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## Still from Bíró's cornucopia: new species and new records of Campopleginae from Australia (Hymenoptera: Ichneumonidae)

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Abstract - Based on material collected by Lajos Bíró in Australia in 1900, nine new species of Ichneumonidae: Campopleginae (Hymenoptera) are described in this paper: Campoplex csorgoi sp. nov., Campoplex reiczigeli sp. nov., Campoplex rozsai sp. nov., Enytus australiensis sp. nov., Eriborus biroi sp nov., Hyposoter hangayi sp. nov., Hyposoter pinyo sp. nov., Picacharops arantia sp. nov., and Venturia criminalis sp. nov. Remarks on identification and, in some cases, on generic placement of the new species are provided. Additionally, Eriborus loculosus (Vachal, 1907), a species previously known only from New Caledonia, is reported for the first time from Australia.

Key words - taxonomy, species description, distribution, identification key, Australasian region, Campoplex, Enytus, Eriborus, Hyposoter, Picacharops, Venturia

Dedication - This paper is dedicated to the memory of Lajos Bíró (1856-1931), in honour of his exceedingly remarkable collecting activity and work for the Hungarian Natural History Museum (that time part of the Hungarian National Museum).

## INTRODUCTION

Lajos Bíró (1856-1931), Hungarian entomologist and collector, was one of the first and most famed zoological explorers of New Guinea, particularly of its northeastern part (Kaiser-Wilhelmsland or German New Guinea that time). During a one-man expedition in New Guinea between 1896-1902, he collected more than 200,000 zoological specimens (mostly insects) for the natural history collections of the Hungarian National Museum, Budapest, later reorganized as the Hungarian Natural History Museum (HNHM). More than 2500 new species have been described from his scientifically and historically extremely valuable Australasian material (see e.g., BALOGH & ALLODIATORIS 1972).

The ichneumon wasps (Hymenoptera: Ichneumonidae) collected during Bíró's expedition were partly identified and published by Sándor Mocsáry (1841-1915) and Győző Szépligeti (1855-1915) (see e.g., MOCSÁRY (1905), SZÉPLIGETI (1906)). However, part of the Ichneumonidae material collected by Bíró has remained unidentified (some even unmounted), and virtually untouched for more than a century. Recently, two new species of the subfamily Campopleginae were described from Bíró's material: Venturia biroi Vas, 2020 from India (collected on his way home from New Guinea in 1902), and Melalophacharops chryseus Vas, 2023 from Australia (VAs 2020, 2023). While Bíró spent most of the time of his expedition in New Guinea, in 1900 he briefly visited Australia, and collected in the areas of Queensland and New South Wales. The importance of this historical material is further emphasized by the fact that the subfamily Campopleginae is still poorly known in Australia; although GAULD (1984) pointed out the presence of a high number of undescribed species in the continent, only very few taxonomic works were published on the Australian fauna subsequently (see e.g., JERMAN & GAULD (1988), PAULL & AUSTIN (2006)). In this paper, based on the material collected by Bíró in Australia in 1900, nine new species of Campopleginae are described, and a species previously known only from New Caledonia is reported for the first time from Australia.

Taxonomy and nomenclature follow YU & HORSTMANN (1997) and YU et al. (2016). Morphological terminology follows GAULD (1984, 1991) and GAULD et al. (1997); however, in cases of wing veins the corresponding terminology of TOWNES (1969) is also used. Terminology of body surface sculpturing follows HARRIS (1979). Identifications were based on the works of SMITH (1878), CAMERON (1901, 1906, 1907, 1911, 1912), TOSQUINET (1903), VACHAL (1907), Morley (1913), Viereck (1925), Sonan (1929), Uchida (1932), Cheesman (1936), FULLAWAY (1940), BLANCHARD (1946), TOWNES (1958, 1964, 1970), Horstmann (1969, 1973, 1987a, b), Momoi (1970), Gupta & Maheshwary (1977), GUPTA (1983, 1987), GAULD (1984), PAULL & AUSTIN (2006), CHOI & LEE (2012), CHEN et al. (2017), VAS (2019a, b, 2020, 2022, 2023), HAN et al. (2021, 2022), GALSWORTHY et al. (2023), and on examination of adequate type materials (at least from photos of scientific quality). The specimens were identified by the author using a Nikon SMZ645 stereoscopic microscope. Label data of specimens are given verbatim, with additions and explanations in square brackets if necessary. Taxa are listed alphabetically.

#### TAXONOMY

Family: Ichneumonidae Latreille, 1802 Subfamily: Campopleginae Förster, 1869

#### Genus: Campoplex Gravenhorst, 1829

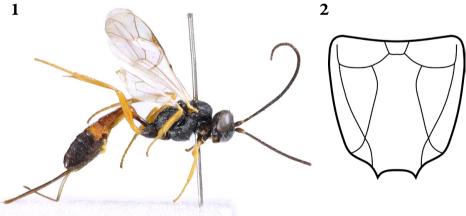
Type species: Ichneumon difformis Gmelin, 1790; designation by Westwood (1840)

Diagnosis: TOWNES (1970), GUPTA & MAHESHWARY (1977), GAULD (1984)

# Campoplex csorgoi sp. nov. (Figs 1–2)

Type material - Holotype: female, "Australia, N. S. Wales, Sydney, 20.X.1900, [leg. L.] Bíró", specimen pinned, id. HNHM-HYM 155259. Paratypes: one female, same label data, specimen pinned, id. HNHM-HYM 155260; one male, "Australia, N. S. Wales, Mt. Victoria, 15.XI.1900, [leg. L.] Bíró", specimen pinned, id. HNHM-HYM 155261. Holotype and paratypes are deposited in the HNHM.

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Figs 1-2. Campoplex csorgoi sp. nov., 1 = habitus, holotype, 2 = propodeum (photo by Zoltán Vas, drawing by Viktória Szőke)

Diagnosis - The new species can be distinguished from the known species of the genus by the following character states in combination: gena roundly narrowed behind eyes, in dorsal view  $0.45-0.50\times$  as long as eye width; occipital carina reaching hypostomal carina at base of mandible; malar space 0.5× as long as basal width of mandible; mesopleuron granulate with weak punctures, and with distinct wrinkles anterior to and above speculum, speculum almost smooth to smooth, subpolished to polished; propodeal carination complete, except median section of posterior transverse carina absent, and lateromedian and lateral longitudinal carinae more or less weakened behind costulae; area superomedia hexagonal, slightly wider than long, its lateral sides shortly convergent behind costulae, posteriorly opened; fore wing with petiolate areolet; second tergite of female  $1.25-1.30\times$ , of male  $1.8\times$  as long as its apical width; posterior margins of sixth and seventh tergites not excised; ovipositor sheath  $1.6 \times$  as long as hind tibia; tegula yellow; tergites 1-3 of metasoma orange, except petiole basally blackish, following tergites black; legs orange, except all coxae dark and apical tarsomeres brownish.

Description – Female (Figs 1–2). Body length ca. 5.5 mm, fore wing length ca. 4 mm.

Head: First flagellomere ca.  $4\times$  as long as its apical width, preapical flagellomeres slightly longer than wide to quadrate, antenna with 32 flagellomeres. Head transverse, matt, granulate with weak punctures on clypeus, and with dense, short hairs. Ocular-ocellar distance as long as ocellus diameter, distance between lateral ocelli 1.8× as long as ocellus diameter. Inner eye orbits slightly indented, about parallel. Gena roundly narrowed behind eyes, in dorsal view  $0.45-0.50\times$  as long as eye width. Occipital carina complete, reaching hypostomal carina at base of mandible; hypostomal carina slightly elevated. Frons flat, slightly impressed above toruli, median longitudinal carina indistinct. Face almost flat, clypeus flat in profile, apical margin of clypeus weakly convex, not impressed, moderately sharp. Malar space 0.5× as long as basal width of mandible. Lower margin of mandible with a moderately narrow flange from base towards teeth, flange gradually narrowed before teeth; mandibular teeth about equal.

Mesosoma: Mesosoma not elongate, matt, granulate with weak punctures, and with dense, short hairs. Pronotum with relatively weak, transverse wrinkles on lower half; epomia distinct. Mesoscutum about as long as wide, convex in profile; notaulus barely discernible. Scuto-scutellar groove wide and moderately deep. Scutellum convex in profile, lateral carinae not developed. Mesopleuron granulate with weak punctures, and with distinct wrinkles anterior to and above speculum; speculum almost smooth to smooth, subpolished to polished. Epicnemial carina complete, pleural part bent to anterior margin of mesopleuron reaching it at about its middle height, ventral part barely elevated. Sternaulus indistinct. Posterior transverse carina of mesosternum complete, slightly elevated. Metanotum ca.  $0.4\times$  as long as scutellum. Metapleuron without juxtacoxal carina; submetapleural carina complete, elevated. Pleural carina of propodeum

complete; propodeal spiracle small, oval, separated from pleural carina by slightly more than its length, connected to pleural carina by a distinct ridge. Propodeum short, convex in profile, granulate, posterior half slightly impressed and transversely rugose. Propodeal carination complete, except median section of posterior transverse carina absent, and lateromedian and lateral longitudinal carinae more or less weakened behind costulae. Area basalis trapezoid, about as long as its anterior width. Area superomedia granulate, hexagonal, slightly wider than long, its lateral sides shortly convergent behind costulae, posteriorly opened. Area petiolaris granulate with transverse wrinkles, confluent with area superomedia, their junction barely discernible. Fore wing with petiolate areolet, 3rs-m present, second recurrent vein (2m-cu) slightly distal to middle of areolet; distal abscissa of Rs almost straight; nervulus (cu-a) interstitial, inclivous; postnervulus (abscissa of Cu1 between 1m-cu and Cu1a + Cu1b) intercepted at about its middle by Cu1a; lower external angle of second discal cell weakly acute. Hind wing with nervellus (cu-a + abscissa of Cu1 between M and cu-a) slightly inclivous, intercepted by discoidella (Cu1) at about its lower quarter; discoidella spectral, proximally connected to nervellus. Coxae finely granulate. Hind femur ca. 5× as long as high. Inner spur of hind tibia ca. 0.5× as long as first tarsomere of hind tarsus. Tarsal claws small, barely longer than arolium, basally very weakly pectinate.

Metasoma: Metasoma compressed, very finely granulate to shagreened, with dense, short hairs. First tergite slender,  $3.1 \times$  as long as its apical width,  $1.15-1.20 \times$  as long as second tergite; glymma absent; dorsomedian carina of first tergite absent. Second tergite  $1.25-1.30 \times$  as long as its apical width; thyridium small, weak, subcircular, its distance from basal margin of tergite ca.  $2 \times$  as long as its length. Posterior margins of sixth and seventh tergites about straight, medially not excised. Ovipositor sheath  $1.6 \times$  as long as hind tibia,  $2 \times$  as long as hind femur; ovipositor compressed, almost straight.

Colour: Antenna, including scapus and pedicellus, brown. Head black, palpi and mandible yellow, base of mandible narrowly blackish, mandibular teeth dark brown. Mesosoma black, tegula yellow. Metasoma: tergites 1–3 orange, except petiole basally blackish, following tergites black. Wings hyaline, wing veins and pterostigma brown. Legs orange, except all coxae blackish and apical tarsomeres brownish.

Male: Similar to female in all characters described above, except: body length ca. 4.5 mm, fore wing length ca. 3 mm; first flagellomere ca.  $3.5 \times$  as long as its apical width, preapical flagellomeres longer than wide, antenna with 29 flagellomeres; ocular-ocellar distance  $0.8 \times$  as long as ocellus diameter; propodeum more roughly sculptured than in female; first tergite  $3.8 \times$  as long as its apical width; second tergite  $1.8 \times$  as long as its apical width; claspers wide, apically rounded; mandible darker, yellowish part of female mandible pale brownish in male; posterior half of propodeum with an orange-brown patch; third tergite slightly brownish dorsally; all coxae dark brown. Distribution – Australia (New South Wales).

Etymology – The new species is dedicated to Tibor Csörgő (1955–), ornithologist, who was one of my supervisors, and from whom I learned a lot about science and research.

*Remarks on identification* – An identification key to the *Campoplex* species currently known from the Australasian region is given below.

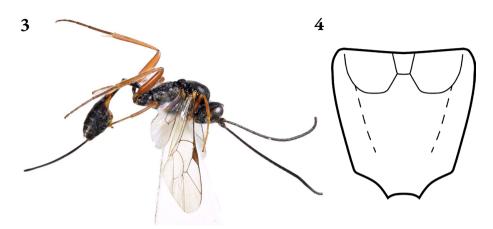
#### Campoplex reiczigeli sp. nov. (Figs 3-4)

*Type material* – Holotype: female, "Australia, N. S. Wales, Springwood, 19.XI.1900, [leg. L.] Bíró", specimen card-mounted, id. HNHM-HYM 155262. Holotype is deposited in the HNHM.

Diagnosis – The new species can be distinguished from the known species of the genus by the following character states in combination: gena roundly narrowed behind eyes, in dorsal view 0.5× as long as eye width; occipital carina reaching hypostomal carina at base of mandible; malar space 0.7× as long as basal width of mandible; mesopleuron granulate with indistinct punctures on lower half, and with weak wrinkles anterior to the smooth, polished speculum; propodeal carination reduced: lateromedian longitudinal carinae posterior to costulae virtually absent, lateral longitudinal carinae obsolescent behind costulae, anterior transverse carina complete, strong, posterior transverse carina laterally weak, medially absent; area superomedia not delimited behind costulae; fore wing without areolet; second tergite 1.2× as long as its apical width; posterior margins of sixth and seventh tergites not excised; ovipositor sheath 1.4× as long as hind tibia; tegula yellow; metasoma black, except second and third tergites partly reddish brown; all coxae black, femora and tibiae orange.

*Description* – Female (Figs 3–4). Body length ca. 5.5 mm, fore wing length ca. 4.5 mm.

Head: First flagellomere ca.  $4\times$  as long as its apical width, preapical flagellomeres quadrate. Head transverse, matt, granulate with weak punctures on face and clypeus, and with dense, moderately short hairs. Ocular-ocellar distance 1.4× as long as ocellus diameter, distance between lateral ocelli 1.7× as long as ocellus diameter. Inner eye orbits barely indented, about parallel. Gena roundly narrowed behind eyes, in dorsal view 0.5× as long as eye width. Occipital carina complete, reaching hypostomal carina at base of mandible; hypostomal carina slightly elevated. Frons flat, slightly impressed above toruli, median longitudinal carina absent. Face almost flat, clypeus flat in profile, apical margin of clypeus weakly convex, not impressed, moderately sharp. Malar space 0.7× as long as basal width of mandible. Lower margin of mandible with a moderately narrow flange from base toward teeth, flange gradually narrowed before teeth; upper mandibular tooth slightly longer than lower tooth.



Figs 3-4. *Campoplex reiczigeli* sp. nov., 3 = habitus, holotype, 4 = propodeum (photo by Zoltán Vas, drawing by Viktória Szőke)

Mesosoma: Mesosoma not elongate, matt, granulate with barely discernible, indistinct punctures, and with dense, short hairs. Pronotum with transverse wrinkles on lower half; epomia distinct. Mesoscutum about as long as wide, convex in profile; notaulus barely discernible. Scuto-scutellar groove wide and moderately deep. Scutellum convex in profile, lateral carinae not developed. Mesopleuron granulate with indistinct punctures on lower half, and with relatively weak wrinkles anterior to speculum; speculum smooth, polished. Epicnemial carina complete, pleural part bent to anterior margin of mesopleuron reaching it at about its middle height, ventral part slightly elevated. Sternaulus indistinct. Posterior transverse carina of mesosternum complete, slightly elevated. Metanotum ca. 0.4x as long as scutellum. Metapleuron without juxtacoxal carina; submetapleural carina complete, elevated. Pleural carina of propodeum complete; propodeal spiracle small, subcircular, separated from pleural carina by about its length, connected to pleural carina by a weak ridge. Propodeum relatively long, declivous in profile, granulate, posterior third with very fine rugosity, not impressed. Propodeal carination reduced: lateromedian longitudinal carinae posterior to costulae virtually absent; lateral longitudinal carinae obsolescent behind costulae; anterior transverse carina, including costulae, complete, strong; posterior transverse carina laterally weak, medially absent. Area basalis trapezoid, slightly longer than its anterior width. Area superomedia not delimited behind costulae. Area petiolaris not delimited, confluent with area superomedia. Fore wing without areolet, 3rs-m absent, second recurrent vein (2m-cu) postfurcal, intercubitus (2rs-m) 1.6× as long as abscissa of M between 2rs-m and 2m-cu, their angle obtuse; distal abscissa of Rs straight; nervulus (cu-a) interstitial, inclivous; postnervulus (abscissa of Cu1 between 1m-cu and Cu1a + Cu1b) intercepted at about its middle by Cu1a; lower external angle of second discal cell weakly acute. Hind wing with nervellus

(*cu-a* + abscissa of *Cu*1 between *M* and *cu-a*) inclivous, intercepted by discoidella (*Cu*1) at about its lower quarter; discoidella spectral, proximally connected to nervellus. Coxae finely granulate. Hind femur ca.  $4.5 \times$  as long as high. Inner spur of hind tibia ca.  $0.5 \times$  as long as first tarsomere of hind tarsus. Tarsal claws small, slightly longer than arolium, basally weakly pectinate.

Metasoma: Metasoma moderately compressed, very finely granulate to shagreened, and with dense, short hairs. First tergite  $3 \times as$  long as its apical width,  $1.25 \times as$  long as second tergite; glymma absent; dorsomedian carina of first tergite only basally discernible. Second tergite  $1.2 \times as$  long as its apical width; thyridium weak, oval, its distance from basal margin of tergite about as long as its length. Posterior margins of sixth and seventh tergites about straight, medially not excised. Ovipositor sheath  $1.4 \times as$  long as hind tibia,  $1.75 \times as$  long as hind femur; ovipositor compressed, weakly, evenly upcurved.

Colour: Antenna dark brown, except scapus ventrally weakly yellowish brown. Head black, palpi and mandible yellow, base of mandible narrowly blackish, mandibular teeth dark brown. Mesosoma black, tegula yellow. Metasoma black, except second tergite partly reddish brown (two reddish brown submedian longitudinal lines along anterior half of second tergite, widening into nearly complete apical band on posterior half), and anterolateral corner of third tergite more or less reddish brown. Wings hyaline, wing veins and pterostigma brown. Fore and middle legs: coxae black, apically narrowly yellowish; trochanters and trochantelli yellowish; femora, tibiae and tarsi orange, apical tarsomeres slightly darkened. Hind leg: coxa black; trochanter blackish, apically narrowly yellowish; trochantellus dark brown to orange-brown; femur and tibia orange; tarsus brownish.

Male: Unknown.

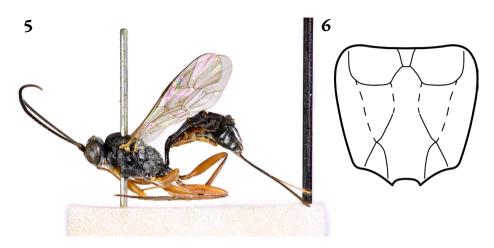
Distribution – Australia (New South Wales).

*Etymology* – The new species is dedicated to Jenő Reiczigel (1954–), biomathematician, who was one of my supervisors, and from whom I learned a lot about science and research.

*Remarks on identification* – An identification key to the *Campoplex* species currently known from the Australasian region is given below.

## Campoplex rozsai sp. nov. (Figs 5-6)

*Type material* – Holotype: female, "Australia, N. S. Wales, Mt. Victoria, 15.XI.1900, [leg. L.] Bíró", specimen pinned, id. HNHM-HYM 155263. Paratypes: one female, same label data except 14.XI.1900, specimen pinned, id. HNHM-HYM 155264; one male, same label data except 9.XI.1900, specimen pinned, id. HNHM-HYM 155265. Holotype and paratypes are deposited in the HNHM.



**Figs 5–6.** *Campoplex rozsai* sp. nov., 5 = habitus, holotype, 6 = propodeum (photo by Zoltán Vas, drawing by Viktória Szőke)

Diagnosis - The new species can be distinguished from the known species of the genus by the following character states in combination: gena strongly narrowed behind eyes, in dorsal view 0.4× as long as eye width; occipital carina reaching hypostomal carina slightly before base of mandible; malar space 0.6x as long as basal width of mandible; mesopleuron granulate with weak punctures on lower half, and with distinct wrinkles anterior to and above speculum, partly covering dorsal part of speculum, ventral part of speculum smooth, polished; propodeal carination complete, except median section of posterior transverse carina absent, and lateromedian and lateral longitudinal carinae more or less weakened between anterior and posterior transverse carinae; area superomedia about hexagonal, relatively narrow, ca. 1.4× as long as wide, its lateral sides slightly convergent behind costulae, posteriorly opened; fore wing without areolet; second tergite  $1.6-2.0 \times$  as long as its apical width; posterior margins of sixth and seventh tergites not excised; ovipositor sheath 1.65× as long as hind tibia; tegula yellow; metasoma black; fore coxa predominantly yellow, middle coxa predominantly black in female, yellow in male, hind coxa black; hind femur and tibia orange, the latter dorsally slightly darker, brownish.

Description – Female (Figs 5–6). Body length ca. 6 mm, fore wing length ca. 4.5 mm.

Head: First flagellomere ca.  $4\times$  as long as its apical width, preapical flagellomeres slightly wider than long, antenna with 35–37 flagellomeres. Head transverse, matt, granulate with weak punctures on clypeus, and with dense, short hairs. Ocular-ocellar distance and distance between lateral ocelli as long as ocellus diameter. Inner eye orbits slightly indented, about parallel. Gena strongly narrowed behind eyes, in dorsal view 0.4× as long as eye width. Occipital carina complete, reaching hypostomal carina slightly before base of mandible;

hypostomal carina slightly elevated. Frons flat, slightly impressed above toruli, median longitudinal carina absent or represented by a very short, indistinct trace below median ocellus. Face and clypeus flat in profile, apical margin of clypeus weakly convex, not impressed, moderately sharp. Malar space  $0.6 \times$  as long as basal width of mandible. Lower margin of mandible with a moderately narrow flange from base towards teeth, flange gradually narrowed before teeth; mandibular teeth about equal.

Mesosoma: Mesosoma moderately elongate, matt, granulate with weak punctures, and with dense, short hairs. Pronotum with more or less irregular wrinkles on lower half; epomia distinct. Mesoscutum slightly longer than wide, moderately convex in profile; notaulus weak but discernible. Scuto-scutellar groove wide and moderately deep. Scutellum convex in profile, lateral carinae not developed. Mesopleuron granulate with weak punctures on lower half, and with distinct wrinkles anterior to and above speculum, partly covering dorsal part of speculum, ventral part of speculum smooth, polished. Epicnemial carina complete, pleural part bent to anterior margin of mesopleuron reaching it below its middle height, ventral part barely elevated. Sternaulus indistinct. Posterior transverse carina of mesosternum complete, elevated. Metanotum ca.  $0.4 \times$  as long as scutellum. Metapleuron without juxtacoxal carina; submetapleural carina complete, elevated. Pleural carina of propodeum complete; propodeal spiracle small, subcircular, separated from pleural carina by less than its length, connected to pleural carina by a weak ridge. Propodeum relatively long, weakly convex in profile, granulate, posterior half with fine, transverse rugosity, not impressed. Propodeal carination complete, except median section of posterior transverse carina absent, and lateromedian and lateral longitudinal carinae more or less weakened between anterior and posterior transverse carinae. Area basalis narrow trapezoid, slightly longer than its anterior width. Area superomedia granulate, about hexagonal, relatively narrow, ca.  $1.4 \times$  as long as wide, its lateral sides slightly convergent behind costulae, posteriorly opened. Area petiolaris granulate with fine, transverse wrinkles, confluent with area superomedia, their junction discernible. Fore wing without areolet, 3rs-m absent, second recurrent vein (2m-cu) postfurcal, intercubitus (2rs-m) 1.3× as long as abscissa of M between 2rs-m and 2m-cu, their angle obtuse; distal abscissa of Rs straight; nervulus (cu-a) interstitial, inclivous; postnervulus (abscissa of Cu1 between 1m-cu and  $Cu_{1a} + Cu_{1b}$  intercepted slightly above its middle by  $Cu_{1a}$ ; lower external angle of second discal cell acute. Hind wing with nervellus (cu-a + abscissa ofCu1 between M and cu-a inclivous, intercepted by discoidella (Cu1) close to its lower end; discoidella spectral, proximally connected to nervellus. Coxae finely granulate. Hind femur ca.  $4.9 \times$  as long as high. Inner spur of hind tibia ca.  $0.40-0.45 \times$  as long as first tarsomere of hind tarsus. Tarsal claws small, slightly longer than arolium, basally very weakly pectinate.

Metasoma: Metasoma moderately compressed, very finely granulate to shagreened with weak, indistinct traces of punctures, and with dense, short hairs. First tergite slender,  $3.2-3.4\times$  as long as its apical width,  $1.2\times$  as long as second tergite; glymma absent; dorsomedian carina of first tergite only basally discernible. Second tergite  $1.6\times$  as long as its apical width; thyridium weak, elongate oval, its distance from basal margin of tergite ca.  $1.7-1.9\times$  as long as its length. Posterior margins of sixth and seventh tergites medially slightly concave but not excised. Ovipositor sheath  $1.65\times$  as long as hind tibia,  $2.1\times$  as long as hind femur; ovipositor compressed, slightly, evenly upcurved.

Colour: Antenna dark brown, except scapus and pedicellus ventrally partly yellowish. Head black, palpi and mandible yellow, base of mandible narrowly blackish, mandibular teeth dark brown. Mesosoma black, tegula yellow. Metasoma black. Wings hyaline, wing veins and pterostigma brown. Fore leg: coxa yellow, basally narrowly blackish; trochanter yellow, dorsally slightly darker; trochantellus yellow; femur, tibia and tarsus orange, apical tarsomeres slightly darkened. Middle leg: similar to fore leg, except coxa blackish, apically narrowly yellowish. Hind leg: coxa black; trochanter and trochantellus dorsally brown, ventrally yellowish; femur orange; tibia ventrally orange, dorsally slightly darker, orange-brown to brown; tarsus brownish.

Male: Similar to female in all characters described above, except: body length ca. 5.5 mm, fore wing length ca. 4 mm; first flagellomere ca.  $3.5 \times$  as long as its apical width, preapical flagellomeres quadrate; distance between lateral ocelli  $1.3 \times$  as long as ocellus diameter; gena more roundly narrowed behind eyes than in female; smooth part of speculum slightly larger than in female; second tergite  $2 \times$  as long as its apical width; posterior margins of apical tergites straight; claspers wide, apically rounded; middle coxa yellow, basally narrowly blackish.

Distribution - Australia (New South Wales).

*Etymology* – The new species is dedicated to Lajos Rózsa (1961–), parasitologist, who was one of my supervisors, and from whom I learned a lot about science and research.

*Remarks on identification* – An identification key to the *Campoplex* species currently known from the Australasian region is given below.

# Identification key to the *Campoplex* species known from the Australasian region

Besides the three newly described species, four other species are known in the region: *Campoplex calamae* Cameron, 1912 from Australia, *Campoplex hudsoni* (Cameron, 1901), *Campoplex disjunctus* Townes, 1964 and *Campoplex haywardi* Blanchard, 1946 from New Zealand; the latter has been introduced from the Neotropical region (Yu *et al.* 2016). Since several undescribed species are expected

to occur in the region, this simplified key is considered preliminary, and is to be used with caution; the detailed descriptions of the species should be consulted to avoid misidentifications. The key works for females.

1	Fore wing with areolet
_	Fore wing without areolet
2	Small species, body length 4.5-5.5 mm, tergites 1-3 of metasoma orange, except petiole
	basally blackish, following tergites black, all coxae predominantly to entirely blackish
-	Much larger species, body length ca. 10 mm, colouration of metasoma different, all coxae
	entirely orange
3	Metasoma predominantly orange, hind wing with discoidella (Cu1) not pigmented, spectral
	Campoplex hudsoni (Cameron, 1901)
-	Metasoma black, hind wing with discoidella (Cu1) distinctly pigmented
4	Ovipositor sheath shorter than hind tibia Campoplex disjunctus Townes, 1964
-	Ovipositor sheath distinctly longer than hind tibia5
5	Ovipositor sheath more than 1.5× as long as hind tibia, second tergite more than 1.5× as long
	as its apical width Campoplex rozsai sp. nov.
-	Ovipositor sheath less than 1.5× as long as hind tibia, second tergite less than 1.5× as long as
	its apical width6
6	Lateromedian longitudinal carinae of propodeum posterior to costulae distinct, area
	superomedia laterally distinctly delimited behind costulae, fore and middle coxae yellowish,
	hind femur and tibia brown Campoplex haywardi Blanchard, 1946
_	Lateromedian longitudinal carinae of propodeum posterior to costulae virtually absent, area
	superomedia not delimited behind costulae, all coxae black, all femora and tibiae orange

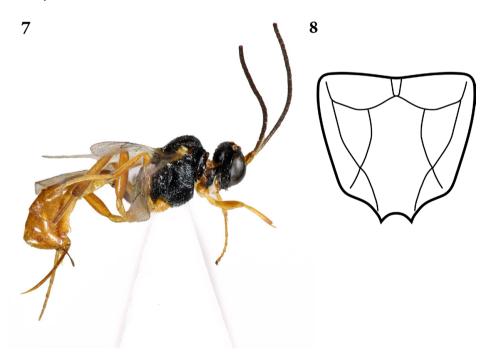
## Genus: Enytus Cameron, 1905

Type species: *Enytus maculipes* Cameron, 1903; designation by VIERECK (1914) Diagnosis: TOWNES (1970), GAULD (1984), HORSTMANN (1987*b*)

# Enytus australiensis sp. nov. (Figs 7–8)

*Type material* – Holotype: female, "Australia, N. S. Wales, Mt. Victoria, 15.XI.1900, [leg. L.] Bíró", specimen card-mounted, id. HNHM-HYM 155266. Holotype is deposited in the HNHM.

Diagnosis - The new species can be distinguished from the known species of the genus by the following character states in combination: gena strongly narrowed behind eyes, in dorsal view 0.4× as long as eye width; mesopleuron granulate with weak punctures on lower half, speculum granulate; propodeum short, convex in profile, granulate, posteriorly with transverse rugosity; lateromedian and lateral longitudinal carinae of propodeum complete, posterior to the level of costulae somewhat weakened, anterior transverse carina complete, posterior transverse carina medially absent; area superomedia pentagonal, 0.7× as long as wide, its lateral sides weakly convergent behind costulae, posteriorly opened; fore wing without areolet, intercubitus (2rs-m) 0.5× as long as abscissa of M between 2rs-m and 2m-cu, postnervulus (abscissa of Cu1 between 1m-cu and Cu1a + Cu1b) intercepted conspicuously above its middle by  $Cu_{1a}$ ; second tergite  $1.45 \times as \log b$ as its apical width; posterior margin of sixth tergite medially roundly concave, posterior margin of seventh tergite medially triangularly excised; ovipositor sheath 0.5× as long as hind tibia; scapus and pedicellus ventrally yellowish; tegula pale yellow; metasoma orange-brown, except petiolus and anterior margin of second tergite black; legs, including coxae, orange, hind tibia basally and apically weakly darkened.



Figs 7–8. *Enytus australiensis* sp. nov., 7 = habitus, holotype, 8 = propodeum (photo by Zoltán Vas, drawing by Viktória Szőke)

*Description* – Female (Figs 7–8). Body length ca. 4.5 mm, fore wing length ca. 3.5 mm.

Head: First flagellomere ca.  $4\times$  as long as its apical width. Head transverse, matt, granulate, except clypeus with weak punctures on smoother surface, and with dense, short hairs. Ocular-ocellar distance and distance between lateral ocelli as long as ocellus diameter. Inner eye orbits not indented, slightly convergent ventrad. Gena short, strongly narrowed behind eyes, in dorsal view  $0.4\times$  as long as eye width. Occipital carina complete, reaching hypostomal carina slightly before base of mandible; hypostomal carina slightly elevated. Frons flat, slightly impressed above toruli, median longitudinal carina indistinct. Face almost flat. Clypeus almost flat in profile, its apical margin weakly convex, sharp. Malar space  $0.6\times$  as long as basal width of mandible. Lower margin of mandible with a narrow flange from base towards teeth, flange gradually narrowed before teeth; upper mandibular tooth longer and wider than lower tooth.

Mesosoma: Mesosoma matt, granulate with indistinctly weak, superficial punctures, and with dense, short hairs. Pronotum with relatively weak, transverse wrinkles on lower half; epomia distinct. Mesoscutum about as long as wide, convex in profile; notaulus not developed. Scuto-scutellar groove wide and moderately deep. Scutellum convex in profile, lateral carinae not developed. Mesopleuron entirely granulate with weak punctures on lower half, and with weak wrinkles anterior to speculum; speculum granulate, matt. Epicnemial carina complete, pleural part bent to anterior margin of mesopleuron reaching it below its middle height. Sternaulus indistinct. Posterior transverse carina of mesosternum complete, slightly elevated. Metanotum ca. 0.6x as long as scutellum. Metapleuron without juxtacoxal carina; submetapleural carina complete, elevated. Pleural carina of propodeum complete; propodeal spiracle small, oval, separated from pleural carina by about its length, connected to pleural carina by a distinct ridge. Propodeum short, convex in profile, granulate, posterior to the level of costulae with transverse rugosity. Propodeal carination: lateromedian and lateral longitudinal carinae complete, anterior to the level of costulae strong, posterior to the level of costulae somewhat weakened; anterior transverse carina, including costulae, complete, strong; posterior transverse carina laterally distinct, medially absent. Area basalis elongate triangular,  $1.6 \times$  as long as its anterior width. Area superomedia pentagonal, transverse, 0.7× as long as wide, its lateral sides weakly convergent behind costulae, posteriorly opened. Area petiolaris wide, slightly impressed, confluent with area superomedia, their junction discernible. Fore wing without areolet, 3rs-m absent, second recurrent vein (2m-cu) postfurcal, intercubitus (2rs-m) short,  $0.5 \times$  as long as abscissa of M between 2rs-m and 2m-cu, their angle obtuse; distal abscissa of Rs straight; nervulus (cu-a) slightly postfurcal, about vertical; postnervulus (abscissa of Cu1 between 1m-cu and Cu1a + Cu1b) intercepted conspicuously above its middle by Cula; lower external angle of second discal cell weakly acute. Hind wing with nervellus (cu-a + abscissa of Cu1 between M and cu-a) vertical, not intercepted

by discoidella (Cu1); discoidella spectral, proximally not connected to nervellus. Coxae finely granulate with weak, indistinct punctures. Hind femur ca. 5× as long as high. Inner spur of hind tibia ca. 0.55× as long as first tarsomere of hind tarsus. Tarsal claws small, about as long as arolium, basally weakly pectinate.

Metasoma: Metasoma moderately compressed, very finely granulate to shagreened, and with relatively sparse, short hairs. First tergite  $2.5 \times$  as long as its apical width,  $1.25 \times$  as long as second tergite; glymma strong; dorsomedian carina of first tergite weak. Second tergite  $1.45 \times$  as long as its apical width; thyridium small, oval, its distance from basal margin of tergite about as long as its length. Posterior margin of sixth tergite medially roundly concave, posterior margin of seventh tergite medially distinctly, triangularly excised. Ovipositor sheath short,  $0.5 \times$  as long as hind tibia; ovipositor compressed, strong, apically distinctly upcurved.

Colour: Antenna dark brown, except scapus and pedicellus dorsally yellowish brown, ventrally yellowish. Head black, palpi and mandible yellow, mandibular teeth brownish. Mesosoma black, tegula pale yellow. Metasoma orange-brown, except petiolus part of first tergite and anterior margin of second tergite black. Wings hyaline, wing veins and pterostigma brown. Fore and middle legs, including coxae, orange, except trochanters and trochantelli paler, and apical tarsomeres brownish. Hind leg, including coxa, orange, except tibia basally and apically weakly darkened, and tarsus predominantly brownish.

Male: Unknown.

*Distribution* – Australia (New South Wales). *Enytus australiensis* sp. nov. is the first species of the genus recorded from the Australasian region.

*Etymology* – The specific epithet *australiensis* is the masculine form of the Latin adjective *australiensis*, *-is*, *-e*, meaning Australian; it refers to the fact that this is the first species of the genus described from Australia.

*Remarks on identification* – Regarding its short, strongly narrowed gena, length of ovipositor sheath, elongate second tergite, characteristics of propodeum and posterior margins of tergites 6–7, and colouration of hind legs and metasoma, the new species is not quite similar to, and cannot be confused with any other *Enytus* species. The combination of character states given in Diagnosis enables reliable identification.

#### Genus: Eriborus Förster, 1869

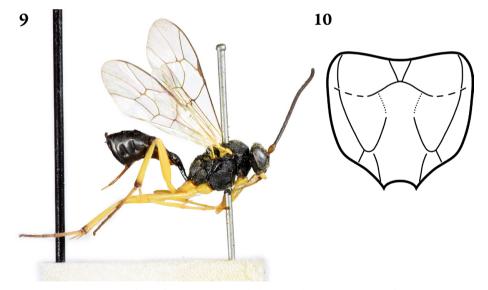
Type species: *Campoplex perfidus* Gravenhorst, 1829; designation by MORLEY (1913)

Diagnosis: TOWNES (1970), GAULD (1984)

#### Eriborus biroi sp. nov. (Figs 9–10)

*Type material* – Holotype: female, "Australia, N. S. Wales, Mt. Victoria, 3.XI.1900, [leg. L.] Bíró", specimen pinned, id. HNHM-HYM 155267. Holotype is deposited in the HNHM.

Diagnosis – The new species can be distinguished from the known species of the genus by the following character states in combination: gena strongly narrowed behind eyes, in dorsal view  $0.4\times$  as long as eye width; mesopleuron granulate with dense, weak punctures, and with weak, short wrinkles around the finely granulate, matt speculum; propodeum short, convex in profile, rugosereticulate, lateromedian longitudinal carinae posterior to costulae obsolescent, costulae more or less weakened, posterior transverse carina medially absent; area superomedia anteriorly rugose, posteriorly rugose-reticulate, pentagonal, wider than long, posteriorly opened; intercubitus (2rs-m) 2× as long as abscissa of M between 2rs-m and 2m-cu; second tergite  $1.25\times$  as long as its apical width; posterior margins of apical tergites not excised; ovipositor sheath shorter than apical depths of metasoma; scapus and pedicellus ventrally partly yellowish brown; tegula yellow; metasoma black; all legs, including coxae, yellow, except apex of hind tibia narrowly brown, and apical tarsomeres more or less brownish.



Figs 9–10. *Eriborus biroi* sp. nov., 9 = habitus, holotype, 10 = propodeum (photo by Zoltán Vas, drawing by Viktória Szőke)

*Description* – Female (Figs 9–10). Body length ca. 6.5 mm, fore wing length ca. 5.5 mm.

Head: First flagellomere ca.  $3 \times as \log as$  its apical width. Head transverse, matt, granulate with dense but weak traces of punctures, and with dense, short hairs. Ocular-ocellar distance  $0.8 \times as \log as$  ocellus diameter, distance between lateral ocelli  $1.5 \times as \log as$  ocellus diameter. Inner eye orbits weakly indented, subparallel. Gena short, strongly narrowed behind eyes, in dorsal view  $0.4 \times as \log as$  eye width. Occipital carina complete, reaching hypostomal carina slightly before base of mandible; hypostomal carina slightly elevated. Frons flat, slightly rugulose, median longitudinal carina absent. Face almost flat. Clypeus flat in profile, its apical margin convex, moderately blunt. Malar space  $0.7 \times as \log as basal width of mandible.$  Lower margin of mandible with a moderately wide flange from base towards teeth, flange gradually narrowed before teeth; upper mandibular tooth slightly longer and wider than lower tooth.

Mesosoma: Mesosoma stout, matt, with dense, short hairs. Pronotum rugulose on granulate surface, with transverse wrinkles on lower half; epomia distinct. Mesoscutum granulate with dense but weak traces of punctures, medially rugulose, about as long as wide, convex in profile; notaulus not developed. Scutoscutellar groove moderately wide and deep. Scutellum rugulose-granulate, convex in profile, lateral carinae not developed. Mesopleuron granulate with dense, weak punctures, and with weak, short wrinkles anterior to and below speculum; speculum finely granulate, matt. Epicnemial carina complete, strong, pleural part bent to anterior margin of mesopleuron reaching it at about its middle height, ventral part slightly elevated. Sternaulus indistinct. Posterior transverse carina of mesosternum complete, elevated. Metanotum ca. 0.5× as long as scutellum. Metapleuron finely rugulose with weak traces of punctures, without juxtacoxal carina; submetapleural carina complete, elevated. Pleural carina of propodeum complete, strong; propodeal spiracle oval, separated from pleural carina by about its length, connected to pleural carina by a distinct ridge. Propodeum short, convex in profile, rugose-reticulate. Propodeal carination: lateromedian longitudinal carinae anterior to the level of costulae strong, posterior to the level of costulae obsolescent, overlaid by coarsely rugose-reticulate surface; lateral longitudinal carinae distinct, complete; anterior transverse carina medially strong, costulae more or less weakened but discernible; posterior transverse carina laterally strong, medially absent, overlaid by coarsely rugose-reticulate surface. Area basalis triangular, slightly longer than its anterior width. Area superomedia anteriorly rugose, posteriorly rugose-reticulate, pentagonal, wider than long, posteriorly opened. Area petiolaris coarsely rugose-reticulate, wide, confluent with area superomedia, their junction discernible. Fore wing without areolet, 3rs-m absent, second recurrent vein (2m-cu) postfurcal, intercubitus (2rs-m) 2× as long as abscissa of M between 2rs-m and 2m-cu, their angle obtuse; distal abscissa of Rs almost straight; nervulus (cu-a) postfurcal by about its width, vertical; postnervulus (abscissa of Cu1 between 1m-cu and Cu1a + Cu1b) intercepted

slightly above its middle by Cu1a; lower external angle of second discal cell weakly acute. Hind wing with nervellus (cu-a + abscissa of Cu1 between M and cu-a) vertical, not intercepted by discoidella (Cu1); discoidella spectral, proximally not connected to nervellus. Coxae finely granulate with weak, indistinct traces of punctures. Hind femur ca. 5× as long as high. Inner spur of hind tibia ca. 0.6× as long as first tarsomere of hind tarsus. Hind tarsus with a midventral row of closely spaced, short hairs (appearing as a darker, somewhat scaly, inconspicuous line). Tarsal claws small, about as long as arolium, basally pectinate.

Metasoma: Metasoma compressed, short, very finely granulate to shagreened, and with moderately dense, short hairs. First tergite  $2.5 \times$  as long as its apical width,  $1.35 \times$  as long as second tergite; glymma strong; dorsomedian carina of first tergite discernible. Second tergite  $1.25 \times$  as long as its apical width; thyridium large, oval, its distance from basal margin of tergite shorter than its length. Posterior margins of apical tergites not excised. Ovipositor sheath shorter than apical depths of metasoma; ovipositor compressed, strong, straight.

Colour: Antenna dark brown, except scapus and pedicellus ventrally partly yellowish brown. Head black, palpi and mandible yellow, mandibular teeth brownish. Mesosoma black, tegula yellow. Metasoma entirely black. Wings hyaline, wing veins and pterostigma brown. All legs, including coxae, yellow, except apex of hind tibia narrowly brown, and apical tarsomeres more or less brownish.

Male: Unknown.

Distribution - Australia (New South Wales).

*Etymology* – The new species is dedicated to the memory of Lajos Bíró (1856–1931), collector of the holotype specimen.

*Remarks on identification* – The new species, regarding its yellow hind coxae and entirely black metasoma, is not similar to any other Australasian species of the genus. In the identification key to the Australasian *Eriborus* species provided by VAS (2019*a*), the new species keys out with *Eriborus tutuilensis* (Fullaway, 1940), a species known from Fiji and American Samoa, at couplet 3, however without complete match to the listed characteristics. *Eriborus tutuilensis* can be readily distinguished from the new species by its extensively yellowish to yellowish brown metasoma, elongate propodeum and much longer ovipositor sheath (about half as long as metasoma).

#### Eriborus loculosus (Vachal, 1907)

*Material examined* – "Australia, N. S. Wales, Mt. Victoria, 10–16.XI.1900, [leg. L.] Bíró", one female.

*Remarks* – First record for Australia. Previously this species was known from New Caledonia (VACHAL 1907, YU *et al.* 2016). As compared to the New Caledonian lectotype (female), metasoma of the Australian specimen is slightly

lighter, dark brown, while metasoma of the lectotype specimen is black. Otherwise, these specimens are very similar in all important characteristics, therefore their conspecificity is fairly convincing.

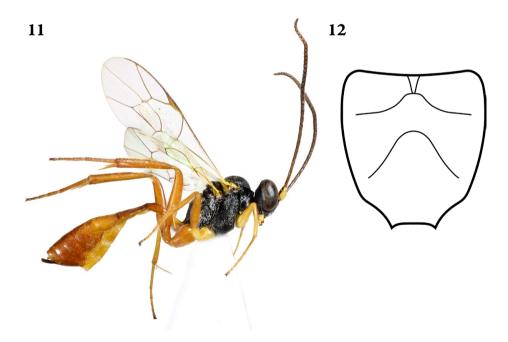
## Genus: Hyposoter Förster, 1869

Type species: *Limnerium parorgyiae* Viereck, 1910; designation by VIERECK (1910)

Diagnosis: TOWNES (1970), GAULD (1984)

## Hyposoter hangayi sp. nov. (Figs 11-12)

*Type material* – Holotype: female, "Australia, N. S. Wales, Parramatta, 28.X.1900, [leg. L.] Bíró", specimen card-mounted, id. HNHM-HYM 155268. Holotype is deposited in the HNHM.



Figs 11–12. *Hyposoter hangayi* sp. nov., 11 = habitus, holotype, 12 = propodeum (photo by Zoltán Vas, drawing by Viktória Szőke)

Diagnosis – The new species can be distinguished from the known species of the genus by the following character states in combination: preapical flagellomeres quadrate; mesopleuron granulate with short, oblique wrinkles anterior to speculum and along pleural part of epicnemial carina; propodeum convex in profile, granulate, posteriorly finely rugose, lateromedian and lateral longitudinal carinae obsolescent, their traces barely discernible, anterior and posterior transverse carinae complete, distinct; area superomedia granulate, pentagonal, about as long as wide, laterally barely delimited, posteriorly closed; areolet petiolate, reduced, 3rs-m very short; nervulus almost interstitial; second tergite  $1.5\times$  as long as its apical width; posterior margins of apical tergites not excised; antenna dark brown, scapus and pedicellus ventrally yellow; tegula pale yellow; metasoma orange; fore and middle legs pale orange to orange, except coxae, trochanters and trochantelli yellowish; hind leg, including coxa, orange, except apical tarsomeres slightly darkened.

*Description* – Female (Figs 11–12). Body length ca. 6 mm, fore wing length ca. 4.5 mm.

Head: Antenna with 30 flagellomeres; first flagellomere slender, ca.  $5\times$  as long as its apical width; preapical flagellomeres quadrate. Head transverse, matt, granulate, with dense, short hairs. Ocular-ocellar distance and distance between lateral ocelli  $0.8\times$  as long as ocellus diameter. Inner eye orbits slightly indented, very slightly convergent ventrad. Gena very short, very strongly narrowed behind eyes, in dorsal view  $0.3\times$  as long as eye width. Occipital carina complete, reaching hypostomal carina before base of mandible; hypostomal carina slightly elevated. Frons flat, slightly impressed above toruli, median longitudinal carina absent. Face weakly convex in profile. Clypeus moderately small, very weakly convex in profile, its apical margin weakly impressed, sharp. Malar space  $0.5\times$  as long as basal width of mandible. Mandible short, lower margin of mandible with a wide flange from base towards teeth, flange gradually narrowed before teeth; upper mandibular tooth slightly longer and wider than lower tooth.

Mesosoma: Mesosoma matt, granulate with dense but rather weak, barely discernible traces of punctures, and with dense, short hairs. Pronotum with strong, transverse wrinkles on lower half; epomia distinct. Mesoscutum slightly longer than wide, convex in profile; notaulus not developed. Scuto-scutellar groove wide and moderately deep. Scutellum convex in profile, lateral carinae not developed. Mesopleuron granulate with short, oblique wrinkles anterior to speculum and along pleural part of epicnemial carina; speculum finely granulate, matt. Epicnemial carina complete, strong, pleural part bent to anterior margin of mesopleuron reaching it at about its middle height. Sternaulus indistinct. Posterior transverse carina of mesosternum complete, slightly elevated. Metanotum ca. 0.5× as long as scutellum. Metapleuron ventrally very finely rugulose; juxtacoxal carina not developed; submetapleural carina complete, elevated. Pleural carina of propodeum complete; propodeal spiracle subcircular, separated from pleural carina by less than its length, connected to pleural carina by a distinct ridge.

Propodeum convex in profile, granulate, posteriorly finely rugose. Propodeal carination: lateromedian and lateral longitudinal carinae obsolescent, their traces barely discernible; anterior and posterior transverse carinae complete, distinct. Area basalis triangular, slightly longer than its anterior width. Area superomedia granulate, pentagonal, about as long as wide, laterally barely delimited, posteriorly closed. Area petiolaris finely rugose, not confluent with area superomedia. Fore wing with petiolate, reduced areolet, its length distinctly shorter than its stalk, 3rs-m very short, second recurrent vein (2m-cu) at distal corner of areolet; distal abscissa of Rs almost straight; nervulus (cu-a) almost interstitial, vertical; postnervulus (abscissa of Cu1 between 1m-cu and Cu1a + Cu1b) intercepted distinctly above its middle by Cu1a; lower external angle of second discal cell weakly acute. Hind wing with nervellus (cu-a + abscissa of Cu1 between M and cu-a) vertical, not intercepted by discoidella (Cu1); discoidella spectral, proximally not connected to nervellus. Coxae finely granulate. Hind femur ca. 5× as long as high. Inner spur of hind tibia ca. 0.65× as long as first tarsomere of hind tarsus. Tarsal claws small, about as long as arolium, basally pectinate.

Metasoma: Metasoma compressed, very finely granulate to shagreened, and with dense, short hairs. First tergite slender,  $3.3 \times$  as long as its apical width,  $1.3 \times$ as long as second tergite; glymma distinct; dorsomedian carina of first tergite indistinct. Second tergite  $1.5 \times$  as long as its apical width; thyridium small, oval, shallow and weak, its distance from basal margin of tergite ca.  $1.5 \times$  as long as its length. Posterior margins of apical tergites not excised. Ovipositor sheath shorter than apical depth of metasoma; ovipositor straight.

Colour: Flagellum dark brown, scapus and pedicellus ventrally yellow, dorsally narrowly dark brown. Head black, palpi and mandible yellow, mandibular teeth brown. Mesosoma black, tegula pale yellow. Metasoma orange. Wings hyaline, wing veins and pterostigma brown. Fore and middle legs pale orange to orange, except coxae, trochanters and trochantelli yellowish. Hind leg, including coxa, orange, except apical tarsomeres slightly darkened, brownish.

Male: Unknown.

Distribution - Australia (New South Wales).

*Etymology* – The new species is dedicated to György [= George] Hangay (1941–), Hungarian-Australian entomologist, to acknowledge his remarkable activity in enriching the entomological collections of the Hungarian Natural History Museum.

Remarks on generic placement – The genus Hyposoter is suspected to be polyphyletic and intermingled with other genera such as Olesicampe Förster, 1869, making the determination of the generic identity difficult in some cases (GALSWORTHY et al. 2023). Hyposoter hangayi sp. nov., due to its relatively small size and moderately small clypeus, shows some superficial affinity towards species of an atypical morphological group of Olesicampe, which are characterised by shorter gena, weaker mandibles and less widened clypeus than usual in the genus. However, following the current generic definition (TOWNES 1970, GAULD 1984) and practical approach (GALSWORTHY *et al.* 2023), the diagnostic characteristics of the new species (such as wide flange on the lower margin of mandible, impressed clypeal margin, very short, strongly narrowed gena and posteriorly closed area superomedia) clearly put it in combination with *Hyposoter*.

*Remarks on identification* – Regarding its colouration, the new species is not similar to, and cannot be confused with any other Australasian *Hyposoter* species. An identification key to the species currently known from the region is given below.

#### Hyposoter pinyo sp. nov. (Figs 13–15)

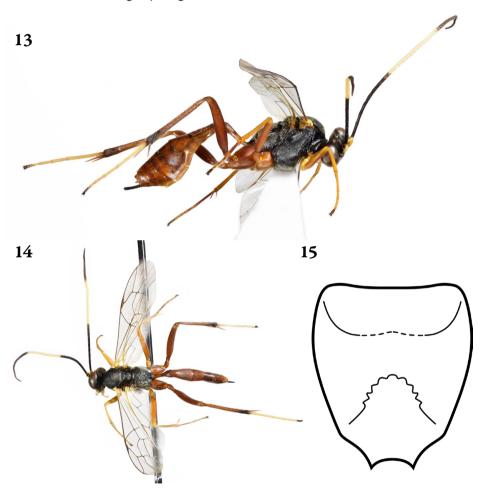
*Type material* – Holotype: female, "Australia, N. S. Wales, Mt. Victoria, 14.XI.1900, [leg. L.] Bíró", specimen card-mounted, id. HNHM-HYM 155269. Paratype: female, same label data, specimen card-mounted, id. HNHM-HYM 155270. Holotype and paratype are deposited in the HNHM.

Diagnosis – The new species can be distinguished from the known species of the genus by the following character states in combination: apical third of flagellum distinctly thinned out towards apex; mesopleuron granulate with short, oblique wrinkles anterior to speculum and along pleural part of epicnemial carina; propodeum convex in profile, rugulose-rugose on granulate background, traces of punctures very weak, anterior half with a weak median keel, lateromedian and lateral longitudinal carinae obsolete, anterior transverse carina medially obsolescent, costulae distinct, posterior transverse carina complete, propodeal areae not defined; areolet petiolate, reduced, 3rs-m very short or more or less merged with abscissa of M between 2rs-m and 2m-cu; nervulus interstitial; second tergite  $1.4 \times$  as long as its apical width; posterior margins of apical tergites not excised; middle third of antenna ivory; tegula pale yellow; metasoma orangebrown; legs, including coxae, orange to orange-brown, except apical tarsomeres and apex of hind tibia blackish, and tarsomeres 1-4 of hind tarsus ivory to pale yellow.

*Description* – Female (Figs 13–15). Body length ca. 10 mm, fore wing length ca. 7 mm.

Head: Antenna with 43 flagellomeres; first flagellomere slender, ca.  $5\times$  as long as its apical width; preapical flagellomeres longer than wide; apical third of flagellum distinctly thinned out towards apex. Head transverse, matt, granulate with rather weak, indistinct traces of punctures, and with dense, short hairs. Ocular-ocellar distance  $0.6-0.7\times$  as long as ocellus diameter, distance between lateral ocelli  $0.7-0.8\times$  as long as ocellus diameter. Inner eye orbits slightly indented, subparallel. Gena very short, very strongly narrowed behind eyes, in dorsal view  $0.3\times$  as long as eye width. Occipital carina complete, reaching

hypostomal carina before base of mandible; hypostomal carina slightly elevated. Frons flat, slightly impressed above toruli, median longitudinal carina absent. Face very finely rugulose, weakly convex in profile. Clypeus small, weakly convex in profile, its apical margin impressed, sharp. Malar space  $0.6 \times$  as long as basal width of mandible. Mandible short, lower margin of mandible with a wide flange from base towards teeth, flange gradually narrowed before teeth; upper mandibular tooth slightly longer and wider than lower tooth.



Figs 13–15. *Hyposoter pinyo* sp. nov., 13 = lateral habitus, holotype, 14 = dorsal habitus, holotype, 15 = propodeum (photos by Zoltán Vas, drawing by Viktória Szőke)

Mesosoma: Mesosoma matt, granulate with dense, weak punctures, and with dense, short hairs. Pronotum with strong, transverse wrinkles on lower half; epomia relatively weak. Mesoscutum slightly longer than wide, convex in profile; notaulus not developed. Scuto-scutellar groove wide and deep. Scutellum convex in profile, lateral carinae not developed. Mesopleuron granulate with short, oblique wrinkles anterior to speculum and along pleural part of epicnemial carina; speculum finely granulate, matt. Epicnemial carina complete, strong, pleural part bent to anterior margin of mesopleuron reaching it at about its middle height. Sternaulus indistinct. Posterior transverse carina of mesosternum complete, slightly elevated. Metanotum  $ca.0.5 \times as$  long as scutellum. Metapleuron ventrally finely rugulose; juxtacoxal carina not developed; submetapleural carina complete, elevated. Pleural carina of propodeum complete; propodeal spiracle subcircular, separated from pleural carina by less than its length, connected to pleural carina by a distinct ridge. Propodeum convex in profile, rugulose-rugose on granulate background, traces of punctures very weak, indistinct; anterior half with a weak median keel. Propodeal carination reduced: lateromedian and lateral longitudinal carinae obsolete; anterior transverse carina medially obsolescent, costulae distinct; posterior transverse carina complete, medially somewhat merged with coarse rugosity but discernible. Propodeal areae not defined. Fore wing with petiolate, reduced areolet, its length distinctly shorter than its stalk, 3rs-m very short or more or less merged with abscissa of M between 2rs-m and 2m-cu, second recurrent vein (2m-cu) at distal corner of areolet; distal abscissa of Rs almost straight; nervulus (cu-a) interstitial, vertical; postnervulus (abscissa of Cu1 between 1m-cu and Cu1a + Cu1b) intercepted distinctly above its middle by Cu1a; lower external angle of second discal cell about right-angled. Hind wing with nervellus (cu-a + abscissa of Cu1 between M and cu-a) vertical, not intercepted by discoidella (Cu1); discoidella spectral, proximally not connected to nervellus. Coxae finely granulate with rather weak, indistinct traces of punctures. Hind femur ca.  $5.5-5.7 \times$  as long as high. Inner spur of hind tibia ca.  $0.6 \times$  as long as first tarsomere of hind tarsus. Tarsal claws small, about as long as arolium, basally pectinate.

Metasoma: Metasoma compressed, very finely granulate to shagreened, and with moderately dense, short hairs. First tergite slender,  $3.5 \times$  as long as its apical width,  $1.4 \times$  as long as second tergite; glymma distinct; dorsomedian carina of first tergite only extreme basally distinct. Second tergite  $1.4 \times$  as long as its apical width; thyridium elongate oval, shallow and weak, its distance from basal margin of tergite about as long as its length. Posterior margins of apical tergites not excised. Ovipositor sheath shorter than apical depth of metasoma; ovipositor straight.

Colour: Flagellum blackish to dark brown with flagellomeres 9-22 (9-24) ivory; scapus and pedicellus ventrally pale yellow, dorsally dark brown. Head black, palpi and mandible yellowish, mandibular teeth brownish. Mesosoma

black, tegula pale yellow. Metasoma orange-brown. Wings hyaline, wing veins and pterostigma brown. Fore and middle legs, including coxae, orange, except apical tarsomeres blackish. Hind leg, including coxa, orange-brown, except apex of tibia and apical tarsomere blackish, and tarsomeres 1–4 ivory to pale yellow.

Male: Unknown.

Distribution – Australia (New South Wales).

*Etymology* – The new species is dedicated to Zoltán Pintér (1985–), my best friend for more than 20 years; the specific epithet is derived from his nickname "Pinyó"; proper noun in apposition, ending not to be changed.

Remarks on generic placement – The generic placement of Hyposoter pinyo sp. nov. is unambiguous: it is a typical species of the genus Hyposoter, perfectly matching its generic diagnosis (TOWNES 1970, GAULD 1984, GALSWORTHY et al. 2023).

*Remarks on identification* – Regarding its conspicuous colouration, the new species is not similar to, and cannot be confused with any other Australasian *Hyposoter* species. An identification key to the species currently known from the region is given below.

# Identification key to the *Hyposoter* species known from the Australasian region

Besides the two newly described species, two other species are known in the region: *Hyposoter bombycivorus* (Cameron, 1911) from Australia and Tasmania, and *Hyposoter didymator* (Thunberg, 1822) from Australia and New Zealand; the latter is an introduced Palaearctic species (YU *et al.* 2016). Since several undescribed species are expected to occur in the region, this simplified key is considered preliminary, and is to be used with caution; the detailed descriptions of the species should be consulted to avoid misidentifications. The key works for females.

1	Middle third of antenna ivory, hind tarsus ivory to pale yellow (except apical tarsomere
	blackish) Hyposoter pinyo sp. nov.
-	Antenna without ivory ring, hind tarsus different
2	All legs conspicuously lemon yellow (except apices of hind tibia and hind tarsus) and
	metasoma black Hyposoter bombycivorus (Cameron, 1911)
-	Colouration of legs and metasoma different (legs never lemon yellow, metasoma either
	orange or if extensively to entirely black then coxae also black)
3	Hind coxa and metasoma entirely orange Hyposoter hangayi sp. nov.
-	Hind coxa black, metasoma black, usually with more or less extensive reddish brown
	patches Hyposoter didymator (Thunberg, 1822)

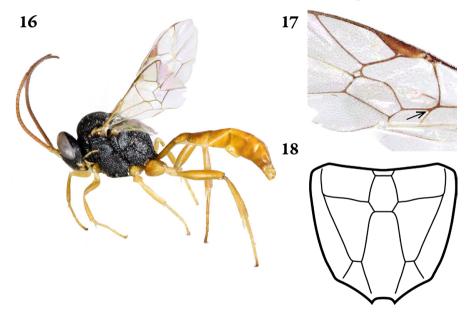
#### Genus: Picacharops Gauld, 1984

Type species: *Picacharops brevithorax* Gauld, 1984, original designation Diagnosis: GAULD (1984)

## Picacharops arantia sp. nov. (Figs 16–18)

*Type material* – Holotype: male, "Australia, Queensland, Townsville, 1900, leg. Bíró L.", specimen card-mounted, id. HNHM-HYM 155271. Holotype is deposited in the HNHM.

*Diagnosis* – The new species can be distinguished from the known species of the genus by the following character states in combination: frons, face, clypeus and mesosoma reticulate-rugose; area superomedia posteriorly closed; flagellum dorsally orange-brown, ventrally orange; metasoma entirely orange; legs, including coxae, pale orange (fore and middle legs) to orange (hind leg), except trochanters and trochantelli ivory, and apical tarsomeres slightly darkened.



Figs 16–18. *Picacharops arantia* sp. nov., 16 = habitus, holotype, 17 = fore wing (anteroproximal corner of first subdiscal cell arrowed), 18 = propodeum (photos by Zoltán Vas, drawing by Viktória Szőke)

Description – Male (Figs 16–18). Body length ca. 6 mm, fore wing length ca. 4 mm.

Head: Antenna with 27 flagellomeres; first flagellomere ca.  $3.8 \times$  as long as its apical width; preapical flagellomeres longer than wide. Head lenticular, transverse, matt; frons, face and clypeus finely reticulate-rugose, gena finely coriaceous; hairs dense and short. Ocular-ocellar distance  $0.7 \times$  as long as ocellus diameter, distance between lateral ocelli  $2 \times$  as long as ocellus diameter. Inner eye orbits weakly indented, about parallel. Gena very short, very strongly narrowed behind eyes, in dorsal view  $0.3 \times$  as long as eye width. Occipital carina complete, slightly elevated, reaching hypostomal carina at base of mandible; hypostomal carina elevated. Frons flat, median longitudinal carina not reaching median ocellus. Face almost flat. Clypeus weakly convex in profile, its apical margin weakly convex, impressed, sharp. Malar space  $0.5 \times$  as long as basal width of mandible. Mandible short and wide, lower margin with a wide flange from base towards teeth, flange abruptly narrowed at teeth; upper mandibular tooth slightly longer than lower tooth.

Mesosoma: Mesosoma conspicuously short and stout, matt, reticulate-rugose on granulate background with inconspicuous traces of punctures, and with dense, short hairs. Pronotum with strong, transverse wrinkles on lower half; epomia distinct. Mesoscutum ca. 0.9× as long as wide, convex in profile; notaulus not developed. Scuto-scutellar groove wide and deep. Scutellum moderately convex in profile, coarsely reticulate-rugose, lateral carinae merged with strong rugosity but more or less discernible. Mesopleuron with moderately strong, oblique wrinkles anterior to speculum; speculum granulate, matt. Epicnemial carina complete, rather strong, slightly elevated along its entire length, pleural part bent to anterior margin of mesopleuron reaching it slightly below its middle height. Sternaulus indistinct. Posterior transverse carina of mesosternum complete, strong, elevated. Metanotum ca. 0.3× as long as scutellum. Metapleuron coarsely reticulate-rugose, juxtacoxal carina merged with strong rugosity but more or less discernible; submetapleural carina complete, elevated. Pleural carina of propodeum complete; propodeal spiracle oval, separated from pleural carina by less than its length, connected to pleural carina by a distinct ridge. Propodeum conspicuously short and abruptly declivous, pyramidal in profile, and rather coarsely reticulate-rugose. All propodeal carinae complete and strongly developed. Area basalis very short, trapezoid. Area superomedia hexagonal, 1.3× as long as wide, costulae situated conspicuously behind its middle, its lateral sides strongly convergent behind costulae, posteriorly closed. Area petiolaris not confluent with area superomedia. Fore wing with petiolate, small areolet, 3rs-m present, second recurrent vein (2m-cu) distal to middle of areolet; distal abscissa of Rs almost straight; nervulus (cu-a) very strongly postfurcal, by ca. 0.55× its length, and strongly inclivous, forming conspicuously strongly acute anteroproximal corner of first subdiscal cell; postnervulus (abscissa of Cu1 between 1m-cu and Cu1a + Cu1b) intercepted slightly below its middle by Cu1a; lower external angle of second discal cell about right-angled. Hind wing with nervellus (cu-a + abscissa of Cu1 between M and cu-a) weakly inclivous, curved, intercepted by discoidella (Cu1) slightly below its middle; discoidella spectral, proximally connected to nervellus. Coxae very finely coriaceous to finely granulate. Hind femur ca. 5× as long as high. Inner spur of hind tibia ca. 0.65× as long as first tarsomere of hind tarsus. Tarsal claws small, about as long as arolium, basally pectinate.

Metasoma: Metasoma compressed, very finely granulate to shagreened, and with dense, short hairs. First tergite rather slender and depressed,  $3.1\times$  as long as its apical width,  $1.75\times$  as long as second tergite; glymma absent; dorsomedian carina of first tergite discernible. First sternite not reaching level of spiracle. Second tergite about as long as its apical width; thyridium oval, shallow, its distance from basal margin of tergite about equal to its length. Posterior margins of apical tergites not excised. Claspers apically evenly rounded.

Colour: Antenna: scapus and pedicellus dorsally orange, ventrally ivory, flagellum dorsally orange-brown, ventrally orange, apical 7–8 flagellomeres slightly darker. Head black, palpi and mandible ivory, mandibular teeth brownish. Mesosoma black, tegula ivory. Metasoma entirely orange. Wings hyaline, wing veins and pterostigma brownish. Legs, including coxae, pale orange (fore and middle legs) to orange (hind leg), except trochanters and trochantelli ivory, and apical tarsomeres slightly darkened.

Female: Unknown.

Distribution - Australia (Queensland).

*Etymology* – The specific epithet *arantia* is the feminine form of the Latin adjective *arantius, -a, -um*, meaning orange-coloured; it refers to the colouration of the new species.

*Remarks on generic placement* – The newly described species perfectly match the generic diagnosis of *Picacharops* given by GAULD (1984). The genus, along with its type species, Picacharops brevithorax Gauld, 1984, was described from Australia (GAULD 1984). Picacharops brevithorax remained the only known species of the genus, until recently HAN et al. (2022) described a species from China (Shaanxi), tentatively placing it in combination with *Picacharops*: namely, Picacharops granulosa Han, Achterberg et Chen, 2022 [proposed as Picacharops granulosus, but GAULD (1984) explicitly indicated that the grammatical gender of the genus is to be considered as feminine, the ending of the specific epithet is therefore to be changed]. However, I am fairly convinced that the latter Chinese species does not belong to *Picacharops*, as it does not show any of the important distinguishing features of *Picacharops*, such as the conspicuously strongly acute anteroproximal corner of first subdiscal cell of fore wing, the characteristically short, abruptly declivous, pyramidal propodeum, the rather slender and depressed first tergite, and conspicuously lenticular head (cf. GAULD (1984: figs 405, 429) and Figs 16-18 of present work with HAN et al. (2022: figs 1-2)). Nevertheless, though it is evidently not a *Picacharops*, the description and photos given by HAN et al. (2022) are inadequate to unambiguously determine its correct generic identity. Hence, I avoid any formal nomenclatural action here, but I suggest a critical re-examination of this species based on the type specimens, as well as a comparison with Australian *Picacharops* species to clarify its generic placement. As I do not accept the above mentioned Chinese species as a member of the genus, *Picacharops* is considered here again as an endemic genus of the Australasian region, following GAULD (1984).

Remarks on identification – The new species can be readily distinguished from *Picacharops brevithorax* by the following traits of the latter species: coxae and flagellum black, area superomedia posteriorly opened, body surface sculpture finer. The female of the new species is unknown; except of the presence of a short ovipositor (sheath about as long as apical depth of metasoma, listed as part of the generic diagnosis by GAULD (1984)), females do not differ from males in *Picacharops brevithorax* (GAULD 1984). Therefore, the Diagnosis given above is expected to apply for the hitherto unknown female as well.

#### Genus: Venturia Schrottky, 1902

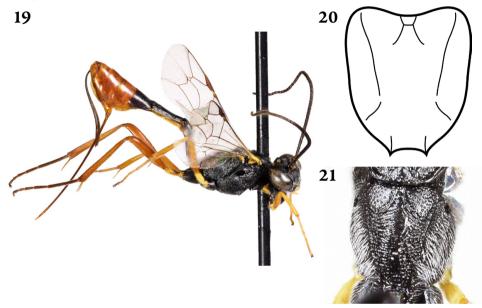
Type species: *Venturia argentina* Schrottky, 1902; designation by VIERECK (1914)

Diagnosis: TOWNES (1970), GUPTA & MAHESHWARY (1977), GAULD (1984)

## Venturia criminalis sp. nov. (Figs 19–21)

*Type material* – Holotype: female, "Australia, N. S. Wales, Mt. Victoria, 14.XI.1900, [leg. L.] Bíró", specimen pinned, id. HNHM-HYM 155272. Holotype is deposited in the HNHM.

*Diagnosis* – The new species can be distinguished from the known species of the genus by the following character states in combination: ocular-ocellar distance as long as ocellus diameter, distance between lateral ocelli 1.7× as long as ocellus diameter; gena strongly narrowed behind eyes, in dorsal view 0.4× as long as eye width; frons finely rugose; face finely rugose-punctate on granulate background; mesopleuron densely punctate on granulate background, speculum smooth; metapleuron densely punctate on granulate background, ventrally somewhat rugose; propodeum convex in profile, its apex not reaching middle length of hind coxa; middle of propodeum finely and densely, mostly transversely striate; propodeal carination reduced, lateromedian longitudinal carinae only discernible anteriorly and at extreme apices, lateral longitudinal carinae complete but weak, anterior transverse carina obsolete, posterior transverse carina obsolete except laterally; propodeal areae not defined except area basalis; fore wing with petiolate areolet, nervulus interstitial to slightly antefurcal; second tergite 1.65× as long as its apical width; ovipositor sheath  $1.25 \times$  as long as hind tibia; antenna blackish, scapus ventrally yellow; tegula pale yellow; tergites 1-3 black, following tergites reddish orange; all coxae almost entirely black, femora and tibiae reddish orange.



**Figs 19–21.** *Venturia criminalis* sp. nov., 19 = habitus, holotype, 20 = propodeum, 21 = surface sculpture of propodeum (photos by Zoltán Vas, drawing by Viktória Szőke)

*Description* – Female (Figs 19–21). Body length ca. 8.5 mm, fore wing length ca. 5 mm.

Head: Antenna with 38 flagellomeres; first flagellomere ca.  $3 \times$  as long as its apical width; preapical flagellomeres slightly longer than wide. Head transverse, matt, with dense, short hairs. Ocular-ocellar distance as long as ocellus diameter, distance between lateral ocelli  $1.7 \times$  as long as ocellus diameter. Inner eye orbits only slightly indented, about parallel. Gena short, strongly narrowed behind eyes, in dorsal view  $0.4 \times$  as long as eye width, densely punctate-granulate. Occipital carina complete, reaching hypostomal carina before base of mandible; hypostomal carina slightly elevated. Frons finely rugose, flat, slightly impressed above toruli, median longitudinal carina indistinct, overlaid by rugosity. Face almost flat, finely rugose-punctate on granulate background. Clypeus flat in profile, its apical margin subtruncate. Malar space  $0.5 \times$  as long as basal width of mandible. Mandible strong, lower margin of mandible with a narrow flange from base towards teeth, flange gradually narrowed before teeth; upper mandibular tooth slightly longer and wider than lower tooth.

Mesosoma: Mesosoma matt, mostly densely punctate on granulate background, with dense, short hairs. Pronotum with strong, transverse wrinkles on lower two-thirds; epomia distinct. Mesoscutum densely punctate on granulate background, slightly longer than wide, convex in profile; notaulus not developed. Scuto-scutellar groove wide and moderately deep. Scutellum rugose-punctate, moderately convex in profile, lateral carinae developed only at extreme base. Mesopleuron densely punctate on granulate background, with relatively weak, oblique wrinkles anterior to speculum; speculum smooth, polished. Epicnemial carina complete, strong, pleural part bent to anterior margin of mesopleuron reaching it below its middle height. Sternaulus indistinct. Posterior transverse carina of mesosternum complete, slightly elevated. Metanotum wrinkled, ca. 0.5× as long as scutellum. Metapleuron densely punctate on granulate background, ventrally somewhat rugose; juxtacoxal carina not developed; submetapleural carina complete, elevated. Pleural carina of propodeum complete; propodeal spiracle small, oval, separated from pleural carina by less than its length, connected to pleural carina by a weak ridge. Propodeum convex in profile, its apex not reaching middle length of hind coxa. Surface sculpture of propodeum mainly rugose, except area externa punctate on granulate background, and area superomedia and area petiolaris finely and densely, mostly transversely striate, forming a somewhat fingerprint-like pattern in the middle of the propodeum. Propodeal carination strongly reduced: lateromedian longitudinal carinae only discernible anteriorly and at extreme apices, medially and posteriorly obsolete; lateral longitudinal carinae complete but relatively weak; anterior transverse carina obsolete; posterior transverse carina obsolete except laterally. Propodeal areae not defined, except the very small, trapezoid area basalis. Fore wing with petiolate, quadrate areolet, 3rs-m present, second recurrent vein (2m-cu) distal to middle of areolet; distal abscissa of Rs almost straight; nervulus (*cu-a*) interstitial to slightly antefurcal, weakly inclivous; postnervulus (abscissa of Cu1 between 1m-cu and Cu1a + Cu1b) intercepted at its middle by Cu1a; lower external angle of second discal cell almost right-angled. Hind wing with nervellus (cu-a + abscissa of Cu1 between M and cu-a) weakly inclivous, broken, intercepted by discoidella (Cu1) below its middle; discoidella spectral, proximally connected to nervellus. Coxae finely granulate-punctate. Hind femur ca. 5.5× as long as high. Inner spur of hind tibia ca. 0.6× as long as first tarsomere of hind tarsus. Tarsal claws small, about as long as arolium, basally weakly pectinate.

Metasoma: Metasoma compressed, very finely granulate to shagreened, and with moderately dense, short hairs. First tergite rather slender,  $3.6 \times$  as long as its apical width,  $1.3 \times$  as long as second tergite; glymma absent; dorsomedian carina of first tergite absent. Second tergite  $1.65 \times$  as long as its apical width; thyridium small, oval, its distance from basal margin of tergite ca.  $3 \times$  as long as its length, connected to basal margin of tergite by a shallow groove. Posterior margins of apical tergites medially distinctly excised. Ovipositor sheath  $1.25 \times$  as long as hind tibia,  $1.55 \times$  as long as hind femur; ovipositor compressed, posterior half weakly, evenly upcurved.

Colour: Antenna black to dark brown, except scapus ventrally yellow. Head black, palpi and mandible yellow, base of mandible narrowly black, mandibular teeth brownish. Mesosoma black, tegula pale yellow. Metasoma: tergites 1–3 black, following tergites reddish orange. Wings hyaline, wing veins and pterostigma brown. Fore and middle legs: coxae black, apically narrowly yellowish; trochanters and trochantelli yellow; femora, tibiae and tarsi orange to reddish orange, apical tarsomeres brown. Hind leg: coxa black, apically very narrowly yellowish; trochanter mainly brownish; trochantellus yellow; femur and tibia reddish orange, tarsus brown.

Male: Unknown.

Distribution - Australia (New South Wales).

*Etymology* – The specific epithet *criminalis* is the feminine form of the Latin adjective *criminalis*, *-is*, *-e*, meaning criminal; it refers to the fact that the fingerprint-like surface sculpture in the middle of the propodeum is a helpful character in the identification of the species (not unlike the fingerprint in the identification of criminals).

Remarks on identification – Regarding the characteristics of the propodeum and the colouration, the new species is not similar to, and cannot be confused with any other Venturia species known from the Australasian region. The combination of character states given in the Diagnosis enables reliable identification. Venturia criminalis sp. nov. is somewhat similar to Venturia liuae Han, Achterberg et Chen, 2021, an Oriental species recently described from Nepal (HAN et al. 2021); however, the new species can be readily distinguished from Venturia liuae by the following traits of the latter species: hind tibia brown, basally and apically blackish, middle and apical tergites dorsally dark brown, lateral longitudinal carina absent, costula present, middle of propodeum rugose.

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