer than 2-SR+M; angle between 1-SR and C+SC+R about 80°; cu-a weakly postfurcal. Hind wing (Fig. 20b): SC+R1: 2-SC+R: 1r-m = 14: 3: 5.

Legs. Length of fore femur: tibia: tarsus = 21: 26: 27; length of hind femur: tibia: basitarsus = 24: 38: 13; length of femur, tibia and basitarsus of hind leg 3.5, 8.4 and 4.6× their maximum width, respectively; hind tibial spurs 0.3 and 0.4× as long as hind basitarsus.

Metasoma. Length of first tergite 0.9× its apical width; first tergite concave medio-basally, median area convex and smooth anteriorly, rugose posteriorly (Fig. 20j); lateral grooves of first tergite moderately wide, with sparse weak crenulae (Fig. 20j); second tergite with longitudinal striae, but laterally and posteriorly smooth (Fig. 20e); median length of second tergite slightly shorter than that of third tergite; second metasomal suture moderately narrow, crenulate, more or less straight medially (Fig. 20e); third to seventh tergites smooth (Fig. 20e); setose part of ovipositor sheath 0.1× as long as fore wing.

Colour. Largely yellowish-brown (Fig. 19); antenna, eye, mandible apically, frons medially and postero-laterally, area surrounding stemmaticum, propleuron laterally

and mesopleuron posteriorly blackish-brown (Fig. 20c, d, g, h); propodeum posteriorly brown (Fig. 20e); telotarsus and claws dark brown (Fig. 20f); wing membrane pale infusate, pterostigma dark brown and veins yellowish-brown to dark brown (Fig. 20a, b).

Variation. Length of body of female 2.9–3.6 mm, of fore wing of female 2.8–3.4 mm and of ovipositor sheath 0.4–0.5 mm; medio-longitudinal carina of propodeum nearly complete; fore wing vein m-cu 1.4–1.5× longer than vein 2-SR+M; fore wing vein cu-a interstitial; length of first metasomal tergite 0.9–1.0× its apical width; spot of head dorsally relatively paler; metasomal tergites largely yellow, first tergite anteriorly, laterally and posteriorly infusate.

Male. Length of body of male 3.1 mm, of fore wing of male 2.9 mm; antenna with 27 segments; pronotal side with an oblique transverse blackish-brown stripe.

Biology. Unknown.

Distribution. China (Jilin, Liaoning).

Etymology. Named after the body colour: “flavus” is Latin for “yellow” and “adustus” is Latin for “brown”.

***Bracon (Lucobracon) quadratus* sp. nov.**

<http://zoobank.org/83DBF977-9611-421D-8F07-F88703283283>

Figs 21, 22

Type material. *Holotype*. ♀, China, Liaoning Prov., Dalian, 4.IX.1991, Lou Juxian, No. 975849 (ZJUH).

Paratypes. 2♀♀, same data as holotype, No. 975951, 975890 (ZJUH).

Diagnosis. This new species is very similar to *B. (L.) grandiceps* Thomson, 1892, but can be separated from the latter by the following characters: fore wing vein 1-SR+M 1.5× longer than vein 1-M (1.8× in *B. (L.) grandiceps*); hind femur 3.4× longer than maximum width (2.5 times); propodeum smooth along medio-longitudinal carina (rugose along medio-



Figure 21. *Bracon (Lucobracon) quadratus* sp. nov., ♀, holotype, habitus lateral.

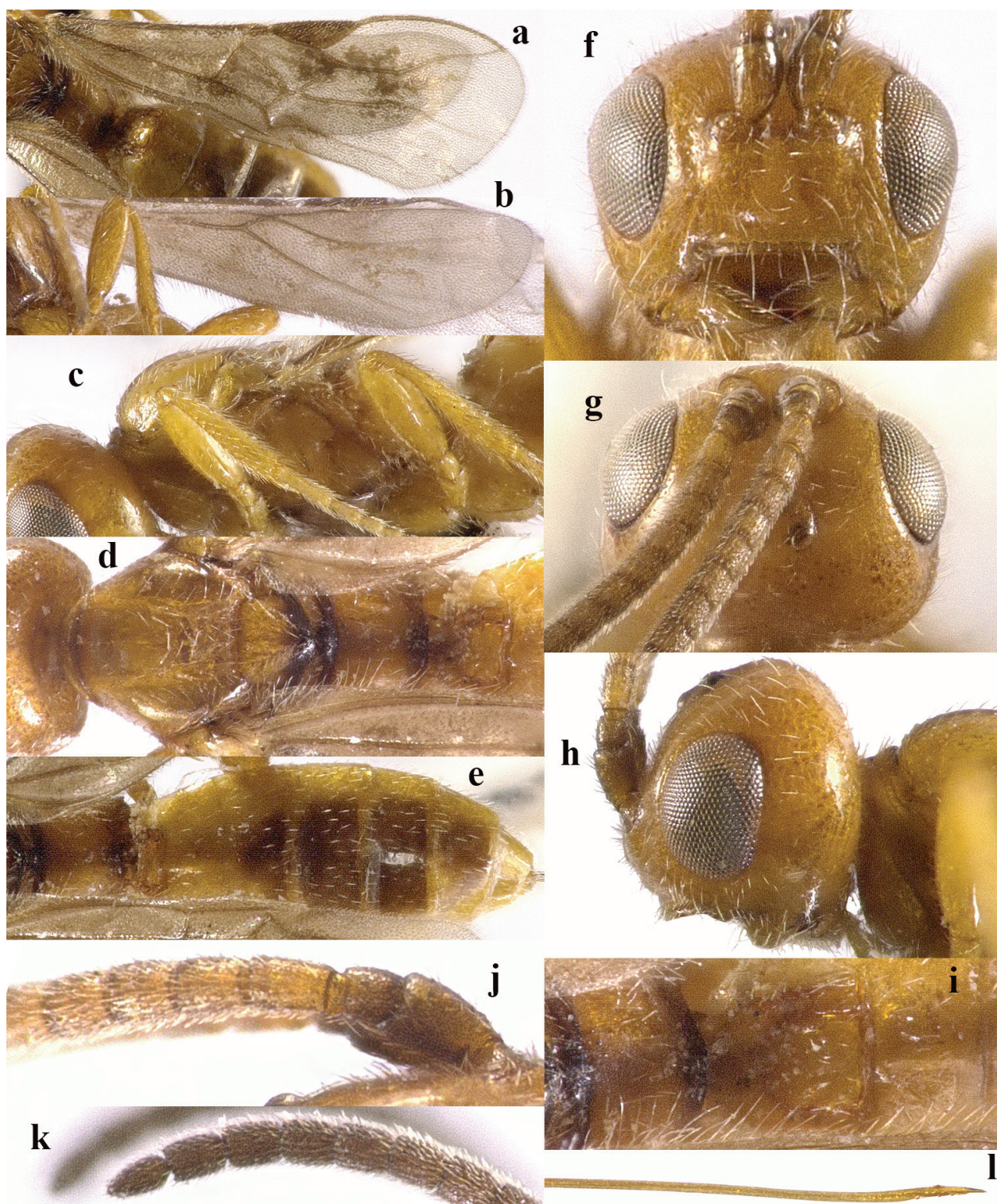


Figure 22. *Bracon (Lucobracon) quadratus* sp. nov., ♀, holotype. **a.** Fore wing; **b.** Hind wing; **c.** Mesosoma, lateral view; **d.** Mesosoma, dorsal view; **e.** Metasoma, dorsal view; **f.** Head, front view; **g.** Head, dorsal view; **h.** Head, lateral view; **i.** First metasomal tergite, dorsal view; **j.** Scapus outer side, lateral view; **k.** Apex of antenna; **l.** Apex of ovipositor, lateral view.

longitudinal carina); tergites yellow with third to sixth tergites with a brown medial spot, respectively (uniformly dark brown).

Description. *Holotype*, ♀, length of body 3.3 mm, of fore wing 2.6 mm, of ovipositor sheath 1.5 mm.

Head. Antenna short, approximately as long as head and mesosoma, with 26 segments; apical antennal seg-

ment slightly acute, $2.1\times$ longer than its maximum width (Fig. 22k); first flagellomere $1.4\times$ longer than wide, 1.2 and $1.3\times$ longer than second and third, respectively, the latter being $1.1\times$ longer than wide; malar suture rather weak, with some short setae; clypeus height: inter-tentorial distance: tentorio-ocular distance = 2: 12: 5; clypeus sparsely short setose; eye not emarginate (Fig. 22g); face

smooth, with some long setae laterally (Fig. 22g); eye height: shortest distance between eyes: head width = 11: 16: 28; frons smooth, nearly not concave behind antennal sockets, with a weak median groove (Fig. 22h); vertex smooth, with sparse short setae; shortest distance between posterior ocelli: minimum diameter of elliptical posterior ocellus: shortest distance between posterior ocellus and eye = 4: 3: 7; temples subparallel behind eyes (Fig. 22h).

Mesosoma. Length of mesosoma 1.8× its height (Fig. 22c); notauli only impressed anteriorly (Fig. 22d); mesoscutum smooth, with sparse short setae along imaginary notaulic courses (Fig. 22d); scutellar sulcus deep, moderately wide, with crenulae (Fig. 22d); scutellum smooth, with dense short setae posteriorly; metanotum moderately convex medially (Fig. 22d); propodeum largely smooth, except for a short medio-longitudinal carina posteriorly and sparsely setose medially, with dense long setae laterally (Fig. 22d).

Wings. Fore wing (Fig. 22a): SR1 not reaching tip of wing; SR1: 3-SR: r = 27: 16: 6; 1-SR+M more or less straight, 1.5× longer than 1-M; 2-SR: 3-SR: r-m = 3: 4: 2; m-cu straight, 1.6× longer than 2-SR+M; angle between 1-SR and C+SC+R about 80°; cu-a more or less interstitial. Hind wing (Fig. 22b): SC+R1: 2-SC+R: 1r-m = 14: 4: 5.

Legs. Length of fore femur: tibia: tarsus = 16: 20: 23; length of hind femur: tibia: basitarsus = 22: 32: 11; length of femur, tibia and basitarsus of hind leg 3.4, 8.0 and 5.5× their maximum width, respectively; hind tibial spurs 0.4 and 0.5× as long as hind basitarsus.

Metasoma. Length of first tergite 1.2× its apical width; first tergite concave medio-basally, median area convex and largely rugose but posteriorly smooth (Fig. 22i); lateral grooves of first tergite moderately wide, with sparse weak crenulae (Fig. 22i); second tergite largely smooth but medio-basally weakly rugose (Fig. 22e); median length of second and third tergites approximately equal; second metasomal suture narrow, largely smooth but with a few weak crenulae, more or less straight medially (Fig. 22e); third to seventh tergites smooth (Fig. 22e); setose part of ovipositor sheath 0.6× as long as fore wing.

Colour. Largely yellow (Fig. 21); antennal segments apical half brown, scapus and pedicel yellowish-brown

(Figs 21, 22j, k); eye, mandible apically, scutellum posteriorly, metanotum medially, claws and ovipositor sheath blackish-brown (Figs 21, 22d, f); third to sixth metasomal tergites each with a brown spot medially (Fig. 22e); wing membrane pale infusate, pterostigma dark brown and veins yellowish-brown to dark brown (Fig. 22a, b).

Variation. Length of body of female 3.3–4.1 mm, of fore wing of female 2.3–3.1 mm and of ovipositor sheath 1.4–1.6 mm; length of mesosoma 1.7–1.8× its height; antenna uniformly blackish-brown; setose part of ovipositor sheath 0.5–0.6× as long as fore wing.

Biology. Unknown.

Distribution. China (Liaoning).

Etymology. Named after the square brown and medial spot of fourth and fifth metasomal tergites: “quadratus” is Latin for “square”.

Subgenus *Uncobracon* Papp, 1996

Figs 23–30

Uncobracon Papp, 1996: 168; Tobias and Belokobylskij 2000: 119; Tan et al. 2012: 64; Samartsev 2018: 249. Type species: *Bracon apoderi* Watanabe, 1933 (monobasic and original designation).

Diagnosis. Antenna usually as long as body, flagellomeres longer than wide; in lateral view, cheek below with a hook-like process directed anteriorly; temples often distinctly narrowed behind eyes; notauli often deeply impressed; propodeum with a medio-longitudinal carina or rugose medially and with a medio-longitudinal groove; second submarginal cell of fore wing medium-sized; hind wing vein 2-SC+R1 relatively long, longitudinal; second metasomal tergite with subfoveolate or reticulate or striated sculpture; third tergite with fine antero-lateral grooves; third to sixth tergites discrete and separate (not confluent) punctures and interspaces polished or with striae; ovipositor sheath often shorter than body.

Biology. Only known from one species, *Bracon* (*Uncobracon*) *apoderi* Watanabe, 1933 which is an ectoparasitoid of larvae of *Apoderus balteatus* (Roelofs, 1874) (Coleoptera: Attelabidae) (Watanabe 1933).

Distribution. Oriental; Palaearctic.

Key to Chinese species of the subgenus *Uncobracon* Papp

- 1 Metasoma entirely yellowish-brown; ovipositor sheath 0.4–0.5× length of fore wing; hind coxa and femur yellowish-brown..... *B. (U.) pappi*
- Metasoma at least partly blackish-brown; ovipositor sheath 0.5–0.6× length of fore wing; hind coxa and femur largely blackish..... 2
2. Scutellar suture relatively narrow, with at least eight crenulae; in dorsal view length of eye 1.8× temple; first and second tergites entirely blackish-brown..... *B. (U.) tricoloratus*
- Scutellar suture rather wide, with less (4) crenulae; in dorsal view length of eye 2.2–2.6× temple; second tergite partly whitish-yellow..... 3
3. Third to sixth tergites largely blackish brown; seventh tergite blackish-brown; propodeum with complete medio-longitudinal carina; fourth and fifth tergites strongly convex in lateral view; medio-basal area of second tergite connected to

- medio-longitudinal carina posteriorly; in dorsal view, length of eye $2.6\times$ temple; hind femur $4.6\times$ longer than its maximum width *B. (U.) eurusulcatus* sp. nov.
- Third to sixth tergites largely whitish-yellow laterally; seventh tergite yellowish-brown; propodeum with medio-longitudinal groove and with medio-longitudinal carina posteriorly; fourth and fifth tergites weakly convex in lateral view; second tergite without medio-longitudinal carina; in dorsal view length of eye $2.2\times$ temple; hind femur $3.2\times$ longer than its maximum width *B. (U.) longwangshanensis* sp. nov.

***Bracon (Uncobracon) eurusulcatus* sp. nov.**

<http://zoobank.org/B6EADCA5-A731-4D5A-B733-55785B41D983>

Figs 23, 24

Type material. Holotype. ♀, China, Guangxi Prov., Longzhou Nonggang, 20.V.1982, He Junhua, No. 821603 (ZJUH).

Diagnosis. This new species is very similar to *B. (U.) tricoloratus* Tobias, 2000, but can be separated from the latter by the following characters: in dorsal view length of eye $2.6\times$ temple ($1.8\times$ temple in *B. (U.) tricoloratus*); scutellar suture rather wide, with sparse (four) crenulae (relatively narrow, with at least eight crenulae); first and second metasomal tergites whitish-yellow and with black spots (entirely blackish-brown); medio-basal area of second tergite connected to medio-longitudinal carina distally (without medio-longitudinal carina).

Description. Holotype, ♀, length of body 5.6 mm, of fore wing 6.0 mm, of ovipositor sheath 3.6 mm.

Head. Antenna with 43 segments; apical antennal segment with a short spine apically, $2.3\times$ longer than its maximum width (Fig. 24i); first flagellomere $1.4\times$ longer than wide, 1.1 and $1.2\times$ longer than second and third, respectively, the latter being $1.2\times$ longer than wide; malar suture rather weak, with some short setae; clypeus height:

inter-tentorial distance: tentorio-ocular distance = 3: 10: 5; clypeus sparsely short setose; eye nearly not emarginate (Fig. 24g); face transverse rugose, weakly convex medially and with dense long setae laterally (Fig. 24g); eye height: shortest distance between eyes: head width = 15: 19: 40; frons weakly granulate, weakly concave behind antennal sockets, with a median groove and densely short setose laterally (Fig. 24h); vertex weakly granulate, with dense short setae; shortest distance between posterior ocelli: minimum diameter of elliptical posterior ocellus: shortest distance between posterior ocellus and eye = 3: 3: 7; temples strongly narrowed behind eyes (Fig. 24h).

Mesosoma. Length of mesosoma $1.3\times$ its height (Fig. 24c); notauli complete and deeply impressed (Fig. 24d); mesoscutum smooth, with sparse short setae along notaulic courses (Fig. 24d); scutellar sulcus deep, wide, with four strong crenulae (Fig. 24d); scutellum smooth, with dense short setae posteriorly; metanotum moderately convex medially, with a short carina anteriorly (Fig. 24d); propodeum largely smooth, with a complete medio-longitudinal carina and a few oblique short carinae laterally and laterally with dense long setae (Fig. 24d).

Wings. Fore wing (Fig. 24a): SR1: 3-SR: r = 53: 27: 9; 1-SR+M weakly curved posteriorly, $1.3\times$ longer than 1-M; 2-SR: 3-SR: r-m = 17: 27: 13; m-cu straight, $1.5\times$ longer



Figure 23. *Bracon (Uncobracon) eurusulcatus* sp. nov., ♀, holotype, habitus lateral.

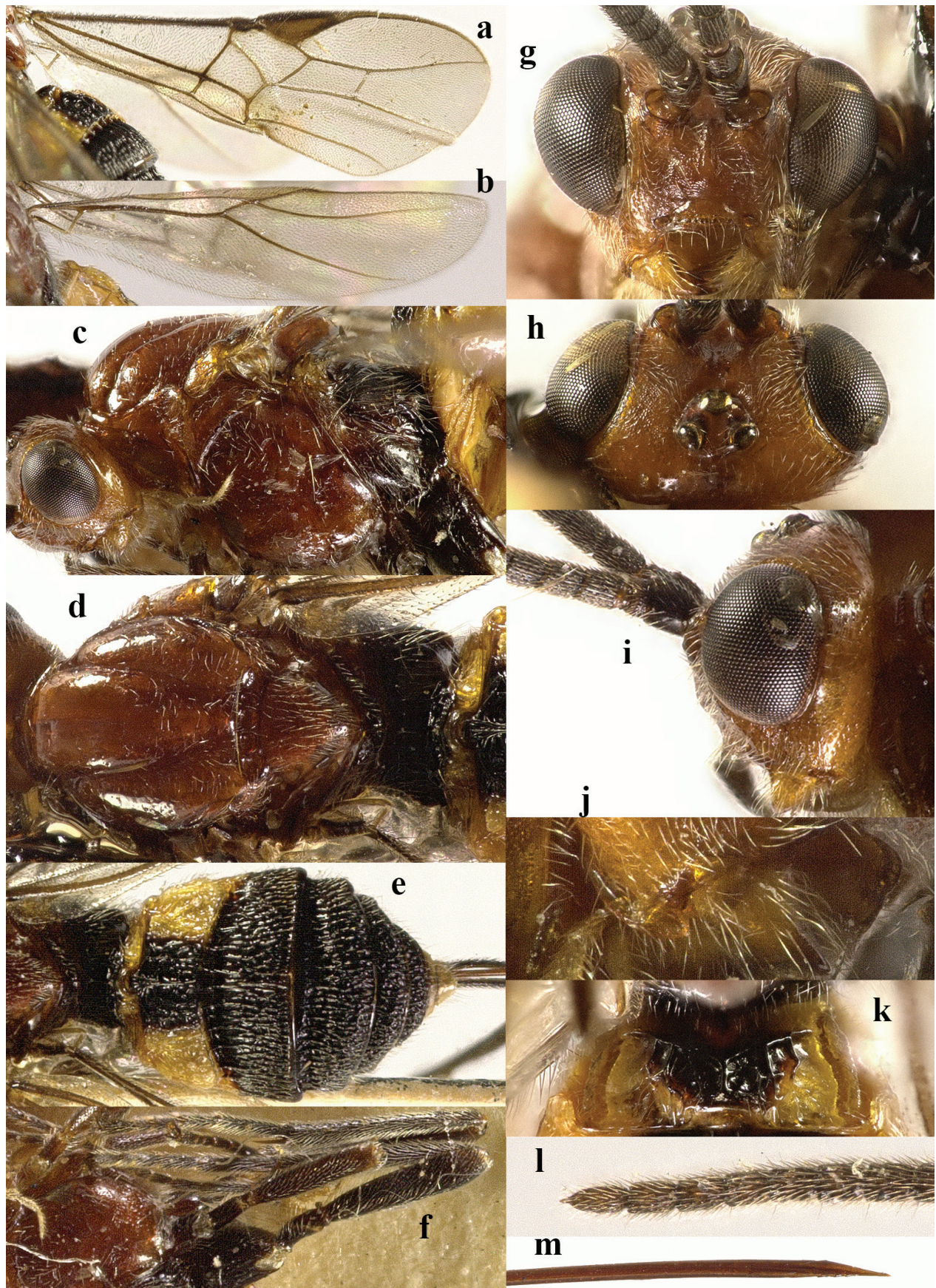


Figure 24. *Bracon (Uncobracon) eurysulcatus* sp. nov., ♀, holotype. **a.** Fore wing; **b.** Hind wing; **c.** Mesosoma, lateral view; **d.** Mesosoma, dorsal view; **e.** Metasoma, dorsal view; **f.** Hind leg, lateral view; **g.** Head, front view; **h.** Head, dorsal view; **i.** head, lateral view; **j.** Mandible, lateral view; **k.** First metasomal tergite, dorsal view; **l.** Apex of antenna; **m.** Apex of ovipositor, lateral view.

than 2-SR+M; angle between 1-SR and C+SC+R about 80°; cu-a interstitial. Hind wing (Fig. 24b): SC+R1: 2-SC+R: 1r-m = 20: 5: 9.

Legs. Length of fore femur: tibia: tarsus = 30: 34: 37; length of hind femur: tibia: basitarsus = 45: 54: 20; length of femur, tibia and basitarsus of hind leg 4.6, 8.3 and 5.7× their maximum width, respectively; hind tibial spurs 0.4 and 0.5× as long as hind basitarsus.

Metasoma. Length of first tergite 0.9× its apical width; first tergite concave medio-basally, median area convex and strongly sculptured posteriorly, with a short medio-longitudinal carina posteriorly (Fig. 24k); lateral grooves of first tergite moderately wide, with sparse weak crenulae (Fig. 24k); second tergite coarsely sculptured, with a small and rugose triangular medio-basal area connected to medio-longitudinal carina apically (Fig. 24e); second metasomal suture wide, deep, with sparse, but strong crenulae, curved medially (Fig. 24e); third tergite with fine antero-lateral grooves; third to sixth tergites coarsely sculptured (Fig. 24e); seventh tergite smooth (Fig. 24e); setose part of ovipositor sheath 0.6× length of fore wing.

Colour. Head and mesosoma largely reddish-yellow (Fig. 23); antenna, eye, mandible apically, metapleuron and propodeum black (Fig. 24c, d, g); fore leg reddish-yellow (but claws black), middle and hind legs black (Figs 23, 24f); metasoma largely black, first and second metasomal tergites laterally, third tergite antero-laterally and seventh tergite posteriorly yellow (Fig. 24e, k); ovipositor sheath black (Fig. 23); wing membrane pale infuscate, pterostigma and veins dark brown (Fig. 24a, b).

Biology. Unknown.

Distribution. China (Guangxi).

Etymology. Named after the wide scutellar sulcus: “eury” is Greek for “wide” and “sulcus” is Latin for “groove”.

***Bracon (Uncobracon) longwangshanensis* sp. nov.**

<http://zoobank.org/B0C365CE-0102-4D68-A3BA-CE08876A7C11>

Figs 25, 26

Type material. *Holotype*. ♀, China, Zhejiang Prov., Anji, Mt. Longwang, 31.VIII.1993, Xu Zaifu, No. 9310129 (ZJUH). *Paratype*. 1♀, China, Zhejiang Prov., Mt. Tianmu, 29.VII.1984, Qian Ying, No. 842895 (ZJUH).

Diagnosis. This new species is very similar to *B. (U.) euryulcatus* sp. nov., but can be separated from the latter by the following characters: metasomal tergites largely blackish-brown, third to fifth tergites laterally and sixth tergite (except medio-basally) white yellow, seventh tergite yellowish-brown (largely blackish-brown, first and second tergites whitish-yellow, with black spots in *B. (U.) euryulcatus*); propodeum with medio-longitudinal groove and with medio-longitudinal carina posteriorly (only with complete medio-longitudinal carina); second tergite without medio-longitudinal carina (medio-longitudinal carina connected to medio-basal area of second

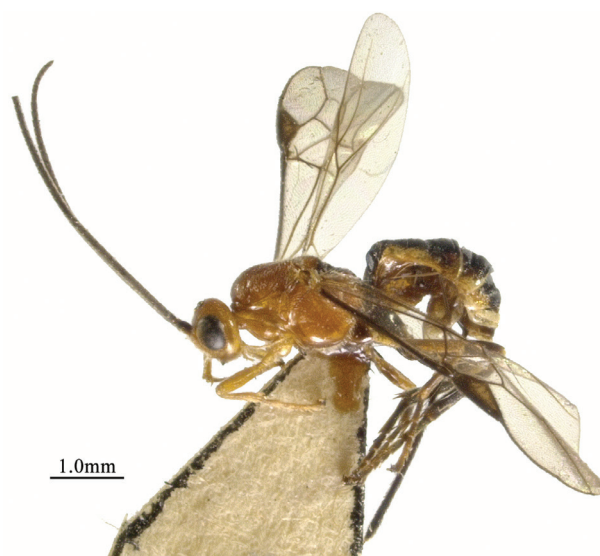


Figure 25. *Bracon (Uncobracon) longwangshanensis* sp. nov., ♀, holotype, habitus lateral.

tergite); in dorsal view, length of eye 2.2× temple (2.6 times); hind femur 3.2× longer than its maximum width (4.6 times).

Description. *Holotype*, ♀, length of body 5.1 mm, of fore wing 4.9 mm, of ovipositor sheath 3.0 mm.

Head. Antenna with 35 segments; apical antennal segment strongly acute, 2.7× longer than its maximum width (Fig. 26l); first flagellomere 2.1× longer than wide, 1.2 and 1.3× longer than second and third, respectively, the latter being 1.8× longer than wide; malar suture rather weak, with some short setae; clypeus height: inter-tentorial distance: tentorio-ocular distance = 3: 8: 4; clypeus sparsely short setose; eye nearly not emarginate (Fig. 26g); face weakly granulate and with dense short setae laterally (Fig. 26g); eye height: shortest distance between eyes: head width = 17: 15: 31; frons weakly granulate, weakly concave behind antennal sockets, with a indistinct median groove and sparsely short setose laterally (Fig. 26h); vertex largely smooth, with sparse short setae; shortest distance between posterior ocelli: minimum diameter of elliptical posterior ocellus: shortest distance between posterior ocellus and eye = 3: 3: 5; temples linearly narrowed behind eyes (Fig. 26h).

Mesosoma. Length of mesosoma 1.6× its height (Fig. 26c); notauli complete and deeply impressed (Fig. 26d); mesoscutum weakly punctate, with relatively dense short setae along notaulic courses (Fig. 26d); scutellar sulcus deep, wide, with four sparse strong crenulae (Fig. 26d); scutellum smooth, with dense short setae posteriorly; metanotum moderately convex medially, with a short carina anteriorly (Fig. 26d); propodeum largely smooth except for weakly rugose medially, with a strong medio-longitudinal groove and with a short medio-longitudinal carina posteriorly and with dense long setae laterally (Fig. 26d).

Wings. Fore wing (Fig. 26a): SR1: 3-SR: r = 35: 22: 7; 1-SR+M more or less straight, 1.2× longer than 1-M;

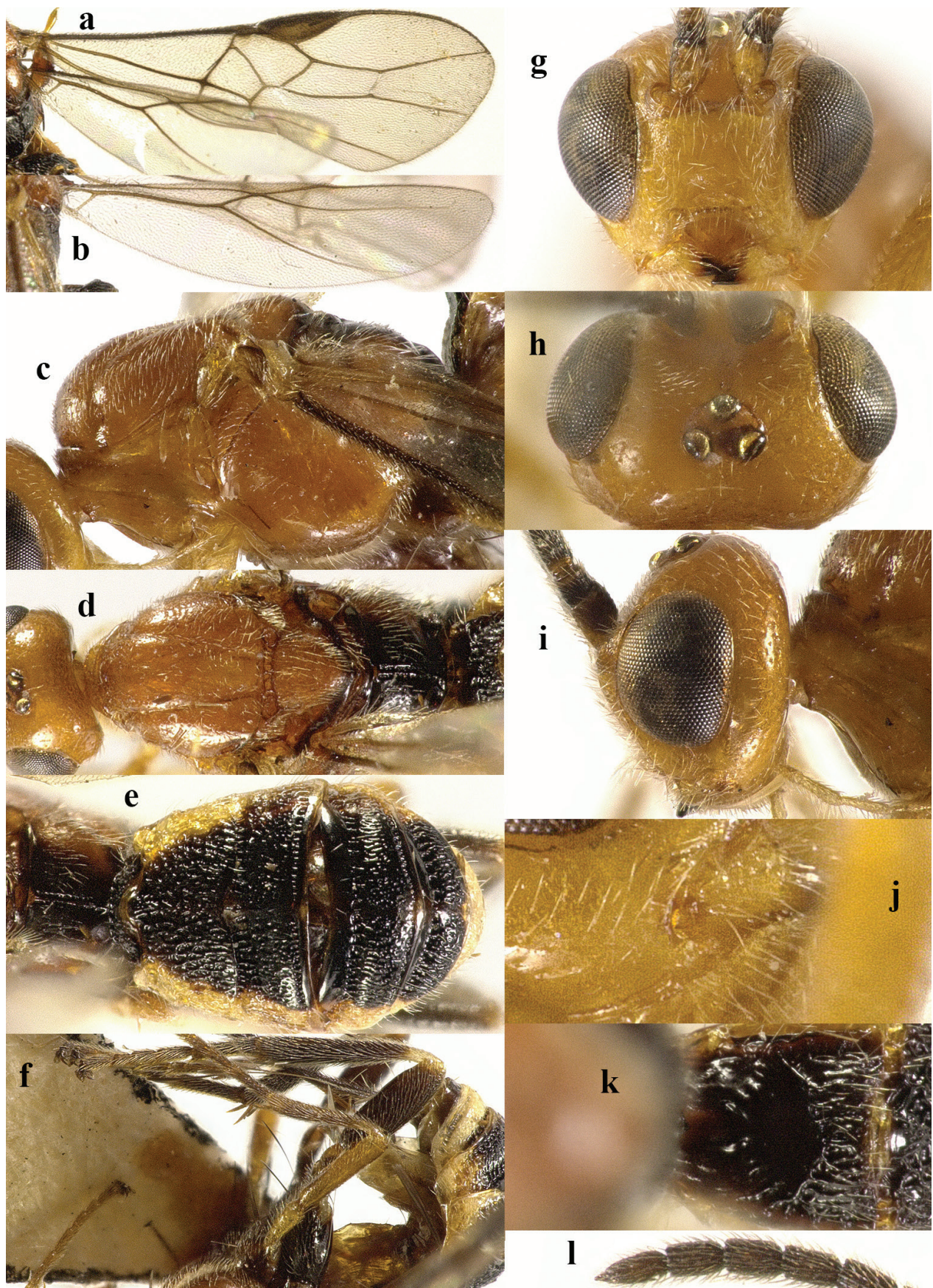


Figure 26. *Bracon* (*Uncobracon*) *longwangshanensis* sp. nov., ♀, holotype. **a.** Fore wing; **b.** Hind wing; **c.** Mesosoma, lateral view; **d.** Mesosoma, dorsal view; **e.** Metasoma, dorsal view; **f.** Hind leg, lateral view; **g.** Head, front view; **h.** Head, dorsal view; **i.** Head, lateral view; **j.** Mandible, lateral view; **k.** First metasomal tergite, dorsal view; **l.** Apex of antenna.



Figure 27. *Bracon (Uncobracon) pappi* Tobias, 2000, ♀, habitus lateral.

2-SR: 3-SR: r-m = 6: 11: 4; m-cu straight, 1.2× longer than 2-SR+M; angle between 1-SR and C+SC+R about 75°; cu-a interstitial. Hind wing (Fig. 26b): SC+R1: 2-SC+R: 1r-m = 8: 2: 5.

Legs. Length of fore femur: tibia: tarsus = 22: 24: 31; length of hind femur: tibia: basitarsus = 29: 42: 14; length of femur, tibia and basitarsus of hind leg 3.2, 7.6 and 5.6× their maximum width, respectively; hind tibial spurs 0.5 and 0.6× as long as hind basitarsus.

Metasoma. First tergite as long as its apical width; first tergite concave medio-basally, median area convex and strongly sculptured posteriorly, without medio-longitudinal carina (Fig. 26k); lateral grooves of first tergite moderately wide, with sparse crenulae (Fig. 26k); second tergite coarsely sculptured, with a small and rugose triangular medio-basal area, without medio-longitudinal carina (Fig. 26e); second metasomal suture wide, deep, with strong crenulae, weakly curved medially (Fig. 26e); third tergite with fine antero-lateral grooves; third to sixth tergites with subposterior transverse grooves (but absent medially on third tergite); third to fifth tergites coarsely sculptured (Fig. 26e); sixth and seventh tergites weakly rugose, posteriorly smooth (Fig. 26e); ovipositor sheath 0.6× as long as fore wing.

Colour. Head and mesosoma largely pale reddish-yellow (Fig. 25); antenna (but inner side of scapus yellow), eyes, mandible apically, metanotum and propodeum (but laterally reddish-yellow) black (Fig. 26d, g); fore leg yellow

(but claws black), middle (except for trochanter and femur yellow) and hind leg black (Figs 25, 26f); metasoma largely black, second to fifth metasomal tergites laterally and sixth tergite (but medio-basally black) whitish-yellow, seventh tergite yellowish-brown (Fig. 26e, k); ovipositor sheath black (Fig. 25); wing membrane pale frusate, pterostigma and veins dark brown (Fig. 26a, b).

Variation. Length of body of female 5.0–5.1 mm, of fore wing of female 4.7–4.9 mm and of ovipositor sheath 2.7–3.0 mm; mesopleuron posteriorly and metapleuron black; middle femur black; whitish-yellow area of second to fifth metasomal tergites relatively larger in paratypes.

Biology. Unknown.

Distribution. China (Zhejiang).

Etymology. Named after the type locality, Longwangshan, Zhejiang Province.

Bracon (Uncobracon) pappi Tobias, 2000

Figs 27, 28

Bracon (Uncobracon) pappi Tobias in Tobias and Belokobylskij 2000: 121; Samartsev 2018: 253.

Uncobracon pappi (Tobias): Tan et al. 2012: 65.

Material. 4♀♀, China, Fujian Prov., Jiangle, Longxishan, 8.VII.1991, Liu Changming, No. 969692,

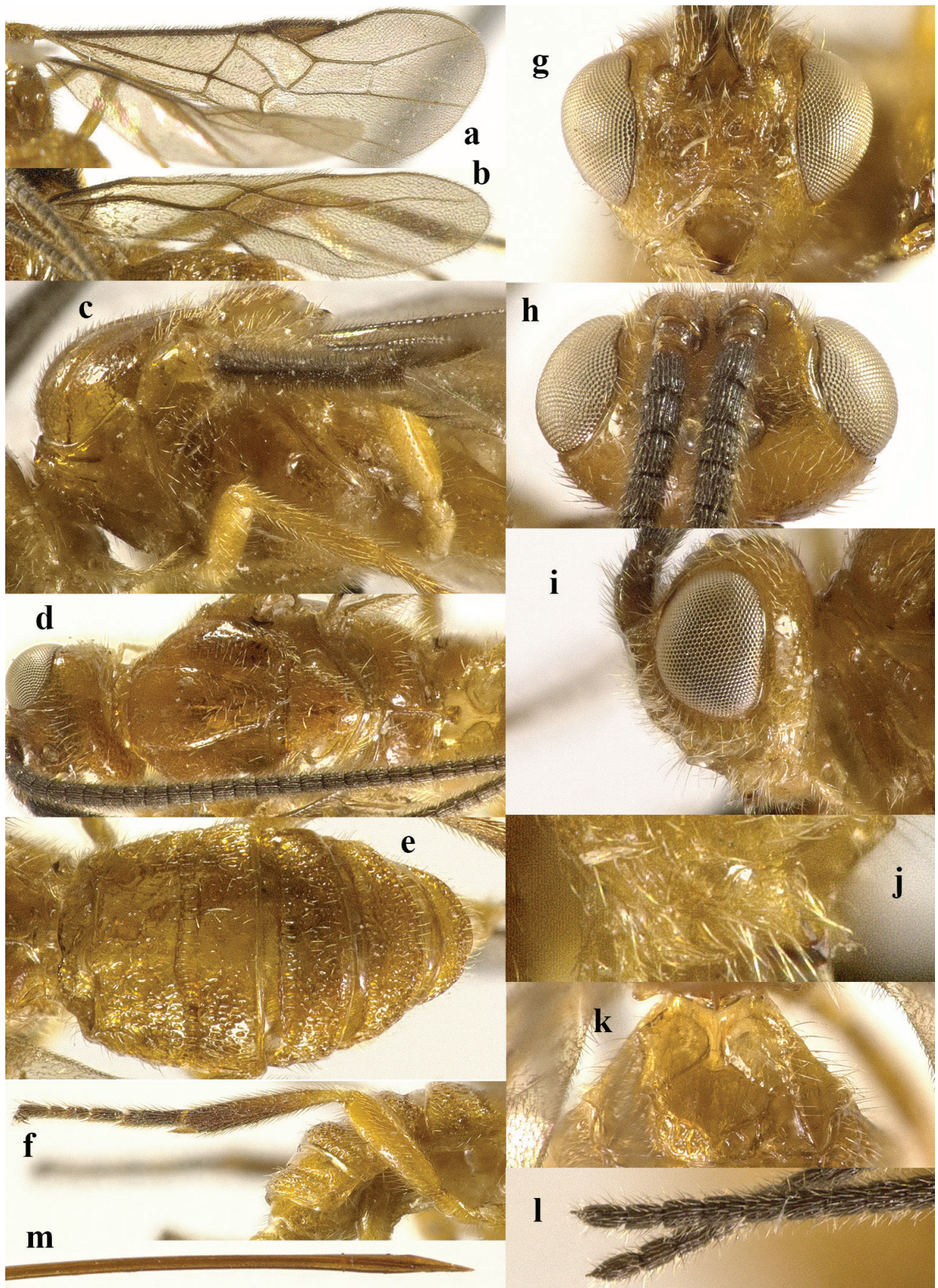


Figure 28. *Bracon (Uncobracon) pappi* Tobias, 2000. ♀. **a.** Fore wing; **b.** Hind wing; **c.** Mesosoma, lateral view; **d.** Mesosoma, dorsal view; **e.** Metasoma, dorsal view; **f.** Hind leg, lateral view; **g.** Head, front view; **h.** Head, dorsal view; **i.** Head, lateral view; **j.** Mandible, lateral view; **k.** First metasomal tergite, dorsal view; **l.** Apex of antenna; **m.** Apex of ovipositor, lateral view.

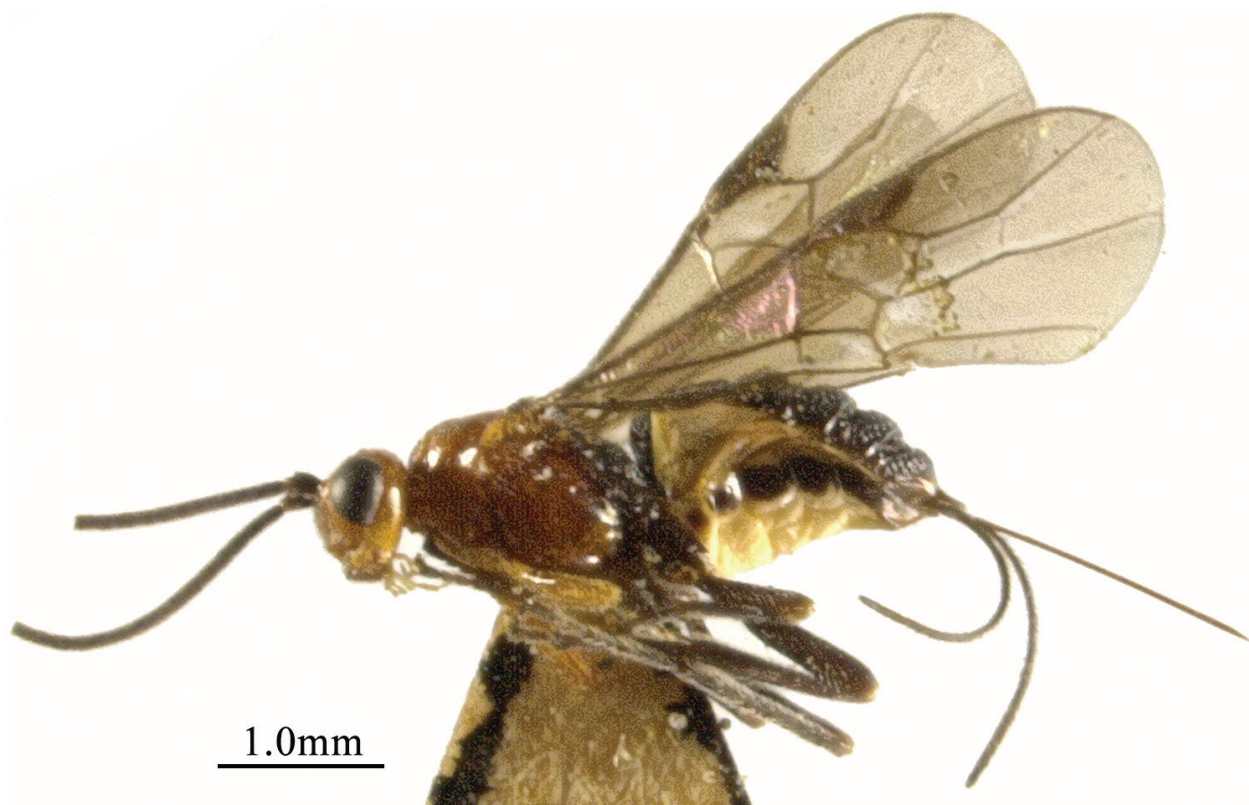


Figure 29. *Bracon (Uncobracon) tricoloratus* Tobias, 2000, ♀, habitus lateral.

969690, 969728, 969711 (ZJUH); 1♀, id., 1.VII.1991, No. 969669 (ZJUH); 1♀, China, id., 16.VII.1991, No. 20007033 (ZJUH); 1♀, China, Fujian Prov., Longyan, Qiushan, 21.VII.1988, Lin Naiquan, No. 20005321 (ZJUH); 1♀, China, Fujian Prov., Wuyishan, 7.IX.1989, Wang Jiashe, No. 963978 (ZJUH); 1♀, id., 5.VIII.1983, Ma Yun, No. 832698 (ZJUH); 1♀, China, Zhejiang Prov., Tianmushan, 27.VII.1988, Qian Yin, No. 940322 (ZJUH); 1♀, China, Zhejiang Prov., West Tianmushan, Qiliting, 28.VII.1999, Zhao Mingshui, No. 998836 (ZJUH); 1♀, China, Zhejiang Prov., West Tianmushan, Xianrending, 3.VIII.1998, Zhao Mingshui, No. 993916 (ZJUH); 2♀♀, China, Zhejiang Prov., Yinxian, 23.VII.1985, Zhang Jianrong, No. 852052, 852073 (ZJUH); 1♀, China, Zhejiang Prov., Anji, Longwangshan, 31.VIII.1993, Zhu Chunyan, No. 939980 (ZJUH); 1♀, id., 28.VII.1996, Wu Hong, No. 970388 (ZJUH); 1♀, id., 11.XII.1991, He Junhua, No. 915983 (ZJUH); 1♀, China, Zhejiang Prov., Qingyuan, Baishanzu, 19.VII.1994, Wu Hong, No. 946851 (ZJUH); 1♀, China, Zhejiang Prov., Moganshan, 11.VI.1992, Chen Xuexin, No. 922672 (ZJUH); 1♀, China, Zhejiang Prov., Gutianshan, 1.VIII.1990, Ma Yun, No. 906144 (ZJUH); 1♀, China, Zhejiang Prov., Wuyanlin, 28.VII.1983, Cai Zhenbin, No. 833341 (ZJUH); 1♀, China, Zhejiang Prov., Suichang, Jiulongshan, 18.VIII.1994, He Junhua, No. 944061 (ZJUH); 1♀, China, Guizhou

Prov., Fanjingshan, Jinding, 12.VII.1993, Yao Songlin, No. 936336 (ZJUH); 1♀, id., 13.VII.1993, Chen Xuexin, No. 938737 (ZJUH); 1♀, China, Henan Prov., Jigongshan, Jinding, 10.VII.1997, Chen Xuexin, No. 973618 (ZJUH); 1♀, id., 11.VII.1997, Chen Xuexin, No. 973809 (ZJUH).

Biology. Only known is the foodplant of its host: *Hippophae rhamnoides* Linnaeus ssp. *sinensis* Rousi (Tan et al. 2012).

Distribution. China (Fujian, Guizhou, Henan, Niangxia, Zhejiang); Korea, Russia.

Note. Tan et al. (2012) reported that this species is from Ningxia.

***Bracon (Uncobracon) tricoloratus* Tobias, 2000**

Figs 29, 30

Bracon (Uncobracon) tricoloratus Tobias in Tobias and Belokobylskij 2000: 120; Samartsev 2018: 253.

Material. 1♀, China, Zhejiang Prov., Tianmushan, 16.V.1988, He Junhua, No. 880900 (ZJUH).

Biology. Unknown.

Distribution. China (Zhejiang); Russia.

Note. This species is new to China.

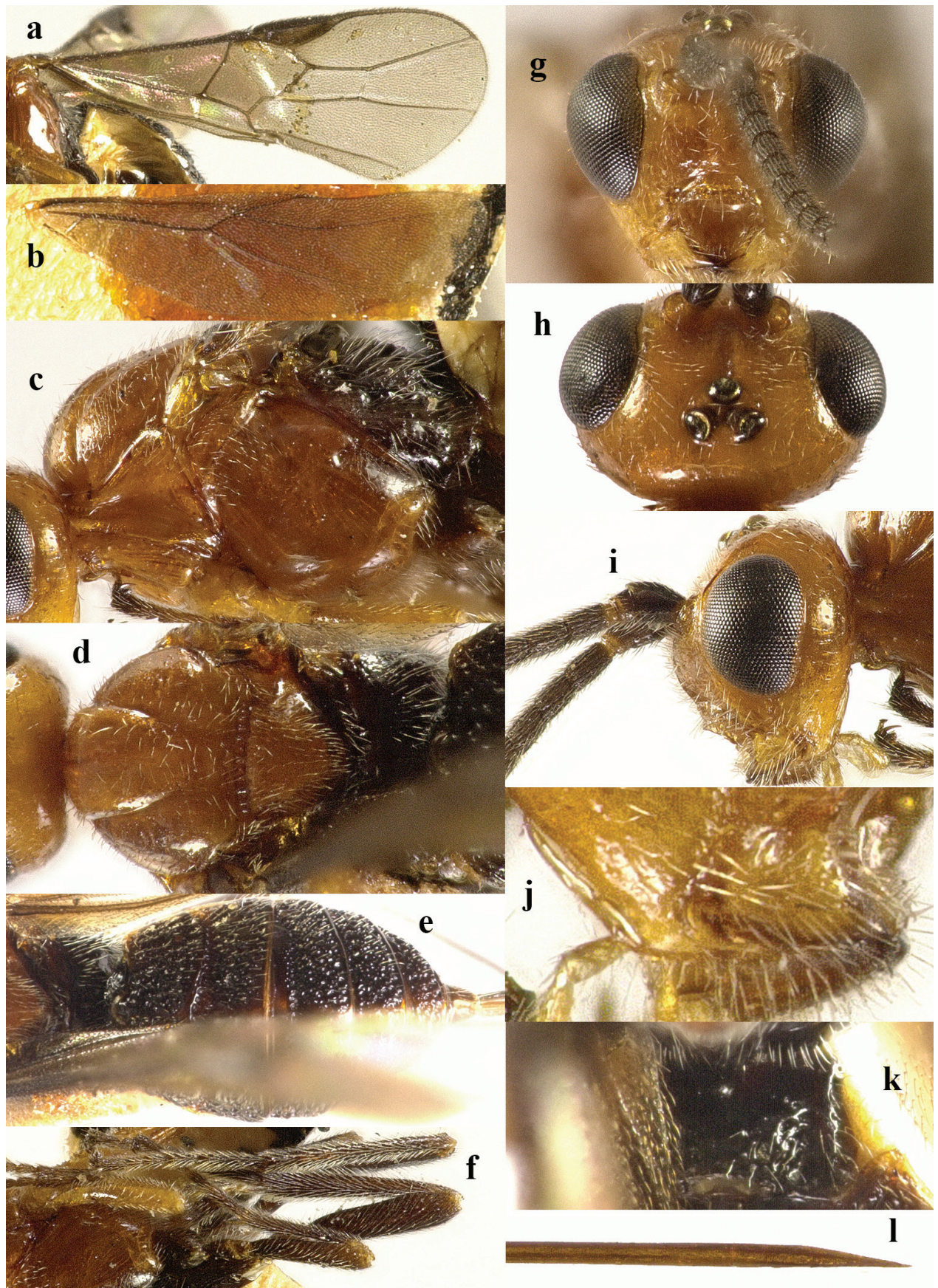


Figure 30. *Bracon (Uncobracon) tricoloratus* Tobias, 2000. ♀. **a.** Fore wing; **b.** Hind wing; **c.** Mesosoma, lateral view; **d.** Mesosoma, dorsal view; **e.** Metasoma, dorsal view; **f.** Hind leg, lateral view; **g.** Head, front view; **h.** Head, dorsal view; **i.** Head, lateral view; **j.** Mandible, lateral view; **k.** First metasomal tergite, dorsal view; **l.** Apex of ovipositor, lateral view.

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