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## Contribution to the Siberian species of *Ichneumon* LINNAEUS (Hymenoptera, Ichneumonidae, Ichneumoninae)

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**A b s t r a c t :** In this study, new distributional records from Siberia are presented for 42 *Ichneumon* species. Of these, six taxa are reported from the Eastern Palaearctic region for the first time: *Ichneumon acuticornis* THOMSON, 1896, *Ichneumon exilicornis* WESMAEL, 1857, *Ichneumon fulvicornis* GRAVENHORST, 1829, *Ichneumon karpathica* HEINRICH, 1951, *Ichneumon minorius* DESVIGNES, 1856 and *Ichneumon veressi* (KISS, 1915).

The females of 20 new species are described and illustrated: *Ichneumon altaicurtulus* nov.sp., *Ichneumon berlovi* nov.sp., *Ichneumon brevipunctatus* nov.sp., *Ichneumon breviscopatus* nov.sp., *Ichneumon genator* nov.sp., *Ichneumon granulatus* nov.sp., *Ichneumon hakassiacus* nov.sp., *Ichneumon inquinatops* nov.sp., *Ichneumon lanceolator* nov.sp., *Ichneumon mandibulatus* nov.sp., *Ichneumon mesonotator* nov.sp., *Ichneumon nigrostigmaticus* nov.sp., *Ichneumon orientopodius* nov.sp., *Ichneumon paravafer* nov.sp., *Ichneumon paravulnerator* nov.sp., *Ichneumon pseudemancipatus* nov.sp., *Ichneumon rufolateralis* nov.sp., *Ichneumon sayanicus* nov.sp., *Ichneumon scopator* nov.sp. and *Ichneumon thyridiator* nov.sp.

One new synonym is established: *Ichneumon jakovlevi* KOKUJEV, 1904 is a new synonym of *Ichneumon cessator* MÜLLER, 1776.

In addition, a determination key for the females is given for all known Siberian species of *Ichneumon* LINNAEUS.

**Key words :** Ichneumonidae, *Ichneumon*, new species, Siberia, Eastern Palaearctic region.

### Introduction

The genus *Ichneumon* LINNAEUS is a very large genus of the Hymenopteran family Ichneumonidae, subfamily Ichneumoninae which are all known as parasitoids of different Lepidoptera. Although the distribution of this genus is worldwide (YU et al. 2016), the highest diversity of this genus seems to be found in the Holarctic regions. Due to a strong sexual dimorphism, a correlation of both sexes is often difficult and sometimes questionable in this genus and could only be solved by further rearing studies and/or molecular analysis in many cases.

The Western Palaearctic species of *Ichneumon* have recently been revised and described by HILPERT (1992) who was able to include several Eastern Palaearctic species in his monographic revision. HILPERT accepted 126 valid *Ichneumon* species from Europe which have been described as females - together with some taxa where only males were described so far.

The Siberian fauna of *Ichneumon* is by far less well studied. Several publications, mainly from the first half of the last century, had addressed species of the genus *Ichneumon* (WOLDSTEDT 1881, KOKUJEV 1904, 1913, 1927, ROMAN 1914, 1927, MEYER 1930, UCHIDA 1926, 1935, HEINRICH 1931). More recently, HEINRICH (1978, 1980) has described several new *Ichneumon* species from the Eastern Palaearctic region improving our knowledge of this difficult genus.

KOKUJEV's Siberian species were revised by RASNITSYN (1984), the material described by Roman and Heinrich was included in the revision of HILPERT (1992). Since I was not able to verify the material mentioned from Siberia by WOLDSTEDT, MEYER and UCHIDA yet, some of their citations of Siberian species which are included in the key might be incorrect in the light of the modern revisions.

In the last years, I could study some Siberian *Ichneumon* material from my own collection (coll. RIEDEL) as well as from the Zoological Staatssammlung München (ZSM) in Munich/Germany, the Natural History Museum (NHM) in London/Great Britain and the Senckenberg Deutsches Entomologisches Institut (SDEI) in Müncheberg/Germany. The material contains many species of the genus *Ichneumon* which are described as new here. However, due to the limited material, one can still expect a large number of Eastern Palaearctic species remaining undescribed yet.

### Material and Methods

For this study, only females were used for determination and description since a correct correlation of sexes was rarely possible with the available material (see Introduction).

For the descriptions below, the nomenclature proposed by HEINRICH (1966-1968) for body structures of the Ichneumoninae was used except that the area posteromedia (of Heinrich) is named area petiolaris here. The distributional records were taken from the revision of HILPERT (1992) and the catalogue of YU et al. (2016).

For the measurements the following relations were used: Length of 1<sup>st</sup> flagellomere was measured in lateral view (length without anellus); width of gena and eye were measured from lateral; length and width of hind femur in lateral view. For the punctuation of body parts the following definitions were used: very scattered – distance of punctures >2x their diameter; scattered – distance 1-2x their diameter; rather dense - distance about as their diameter; dense – diameter of punctures larger than their distance. The following index was applied: OOD - distance of lateral ocellus to eye in relation to its diameter.

For the measurements an Olympus SZX 7 stereo microscope with dividing eyepiece was used. The figures were taken with an Olympus SC 30 CCD-camera using the AnalySIS getIT and Helicon Focus Pro softwares and processed with the Microsoft Office Picture manager.

### List of species

#### *Ichneumon acuticornis* THOMSON, 1896

**M a t e r i a l e x a m i n e d :** East Siberia, Baikal lake, 10 km southwest of Vydrino, Snezhinaya river valley, 1♀ 6-10.viii.2001, leg. Berlov (coll. Riedel).

**Distribution:** Known from the Western Palaearctic region, new record for the Eastern Palaearctic region.

***Ichneumon altaicurtulus* nov.sp. (figs 19, 63)**

**Type material:** Holotype: ♀ "12-15 VII 2001, 2000 m, Nura vill., NE Altai Mt. mg., S Kirgizstan, leg. Osipov" (coll. Riedel).

**Description:** Body length 11 mm. Antenna slightly lanceolate, with 33 flagellomeres; 1<sup>st</sup> flagellomere 1.8x longer than wide, 7<sup>th</sup> flagellomere square, widest flagellomeres c.0.6x as long as wide; preapical flagellomere 0.75x as long as wide. Temple slightly and roundly narrowed behind eye. OOD 1.5. Gena 1.0x as wide as eye, with scattered punctures in ventral half. Malar space c.1.0x as long as width of mandibular base and 0.8x as long as 1<sup>st</sup> flagellomere. Genal carina complete, not interrupted ventrally. Hypostomal carina slightly elevated.

Mesosoma covered with brownish hairs. Mesoscutum densely punctate, lateral field with rather dense punctures centrally. Mesopleuron and metapleuron coarsely striate-punctate; coxal carina present. Scutellum flat, about as long as wide, with fine very scattered punctures. Area superomedia rectangular, about as long as wide; costula absent. Area petiolaris without lateral carina. Hind coxa densely punctate, without scopa. Hind femur 3.7x longer than wide, with scattered punctures basally and in ventral 1/3. Hind tibia without denticular spurs apico-externally. Tarsomeres slender, 3<sup>rd</sup> mid tarsomere 1.9x longer than wide.

Metasoma strongly oxyptygous, hypopygium short. Postpetiolus strongly widened, lateral field 0.7x as wide as the median one, median field with rather coarse regular aciculation. 2<sup>nd</sup> tergite 0.8x as long as wide. Gastrocoelus impressed, with several ridges; thyridium slightly oblique, c.0.8x as wide as the interval. 2<sup>nd</sup> and 3<sup>rd</sup> tergites densely punctate and finely rugose medially. Ovipositor sheath distinctly extending behind metasomal apex.

**Color:** Black. Scapus, pedicel and flagellomeres 1-12 yellowish-red. Mandible except teeth, clypeus largely and facial and frontal orbits narrowly reddish. Collare, hind edge of pronotum and tegula red. Scutellum yellow. 2<sup>nd</sup> and 3<sup>rd</sup> tergites yellow, gastrocoelus reddish, 3<sup>rd</sup> tergite with wide basal (1/3 of its length) and narrow apical blackish bands. 5<sup>th</sup> to 7<sup>th</sup> tergite with very wide and large yellow stripes covering the whole dorsal area. Coxae and trochanters black; legs otherwise reddish-yellow; hind femur black, its basal 1/3 and hind trochantellus red; hind tibia and tarsus yellow; apical 0.2 of hind tibia and tips of hind tarsomeres reddish. Wings with yellowish tint, pterostigma yellow.

Males unknown.

**Taxonomical remark:** This species belongs to group G 1 sensu HILPERT (1992) and runs to *I. caedator* GRAVENHORST in his key. It differs by the slenderer hind femur and yellow hind tibia and hind tarsus with reddish tips. The new taxon also resembles *Ichneumon curtulus* KRIECHBAUMER and can be differentiated by its slenderer legs and different color pattern of 3<sup>rd</sup> tergite.

However, this species might represent a subspecies of *Ichneumon curtulus* which have been previously reported from the Western Palaearctic region, Kazakhstan and Iran (YU et al. 2016).

***Ichneumon berlovi* nov.sp. (figs 1, 21, 45, 64)**

**Type material:** Holotype: ♀ "Siberia, Irkutsk region, 5 km E Pivovarkha, 16 vii 2007, leg. Berlov" (coll. Riedel).

**Description:** Body length 9.5 mm. Antenna filiform, with 32 flagellomeres; 1<sup>st</sup> flagellomere 2.4x longer than wide, 8<sup>th</sup> or 9<sup>th</sup> flagellomeres square, widest flagellomeres about square; preapical flagellomere 0.94x as long as wide. Temple distinctly and roundly narrowed behind eye. OOD 1.4. Frons with superficial and dense punctures, granulate, ± opaque. Face and clypeus densely punctate and granulate. Gena 1.1x as wide as eye, with fine striation dorsally and rather dense punctures ventrally. Malar space 1.6x as long as width of mandibular base and 0.95x as long as 1<sup>st</sup> flagellomere. Genal carina complete, not interrupted ventrally. Hypostomal carina narrow.

Mesosoma covered with brownish hairs. Mesoscutum densely punctate and granulate, opaque. Mesopleuron completely rugose-punctate (including speculum); metapleuron coarsely rugose-punctate; coxal carina present. Scutellum moderately elevated, about as long as wide, with rather dense punctures. Propodeum rather short. Area superomedia slightly elevated above surrounding areas, hexagonal, 1.35x wider than long; costula weakly present. Area petiolaris bordered by lateral rugae in apical 2/3. Hind coxa densely punctate and granulate, without scopa. Hind femur 3.8x longer than wide, with very superficial punctures, granulate. Hind tibia with c.6 external denticular spurs. Tarsi not enlarged, 3<sup>rd</sup> mid tarsomere 1.6x longer than wide.

Metasoma oxypygous; hypopygium short. Postpetiolus strongly widened, median field c.2x wider than the lateral one, with regular aciculation; lateral field rugose-striate. 2<sup>nd</sup> tergite 0.68x as long as wide. Gastrocoelus narrow, with fine ridges; thyridium transverse and very wide, 1.8x wider than the interval. 2<sup>nd</sup> and 3<sup>rd</sup> tergites very densely punctate and granulate, ± opaque; 2<sup>nd</sup> tergite with fine longitudinal rugosity medially. Ovipositor sheath slightly extending behind metasomal apex.

**Color:** Black. Rings on flagellomeres 6-10 and roundish spots on 6<sup>th</sup> and 7<sup>th</sup> tergites ivory. Tegula and small central spot on scutellum reddish. Postpetiolus and 2<sup>nd</sup> tergite reddish, 3<sup>rd</sup> tergite reddish-brown. Coxae and trochanters black; legs otherwise yellowish-red; fore femur in basal 2/5 and mid and hind femora mainly dark brown; distal tarsomeres brownish apically. Wings hyaline, pterostigma yellowish.

Males unknown.

**Taxonomical remark:** This species belongs to group I of HILPERT (1992) and runs to *I. memorator* WESMAEL in his key. It is closely related to *I. thyridiator* nov.sp. and differs by the square central flagellomeres, wider area superomedia and red hind tibia and scutellum.

***Ichneumon brevipunctatus* nov.sp. (figs 2, 20, 22, 46, 39)**

**Type material:** Holotype: ♀ "1-5 vii 2003, 2000 m, SW Tannu-Ola Mt reg., Sogly vill., SW Tuwa reg., S Siberia, leg. Vastchenko" (coll. Riedel).

**Description:** Body length 9 mm. Antenna almost filiform, with 34 flagellomeres; 1<sup>st</sup> flagellomere 1.3x longer than wide, c. 3<sup>rd</sup> flagellomere square, widest flagellomeres c.0.65x as long as wide; preapical flagellomere 0.7x as long as wide. Temple moderately and roundly narrowed behind eye. OOD 1.4. Frons rather densely punctate, smooth between punctures. Face and clypeus with scattered punctures, smooth between

punctures. Gena wide, 1.3x as wide as eye, with very scattered punctures in ventral half. Malar space 1.0x as long as width of mandibular base and 1.7x as long as 1<sup>st</sup> flagellomere. Genal carina complete, not interrupted ventrally. Hypostomal carina narrow.

Mesosoma covered with brownish hairs. Mesoscutum rather densely punctate, lateral field centrally with an almost smooth area with only very scattered punctures. Mesopleuron coarsely punctate, in frontal half with scattered punctures; metapleuron densely rugose-punctate, partly striate in frontal third; coxal carina present. Scutellum slightly elevated, about as long as wide, with fine scattered punctures. Area superomedia rectangular, 1.2x longer than wide; costula absent. Area petiolaris without lateral border. Mid and hind coxae with very scattered punctures, almost completely smooth apico-ventrally, hind coxa without scopa. Hind femur 3.3x longer than wide, punctate and finely granulate, with very scattered punctures basally and in ventral 1/2. Hind tibia with c.2 denticular spurs apico-externally. Fore and mid tarsomeres moderately enlarged, 3<sup>rd</sup> mid tarsomere c.1.3x longer than wide.

Metasoma strongly oxygygous, hypopygium short. Postpetiolus strongly widened, median field with very fine and superficial aciculation. 2<sup>nd</sup> tergite very wide, 0.62x as long as wide. Gastrocoelus impressed, with several ridges; thyridium small, slightly oblique, c.0.5x as wide as the interval. 2<sup>nd</sup> and 3<sup>rd</sup> tergites with fine dense punctures, 2<sup>nd</sup> tergite with longitudinal rugosity medially. Ovipositor sheath slightly extending behind metasomal apex.

Color: Black. Scapus and flagellomeres 1-12 red, pedicel blackish. Head completely black. Mesosoma black; collare and tegula reddish. 2<sup>nd</sup> and 3<sup>rd</sup> tergites reddish-brown, with diffuse blackish suffusion; 6th tergite with small yellow apical spot, 7<sup>th</sup> tergite with narrow yellow stripe medially. Coxae and trochanters black; fore coxa frontally and fore trochanter apically reddish. Legs otherwise red; hind femur black, in basal 1/10 and apical 1/4 reddish. Wings with slightly yellowish tint, pterostigma yellow.

Males unknown.

**Taxonomical remark:** The species belongs to group E 3 sensu HILPERT (1992) and runs to *Ichneumon mordax* KRIECHBAUMER in his key. It differs by widened fore and mid tarsomeres, black head without reddish color pattern, black scutellum and a different color pattern of metasoma.

### ***Ichneumon breviscopatus* nov.sp. (figs 23, 40, 65)**

**Type material:** Holotype: ♀ "Russia: Primorskiy kray, Samarka 70 km N Chuguyevka, 44.43 N 134.12 E, 30.v.1993, 200 m, leg. A. Taeger" (SDEI)

**Description:** Body length 15 mm. Antenna slightly lanceolate, with 41 flagellomeres; 1<sup>st</sup> flagellomere 1.9x longer than wide, 8<sup>th</sup> flagellomere square, widest flagellomeres 0.62x as long as wide; preapical flagellomere 0.8x as long as wide. Temple slightly and roundly narrowed behind eye. OOD 1.4. Occiput and frons densely and coarsely rugose-punctate. Face coarsely rugose-punctate. Clypeus with scattered punctures, smooth and shining between punctures. Gena widened ventrally, 1.2x as wide as eye, with rather dense punctures in ventral 1/2. Malar space 1.0x as long as width of mandibular base and 1.0x as long as 1<sup>st</sup> flagellomere. Genal carina complete ventrally; hypostomal carina narrow.

Mesosoma covered with brownish hairs. Mesoscutum densely rugose-punctate and ±

opaque. Mesopleuron with dense punctures, striate caudally. Metapleuron coarsely rugose-punctate; coxal carina present. Scutellum almost flat, wider than long, with rather dense punctures. Area superomedia hexagonal, about as long as wide; costula absent. Hind coxa coarsely and finely punctate, with small and slightly elevated scopa. Hind femur 3.7x longer than wide, densely punctate. Hind tibia with 1-2 denticular spurs apico-externally. Tarsomeres slender, 3<sup>rd</sup> mid tarsomere c.1.5x longer than wide.

Metasoma oxygygous, hypopygium slightly elongate. Postpetiolus strongly widened, lateral field coarsely striate-punctate, c.0.5x as wide as the median one, median field with fine regular aciculation. 2<sup>nd</sup> tergite 0.82x as long as wide. Gastrocoelus moderately impressed, with ridges; thyridium slightly oblique, c.1.0x wider than the interval. 2<sup>nd</sup> and 3<sup>rd</sup> tergites very finely rugose-punctate, not distinctly striate medially. Ovipositor sheath slightly extending behind metasomal apex.

Color: Black. Ring on flagellomeres 8-14 and round spots on 6<sup>th</sup> and 7<sup>th</sup> tergites ivory. Narrow frontal orbit and scutellum yellow. 2<sup>nd</sup> and 3<sup>rd</sup> tergites red; 3<sup>rd</sup> tergite diffusely infusate basally and apically. Legs black; fore and mid femora apically, fore and mid tibiae frontally and fore tarsus frontally reddish; hind tibia diffusely dark reddish medio-externally. Wings with slight yellowish tint, pterostigma yellow-red.

Males unknown.

**Taxonomical remark:** The new species runs to group E 1 sensu Hilpert. It is closely related to *Ichneumon tuberculipes* WESMAEL which might also have the 2<sup>nd</sup> and 3<sup>rd</sup> tergites ± reddish, but differs by the narrow hypostomal carina, complete genal carina, densely punctate hind femur and shorter 1<sup>st</sup> flagellomere.

### ***Ichneumon caedator* GRAVENHORST, 1829**

**Material examined:** Far East Russia, *Primorskii* Krai, Lazovski Zapovednik, c. 170 km east Vladivostok, Korpud, N 43°17.16' E 134°07.09', 506 m, 1♂ 14.vii.-4.viii.2001, Malaise trap 483, leg. M. Quest (NHM).

**Distribution:** Palearctic, known from Mongolia, new record for Far East Russia.

### ***Ichneumon cessator* MÜLLER, 1776**

**syn. nov.** *Ichneumon jakovlevi* KOKUJEV, 1904: 81

**Material examined:** East Siberia, Irkutsk region, Shelehov environment, 1♀ 2.viii.2005, leg. A. Shavrin (coll. Riedel).

**Description:** Body length 14.5 mm. Antenna with 43 flagellomeres, bristle-shaped; 1<sup>st</sup> flagellomere 3.3x longer than wide, c.14<sup>th</sup> flagellomere square, widest flagellomeres 0.87x as long as wide, preapical flagellomere 1.15x longer than wide. Malar space 0.7x as long as 1<sup>st</sup> flagellomere. Area superomedia 0.75x as long as wide, widest apically. Hind femur 4.4x longer than wide, with scattered punctures in ventral 1/5.

Color: Black. Antenna with diffuse reddish-yellow ring on flagellomeres 8-12. Scutellum and stripes on 6<sup>th</sup> and 7<sup>th</sup> tergites cream-yellow. Coxae, trochanters and fore and mid trochantelli black; legs otherwise red; hind tibia infusate in apical 1/3; hind tarsus blackish. Pterostigma reddish.

**Taxonomical remark:** The available specimen is structurally similar to European material of *Ichneumon cessator* MÜLLER. It differs only by the completely

yellow scutellum. I have not seen the type of *Ichneumon jakovlevi* KOKUJEV, but from the description given by RASNITSYN (1984: 794) who reported the slender basal flagellomere, this var. of *I. cessator* seems to be conspecific with *Ichneumon jakovlevi* KOKUJEV which had also been found in the Irkutsk area.

**Distribution:** Palaearctic region, known from Siberia (KOKUJEV 1904, MEYER 1933).

***Ichneumon confundor* HEINRICH, 1978**

**Material examined:** South Siberia, Southwestern Tannu-Ola mountain range, Sogly village, southwest Tuwa region, 2000 m, 1♀ 1-5.vii.2003, leg. Vastchenko (coll. Riedel).

**Taxonomical remark:** This specimen slightly differs from the description of the holotype (HEINRICH, 1978: 27-28) by the less extensive red coloration: clypeus, malar space and gena black; inner orbits narrowly red. Mesoscutum completely black, subtegular ridge black; 3<sup>rd</sup> tergite red, with black transverse bands in basal 1/5 and apical 1/5. Otherwise a typical specimen.

**Distribution:** Southern Siberia and Far East Russia.

***Ichneumon exilicornis* WESMAEL, 1857**

**Material examined:** Southwest Siberia, Orenburg region, Ilek surrounds, 1♀ 1-5.viii.2005, leg. Osipov (coll. Riedel).

**Distribution:** Known from the Western Palaearctic region, new record for Siberia.

***Ichneumon extensorius* LINNAEUS, 1758**

**Material examined:** East Siberia, Lake Baikal near Anghasolka (overwintering), 35♀♀ 6.iv.2007, leg. Berlov (coll. Riedel).

**Distribution:** Palaearctic region, known from Siberia (KOKUJEV 1904).

***Ichneumon formosus* GRAVENHORST, 1829**

**Material examined:** South Siberia, East Sayan mountains, near Mondy village, 1400 m, 1♀ 4.vi.1983, leg. Berlov (coll. Riedel).

**Distribution:** Palaearctic region, known from Siberia (WOLDSTEDT 1881).

***Ichneumon fulvicornis* GRAVENHORST, 1829**

**Material examined:** South Siberia, Southwest Tannu-Ola mountain range, Southwest Tuwa region, Sogly surrounds, 2000 m, 1♀ 1-5.vii.2003, leg. Vastchenko (coll. Riedel).

**Taxonomical remark:** Antenna with 32 flagellomeres, structure and color otherwise as described for the European material (HILPERT 1992).

**Distribution:** Known from the Western Palaearctic region, new for Siberia.

***Ichneumon genator* nov.sp. (figs 3, 24, 41, 47, 66)**

**Material examined:** Holotype: ♀ "1-5 vii 2003, 2000 m, SW Tannu-Ola Mt rng, Sogly vill, SW Tuwa reg., S Siberia, leg. Vastchenko" (coll. Riedel). Paratype: ♀ "E Siberia, lake Baikal, Baikalo-Lenskiy reg., Cordon Onkholoi, 19.vii.2005, leg. Berlov" (coll. Riedel).

**D e s c r i p t i o n :** Body length 16 mm. Antenna stout and slightly lanceolate, with 36 flagellomeres; 1<sup>st</sup> flagellomere 1.6x longer than wide, 4<sup>th</sup> flagellomere square, widest flagellomeres 0.58x as long as wide; preapical flagellomere 0.65x as long as wide. Temple slightly and roundly narrowed behind eye. OOD 1.4. Occiput and frons densely and coarsely rugose-punctate, finely granulate. Central face with coarse transverse striae, face otherwise punctate, facial orbit with scattered punctures. Clypeus large and wide, with rather dense punctures, smooth between punctures. Mandible thick, with parallel sides or slightly widened apically, teeth blunt, lower tooth much smaller than the upper one. Gena strongly widened ventrally, 1.4x as wide as eye, with scattered punctures in ventral half. Malar space 1.4x as long as width of mandibular base and 1.5x as long as 1<sup>st</sup> flagellomere. Genal carina widely interrupted ventrally; hypostomal carina narrow.

Mesosoma covered with brownish hairs. Mesoscutum densely rugose-punctate but shining. Mesopleuron and metapleuron coarsely striate-punctate; coxal carina present. Scutellum slightly elevated, 1.4x wider than long, with rather dense punctures. Area supermedia square; costula absent. Area petiolaris without lateral border. Hind coxa coarsely punctate, without scopa or ventro-internal edge (but with scattered punctures apico-ventrally in paratype). Hind femur 2.9-3.0x longer than wide, densely punctate. Hind tibia with c.12 denticular spurs externally, mainly in apical 1/2. Tarsomeres moderately widened, 3<sup>rd</sup> mid tarsomere c.1.35x longer than wide.

Metasoma strongly oxypygous, hypopygium short. Postpetiolus strongly widened, lateral field punctate, c.0.6x as wide as the median one, both fields with rather strong regular aciculation. 2<sup>nd</sup> tergite 0.68x as long as wide. Gastrocoelus impressed, with ridges; thyridium slightly oblique, c.0.7x wider than the interval. 2<sup>nd</sup> and 3<sup>rd</sup> tergites very finely rugose-punctate, not distinctly striate medially. Ovipositor sheath slightly extending behind metasomal apex.

**Color:** Black. Ring on flagellomeres 8/9-13/14, scutellum and small round spots on 6<sup>th</sup> and 7<sup>th</sup> tergites ivory. Mandible except teeth, side of clypeus and frontal orbit red; red spot on frontal orbit widened dorsally and reaching lateral ocellus. Collare and hind edge of pronotum, tegula, subtegular ridge and spot on prescutellar carina red. 2<sup>nd</sup> and 3<sup>rd</sup> tergites completely red or 3<sup>rd</sup> tergite with narrow black basal band (in paratype). Coxae, trochanters and femora black; tibiae and tarsi reddish; hind tibia darkened in apical 1/4-1/5, hind tarsomeres completely red or with darkened tips. Wings with slightly yellowish tint, pterostigma brown.

Males unknown.

**T a x o n o m i c a l r e m a r k :** The new species runs to group G 4 sensu HILPERT. It is closely related to *Ichneumon mandibulatus* nov.sp., but can be differentiated by the widely interrupted genal carina, longer malar space, wider scutellum, stouter hind femur and larger number of denticular spurs on hind tibia.

### ***Ichneumon gracilentus* WESMAEL, 1845**

**M a t e r i a l e x a m i n e d :** East Siberia, Lake Baikal near Anghasolka (overwintering), 10♀♀ 6.iv.2007, leg. Berlov (coll. Riedel).

**D i s t r i b u t i o n :** Palearctic region, known from Siberia (MEYER 1933).



***Ichneumon granulatus* nov.sp. (figs 4, 25, 48, 67)**

**M a t e r i a l e x a m i n e d :** Holotype: ♀ "Russia, S Siberia, Hakassia reg., W. Sagan mts, 2400 m, Sallyghem-Taiga reg., 5 vii 2004, leg. Osipov" (coll. Riedel).

**D e s c r i p t i o n :** Body length 9.8 mm. Antenna slightly lanceolate, with 37 flagellomeres, 1<sup>st</sup> flagellomere 1.6x longer than wide, 7<sup>th</sup> flagellomere square, widest flagellomeres 0.63x as long as wide, preapical flagellomere 0.78x as long as wide. Temple moderately and roundly narrowed behind eye. Frons and face densely punctate and granulate. Clypeus with rather dense punctures. Gena 1.25x wider than long, with rather dense punctures ventrally. Malar space 1.3x longer than width of mandibular base and 1.3x longer than 1<sup>st</sup> flagellomere. Genal carina complete, hypostomal carina slightly elevated.

Mesosoma covered with brownish hairs. Mesoscutum densely punctate, median field finely granulate. Mesopleuron and metapleuron densely punctate and distinctly granulate; coxal carina present. Scutellum almost flat, slightly wider than long, with scattered punctures. Area superomedia hexagonal, 1.2x wider than long; costula weakly developed, at least medially. Area petiolaris without lateral carina. Hind coxa coarsely punctate and granulate, with rather long brownish hairs, but without scopa. Hind femur 3.8x longer than wide, with scattered punctures in ventral third. Hind tibia with c.4-5 denticular spurs apico-externally. Tarsomeres slender, 3<sup>rd</sup> mid tarsomere c.1.5x longer than wide.

Metasoma strongly oxygyous, hypopygium short. Postpetiolus strongly widened, median field c.1.9x wider than the lateral one, with fine aciculation and some punctures, lateral field densely punctate. 2<sup>nd</sup> tergite 0.69x as long as wide. Gastrocoelus impressed, with ridges; thyridium slightly oblique, c.0.6x as wide as the interval. 2<sup>nd</sup> and 3<sup>rd</sup> tergites densely punctate and granulate, ± opaque, without longitudinal rugae medially. Ovipositor sheath distinctly extending behind metasomal apex.

**C o l o r :** Black. Scapus except narrow brownish base, pedicel and flagellomeres 1-14 red; flagellomeres 10-12 with a yellow stripe dorsally, following flagellomeres blackish. Head and mesosoma black; collare, tegula and scutellum reddish. 2<sup>nd</sup> and 3<sup>rd</sup> tergites red, 2<sup>nd</sup> tergite diffusely infusate centrally, 3<sup>rd</sup> tergite with black band in apical third. 6<sup>th</sup> and 7<sup>th</sup> tergites with roundish ivory spots apically. All coxae and trochanters and fore and mid trochantelli black. Hind trochantellus and legs red. Hind femur with blackish stripe centrally-dorsally (half as long as the femur). Wings with slightly brownish tint. Pterostigma reddish.

Males unknown.

**T a x o n o m i c a l r e m a r k :** This species belongs to the group G 4 of HILPERT (1992) and runs to *I. pilulicornis* HEINRICH in his key. It differs by the complete genal carina, slightly elevated hypostomal carina and wide malar space.

***Ichneumon haglundii* HOLMGREN, 1864**

**M a t e r i a l e x a m i n e d :** East Siberia, 10 km East of Irkutsk, 1♀ 25.ix.2004, leg. Berlov (coll. Riedel).

**D i s t r i b u t i o n :** Palaearctic region, known from Siberia (ROMAN 1904).

***Ichneumon hakassiacus* nov.sp. (figs 5, 26, 49, 68)**

**Material examined:** Holotype: ♀ "Russia, S Siberia, Hakkasia, W Sayan Mts, Aradan Mt rng, Buyba, 25.viii.1990, leg. V. Gromenko" (coll. Riedel). Paratype: ♀ with same labels (coll. Riedel).

**Description:** Body length 9.5 mm. Antenna moderately lanceolate, with 34 flagellomeres; 1<sup>st</sup> flagellomere 1.6x longer than wide, c. 7<sup>th</sup> flagellomere square, widest flagellomeres c.0.61x as long as wide; preapical flagellomere 0.8x as long as wide. Temple moderately and roundly narrowed apically. OOD 1.3. Frons densely rugose-punctate and granulate. Face densely punctate and granulate; clypeus with dense punctures basally and with scattered punctures in apical 1/2, smooth between punctures. Gena 1.35x as wide as eye, with dense punctures and fine striation dorsally and scattered punctures ventrally. Malar space 1.3x as long as width of mandibular base and 1.2x as long as 1<sup>st</sup> flagellomere. Genal carina complete, not interrupted ventrally. Hypostomal carina narrow.

Mesosoma covered with brownish hairs. Mesoscutum densely punctate and granulate, opaque; lateral field opaque, but with shining central area. Mesopleuron and metapleuron densely rugose-punctate, partly finely striation; coxal carina present. Scutellum slightly elevated, slightly wider than long, with rather dense punctures. Area supermedia rectangular, with slightly rounded sides, c.1.6x wider than long; costula present as short stub. Area petiolaris without lateral carina. Hind coxa densely punctate and granulate, without scopa. Hind femur 3.8-4.0x longer than wide, with superficial punctures, smoothed in ventral half. Hind tibia with c.6 denticular spurs apico-externally. Tarsomeres slender, 3<sup>rd</sup> mid tarsomere 1.7x longer than wide.

Metasoma strongly oxyppygous, hypopygium short. Postpetiolus strongly widened, median field not distinctly separated, c.1.9x wider than the lateral one, both with fine aciculation. 2<sup>nd</sup> tergite 0.78x as long as wide. Gastrocoelus strongly impressed, with fine ridges; thyridium large, slightly oblique, c.1.5x wider than the interval. 2<sup>nd</sup> and 3<sup>rd</sup> tergites very densely punctate and granulate, ± opaque, without longitudinal rugosity medially. Ovipositor sheath slightly extending behind metasomal apex.

**Color:** Black. Flagellomeres 1-8 red, flagellomeres 9-12 reddish-yellow, following flagellomeres black. Lateral field of mesoscutum, hind edge of pronotum, tegula and scutellum red (in paratype also collare and postscutellum). Median field of postpetiolus and 2<sup>nd</sup> and 3<sup>rd</sup> tergites red; 6<sup>th</sup> and 7<sup>th</sup> tergites with roundish ivory spots. Coxae and trochanters black; legs otherwise red; distal tarsomeres ± brownish apically. Wings almost hyaline, perostigma yellow.

Males unknown.

**Taxonomical remark:** This species belongs to group I sensu HILPERT (1992) and runs to *I. stigmaticus* ZETTERSTEDT in his key. It differs by its red hind femur, black frontal orbit, shorter 1<sup>st</sup> flagellomere and wider area supermedia.

***Ichneumon inops* HOLMGREN, 1880**

**Material examined:** South Siberia, southwest Tannu-Ola mountain range, Southwest Tuwa region, Sogly surrounds, 2000 m, 1♀ 1-5.vii.2003, leg. Vastchenko (coll. Riedel).

**Distribution:** Palearctic region, known from Siberia (KOKUJEV 1904, MEYER 1933).

***Ichneumon inquinatops* nov.sp. (figs 6, 27, 50, 69)**

**M a t e r i a l e x a m i n e d :** Holotype: ♀ "S Siberia, Hakassia reg., Sallyghen-Taiga mt. reg., 2400 m, 5 vii 2005, leg. Osipov" (coll. Riedel).

**D e s c r i p t i o n :** Body length 12 mm. Antenna filiform, with 40 flagellomeres; 1<sup>st</sup> flagellomere 1.8x longer than wide, c.6th flagellomere square, widest flagellomeres c.0.8x as long as wide; preapical flagellomere 0.78x as long as wide. Temple moderately narrowed apically. OOD 1.7. Frons densely rugose-punctate. Face coarsely punctate and finely granulate, centrally with coarse transverse striae; clypeus with scattered punctures, smooth between punctures. Gena 1.3x as wide as eye, with scattered punctures in ventral half and fine striation dorsally. Malar space 1.35x as long as width of mandibular base and 1.25x as long as 1<sup>st</sup> flagellomere. Genal carina complete, not interrupted ventrally. Hypostomal carina narrow.

Mesosoma covered with brownish hairs. Mesoscutum densely punctate, median field finely granulate, lateral field smooth between punctures. Mesopleuron and metapleuron densely rugose-punctate; coxal carina present. Scutellum slightly elevated, slightly wider than long, with scattered punctures. Area superomedia slightly trapezoid, widest basally, 1.1x wider than long; costula absent. Area petiolaris without lateral carina. Hind coxa densely punctate and granulate, without scopa. Hind femur 3.8x longer than wide, with scattered punctures in ventral 1/5. Hind tibia with 4-5 denticular spurs apico-externally. Tarsomeres slender, 3<sup>rd</sup> mid tarsomere 1.55x longer than wide.

Metasoma strongly oxygyous, hypopygium short. Postpetiolus strongly widened, median field 1.6x wider than the lateral one, with fine regular aciculation; lateral field with coarser striae. 2<sup>nd</sup> tergite 0.65x as long as wide. Gastrocoelus deeply impressed, with some strong ridges; thyridium transverse, c.0.6x as wide as the interval. 2<sup>nd</sup> and 3<sup>rd</sup> tergites densely and finely punctate, 2<sup>nd</sup> tergite with fine longitudinal rugosity medially. Ovipositor sheath distinctly extending behind metasomal apex.

**C o l o r :** Black. Scapus ventrally and flagellomeres 1-7 reddish-brown, flagellomeres 9-13 darker red, following flagellomeres black. Palps ochreous. Rings on flagellomeres 8-13, complete scutellum and narrow stripes on 6<sup>th</sup> and 7<sup>th</sup> tergites ivory. Mandible except teeth, collare, and hind edge of pronotum and tegula red. Metasoma black, 2<sup>nd</sup> to 3<sup>rd</sup> tergites with some diffuse dark reddish tint. Coxae and trochanters black; legs otherwise red; fore and mid femora basally and hind femur black except red basal 1/10. Wings with slightly brownish tint, pterostigma reddish.

Males unknown.

**T a x o n o m i c a l r e m a r k :** This species belongs to the group F of HILPERT (1992) and runs to *I. inquinatus* WESMAEL in his key. It differs by a higher number of flagellomeres, slenderer 1<sup>st</sup> flagellomere and completely red hind tibia and tarsus.

***Ichneumon karpathica* HEINRICH, 1951**

**M a t e r i a l e x a m i n e d :** South Siberia, Hakassia region, West Sayan mountains 2400 m, Sallyghem-Taiga region, 1♀ 5.viii.2004, leg. Osipov (coll. Riedel).

**T a x o n o m i c a l r e m a r k :** The available ♀ is smaller (body length 10 mm, antenna with 36 flagellomeres) than the European specimens, but is otherwise typical.

**D i s t r i b u t i o n :** Known from Europe, new record for Siberia.

***Ichneumon lanceolator* nov.sp. (figs 7, 28, 51, 70)**

**Material examined:** Holotype: ♀ "1-5 vii 2003, 2000 m, SW Tannu-Ola Mt rmg, Sogly vill, SW Tuwa reg., S Siberia, leg. Vastchenko" (coll. Riedel).

**Description:** Body length 10.2 mm. Antenna very stout and strongly lanceolate, with 35 flagellomeres; 1<sup>st</sup> flagellomere 1.1x longer than wide, 2<sup>nd</sup> flagellomere square; widest flagellomeres c.0.5x as long as wide; preapical flagellomere 0.9x as long as wide. Temple slightly and roundly narrowed behind eye. OOD 1.6. Frons coarsely rugose-punctate. Face centrally with dense punctures, smooth between punctures; facial orbit and clypeus with scattered punctures. Gena 1.1x as wide as eye, with rather dense punctures in ventral 1/2. Malar space 1.15x as long as width of mandibular base and 1.25x as long as 1<sup>st</sup> flagellomere. Genal carina complete, not interrupted ventrally. Hypostomal carina narrow.

Mesosoma covered with brownish hairs. Mesoscutum densely punctate, lateral field centrally with scattered punctures. Mesopleuron densely punctate, smooth between punctures. Metapleuron coarsely rugose-punctate; coxal carina present. Scutellum slightly elevated, wider than long, with scattered punctures. Area superomedia rectangular, 1.5x wider than long; costula absent. Area petiolaris without lateral border. Mid coxa with scattered punctures ventrally, hind coxa with dense punctures, without scopa. Hind femur 3.3x longer than wide, with very scattered punctures in ventral 1/3. Hind tibia with c.9 denticular spurs apico-externally. Fore and mid tarsomeres moderately enlarged, 3<sup>rd</sup> mid tarsomere c.1.3x longer than wide.

Metasoma strongly oxypygous, hypopygium short. Postpetiolus strongly widened, lateral field 0.5x as wide as the median one, median field with fine and very superficial aciculation. 2<sup>nd</sup> tergite very wide, 0.63x as long as wide. Gastrocoelus impressed, with weak ridges. Thyridium small, transverse, c.0.5x as wide as the interval. 2<sup>nd</sup> and 3<sup>rd</sup> tergites with fine and very dense punctures, finely granulate, but without longitudinal rugosity medially. Ovipositor sheath slightly extending beyond metasomal apex.

**Color:** Black. Mandible except teeth, side of clypeus, facial and frontal orbits, scapus, pedicel and flagellomeres 1-10 red. Collare and hind edge of pronotum, tegula and scutellum red. Postpetiolus apically and 2<sup>nd</sup> and 3<sup>rd</sup> tergites completely red. 6<sup>th</sup> and 7<sup>th</sup> tergites with rather large ivory spots medially. Coxae and trochanters black, fore and mid coxae frontally and all trochanters apically red. Legs otherwise red; hind femur black centrally, red in basal 0.1 and apical 0.2. Wings with slight yellowish tint, pterostigma yellow.

Males unknown.

**Taxonomical remark:** This species belongs to group G 4 sensu HILPERT, but differs from all known species in this group by the stout and strongly lanceolate flagellum and the red color pattern of basal antenna, scutellum and legs. It resembles *Ichneumon grandicornis* THOMSON (group E) due to the structure of flagellum, but differs by the red color pattern, absent scopa of hind coxa, stouter metasoma and wider area superomedia.

***Ichneumon lautatorius* DESVIGNES, 1856**

**Material examined:** Far East Russia, Primorskij Kray, Ryazanovska, 14 km southwest of Slavyanka, N 42°48' E 131°12', 50 m, 3♀ 16.vi.1993, leg. Taeger (SDEI); Far East Russia, Primorskij Kray, Samarka, 70 km north of Chuguyerka, 200 m, N 44°43' E 134°12', 1♀ 30.v.1993, leg. Taeger (SDEI); Far East Russia, Primorskii Krai, Lazovski Zapovednik, c. 170 km east of Vladivostok, Ta-Chingousa, N 43°01.07' E 134°07.46', 0 m, 1♀ and 12♂♂ 31.viii-16.ix.2001, sandy coast, Malaise trap 495, leg. M. Quest (NHM).

**Taxonomical remark:** The Eastern Palaearctic specimens differ from the European material by yellow-reddish hind femur and tibia which are slightly infusate apically. The ♀ from Samarka has a basal ivory band on 7<sup>th</sup> tergite.

**Distribution:** Widespread in Eurasia.

***Ichneumon magistratus* HILPERT, 1992**

**Material examined:** Far East Russia, Primorskij Kray, Vladivostok: Sedanka, N 32°05' E 131°53', 1♀ 20.vi.1993, leg. Taeger (SDEI); Far East Russia, Primorskij Kray, Ryazanovska, 14 km Southwest of Slavyanka, N 42°48' E 131°12', 50 m, 1♀ 16.vi.1993, leg. Taeger (SDEI).

**Distribution:** Known from Siberia (HILPERT 1992).

***Ichneumon mandibulatus* nov.sp. (figs 8, 29, 43, 52, 71)**

**Material examined:** Holotype: ♀ "S Siberia, Hakassia reg., Sallyghen-Taiga mt. reg., 2400 m, 10.vii.2005, leg. Osipov" (coll. Riedel).

**Description:** Body length 13.5 mm. Antenna stout and almost filiform, with 36 flagellomeres; 1<sup>st</sup> flagellomere 1.5x longer than wide, 4<sup>th</sup> flagellomere square, widest flagellomeres c.0.68x as long as wide; preapical flagellomere 0.65x as long as wide. Temple moderately and roundly narrowed behind eye. Ocelli rather small, OOD 1.8. Occiput densely and coarsely punctate and granulate. Frons coarsely rugose-punctate. Face densely punctate, smooth between punctures. Clypeus with rather dense punctures, smooth between punctures. Mandible thickened, with parallel sides, teeth blunt, lower tooth much smaller than the upper one. Gena strongly widened ventrally, 1.5x as wide as eye, with scattered punctures in ventral 1/2. Malar space 1.0x as long as width of mandibular base and 1.3x as long as 1<sup>st</sup> flagellomere. Genal carina complete, not interrupted ventrally; hypostomal carina narrow.

Mesosoma covered with brownish hairs. Mesoscutum densely punctate, smooth between punctures. Mesopleuron and metapleuron coarsely striate-punctate; coxal carina present. Scutellum slightly elevated, about as wide as long, with scattered punctures. Area superomedia trapezoid, widest frontally, c.1.2x longer than wide; costula weakly indicated. Area petiolaris without lateral border. Hind coxa coarsely punctate, without scopa, but with a longitudinal blunt ventro-internal edge (as in *Ichneumon stramentarius* GRAVENHORST). Hind femur 3.4x longer than wide, with scattered punctures in ventral 1/3. Hind tibia with c.2 denticular spurs apico-externally. Tarsomeres slender, 3<sup>rd</sup> mid tarsomere c.1.55x longer than wide.

Metasoma oxypygous, hypopygium short. Postpetiolus strongly widened, lateral field punctate and c.0.9x as wide as the median one, median field with fine regular aciculation. 2<sup>nd</sup> tergite c.0.6x as long as wide. Gastrocoelus rather weakly impressed, with several ridges; thyridium transverse, c.0.7x wider than the interval. 2<sup>nd</sup> and 3<sup>rd</sup> tergites with fine dense punctures, granulate and ± opaque; 2<sup>nd</sup> tergite with fine longitudinal

rugosity medially. Ovipositor sheath slightly extending behind metasomal apex.

Color: Black. Flagellomeres 5-13 with reddish-yellow ring. Mandible centrally, collare and tegula partly red. Scutellum ivory. 2<sup>nd</sup> and 3<sup>rd</sup> tergites red; 5<sup>th</sup> tergite with a small and 6<sup>th</sup> and 7<sup>th</sup> tergites with larger ivory spots. Coxae and trochanters, mid trochantellus, basal 2/3 of mid femur and hind femur except narrow red base blackish. Legs otherwise red; hind tibia diffusely yellowish subbasally. Wings with yellowish tint, pterostigma reddish.

Males unknown.

**Taxonomical remark:** Due to the edge on hind coxa, the new species belongs to group E 4 sensu HILPERT (1992) and runs to *Ichneumon rufigena* KRIECHBAUMER in his key. It differs by the parallel-sided thick mandible, trapezoid area superomedia and black head.

If one neglects the form of hind coxa, it runs to group G 4 sensu HILPERT (1992) and here to *Ichneumon jugicola* HEINRICH in his key. It can be differentiated by the form of mandible and the ventrally widened gena.

***Ichneumon mesonotator* nov.sp. (figs 9, 30, 53, 72)**

**Material examined:** Holotype: ♀ "1-5 vii 2003, 2000 m, SW Tannu-Ola Mt reg., Sogly vill., SW Tuwa reg., S Siberia, leg. Vastchenko" (coll. Riedel)

**Description:** Body length 14 mm. Antenna moderately lanceolate, with 40 flagellomeres; 1<sup>st</sup> flagellomere 2.3x longer than wide, c.9<sup>th</sup> flagellomere square, widest flagellomere c.0.70x as long as wide; preapical flagellomere 0.9x as long as wide. Temple moderately and almost linearly narrowed behind eye. OOD 1.6. Frons coarsely rugose-punctate. Face densely punctate, with fine granulation but shining. Clypeus with scattered punctures, smooth between punctures. Gena 1.1x as wide as eye, with rather dense punctures in ventral 1/2. Malar space 1.3x as long as width of mandibular base and 1.0x as long as 1<sup>st</sup> flagellomere. Genal carina complete, not interrupted ventrally. Hypostomal carina narrow.

Mesosoma covered with brownish hairs. Mesoscutum densely punctate, smooth between punctures. Mesopleuron and metapleuron coarsely punctate, partly striate; coxal carina present. Scutellum slightly elevated, wider than long, with scattered punctures. Area superomedia slightly hexagonal, about as long as wide; costula absent. Area petiolaris bordered with irregular rugae in apical half. Mid and hind coxae with dense long pale brownish hairs; hind coxa with denser hairs almost forming an indistinct scopa apico-ventrally. Hind femur 3.9x longer than wide, densely punctate. Hind tibia with c.4 denticular spurs apico-externally. Tarsomeres not enlarged, 3<sup>rd</sup> mid tarsomere c.1.7x longer than wide.

Metasoma strongly oxygygous, hypopygium short. Postpetiolus strongly widened, median field with weak aciculation and some coarse punctures. 2<sup>nd</sup> tergite 0.75x as long as wide. Gastrocoelus strongly impressed, with several ridges; thyridium large, transverse, c.1.4x wider than the interval. 2<sup>nd</sup> and 3<sup>rd</sup> tergites with fine dense punctures, both with longitudinal rugosity medially. Ovipositor sheath slightly extending behind metasomal apex.

Color: Black. Scapus, pedicel and flagellomeres 1-14 red, distal flagellomeres black. Mandible centrally red; narrow frontal orbit pale reddish. Collare and hind edge of pro-

notum, mesoscutum completely, tegula and subtegular ridge red. Scutellum ivory. Lateral field of postpetiolus red; 2<sup>nd</sup> and 3<sup>rd</sup> tergites yellowish-red; 5<sup>th</sup> to 7<sup>th</sup> tergites with large ivory spots. Coxae and trochanters black; fore coxa frontally and mid and hind coxae apico-dorsally with reddish spots. Legs otherwise red; hind tibia diffusely yellowish subbasally; infusate in apical 1/10; 1<sup>st</sup> to 3<sup>rd</sup> hind tarsomeres red with black tips, 4<sup>th</sup> and distal hind tarsomeres blackish. Wings with yellowish tint, pterostigma yellow.

Males unknown.

**Taxonomical remark:** The species belongs to group C sensu HILPERT (1992) and runs to *Ichneumon cynthiae* KRIECHBAUMER in his key. It differs by the red coloration of basal antenna and mesoscutum and the dense pilosity of mid and hind coxae. From *Ichneumon gracilicornis* GRAVENHORST it can be differentiated by the red mesoscutum and shorter 1<sup>st</sup> flagellomere.

### ***Ichneumon minutorius* DESVIGNES, 1856**

**Material examined:** East Siberia, Lake Baikal near Anghasolka, overwintering under bark, 1♀ 6.iv.2007, leg. Berlov (coll. Riedel).

**Distribution:** Palaearctic region, new record for Siberia.

### ***Ichneumon nigrostigmaticus* nov.sp. (figs 10, 31, 54, 73)**

**Material examined:** Holotype: ♀ "1-5 vii 2003, 2000 m, SW Tannu-Ola Mt reg., Sogly vill., SW Tuva reg., S Siberia, leg. Vastchenko" (coll. Riedel)

**Description:** Body length 14 mm. Antenna slightly lanceolate, with 41 flagellomeres; 1<sup>st</sup> flagellomere 1.85x longer than wide, c.7<sup>th</sup> flagellomere square, widest flagellomeres c.0.75x as long as wide; preapical flagellomere 0.67x as long as wide. Temple moderately and roundly narrowed behind eye. Ocelli small, OOD 1.8. Frons densely rugose-punctate. Face densely rugose-punctate and granulate. Clypeus densely punctate, with some coarse striae in apical 1/2. Gena wide, 1.3x as wide as eye, densely punctate, but with a small ventral area with scattered punctures. Malar space 1.4x as long as width of mandibular base and 1.5x as long as 1<sup>st</sup> flagellomere. Genal carina complete, reaching the hypostomal one far from mandibular base (distance as long as width of mandibular base). Hypostomal carina narrow.

Mesosoma covered with brownish hairs. Mesoscutum rather densely punctate, lateral field centrally with scattered punctures. Mesopleuron and metapleuron coarsely rugose-punctate; coxal carina absent. Scutellum slightly elevated, slightly longer than wide, with fine scattered punctures. Area superomedia about square; costula absent. Area petiolaris not bordered laterally. Hind coxa densely punctate, with rather long brownish hairs, but without scopa. Hind femur slender, 4.1x longer than wide, densely punctate, with scattered punctures in ventral 1/5. Hind tibia with 3-4 denticular spurs apico-externally. Tarsomeres slender, 3<sup>rd</sup> mid tarsomere c.1.7x longer than wide.

Metasoma strongly oxygygous, hypopygium short. Postpetiolus strongly widened, median field not distinctly separated and c.1.6x wider than lateral field, with very fine and regular aciculation; lateral field punctate and with fine aciculation. 2<sup>nd</sup> tergite 0.8x as long as wide. Gastrocoelus strongly impressed, with several strong ridges; thyridium slightly oblique, c.0.8x as wide as the interval. 2<sup>nd</sup> and 3<sup>rd</sup> tergites with fine dense punctures and granulation, basal third of 2<sup>nd</sup> tergite finely rugose medially. Ovipositor sheath slightly extending behind metasomal apex.

Color: Black. Flagellomeres 1-12 completely and mandible centrally red. Mesosoma black; collare, tegula and central spot on scutellum reddish. Lateral field of postpetiolus with reddish stripe, 2<sup>nd</sup> tergite completely red, 3<sup>rd</sup> tergite only laterally. 6<sup>th</sup> and 7<sup>th</sup> tergites diffusely reddish apically, without distinct pale spots. Coxae and trochanters black; legs otherwise red; fore and mid femora basally blackish; hind femur black, in basal 1/10 and apical 1/5 reddish. Wings with brownish tint, pterostigma black, paler proximally.

Males unknown.

**Taxonomical remark:** The species belongs to group G 4 sensu HILPERT (1992). It is characterized by the strongly sculptured clypeus, slender hind femur and characteristic coloration of metasoma.

***Ichneumon orientopodius* nov.sp. (figs 11, 32, 55, 74, 82)**

**Material examined:** Holotype: ♀ "Far East Russia, Primorje reg., Anisimovka vill., 290 m, N 43°10'07", E 132°46'10", 18.vi.2015, leg. Gromenko" (coll. Riedel).

**Description:** Body length 16 mm. Antenna almost filiform, with 43 flagellomeres; 1<sup>st</sup> flagellomere 2.1x longer than wide, c.8<sup>th</sup> flagellomere square, widest flagellomeres c.0.7x as long as wide; preapical flagellomere 0.8x as long as wide. Temple rather long, slightly narrowed behind eye. OOD 1.5. Occiput with transverse rugae; frons coarsely rugose-punctate. Face densely punctate, rugose-punctate centrally, facial orbit smooth between punctures. Clypeus with scattered punctures, smooth between punctures. Gena wide, 1.2x as wide as eye, with scattered punctures in ventral 1/2. Malar space 1.1x as long as width of mandibular base and 0.9x as long as 1<sup>st</sup> flagellomere. Genal carina complete, not interrupted ventrally. Hypostomal carina narrow.

Mesosoma covered with brownish hairs. Mesoscutum densely punctate, smooth and shining between punctures. Mesopleuron coarsely punctate, coarsely striate in ventral 1/2. Metapleuron coarsely rugose-punctate; coxal carina present. Scutellum almost flat, wider than long, with scattered punctures. Area supermedia hexagonal, 1.2x wider than long; costula weakly present. Area petiolaris completely bordered by strong irregular rugae laterally. All coxae with dense long brownish hairs; hind coxa densely punctate and with small dense scopa presenting as a slightly elevated area. Hind femur 3.4x longer than wide, with dense punctures. Hind tibia with c.5 denticular spurs externally. All tarsomeres distinctly widened, 3<sup>rd</sup> mid tarsomere c.1.2x longer than wide.

Metasoma semi-amblypygous, hypopygium moderately elongate (about as long as the length between its apical margin and the metasomal apex). Postpetiolus strongly widened, median field with fine regular aciculation. 2<sup>nd</sup> tergite 0.68x as long as wide. Gastrocoelus impressed, with several ridges; thyridium slightly oblique, c.0.75x as wide as the interval. 2<sup>nd</sup> and 3<sup>rd</sup> tergites with fine dense punctures, 2<sup>nd</sup> tergite not rugose medially. Ovipositor sheath slightly extending behind metasomal apex.

Color: Black. Antenna reddish basally and darkened in apical 1/3, with yellowish rings on flagellomeres 7-13. Scutellum and wide spots on 6<sup>th</sup> and 7<sup>th</sup> tergites yellow. 2<sup>nd</sup> and 3<sup>rd</sup> tergites reddish, with yellowish tint in apical parts; 3<sup>rd</sup> tergite with black basal band. Coxae and trochanters black; legs otherwise red; all tibiae yellowish externally; hind tarsus blackish in apical 1/2. Wings with slight yellowish tint, pterostigma yellow.

Males unknown.

**Taxonomical remark:** The species belongs to group E 1 sensu HILPERT



(1992) and is characterized by the color pattern of 2<sup>nd</sup> and 3<sup>rd</sup> tergites, strongly enlarged tarsomeres and the semi-amblypygous metasoma with moderately elongate hypopygium.

***Ichneumon paravafer* nov.sp. (figs 12, 33, 56, 75)**

**Material examined:** Holotype: ♀ "S Siberia, Hakassia reg., Sallyghen-Taiga mt. reg., 2400 m, 5 vii 2005, leg. Osipov" (coll Riedel).

**Description:** Body length 13 mm. Antenna strongly lanceolate, with 40 flagellomeres; 1<sup>st</sup> flagellomere 1.5x longer than wide, 4<sup>th</sup> flagellomere square, widest flagellomeres c.0.5x as long as wide; preapical flagellomere 0.67x as long as wide. Temple moderately narrowed apically, slightly rounded. OOD 1.6. Frons densely rugose-punctate. Face coarsely punctate and finely granulate; clypeus with rather dense punctures, smooth between punctures. Gena 1.3x as wide as eye, with scattered punctures in ventral 1/2. Malar space 1.1x as long as width of mandibular base and 1.15x as long as 1<sup>st</sup> flagellomere. Genal carina complete, not interrupted ventrally. Hypostomal carina narrow.

Mesosoma covered with brownish hairs. Mesoscutum densely punctate; median field finely granulate, lateral field with rather dense punctures centrally, smooth between punctures. Mesopleuron very densely punctate; metapleuron coarsely rugose-punctate; coxal carina present. Scutellum slightly elevated, slightly wider than long, with scattered punctures. Area supermedia slightly hexagonal, about as long as wide; costula absent. Area petiolaris without lateral carina. Hind coxa densely punctate and granulate, partly with less dense punctures externally, ± opaque, without scopa. Hind femur 3.6x longer than wide, with scattered punctures in ventral 1/2. Hind tibia and tarsus missing. Tarsomeres slender, 3<sup>rd</sup> mid tarsomere 1.6x longer than wide.

Metasoma semi-amblypygous; hypopygium moderately elongate, about as long as the distance of its apical margin to metasomal apex. Postpetiolus strongly widened, median field 1.6x wider than the lateral one, with regular aciculation; lateral field aciculate. 2<sup>nd</sup> tergite 0.76x as long as wide. Gastrocoelus impressed, with fine ridges; thyridium slightly oblique, about as wide as the interval. 2<sup>nd</sup> and 3<sup>rd</sup> tergites densely punctate and granulate, ± opaque; following tergites strongly shining; 2<sup>nd</sup> tergite with fine longitudinal rugosity medially. Ovipositor sheath slightly extending behind metasomal apex.

Color: Black. Rings on flagellomeres 8-12, scutellum and equally sized spots on tergite 5-7 ivory. Collare, tegula, postpetiolus and 2<sup>nd</sup> tergite completely red, 3<sup>rd</sup> tergite with narrow reddish lateral margin. Coxae and trochanters black; legs otherwise red (hind tibia and tarsus missing). Wings with brownish tint, pterostigma yellowish-red.

Males unknown.

**Taxonomical remark:** This species belongs to the group G 2.1 sensu HILPERT (1992) and runs to *I. vafer meridionalis* HEINRICH in his key. It differs by the red hind femur with scattered punctures in ventral 1/2 and the blackish 3<sup>rd</sup> tergite.

***Ichneumon paravulnerator* nov.sp. (figs 13, 34, 57, 76)**

**Material examined:** Holotype: ♀ "1-5 vii 2003, 2000 m, SW Tannu-Ola Mt reg., Sogly vill., SW Tuwa reg., S Siberia, leg. Vastchenko" (coll. Riedel)

**Description:** Body length 11 mm. Antenna moderately lanceolate, with 37 flagellomeres; 1<sup>st</sup> flagellomere 1.8x longer than wide, c.8<sup>th</sup> flagellomere square, widest

flagellomeres c.0.75x as long as wide; preapical flagellomere 0.9x as long as wide. Temple rather long, slightly narrowed behind eye. OOD 1.5. Frons coarsely and transversely rugose-punctate. Face coarsely and densely punctate, with fine granulation. Clypeus with dense punctures, smooth between punctures. Gena 1.2x as wide as eye, with dense punctures and fine striation in ventral 1/2. Malar space 1.25x as long as width of mandibular base and 1.15x as long as 1<sup>st</sup> flagellomere. Genal carina complete, not interrupted ventrally. Hypostomal carina slightly elevated.

Mesosoma covered with brownish hairs. Mesoscutum coarsely and densely punctate, with fine granulation but shining. Mesopleuron and metapleuron coarsely rugose-punctate; coxal carina present. Scutellum moderately elevated, about as long as wide, with rather dense punctures becoming finer apically. Area superomedia slightly hexagonal, 1.2x wider than long; costula absent. Area petiolaris without lateral border. Hind coxa densely punctate, without scopa. Hind femur 3.4x longer than wide, densely punctate. Hind tibia with c.8. denticular spurs apico-externally. 3<sup>rd</sup> mid tarsomere c.1.5x longer than wide.

Metasoma strongly oxyptygous, hypopygium short. Postpetiolus strongly widened, median field with fine and regular aciculation. 2<sup>nd</sup> tergite very wide, 0.63x as long as wide. Gastrocoelus impressed, with several ridges; thyridium large, transverse, c.1.5x wider than the interval. 2<sup>nd</sup> to 4<sup>th</sup> tergites with dense punctures, granulate and  $\pm$  opaque. Ovipositor sheath slightly extending beyond metasomal apex.

Color: Black. Scapus, pedicel and flagellomeres 1-8 red, flagellomeres 9-12 more yellowish-red. Mandible shortly red centrally. Collare, tegula and scutellum red. 2<sup>nd</sup> and 3<sup>rd</sup> tergites red, 3<sup>rd</sup> tergite with black band in apical third. 6<sup>th</sup> and 7<sup>th</sup> tergites with roundish ivory spots medially. Coxae and trochanters black; legs otherwise red. Wings with slightly yellowish tint, pterostigma yellow.

Males unknown.

**Taxonomical remark:** The species belongs to group C sensu HILPERT (1992) and runs to *Ichneumon norvegicus* HILPERT in his key. It differs by less widened median flagellomeres, reddish scapus, pedicel, scutellum and 2<sup>nd</sup> tergite and an ivory spot on 6<sup>th</sup> tergite.

### ***Ichneumon pilulicornis* HEINRICH, 1978**

**Material examined:** East Siberia, 10 km east of Irkutsk, 1♀ 12.iv.1999, leg. Berlov (coll. Riedel).

**Taxonomical remark:** The available ♀ is smaller than the holotype and differs slightly in its coloration: Body length 8.5 mm. Antenna with 29 flagellomeres. Area superomedia rectangular, 1.4x longer than wide. Hind femur 2.8x longer than wide; 3<sup>rd</sup> mid tarsomere 1.5x longer than wide. 2<sup>nd</sup> tergite 0.83x as long as wide. Clypeus and face centrally reddish. Hind femur black, basal 1/8 red; hind tibia slightly darkened in apical 1/10. 3<sup>rd</sup> tergite completely red. Structure and coloration otherwise as described for the holotype (HEINRICH 1978: 35-36, HILPERT 1992: 243).

**Distribution:** Only known from Far East Russia.

### ***Ichneumon pseudemancipatus* nov.sp. (figs 14, 35, 58, 77)**

**Material examined:** Holotype: ♀ "S Siberia, Hakassia region, W Sayan mts 2400 m,

Sallyghem-Taiga region, 5 vii 2004, leg. Osipov" (coll. Riedel).

**Description:** Body length 10 mm. Antenna moderately lanceolate, with 37 flagellomeres; 1<sup>st</sup> flagellomere 1.8x longer than wide, c. 7<sup>th</sup> flagellomere square, widest flagellomeres c.0.7x as long as wide; preapical flagellomere 1.05x longer than wide. Temple moderately and roundly narrowed behind eye. OOD 1.6. Frons coarsely rugose-punctate. Face coarsely punctate, rugose centrally, with fine granulation. Clypeus with rather dense punctures, finely granulate. Gena 1.1x as wide as eye, with rather dense punctures and fine striation in ventral 1/2. Malar space 1.5x as long as width of mandibular base and 1.2x as long as 1<sup>st</sup> flagellomere. Genal carina complete, not interrupted ventrally. Hypostomal carina narrow.

Mesosoma covered with brownish hairs. Mesoscutum densely punctate, smooth and shining between punctures. Mesopleuron and metapleuron coarsely rugose-punctate; coxal carina present. Scutellum moderately elevated, about as long as wide, with rather dense punctures. Area superomedia rectangular, about as long as wide, apical carina absent; costula absent. Area petiolaris without lateral carina. Hind coxa densely punctate and granulate, with rather dense and long brownish hairs, but without scopa. Hind femur 3.9x longer than wide, densely but superficially punctate and granulate. Hind tibia with c.4 denticular spurs apico-externally. 3<sup>rd</sup> mid tarsomere c.1.6x longer than wide.

Metasoma strongly oxygyous, hypopygium short. Postpetiolus strongly widened, median field c. 1.9x wider than the lateral one, with some indistinct aciculation basally and fine irregular rugae apically. 2<sup>nd</sup> tergite 0.66x as long as wide. Gastrocoelus strongly impressed, with strong ridges; thyridium large, transverse, c.1.3x wider than the interval. 2<sup>nd</sup> and 3<sup>rd</sup> tergites with dense fine punctures, granulate and ± opaque, not rugose. Ovipositor sheath slightly extending behind metasomal apex.

**Color:** Black. Scapus and pedicel black. Flagellomeres 1-8 red, flagellomeres 9-12 more yellowish-red. Scutellum yellow, mesosoma otherwise black. Median field of postpetiolus, 2<sup>nd</sup> and 3<sup>rd</sup> tergites red, 3<sup>rd</sup> tergite with black band in apical 1/4. 6<sup>th</sup> and 7<sup>th</sup> tergite with roundish ivory spots medially. Coxae and trochanters black; legs otherwise red; mid femur black in basal 1/2; hind femur black, red in basal and apical 1/5. Hind tibia and tarsus red, distal hind tarsomere partly brownish. Wings with moderate brownish tint, pterostigma yellow.

Males unknown.

**Taxonomical remark:** The species belongs to group C sensu HILPERT (1992) and is closely related to *Ichneumon emancipatus* WESMAEL and *Ichneumon emancipatops* HEINRICH. It can be differentiated from the former species by shorter 1<sup>st</sup> flagellomere, absence of ivory spot on 5<sup>th</sup> tergite and red hind tibia and tarsus (except brownish distal tarsomere). It differs from the latter taxon by the black scapus and pedicel, black mesosoma (except scutellum), absence of ivory spot on 5<sup>th</sup> tergite and strongly orthogonal thyridia.

Due to the limited East Palaearctic material, the status of *Ichneumon emancipatops* and *Ichneumon pseudemancipatus* remains unclear. It is possible that both species might be variants or subspecies of *Ichneumon emancipatus* (see HILPERT 1992: 108).

***Ichneumon rufolateralis* nov.sp. (figs 15, 36, 59, 78)**

**Material examined:** Holotype: ♀ "S Siberia, Hakassia reg., Sallyghem-Taiga mt.

reg., 2400 m, 10 vii 2005, leg. Osipov" (coll. Riedel).

**Description:** Body length 11 mm. Antenna almost filiform, with 43 flagellomeres; 1<sup>st</sup> flagellomere 1.5x longer than wide, c.7<sup>th</sup> flagellomere square, widest flagellomeres c.0.75x as long as wide; preapical flagellomere 0.67x as long as wide. Temple slightly widened behind eye and slightly narrowed apically. OOD 1.8. Frons densely rugose-punctate and granulate. Face coarsely punctate and finely granulate; clypeus rather densely punctate, smooth between punctures. Gena wide, 1.4x as wide as eye, with scattered punctures in ventral 1/2. Malar space 1.25x as long as width of mandibular base and 1.3x as long as 1<sup>st</sup> flagellomere. Genal carina complete, not interrupted ventrally. Hypostomal carina narrow.

Mesosoma covered with brownish hairs. Mesoscutum densely punctate and finely granulate medially, lateral field with rather dense punctures centrally, smooth between punctures. Mesopleuron densely punctate, partly rugose; metapleuron coarsely rugose-punctate; coxal carina present. Scutellum slightly elevated, slightly longer than wide, with rather dense punctures. Area supermedia almost square; costula absent. Area petiolaris without lateral border. Hind coxa densely punctate, with large reddish scopa (2/5 of coxal length). Hind femur 3.7x longer than wide, with very scattered punctures basally and in ventral 1/2. Hind tibia with c.3 denticular spurs apico-externally. Tarsomeres distinctly widened, 3<sup>rd</sup> mid tarsomere 1.3x longer than wide.

Metasoma strongly oxypygous, hypopygium short. Postpetiolus strongly widened, lateral field 0.5x as wide as the median one, median field with fine irregular aciculation and some subapical punctures. 2<sup>nd</sup> tergite 0.62x as long as wide. Gastrocoelus impressed, with fine ridges; thyridium slightly oblique, about as wide as the interval. 2<sup>nd</sup> and 3<sup>rd</sup> tergites very densely punctate and finely granulate, not rugose medially. Ovipositor sheath slightly extending behind metasomal apex.

**Color:** Black. Scapus apically and flagellomeres 1-8 red, flagellomeres 9-13 darker red, following flagellomeres black. Mandible except teeth, collare and hind edge of pronotum, tegula and scutellum red. Metasoma black; postpetiolus laterally and apically and 2<sup>nd</sup> to 3<sup>rd</sup> tergites laterally red; 7<sup>th</sup> tergite with an indistinct reddish spot medially. Coxae and trochanters black; legs otherwise red. Wings with yellowish tint, pterostigma yellow.

Males unknown.

**Taxonomical remark:** This species belongs to group E 2 sensu HILPERT (1992). The new taxon is closely related to *Ichneumon lariae taimyrensis* HEINRICH, but differs by larger number of flagellomeres, black mesoscutum and distinct scopa on hind coxa.

### ***Ichneumon sayanicus* nov.sp. (figs 16, 37, 60, 79)**

**Material examined:** Holotype: ♀ "S Siberia, Hakassia, W Sayan Mts, Aradan mountain range, Buyba vill., 25.viii.1990, leg. V. Gromenko" (coll. Riedel).

#### **Description:**

Body length 14.5 mm. Antenna moderately lanceolate, with 42 flagellomeres, 1<sup>st</sup> flagellomere 1.5x longer than wide; 4<sup>th</sup> flagellomere square, widest flagellomeres 0.57x as long as wide, preapical flagellomere 0.8x as long as wide. Temple moderately and roundly narrowed behind eye. OOD 1.6. Frons transversely rugose-punctate, finely granulate. Face densely punctate, smooth between punctures; clypeus with rather dense

punctures, smooth between punctures. Gena 1.2x as wide as eye, with rather dense punctures in ventral 1/2. Malar space 1.15x as long as width of mandibular base and 1.25x as long as 1<sup>st</sup> flagellomere. Genal carina complete, not interrupted ventrally. Hypostomal carina narrow.

Mesosoma covered with brownish hairs. Mesoscutum and mesopleuron densely punctate, smooth between punctures. Metapleuron coarsely rugose-punctate; coxal carina present. Scutellum slightly elevated, slightly wider than long, with scattered fine punctures. Area superomedia trapezoid, widest frontally, 1.1x wider than long; costula weakly indicated. Area petiolaris with lateral border defined by some irregular rugae in the apical half. Hind coxa densely punctate and granulate, without scopa or longitudinal edge. Hind femur 3.4x longer than wide, with scattered punctures in ventral 1/3. Hind tibia with c.4 denticular spurs apico-externally. Tarsomeres slender, 3<sup>rd</sup> mid tarsomere 1.7x longer than wide.

Metasoma strongly oxyptygous, hypopygium short. Postpetiolus strongly widened, median field 1.4x wider than the lateral one, with fine aciculation. 2<sup>nd</sup> tergite 0.70x as long as wide. Gastrocoelus impressed, with distinct ridges; thyridium slightly oblique, 0.7x as wide as the interval. 2<sup>nd</sup> and 3<sup>rd</sup> tergites densely punctate and finely granulate, but shining. 2<sup>nd</sup> tergite with fine longitudinal rugosity medially. Ovipositor sheath slightly extending behind metasomal apex.

Color: Black. Ring of flagellomeres 8-13, scutellum and roundish, equally sized spots on 5<sup>th</sup> to 7<sup>th</sup> tergites ivory. Coxae and trochanters black; legs otherwise red; tips of hind tibia and hind tarsomeres slightly darkened. Wings almost hyaline, pterostigma reddish-yellow.

Males unknown.

**Taxonomical remark:** This species belongs to group F sensu HILPERT (1992). It runs to *Ichneumon subalpinus* HOLMGREN in his key but differs by the less strongly lanceolate flagellum and black head and mesosoma (except the ivory scutellum).

### ***Ichneumon scopator* nov.sp. (figs 17, 38, 61, 80)**

**Material examined:** Holotype: ♀ "Russia, S Siberia, Hakassia reg., Sallyghem-Taiga mt. reg, 2400 m, 10 VII 2005, leg. Osipov" (coll. Riedel).

**Description:** Body length 15 mm. Antenna rather stout and almost filiform, with 45 flagellomeres; 1<sup>st</sup> flagellomere c.1.65x longer than wide, c.6<sup>th</sup> flagellomere square, widest flagellomeres c.1.3x wider than long; preapical flagellomere 0.6x as long as wide. Temple slightly widened behind eye, and slightly narrowed apically. OOD 1.5. Frons with coarse dense punctures, granulate. Face densely punctate; clypeus with rather dense punctures; both areas smooth between punctures. Gena wide, c.1.4x wider than eye, with scattered punctures in ventral 1/2. Malar space c.1.35x longer than width of mandibular base and 1.4x longer than 1<sup>st</sup> flagellomere. Genal carina complete, hypostomal carina narrow.

Mesosoma covered with brownish hairs. Mesoscutum densely punctate, smooth between punctures. Mesopleuron coarsely and densely punctate, partly rugose; metapleuron coarsely rugose-punctate; coxal carina present. Scutellum slightly elevated, with rather dense fine punctures. Area superomedia c.1.2x wider than long; costula absent. Area

petiolaris without lateral border. Mid coxa with short scopa apically; hind coxa densely punctate and with strong and large scopa (0.5x coxal length). Hind femur stout, c.3.0x longer than wide, with scattered punctures in ventral 1/2. Hind tibia with c.6 denticular spurs apico-externally. All tarsomeres distinctly widened, 3<sup>rd</sup> mid tarsomere c.1.25x longer than wide.

Metasoma strongly oxyptygous, hypopygium short. Postpetiolus strongly widened, median field with fine aciculation and some fine punctures. 2<sup>nd</sup> tergite c.0.7x as long as wide. Gastrocoelus impressed, with fine ridges; thyridium almost transverse, c.0.9x as wide as the interval. 2<sup>nd</sup> and 3<sup>rd</sup> tergites with fine dense punctures and fine longitudinal rugosity medially. Ovipositor sheath slightly extending behind metasomal apex.

Color: Black. Scapus partly and flagellomeres 1-15 red, following flagellomeres black. Narrow frontal orbit, collare, hind edge of pronotum and tegula red. Scutellum yellowish-red. 2<sup>nd</sup> and 3<sup>rd</sup> tergites mainly red, darkened medially; sides of 4<sup>th</sup> tergite reddish basally. 6<sup>th</sup> and 7<sup>th</sup> tergites with narrow ivory stripes. Coxae and trochanters black, legs otherwise completely reddish. Wings with yellowish tint, pterostigma reddish.

**Taxonomical remark:** This new species belongs to group E2 sensu HILPERT (1992) and is closely related to *I. rufolateralis* nov.sp. It differs mainly by its larger size, stouter hind femur and distinct scopae on mid and hind coxae.

#### ***Ichneumon sibiricus* ROMAN, 1904**

**Material examined:** East Siberia, Lake Baikal near Anghasolka, overwintering under bark, 7♀ 6.iv.2007, leg. Berlov (coll. Riedel); Far East Russia, Primorskii Kray, Lazovski Zapovednik, c. 170 km E Vladivostok, Korpad, N 43°15.52' E 134°07.45', 174 m, 1♀ 1-14.v.2001, flood plain, Malaise trap 441, leg. M. Quest (NHM).

**Distribution:** Only known from Siberia.

#### ***Ichneumon suspiciosus* WESMAEL, 1845**

**Material examined:** South Siberia, Hakassia, West Sayan mountains, Aradan mountain range, Buyba village, 2♀ 25.viii.1990, leg. V. Gromenko (coll. Riedel).

**Taxonomical remark:** Body length 15 mm. Antenna with 38-40 flagellomeres; 1<sup>st</sup> flagellomere 1.5x longer than wide. Hind femur 3.3x longer than wide, with scattered punctures in ventral 1/2. One ♀ has a completely red hind tibia without a sub-basal yellow stripe, both specimens have completely red hind tarsi.

**Distribution:** Palaearctic region, known from Eastern Palaearctic region (UCHIDA 1926, MEYER 1933).

#### ***Ichneumon thomsoni* HOLMGREN, 1864**

**Material examined:** South Siberia, Hakassia region, West Sayan mountains 2400 m, Sallyghem-Taiga region, 1♀ 5.vii.2004, leg. Osipov (coll. Riedel).

**Taxonomical remark:** Antenna with 40 flagellomeres. Hind coxa with indistinct scopa. Petiolus and postpetiolus red, 2<sup>nd</sup> and 3<sup>rd</sup> tergites black medially, red laterally.

**Distribution:** Palaearctic region, known from Siberia (ROMAN 1927, MEYER 1933).

***Ichneumon thyridiator* nov.sp. (figs 18, 62, 81)**

**M a t e r i a l e x a m i n e d :** Holotype: ♀ "Russia, E Siberia, lake Baikal near Anghasolka, 6 iv 2007, leg. Berlov" "under bark of dead *Pinus silvestris*" (coll. Riedel). Paratype: ♀, with similar labels (coll. Riedel).

**D e s c r i p t i o n :** Body length 10 mm. Antenna strongly lanceolate, with 32 flagellomeres; 1<sup>st</sup> flagellomere 2.0x longer than wide, c.8<sup>th</sup> flagellomere square, widest flagellomeres c.0.6x as long as wide; preapical flagellomere about square. Temple strongly and roundly narrowed apically. OOD 1.6. Frons coarsely rugose-punctate. Face densely punctate and finely granulate. Clypeus with scattered punctures, smooth and shining between punctures. Gena c.0.9x as wide as eye, with dense coarse punctures in ventral 1/2, striate-punctate dorsally. Malar space 1.0x as long as width of mandibular base and 0.8x as long as 1<sup>st</sup> flagellomere. Genal carina complete, hypostomal carina slightly elevated.

Mesosoma covered with pale brownish hairs. Mesoscutum densely punctate and granulate, ± opaque. Mesopleuron and metapleuron coarsely rugose-punctate; coxal carina present. Scutellum slightly elevated, with dense punctures and lateral carina in basal 0.2. Area supermedia rectangular, c.1.2x wider than long; costula absent. Area petiolaris bordered laterally with irregular rugae in apical half. Hind coxa densely punctate and granulate, without scopa. Hind femur 3.6x longer than wide, with dense punctures. Hind tibia without denticular spurs apico-externally. Tarsomeres slender, 3<sup>rd</sup> mid tarsomere c.1.8x longer than wide.

Metasoma strongly oxygygous, hypopygium short. Postpetiolus strongly widened, median field with strong aciculation and some fine punctures. 2<sup>nd</sup> tergite 0.78x as long as wide. Gastrocoelus impressed, with several ridges; thyridium slightly oblique, very wide, c.3.0x wider than the interval. 2<sup>nd</sup> and 3<sup>rd</sup> tergites with fine dense punctures, finely granulate, 2<sup>nd</sup> tergite with longitudinal rugosity medially. Ovipositor sheath extending behind metasomal apex.

Color: Black. Flagellomeres 7-13 and large spots on 6<sup>th</sup> and 7<sup>th</sup> tergites ivory. Mesosoma black, tegula reddish-brown or black. 2<sup>nd</sup> tergite mainly red, gastrocoelus darkened; sides of 3<sup>rd</sup> tergite reddish basally. Legs black; hind trochantellus completely and hind femur narrowly reddish at base; fore and mid femora apically and fore and mid tibiae and tarsi ± reddish; hind tibia reddish, infusate in apical 1/3; hind tarsomere reddish-brown, with darkened tips. Wings almost hyaline; pterostigma ochreous.

Males unknown.

**T a x o n o m i c a l r e m a r k :** This new species belongs to group I sensu HILPERT (1992) and runs to *Ichneumon boreellus* THOMSON in his key. It can be differentiated by the black pronotum, black postpetiolus and 3<sup>rd</sup> tergite and slenderer 1<sup>st</sup> flagellomere.

***Ichneumon validicornis* HOLMGREN, 1864**

**M a t e r i a l e x a m i n e d :** Far East Russia, Primorskij Kray, Sikhote-Alin, Oblachnaya, N 43°45' E 134°15', 850 m, 1♀ 2.vi.1993, leg. Taeger (SDEI).

**D i s t r i b u t i o n :** Known from Siberia (MEYER 1933).

***Ichneumon veressi* (KISS, 1915)**

**M a t e r i a l e x a m i n e d :** Far East Russia, Primorskii Kray, Lazovski Zapovednik, c. 170 km East of Vladivostok, Korpad, N 43°15.52' E 134°07.45', 174 m, 1♀ and 1♂ 20-27.vi.2001, flood plain, Malaise trap 489, 4♂♂ 05-26.viii.2001, sandy flood plain, Malaise trap 469, leg. M. Quest (NHM).

**D i s t r i b u t i o n :** Known from the Western Palaearctic region, new record for Far East Russia.

***Ichneumon zoologicus* HILPERT, 1992**

**M a t e r i a l e x a m i n e d :** Far East Russia, Primorskij Kray, Vladivostok: Sedanka, N 32°05' E 131°53', 4♀♀ 20.vi.1993, leg. Taeger (SDEI); Far East Russia, Khabarevsky Kray, Bostsovo 20 km North of Bikin, Bolshoi Solutsepyok Hill, N 47°02' E 134°21', 300 m, 1♀ 26.v.1993, leg. A. Taeger (SDEI); Far East Russia, Primorskij Kray, Ryazanovska, 14 km Southwest of Slavyanka, N 42°48' E 131°12', 50 m, 2♀♀ 16.vi.1993, leg. Taeger (SDEI).

**T a x o n o m i c a l r e m a r k :** Antenna with 35-36 flagellomeres, otherwise typical.

**D i s t r i b u t i o n :** Only known from Siberia (HILPERT 1992).

### **Key to the females of *Ichneumon* LINNAEUS from Siberia and adjacent countries**

(adopted from HILPERT 1992):

- 1 Metasoma with color bands: all tergites yellow apically OR 6<sup>th</sup> tergite with ivory band AND 7<sup>th</sup> tergite black (or at most with narrow basal ivory band). Scutellum yellow .....2
  - Metasoma without regular bands on the tergites. If 6<sup>th</sup> tergite with ivory band or stripe, then also 7<sup>th</sup> tergite. Often some tergites completely reddish or yellowish.....5
- 2 All tergite with yellow apical bands. Hind coxa with large dorsal yellow spot. Hind tibia and tarsus completely reddish-yellow. Antenna with 40-44 flagellomeres. Europe, Russia, Mongolia (KOLAROV & GHAHARI 2005) .....*I. sexcinctus* GRAVENHORST, 1829 (group A1)
  - 6<sup>th</sup> tergite with apical ivory band and 7<sup>th</sup> tergite black. Antenna with 33-39 flagellomeres.....(group A2).3
- 3 Apical bands on 2<sup>nd</sup> and 3<sup>rd</sup> tergites yellow. Smaller, body length 9-10 mm. Antenna with 33 flagellomeres. Europe, Far East Russia .....*I. veressi* (KISS, 1915)
  - Apical bands on tergites ± reddish. Larger, body length 11-13 mm. Antenna with 36-39 flagellomeres.....4
- 4 2<sup>nd</sup> tergite red; 3<sup>rd</sup> tergite with yellow apical band, black. Whole Palaearctic region ..... *I. lautatorius* DESVIGNES, 1856
  - 2<sup>nd</sup> and 3<sup>rd</sup> tergites red (ssp. *sarcitorius*) or reddish-yellow (ssp. *caucasicus* MEYER); 3<sup>rd</sup> tergite black basally. Europe. Uzbekistan, Kirgistan (HEINRICH, 1978) ..... *I. sarcitorius* LINNAEUS, 1758
- 5 Hind coxa with yellow spot dorsally OR propodeum with blunt apophyses or at least apical transverse carina of propodeum with characteristic edge. Large, body length 16-22 mm. Antenna with 39-47 flagellomeres, bristle-shaped, preapical flagellomeres square or longer than wide. Hind coxa without scopa ..... (group B) 6
  - Hind coxa black or propodeum without blunt apophyses.....7



- 6 Hind femur red. Propodeum with blunt apophyses or at least apical transverse carina of propodeum with characteristic lateral edge. Metasoma black, with apical spots on (4<sup>th</sup>-5<sup>th</sup>)-6<sup>th</sup>-7<sup>th</sup> tergites. Antenna with 39-45 flagellomeres. Hind tibia narrowly darkened (1/15) at apex. Hind coxa black. Europe, Kirgistan, Far East Russia (MEYER 1933).....  
.....*I. quaesitorius* LINNAEUS, 1761
- Hind femur black, hind coxa with large dorsal yellow spot. Propodeum with blunt apophyses. Very large, body length 22-23 mm. Antenna with 44-57 flagellomeres. 2<sup>nd</sup> and 3<sup>rd</sup> tergites red, 5<sup>th</sup> to 7<sup>th</sup> tergites with ivory spots. Hind tibia black-yellow-black. Hind tarsus black. Europe, Far East Russia (UCHIDA 1926).....  
.....*I. primatorius* FORSTER, 1771
- 7 Antenna bristle-shaped, e.g. preapical flagellomeres square or longer than wide, rarely slightly widened. Hind coxa densely punctate, always without distinct scopa or longitudinal edge. If thyridium wider than the interval, than strongly transversal (orthogonal to the length axis of tergite) .....8
- Antenna filiform, e.g. preapical flagellomeres wider than long (seen from ventral). Hind coxa often differentiated: with scopa, longitudinal edge or scattered punctures (then the preapical flagellomere might be square). If thyridium wider than the interval, thyridium ± oblique to the length axis of the tergite.....24
- 8 Thyridium at least as wide as the interval, usually much wider (fig. 76) (if rarely smaller, then 5<sup>th</sup> to 7<sup>th</sup> tergites with ivory spots or mandible with equally long teeth or mandible not distinctly narrowed apically.) ..... (group C).9
- Thyridium smaller than the interval; if wider, then thyridium oblique and gastrocoelus short and only slightly impressed medially ..... (group D).15
- 9 6<sup>th</sup> and 7<sup>th</sup> tergites with ivory spots .....10
- 5<sup>th</sup> to 7<sup>th</sup> tergites with ivory spots. (At least 2<sup>nd</sup> tergite mainly red, 3<sup>rd</sup> tergite often ± black apically or (in *I. cinxiae*) mandibular teeth of almost equal length).....11
- 10 Legs except black coxae and trochanters red. Scapus, pedicel and basal flagellomeres red. Scutellum red. Hind femur stout, 3.4x longer than wide. Siberia.....  
.....*I. paravulnerator* nov.sp.
- Hind femur mainly black. Scapus and pedicel black. Scutellum yellow. Hind femur slender, 3.9x longer than wide. Siberia .....*I. pseudemancipatus* nov.sp.
- 11 Mandible not distinctly narrowed apically, mandibular teeth of almost equal length (as fig. 43). Antenna with 34-36 flagellomeres; 1<sup>st</sup> flagellomere c.2.6x longer than wide. Body length 11.5-11.9 mm. 2<sup>nd</sup> tergite completely red. Hind femur mainly black; hind tibia red, basally and in apical 0.25 black. Hind tarsus black. Europe, Buyatsk region (HORSTMANN 2006).....*I. cinxiae* KRIECHBAUMER, 1890
- Mandible normally narrowed apically, teeth of different length. 3<sup>rd</sup> tergite red. 5<sup>th</sup> tergite with large ivory spot. Hind femur largely red OR antenna with at least 37 flagellomeres.....12
- 12 Mesoscutum and basal flagellomeres red. Hind femur red. 1<sup>st</sup> flagellomere c.2.3x longer than wide. Mid and hind coxae densely pilose, but hind coxa without scopa. Siberia .....*I. mesonotator* nov.sp.
- Mesoscutum black.....13
- 13 Hind tibia almost completely red, at most black in apical 1/20. Thyridium rather short, but very wide and deep. Hind femur black, basally and apico-dorsally red. Antenna with 35 flagellomeres; 1<sup>st</sup> flagellomere 1.9x longer than wide. 2<sup>nd</sup> and 3<sup>rd</sup> tergite completely red. Body length 10.1 mm. Far East Russia....*I. emancipatops* HEINRICH, 1978
- Hind tibia at least blackish in apical 1/7. Hind femur mainly red (if in *I. gracilicornis* rarely black, then temples strongly and almost linearly narrowed behind eye). Antenna with 34-42 flagellomeres. Scutellum always yellow .....14
- 14 1<sup>st</sup> flagellomere slender, 2.4-3.1x longer than wide, antenna slightly lanceolate (widest flagellomeres 0.8-0.9x as long as wide). Color variable: Basal flagellomeres, width of ivory metasomal spots and color of hind femur variable. Europe, Far East Russia (ROMAN 1927).....*I. gracilicornis* GRAVENHORST, 1829

- 1<sup>st</sup> flagellomere stouter, 2.1x longer than wide, antenna distinctly lanceolate (widest flagellomeres 0.65x as long as wide). Europe, Far East Russia (ROMAN 1927) .....  
..... *I. emancipatus* WESMAEL, 1845
- 15 Antenna with 28-35 flagellomeres .....16
- Antenna with at least 37 flagellomeres.....21
- 16 3<sup>rd</sup> tergite mostly or completely black. Antenna with 32-35 flagellomeres; 1<sup>st</sup> flagellomere c.2.2x longer than wide. Area superomedia slightly wider than long. Europe, Far East Russia (UCHIDA 1926, MEYER 1930).....  
..... *I. submarginatus* GRAVENHORST, 1829
- 3<sup>rd</sup> tergite completely red.....17
- 17 Scutellum completely yellow .....18
- Scutellum at most partly yellow, usually black .....20
- 18 Malar space at least as long as 1<sup>st</sup> flagellomere. Antenna with 30-35 flagellomeres. Petiolus at spiracles with two elevated carinae, area between them  $\pm$  concave. Postpetiolus red, median field with regular strong aciculation. Antenna except ivory ring always black, sometimes ivory spot at orbit opposite to antenna. Europe, Siberia .....  
..... *I. minorius* DESVIGNES, 1856
- Malar space shorter than 1<sup>st</sup> flagellomere. Petiolus without elevated longitudinal carinae .....19
- 19 Hind femur slenderer, 3.6-4.2x longer than wide. Antenna with 32-35 flagellomeres. If femur rather stout, than with more flagellomeres. Very variable species. Europe, Irkutsk (KOKUJEV 1904).....  
..... *I. sculpturatus* HOLMGREN, 1864
- Hind femur stouter, 3.0-3.6x longer than wide. Antenna with 28-33 flagellomeres. Postpetiolus usually reddish. If femur rather slender, than with less flagellomeres. Scapus, pedicel and basal flagellomeres completely red. Europe, Iran .....  
..... *I. fulvicornis* GRAVENHORST, 1829
- 20 Antenna with weak or without pale ring, with 31-32 flagellomeres; basal flagellomeres red. Scutellum black. Area superomedia hexagonal. Postpetiolus apically, 2<sup>nd</sup> and 3<sup>rd</sup> tergites completely red. Thyridium distinctly smaller than the interval. Kazakhstan .....  
..... *I. transaralius* HILPERT, 1992
- Antenna with distinct pale ring, with 28 flagellomeres. Postpetiolus mainly red. Scutellum partly reddish. Area superomedia trapezoid (widest apically). Thyridium very small. Far East Russia. (According to HILPERT 1992 probably synonym to *I. leucopeltis* THOMSON) .....  
..... *I. inoblidendus* HEINRICH, 1978
- 21 5<sup>th</sup> to 7<sup>th</sup> tergites with large yellow spots. Antenna with 39-45 flagellomeres. Scutellum yellow and antenna with yellow ring. Pterostigma yellow or reddish. 4<sup>th</sup> tergite at most with small ivory spot .....22
- At most 6<sup>th</sup> and 7<sup>th</sup> tergites with large ivory spots, 5<sup>th</sup> tergite often with a smaller spot. Antenna with 42-45 flagellomeres .....23
- 22 Hind femur completely red and tergites mainly or completely black. 1<sup>st</sup> flagellomere 2.6x longer than wide. Hind tibia infusate in apical 1/10. Palaearctic region, Far East Russia (MEYER 1933).....  
..... *I. quaesitorius* LINNAEUS, 1761 (part)
- At least 2<sup>nd</sup> and 3<sup>rd</sup> tergite completely red (often apical tergites more or less red) or hind femur black. 1<sup>st</sup> flagellomere 1.9x longer than wide. Hind tibia infusate in apical 1/10 or completely red. Subtegular ridge thick, usually widely yellow. Lateral field of mesoscutum often reddish. Europe, Altai region (HEINRICH 1978).....  
..... *I. bellipes* WESMAEL, 1845
- 23 Hind femur completely red; hind tibia red-black. Hind tarsus black. Scutellum black (if yellow: var. *jakovlevi*). 1<sup>st</sup> flagellomere slender, 3.0.3.2x longer than wide. Tergites completely black. Central Europe, Irkutsk (KOKUJEV 1904 as *jakovlevi*) .....  
..... *I. cessator* MÜLLER, 1776

- Hind femur black. Mandible with wide, blunt upper tooth and very small lower one. Hypopygium moderately widened (metasoma semi-amblypygous). Hind tibia red, subbasally ± yellowish, apically not or narrowly darkened. Hind tarsus red. 1<sup>st</sup> flagellomeres 1.5x longer than wide. 2<sup>nd</sup> and 3<sup>rd</sup> tergites red, 3<sup>rd</sup> tergite basally black. Central Asia.....*I. mordaxiops* HEINRICH, 1978
- 24 Thyridium not wider than the interval.....25
- Thyridium distinctly wider than the interval, oblique and deeply impressed, usually close to basal margin of 2<sup>nd</sup> tergite. 6<sup>th</sup> and 7<sup>th</sup> tergites or only 7<sup>th</sup> tergite with ivory spots .....(group I) 97
- 25 Hind coxa with scopa, longitudinal edge or scattered punctures ventrally .....26
- Hind coxa without scopa or longitudinal edge; densely punctate ventrally, but punctures often even denser at area of scopa.....53
- 26 Hind coxa with a small dense scopa resembling a narrow elevation. 6<sup>th</sup> and 7<sup>th</sup> tergites with yellow spots, 5<sup>th</sup> tergite with small spot OR these spots are strongly widened. Scutellum yellow. Antenna ± lanceolate, widest flagellomeres 1.5-2.2x wider than long, preapical flagellomeres weakly to strongly transverse. Thyridium about as wide as the interval. Hind tarsus at least in the apical 3/4 or completely black..... (group E1) 27
- Hind coxa without elevated small scopa; if scopa present, then larger.....32
- 27 Tarsomeres distinctly widened (fig. 42). Hypopygium rather long (fig. 82), about as long as the distance between its apical margin and metasomal apex (Metasoma semi-amblypygous). Basal flagellomeres reddish. 3<sup>rd</sup> tergite reddish, with black basal band. Hind femur red. Far East Russia.....*I. orientopodius* nov.sp.
- Tarsomeres slender. Hypopygium much shorter than the distance between its apical margin and metasomal apex.....28
- 28 Larger, body length 13.2-15.5 mm. Antenna with 41-44 flagellomeres. Often all tergites (except yellow spots) black.....29
- Smaller, body length 11-14 mm. Antenna with 36-41 flagellomeres. Some tergites always completely red.....30
- 29 Usually genal carina ventrally obsolete, hypostomal carina often distinctly elevated. 1<sup>st</sup> flagellomere 2.1x longer than wide. Hind femur 3.2x longer than wide, with scattered punctures in ventral 1/3. Coloration of hind femur and tibiae and metasoma variable. Europe, Iran, South Russia.....*I. tuberculipes* WESMAEL, 1848
- Genal carina complete, hypostomal carina narrow. 1<sup>st</sup> flagellomere 1.9x longer than wide. Hind femur 3.7x longer than wide, densely punctate. Siberia.....*I. breviscopatus* nov.sp.
- 30 Antenna with 36-38 flagellomeres, preapical flagellomeres distinctly transverse, 0.67x as long as wide. 3<sup>rd</sup> tergite rarely black basally. Hind femur black, 3.1x longer than wide. Europe, Irkutsk (KOKUJEV 1904), Altai Region (HEINRICH 1978).....*I. cerebrus* WESMAEL, 1859
- Antenna with 37-41 flagellomeres, preapical flagellomere 0.92x as long as wide. 3<sup>rd</sup> tergite often blackish basally. Hind femur slender, at least 3.3x longer than wide.....31
- 31 Ivory spots on (5<sup>th</sup>-) 6<sup>th</sup> to 7<sup>th</sup> tergites very wide. Hind femur 3.3x longer than wide, usually large red. 3<sup>rd</sup> tergite red, without yellowish tint. Europe, Kazakhstan (RASNITSYN & SIYTAN 1981).....*I. balteatus* WESMAEL, 1845
- Ivory spots on 6<sup>th</sup> and 7<sup>th</sup> tergites not distinctly widened. Hind femur slender, 4.1x longer than wide, black. 3<sup>rd</sup> tergite red, basally black, apically with yellowish tint. Germany, Altai region.....*I. altaicola* HEINRICH, 1978
- 32 Hind coxa with ± distinct scopa ..... (group E2) 33
- Hind coxa without scopa, but with scattered punctures or ± distinct longitudinal edge ventrally (if longitudinal edge present, then mandible distinctly thickened). Widest flagellomeres sometimes c.2.3x wider than long. Antenna with 32-43 flagellomeres.....47
- 33 Widest flagellomeres at most 2.2x wider than long. Antenna with 27-48 flagellomeres...34
- Antenna strongly lanceolate, widest flagellomere c.2.5x wider than long, with 34-43 flagellomeres. Hind femur with scattered punctures in ventral 1/2 .....42

- 34 Scutellum black. Antenna without ivory ring, with 42-45 flagellomeres. Metasoma except ivory apical spots black. Hind femur red, tarsi slightly enlarged. Europe, Far East Russia (MEYER 1930) ..... *I. melanosomus* WESMAEL, 1855
- Scutellum ivory, yellow or red ..... 35
- 35 Antenna with 27-28 flagellomeres, petiolus red. (5<sup>th</sup>-) 6<sup>th</sup> and 7<sup>th</sup> tergites with ivory spots. Hind femur with scattered punctures in ventral 1/2. Hind tibia yellow centrally. Preapical flagellomere strongly transverse, 0.66x as long as wide. Scopa often ± obsolete. Europe, Far East Russia (MEYER 1933) ..... *I. validicornis* HOLMGREN, 1864
- Antenna with at least 30 flagellomeres OR petiolus black ..... 36
- 36 All tarsi distinctly widened. Body length 11-12 mm ..... 37
- Tarsi slender OR slightly and/or partly widened ..... 39
- 37 Antenna with 33-37 flagellomeres. Scutellum yellow. 2<sup>nd</sup> and 3<sup>rd</sup> tergites completely red. Hind femur mainly black; stout, 2.5x longer than wide. Europe, Far East Russia (ROMAN 1927) ..... *I. ligatorius* THUNBERG, 1822
- Antenna with at least 43 flagellomeres. Hind femur red; at least 3.0x longer than wide. 2<sup>nd</sup> and 3<sup>rd</sup> tergite reddish with ± black coloration ..... 38
- 38 Body length 11 mm. Antenna with 43 flagellomeres. Scutellum red. Hind femur slender, 3.7x longer than wide. Mid coxa without distinct scopa. Siberia ..... *I. rufolateralis* nov.sp.
- Body length 15 mm. Antenna with 45 flagellomeres. Scutellum yellowish-red. Hind femur stouter, 3.0x longer than wide. Mid coxa with small apico-ventral scopa. Siberia ..... *I. scopator* nov.sp.
- 39 Hind tibia yellow centrally. 2<sup>nd</sup> and 3<sup>rd</sup> tergites red (in *I. crassifemur* sometimes darkened) ..... 40
- Hind tibia not yellow centrally ..... 45
- 40 Hind femur with scattered punctures in ventral half. Metasoma almost completely black (except ivory apical spots). Hind coxa densely punctate. Antenna with 30-34 flagellomeres. Hind tibia black-yellow-black. Central Europe, Far East Russia (UCHIDA 1926, ROMAN 1927) ..... *I. crassifemur* THOMSON, 1886
- Hind femur at most in ventral 1/3 or basally with scattered punctures, usually denser punctate ..... 41
- 41 Hind tibia black-yellow-black, black in apical 2/5. Hind femur with scattered punctures in basal 1/2 and ventrally. Antenna with 33-36 flagellomeres, preapical flagellomere less wide, 0.64x as long as wide. Europe, Far East Russia (UCHIDA 1926) ..... *I. molitorius* LINNAEUS, 1761
- Hind tibia red-yellow-red-black; black in apical 1/4. Hind femur densely punctate. Antenna with 30-34 flagellomeres, preapical flagellomere strongly transverse, 0.5x as long as wide. Europe, West Siberia (WOLDSTEDT 1881) ..... *I. confusor* GRAVENHORST, 1820
- 42 Hind femur densely punctate externally. Collare ivory. Wings slightly infuscate. Hind leg black. 2<sup>nd</sup> and 3<sup>rd</sup> tergites red, 3<sup>rd</sup> tergite black basally OR 2<sup>nd</sup> tergite only slightly reddish. 6<sup>th</sup> and 7<sup>th</sup> tergites with ivory spots. Antenna with 37-43 flagellomeres. South Europe, Irkutsk (KOKUJEV 1904) ..... *I. haemorrhoidicus* KRIECHBAUMER, 1887
- Hind femur with scattered punctures in ventral 1/3 to 1/2 ..... 43
- 43 2<sup>nd</sup> and 3<sup>rd</sup> tergites red. Area superomedia distinctly longer than wide. Scopa on hind coxa weak. Europe, Irkutsk (KOKUJEV 1904), Far East Russia (ROMAN 1927) ..... *I. extensorius* LINNAEUS, 1758
- 2<sup>nd</sup> and 3<sup>rd</sup> tergites blackish ..... 44
- 44 Antenna with 43-47 flagellomeres. France, Altai region (HEINRICH 1978) ..... *I. nebulosae* HINZ, 1975
- Antenna with 32-33 flagellomeres. Far East Russia ..... *I. magistratus* HILPERT, 1992
- 45 Face, gena and mesoscutum mainly red. Collare ivory, with reddish margins. Siberia ..... *I. zoologicus* HILPERT, 1992

- Face not completely red. Mesoscutum black.....46
- 46 2<sup>nd</sup> and 3<sup>rd</sup> tergites completely red, 6<sup>th</sup> and 7<sup>th</sup> tergites with ivory spots. Antenna with 34-37 flagellomeres, preapical flagellomeres 0.83x as long as wide. Body length 10.5 mm. Hind tibia not yellow. Hind tarsus mainly red. Scopa of hind coxa weak. Europe, Altai region (HEINRICH 1978)..... *I. grandicornis* THOMSON, 1886
- 2<sup>nd</sup> and 3<sup>rd</sup> tergites at most partly red, 5<sup>th</sup> tergite with small ivory spot. Hind coxa with rather weak scopa. Hind tarsus mainly black. Antenna with 34-39 flagellomeres, preapical flagellomeres 0.72x as long as wide. Body length 13-14 mm. Europe, Far East Russia (MEYER 1933)..... *I. computatorius* MÜLLER, 1776
- 47 Hind coxa with longitudinal edge ventrally. Mandible thick, with parallel sides and blunt teeth (fig. 43). Gena strongly widened ventrally, c.1.5x wider than eye (seen from lateral). Siberia..... *I. mandibulatus* nov.sp.
- Hind coxa with ± scattered punctures apico-ventrally, without longitudinal edge. Mandible not thickened, sides narrowed apically, teeth pointed. Gena less strongly widened..... (group E3) 48
- 48 Hind coxa with almost smooth area apico-ventrally (fig. 39). Lateral field of mesoscutum centrally with very scattered punctures. Fore and mid tarsomeres widened. Antenna slightly lanceolate. Siberia..... *I. brevipunctatus* nov.sp.
- Hind coxa with scattered punctures or rather dense punctures, without almost smooth areas .....49
- 49 3<sup>rd</sup> tergite black basally. Basal flagellomeres red, antenna strongly lanceolate. Hind coxa rather densely punctate ventrally, but strongly shining between punctures. Hind femur stout, 2.9-3.1x longer than wide.....50
- 2<sup>nd</sup> and 3<sup>rd</sup> tergites almost always completely red, rarely with yellowish tint, not black basally, but sometimes both tergites completely black.....51
- 50 Area superomedia longer than wide. 5<sup>th</sup> tergite black. 2<sup>nd</sup> and 3<sup>rd</sup> tergites red, with yellowish and blackish color patterns. Antenna with 35 flagellomeres. Hind femur 2.9x longer than wide. Hind tibia black in apical 1/8. Body length 10.7 mm. Far East Russia. (according to HILPERT 1992 probably a subspecies of *I. alius* TISCHBEIN)..... *I. confundor* HEINRICH, 1978
- Area superomedia wider than long. 5<sup>th</sup> tergite with wide ivory spot. 2<sup>nd</sup> and 3<sup>rd</sup> tergites red, 3<sup>rd</sup> tergite black basally. Antenna with 39 flagellomeres. Hind femur 3.1x longer than wide. Hind femur red, yellowish centrally. Body length 11-16 mm. Far East Russia..... *I. pseudocaedator* HEINRICH, 1978
- 51 Large, body length 16-17 mm. Antenna with 44-45 flagellomeres. Hind tibia distinctly differentiated: with fewer spurs externally and sharp border to the densely pilose internal side. Hind femur with scattered punctures in ventral 2/3. Hind coxa with ± scattered punctures externally and weak scopa. Europe, Irkutsk (HEINRICH, 1931), Far East Russia (ROMAN 1927)..... *I. hypolius* THOMSON, 1888
- Smaller species. Antenna with lower number of flagellomeres.....52
- 52 2<sup>nd</sup> and 3<sup>rd</sup> tergites black, at most with reddish tint. Gena, frontal orbit and basal flagellomeres ventrally red. Hind coxa with very scattered punctures ventrally. Hind femur stout, 3.0x longer than wide, with scattered punctures in ventral 1/4. Antenna with 35-37 flagellomeres, preapical flagellomere distinctly transverse. Far East Russia..... *I. helenae* HILPERT, 1992
- 2<sup>nd</sup> and 3<sup>rd</sup> tergites red. Antenna strongly lanceolate, with 34-38 flagellomeres; widest flagellomere c.0.42x as long as wide. Europe, Irkutsk (KOKUJEV 1904)..... *I. alius* TISCHBEIN, 1875
- 53 Metasoma except ivory marks black .....(group F) 54
- Metasoma with red or yellow tergites .....62
- 54 (4<sup>th</sup>-) 5<sup>th</sup>-7<sup>th</sup> tergites with ivory spots. Antenna with 37-42 flagellomeres .....55
- At most 6<sup>th</sup> and 7<sup>th</sup> tergites with ivory spots. Hind femur black. Antenna with 37-40 or 43-47 flagellomeres. Hind tibia and hind tarsus ± black apically.....57

- 55 Head and mesosoma except yellow scutellum black (fig. 16). Femora, tibiae and tarsi red, hind tibia and hind tarsus slightly darkened apically. Siberia..... *I. sayanicus* nov.sp.  
 - Frontal orbit and upper margin of pronotum ± yellow. Hind femur black. Hind tibia and tarsus widely black .....56
- 56 Antenna with 39-42 flagellomeres, preapical flagellomere c.0.88x as long as wide, widest flagellomeres c.0.61x as long as wide. Upper margin of pronotum not yellow OR with yellow stripe frontally, then pale stripe widely interrupted. Frontal orbit narrowly ivory. Area superomedia slightly transverse. Hind tibia distinctly red centrally. Europe, Western Siberia (ROMAN 1927) ..... *I. haglundii* HOLMGREN, 1864  
 - Antenna with 38 flagellomeres, preapical flagellomere c.0.63x as long as wide. Upper margin of pronotum narrowly interrupted. Frontal orbit widely ivory up to vertex. Far East Russia ..... *I. ustazae* HEINRICH, 1978
- 57 Antenna with 43-47 flagellomeres. Large, body length 15.2 mm. Hind femur with scattered punctures in ventral 1/2. Collare partly yellow. Hind coxa often with ± distinct scopa. France, Altai region (HEINRICH 1978) ..... *I. nebulosae* HINZ, 1975  
 - Antenna with 37-40 flagellomeres .....58
- 58 Hind tibia completely black. Hind coxa with variable punctures or with weak scopa. Preapical flagellomere 0.54x as long as wide. Scutellum completely yellow. Ivory spots on apical tergites wide. Median field of postpetiolus more than 2x wider than lateral field. South Europe, Irkutsk (KOKUJEV 1904, MEYER 1933) ..... *I. haemorrhoidicus* KRIECHBAUMER, 1887 (part)  
 - Hind tibia infuscate in apical 1/3 OR preapical flagellomeres slightly transverse. Hind coxa with even punctuation. Scutellum almost completely yellow or ivory. Body length 12-14 mm .....59
- 59 Antenna with 27-29 flagellomeres, 1<sup>st</sup> flagellomere c.2.x longer than wide. Body slender. Temple slightly widened behind eye. Hind femur with dense punctures. European Alps, Siberia (HILPERT 1992) ..... *I. buryas* HEINRICH, 1949 (part)  
 - Antenna with 35-40 flagellomeres. 1<sup>st</sup> flagellomere at most 1.8x longer than wide. Temple ± narrowed behind eye. Hind femur with scattered punctures in ventral 1/3 to 1/5 .....60
- 60 Antenna with 40 flagellomeres. 1<sup>st</sup> flagellomere 1.8x longer than wide. Hind tibia and tarsus red. Hind femur with scattered punctures in ventral 1/5. Siberia ..... *I. inquinatops* nov.sp.  
 - Antenna with 35-38 flagellomeres, 1<sup>st</sup> flagellomere at most 1.5x longer than wide. Hind tibia ± infuscate apically, hind tarsus mainly black. Hind femur with scattered punctures in ventral 1/3 .....61
- 61 Area superomedia square or slightly longer than wide, hexagonal. Thyridium narrow. Upper mandibular tooth wide and blunt. Inner orbit widely reddish-yellow. Central Europe, Far East Russia (MEYER 1933, UCHIDA 1935) ..... *I. inquinatus* WESMAEL, 1845  
 - Area superomedia c.1.3x longer than wide, rectangular. Thyridium almost as wide as the interval. Mandible normal. Inner orbit yellow, edges of clypeus reddish. Siberia ..... *I. sibiricus* ROMAN, 1904
- 62 Scutellum yellow OR antenna with at least 30 flagellomeres. If mesoscutum red, then scutellum often red or black .....63  
 - Scutellum black or red. 5<sup>th</sup> tergite without ivory spot. Antenna with 22-29 flagellomeres ..... (group H) 92
- 63 Hind tibia with clear yellow color centrally ..... (group G1) 64  
 - Hind tibia without yellow color centrally (or only in small parts) .....67
- 64 5<sup>th</sup> tergite at most with small ivory spot. 2<sup>nd</sup> and 3<sup>rd</sup> tergites red. Antenna with 33-38 flagellomeres, preapical flagellomeres strongly transverse, 0.59x as long as wide, widest flagellomere 0.58x as long as wide. Hind coxa with variable punctures ventrally. Hind tibia narrowly black basally, yellow subbasally, then weakly red and black in apical 1/3. Europe, West Siberia (WOLDSTEDT 1881) ..... *I. melanotis* HOLMGREN, 1864

- 5<sup>th</sup> to 7<sup>th</sup> tergites with large ivory spots OR collare clearly ivory. Antenna with 31-41 flagellomeres.....65
- 65 Ivory spots on 5<sup>th</sup> to 7<sup>th</sup> tergite roundish, not transverse. Antenna usually with 34-37 flagellomeres (rarely 32-33). 2<sup>nd</sup> to 3<sup>rd</sup> tergites red. Area superomedia distinctly longer than wide. Hind femur with scattered punctures in ventral 1/3-1/2. Hind tibia red-yellow-red-black. Europa, Far East Russia (UCHIDA 1926) . *I. suspiciosus* WESMAEL, 1845
- Ivory spots on 5<sup>th</sup> to 7<sup>th</sup> tergite wide and transverse. Antenna with 30-34 flagellomeres. Area superomedia about as long as wide.....66
- 66 Hind femur 2.9x longer than wide. Hind tibia red-yellow-red-black, hind tarsus black in apical 1/4. 3<sup>rd</sup> tergite red, sometimes black baso-medially. Europa, Kazachstan, Mongolia (RASNITSYN & SIYTAN 1981) ..... *I. caedator* GRAVENHORST, 1829 (part)
- Hind femur 3.7x longer than wide. Hind tibia and tarsus mainly yellow, with reddish tips. 3<sup>rd</sup> tergite yellow, with basal and apical black bands (fig. 19). Kirgistan ..... *I. altaicurtulus* nov.sp.
- 67 5<sup>th</sup>-7<sup>th</sup> tergites with large ivory spots or apical bands AND antenna with at least 32 flagellomeres..... (group G2) 68
- 5<sup>th</sup> tergite at most with smaller ivory spot OR antenna with 27-31 flagellomeres..... (group G4) 73
- 68 Ivory spots on apical tergites not distinctly wide. Body length 10-15 mm. .... (group G2.1) 69
- Ivory spots on apical tergites very wide. Face usually with extended red coloration. Body length 8-11 mm..... (group G2.2) 72
- 69 Mandible strongly thickened. Hypostomal carina widened. Hind tibia red, black apically. Body length 13.6-14.1 mm. Usually 2<sup>nd</sup> and 3<sup>rd</sup> tergite completely red, in *I. bucculentus teberdensis* HEINRICH 3<sup>rd</sup> tergite only medially red. Europe, Kazachstan (RASNITSYN & SIYTAN 1981)..... *I. bucculentus* WESMAEL, 1845
- Mandible not thickened. Hypostomal carina narrow. Hind tibia completely red or black apically. Smaller, body length 10.4-11.5 mm.....70
- 70 Antenna with 33-35 flagellomeres. Area superomedia c1.1x longer than wide. Hind femur stouter, 3.2-3.3x longer than wide. Europe, Kazachstan (RASNITSYN & SIYTAN 1981) ..... *I. curtulus* KRIECHBAUMER, 1882 (part)
- Antenna with 37-40 flagellomeres. Hind femur slenderer, 3.5-3.6x longer than wide. Wings with brownish tint, pterostigma reddish .....71
- 71 Hind femur with scattered punctures in ventral 1/2. Hind femur red. Postpetiolus and 2<sup>nd</sup> tergite red, 3<sup>rd</sup> tergite blackish (fig. 12). Siberia..... *I. paravafer* nov.sp.
- Hind femur with dense punctures, mainly black. Usually postpetiolus, 2<sup>nd</sup> and 3<sup>rd</sup> tergites completely red. 4<sup>th</sup> tergite with a small ivory spot. Iran..... *I. vafer meridionalis* HEINRICH, 1929
- 72 Hind tibia black in apical 1/6. Body length 8 mm. 1<sup>st</sup> flagellomere 1.1-1.6x longer than wide. Hind femur completely black, stout, 2.6x longer than wide. 3<sup>rd</sup> tergite usual black basally. Ivory spot on 5<sup>th</sup> tergite often narrow, sometimes absent. Basal flagellomeres red or black. Europe, Mongolia (RASNITSYN & SIYTAN 1981) ..... *I. caedator* GRAVENHORST, 1829
- Hind tibia yellow or red, not black apically. Body length 10-11 mm. 1<sup>st</sup> flagellomere longer, c.1.8x longer than wide. Hind femur less stout, 3.3x longer than wide. Ivory spot on 5<sup>th</sup> tergite usually very wide. Basal flagellomeres red. 3<sup>rd</sup> tergite not black basally. Europe, Kazachstan (RASNITSYN & SIYTAN 1981), Iran..... *I. curtulus* KRIECHBAUMER, 1882
- 73 Antenna with 27-35 flagellomeres.....74
- Antenna with at least 36 flagellomeres.....80
- 74 Antenna strongly lanceolate, widest flagellomere c.2x wider than long; 1<sup>st</sup> flagellomere stout, c.1.1x longer than wide. Basal flagellomeres and scutellum red (fig. 7). Siberia ..... *I. lanceolator* nov.sp.
- Antenna less strongly lanceolate. 1<sup>st</sup> flagellomere slenderer .....75

- 75 Temple parallel or slightly widened behind eye. Antenna with 27-29 flagellomeres. Ventral part of central flagellomeres very narrow. Only 2<sup>nd</sup> tergite basally red. Area superomedia c.1.5x longer than wide. European Alps, Siberia (HILPERT 1992).....  
..... *I. buryas* HEINRICH, 1949
- Temple usually ± narrowed behind eye. Antenna with 29-35 flagellomeres. Mid flagellomeres not as narrow, c.0.7x as long as wide. 2<sup>nd</sup> and 3<sup>rd</sup> tergites completely red .....76
- 76 Petiolus red and scutellum ivory. Smaller, body length 8.7 mm. Hind femur completely red. Thyridium smaller than the interval and only slightly impressed. Europe, Far East Russia (UCHIDA 1926)..... *I. gratus* WESMAEL, 1855
- Petiolus OR scutellum black .....77
- 77 Tarsi moderately widened. Hind femur red-black. Body length 11 mm. Antenna with 28-30 flagellomeres, preapical flagellomeres 0.76x as long as wide. Area superomedia about square. Hind tarsus mainly black. Europe, Iran ..... *I. eumerus* WESMAEL, 1857
- Tarsi not widened. Hind femur usually completely black .....78
- 78 Ivory spots on apical tergites rather wide, seen from dorsal almost covering the whole width of tergites. Mandible rather thickened. 2<sup>nd</sup> tergite as long as wide. Antenna with 30-34 flagellomeres. Area superomedia about square. Europe, Mongolia (RASNITSYN & SIYTAN 1981) ..... *I. caedator* GRAVENHORST, 1829 (part)
- Ivory spots on apical tergites not that wide. Mandible not thickened.....79
- 79 Basal flagellomeres red. Antenna with 32 flagellomeres. Area superomedia almost square. Hind tibia and hind tarsus except distal tarsomere completely red. 3<sup>rd</sup> tergite blackish basally (here also runs *I. mordax*). Siberia ..... *I. pilulicornis* HEINRICH, 1978
- Basal flagellomeres black. Antenna with 27-32 flagellomeres. Area superomedia c.1.25x longer than wide. Hind tibia black in apical 1/8. Hind tarsus completely red. 3<sup>rd</sup> tergite completely red. Europea, Altai region, Irkutsk (MEYER 1933).....  
..... *I. gracilentus* WESMAEL, 1845
- 80 Antenna with 36-43 flagellomeres .....81
- Antenna with 44-47 flagellomeres .....91
- 81 Head and mesosoma punctate and distinctly granulate, ± opaque. Basal flagellomeres red. Hind femur red with black dorsal stripe centrally. Siberia ..... *I. granulatus* nov.sp.
- Head and mesosoma punctate, smooth or with fine granulation between punctures. If hind femur mainly red, then mesoscutum ± red .....82
- 82 Hind femur mainly red. Mesoscutum ± red.....83
- Hind femur mainly black.....86
- 83 6<sup>th</sup> and 7<sup>th</sup> tergites with distinct ivory spots .....84
- Ivory spots on apical tergites absent OR at most 7<sup>th</sup> tergite with ± distinct spot. Mesoscutum, scutellum and legs except coxae and trochanters red. 1<sup>st</sup> and 2<sup>nd</sup> tergites red, 2<sup>nd</sup> tergite black apico-medially, 3<sup>rd</sup> tergite black with red basolateral stripes. Wings slightly infuscate. Hind tarsus black in apical 1/4.....85
- 84 Scutellum red, sometimes reddish-yellow. Fore and mid tarsomeres moderately widened. Hind coxa sometimes with weak scopa. Hind femur stout, 3.2x longer than wide. Antenna with 39 flagellomeres, 1<sup>st</sup> flagellomere 1.2x longer than wide. Scandinavia, Siberia (ROMAN 1927) ..... *I. thomsoni* HOLMGREN, 1864
- Scutellum yellow to ivory. Tarsomeres slender. Hind coxa without scopa. Hind femur slender, 3.7x longer than wide. Antenna with 37-38 flagellomeres, 1<sup>st</sup> flagellomere 1.8x longer than wide. Far East Russia ..... *I. zherichini* HEINRICH, 1978
- 85 Apical tergites without pale spots. Hind femur with scattered punctures in ventral 0.6. Mid tarsomeres slightly widened. Wings and pterostigma slightly infuscate. Hind coxa with unequal punctures ventrally. Smaller, body length 10.7 mm. Thyridium slightly smaller than the interval. Siberia ..... *I. lariae taimyrensis* HEINRICH, 1978
- 7<sup>th</sup> tergite with apical spot, 6<sup>th</sup> tergite with narrowly ivory apical margin. Hind femur with dense punctures. Mid tarsomeres slender. Wings strongly infuscate, pterostigma blackish. Larger, body length 14.9 mm. Thyridium much smaller than the interval. Hind coxa with equal punctuation. Siberia..... *I. chernovi* HEINRICH, 1978



- 86 Genal carina widely interrupted ventrally. Malar space longer, c.1.5x longer than 1<sup>st</sup> flagellomere (fig. 44). Antenna with 36 flagellomere, 1<sup>st</sup> flagellomeres 1.6x longer than wide. Hind tibia infusate in apical 1/4. Hind femur stout, 2.9-3.0x longer than wide; hind tibia with multiple denticular spines externally (fig. 41). Siberia ..... *I. genator* nov.sp.  
 - Genal carina not interrupted ventrally. Malar space shorter ..... 87
- 87 Clypeus densely punctate and with coarse longitudinal rugae in apical half. Hind femur very slender, 4.1x longer than wide. 2<sup>nd</sup> tergite red; 3<sup>rd</sup> tergite black, with reddish sides. 6<sup>th</sup> and 7<sup>th</sup> tergites without ivory spots, diffusely reddish apically (fig. 10). Siberia .....  
 ..... *I. nigrostigmaticus* nov.sp.  
 - Clypeus with finer sculpture, usually ± punctate. Hind femur stouter, at most 3.6x longer than wide. 6<sup>th</sup> and 7<sup>th</sup> tergites with distinct ivory spots..... 88
- 88 Hind tibia red, very narrowly black in apical 1/20. Hind femur black, narrowly at base and in apical 1/5 red. Hind tarsus completely red. Ivory spot on scutellum often obsolete. Area superomedia slightly wider than long. Lower mandibular tooth very small. Antenna stout, with 36-38 flagellomeres, red basally, with ivory ring centrally, 1<sup>st</sup> flagellomere 1.2x longer than wide; preapical flagellomere almost square, 0.91x as long as wide. Hind femur stout, 3.1x longer than wide. Postpetiolus partly red, 2<sup>nd</sup> tergite black in basal 2/5, then shortly red, apically yellowish, 3<sup>rd</sup> tergite reddish-yellow, black in basal 1/3. Hypopygium moderately elongate, metasoma semi-amblypygous. Siberia ..... *I. amblypygops* HEINRICH, 1978  
 - Hind tibia at least in apical 1/4 black. Hind tarsus at least in distal 1/3 black ..... 89
- 89 Antenna completely black. Hind tibia narrowly black at base and in apical 1/5. 2<sup>nd</sup> tergite red, black in basal 0.5; 3<sup>rd</sup> tergite red, black in basal 1/3. Only 7<sup>th</sup> tergite with distinct ivory spot. Hind femur with scattered punctures in ventral 1/3. Wings slightly infusate. Hind coxa with irregular punctuation. Hind tarsus completely black. Tadzikistan ..... *I. kazdikistanus* HEINRICH, 1980  
 - Ring of antenna and scutellum ivory ..... 90
- 90 Basal flagellomeres red, yellow ring not distinct. Inner orbit widely yellow-red. Scutellum yellow. 2<sup>nd</sup> and 3<sup>rd</sup> tergites red, 2<sup>nd</sup> tergite sometimes black basally, 3<sup>rd</sup> tergite basally, sometimes also apically black. Hind coxa and hind femur with regular punctuation. Hind tibia pale red, black in apical 1/3. Hind tarsus black in apical 1/2. Buryat ..... *I. obnixus* HEINRICH, 1978  
 - Antenna except ivory ring black. 2<sup>nd</sup> tergite red, 3<sup>rd</sup> tergite black, with red lateral margins. Hind femur red, narrowly black apically. Hind tibia yellow-red, black in apical 1/8. Hind tarsus ± black. Siberia (MEYER 1933) .....  
 ..... *I. insidiosus malaisei* ROMAN, 1927
- 91 Tarsi widened. Hind coxa with unequal punctuation ventrally. Hind femur with scattered punctures in ventral 2/3. Hind tibia red, black in apical 1/4. Large, body length 17 mm. Europe, Far East Russia (ROMAN 1927) .....  
 ..... *I. hypolius* THOMSON, 1888 (part)  
 - Tarsi not widened. Hind coxa with equal punctuation. Hind femur with scattered punctures in ventral 1/4. Mid and hind legs completely black. Body length 15 mm. Far East Russia. According to HILPERT (1992) probably conspecific with *I. melanobatus* GRAVENHORST ..... *I. vittimensis* HEINRICH, 1978
- 92 Apical tergites without ivory spots. Antenna with 22-23 flagellomeres. 1<sup>st</sup> tergite ± and hind coxa red. Very small, body length 6.4 mm. Area superomedia c.1.25x longer than wide. Europa, Irkutsk (WOLDSTEDT 1881) ..... *I. oblongus* SCHRANK, 1802 (part)  
 - At least 7<sup>th</sup> tergite with ivory spot. If 6<sup>th</sup> tergite without ivory spot, then coxae red OR antenna with more than 26 flagellomeres..... 93
- 93 Coxae red (or at most 26 flagellomeres, body length less than 7.8 mm and area superomedia not strongly elongated). Hypopygium short ..... 94  
 - Coxae usually black; if red, then antenna at least with 25 flagellomeres ..... 96
- 94 Very small, body length at most 6.2 mm. Antenna with 22-23 flagellomeres. Often coxae, pterostigma and 2<sup>nd</sup> and 3<sup>rd</sup> tergites dark. Hind femur black. Europe, Far East Russia (MEYER 1933) ..... *I. simulans* TISCHBEIN, 1873 (part)

- Larger, body length more than 6.2 mm. Antenna with 23-26 flagellomeres. Coxae only rarely black. 2<sup>nd</sup> and 3<sup>rd</sup> tergites completely red. Hind femur usually ± red. Postpetiolus red. Hind tibia black in apical 1/5-1/4 .....95
- 95 1<sup>st</sup>-4<sup>th</sup> tergites red. Ivory spot on 6<sup>th</sup> tergite small, much smaller than spot on 7<sup>th</sup> tergite. Area superomedia more than 1.3x longer than wide, sides not edged. Petiolus often dark medially..... *I. oblongus* SCHRANK, 1802 (part)
- Only 1<sup>st</sup>-3<sup>rd</sup> tergites red, 4<sup>th</sup> tergite sometimes red at base. Ivory spot on 6<sup>th</sup> tergite large. Area superomedia at most 1.3x longer than wide, ± hexagonal .....  
..... *I. simulans* TISCHBEIN, 1873 (part)
- 96 Petiolus black. Mandible moderately thickened. Temple only slightly narrowed behind eye. Hypopygium slightly enlarged. Metasomal apex somewhat compressed. 2<sup>nd</sup> tergite red, 3<sup>rd</sup> tergite with some diffuse reddish tint. Antenna with 28 flagellomeres, pale ring indistinct (structure similar to *I. intricator* WESMAEL). Central Asia .....  
..... *I. medioasiaticus* HILPERT, 1992
- Petiolus red. Mandible not thickened. Temple distinctly and roundly narrowed behind eye. Hypopygium narrow. Postpetiolus ± and 2<sup>nd</sup> and 3<sup>rd</sup> tergites red. Antenna with 28-30 flagellomeres, with distinct ivory ring. Europe, Siberia (UCHIDA 1926, MEYER 1933) .....  
..... *I. memorator* WESMAEL, 1845 (part)
- 97 Scutellum yellow. Antenna with 29-36 flagellomeres. Apical tergites without ivory spots. 2<sup>nd</sup> and 3<sup>rd</sup> tergites red; if black, then margins of 2<sup>nd</sup> tergite and apical margins of following tergites red. Area superomedia rectangular, large, wider than long. Hind femur red or black. Hind tibia completely red. Hind tarsus red, apical narrowly black. Thyridium often only slightly wider than the interval. Siberia.....  
..... *I. modestus* ROMAN, 1927
- Scutellum red or black.....98
- 98 6<sup>th</sup> and 7<sup>th</sup> tergites with large ivory spots. Scutellum black or reddish .....99
- Apical tergite without ivory spots or only 7<sup>th</sup> tergite with narrow yellow stripe. Scutellum red, at least apically.....100
- 99 Lateral field of mesoscutum and scutellum red (fig. 5). Femora, tibiae and tarsi except brownish distal tarsomeres red. Antenna with 34 flagellomeres; 1<sup>st</sup> flagellomere c.1.6x longer than wide. Siberia.....  
..... *I. hakassiacus* nov.sp.
- Mesoscutum black, scutellum black or red. Hind femur mainly black. Antenna with at most 32 flagellomeres; 1<sup>st</sup> flagellomere usually longer .....102
- 100 Antenna with 27-30 flagellomeres; 1<sup>st</sup> flagellomeres 1.7x longer than wide. Body length 8.8 mm. Hind femur 3.3x longer than wide. 3<sup>rd</sup> tergite red. Hind coxa with slightly elevated ventral edge. Thyridium slightly wider than the interval. Europe, Siberia .....  
..... *I. memorator* WESMAEL, 1845 (part)
- Antenna with 32 flagellomeres; 1<sup>st</sup> flagellomere at least 2.0x longer than wide. Body length 9.5-10 mm. Hind femur at least 3.6x longer than wide. Thyridium at least 2x wider than the interval.....101
- 101 Widest flagellomeres about square. Thyridium c.2x wider than the interval (fig. 64). 1<sup>st</sup> flagellomere slender, 2.4x longer than wide. Scutellum reddish. 3<sup>rd</sup> tergite reddish-brown. Hind tibia completely yellowish. Area superomedia hexagonal, c.1.35x wider than long. Siberia .....  
..... *I. berlovi* nov.sp.
- Widest flagellomeres c.1.6x wider than long. Thyridium c.3x wider than the interval (fig. 81). 1<sup>st</sup> flagellomere 2.0x longer than wide. Scutellum black. 3<sup>rd</sup> tergite mainly black. Hind tibia infusate in apical 1/3. Area superomedia rectangular, c.1.2x wider than long. Siberia .....  
..... *I. thyridiator* nov.sp.
- 102 Antenna with 31-33 flagellomeres and distinct ivory ring, basal flagellomeres reddish. Apical tergites without ivory spots OR 7<sup>th</sup> tergite with narrow yellow stripe. 4<sup>th</sup> tergite partly red. Body length 10.2 mm. Hind coxa with long hairs indicating ± distinct scopa. Hind femur 3.6x longer than wide. Hind tibia usually black in apical 1/8. In Eastern Palaearctic material mesoscutum reddish, scutellum with dark reddish spot, frontal orbit widely yellow-red, hind femur black and distal hind tarsomere blackish. Europe, Far East Russia (ROMAN 1927 as *kamtschaticus*)..... *I. stigmatorius* ZETTERSTEDT, 1838

- Antenna with 29-31 flagellomeres, black, at most with rudimental ring. Mesoscutum and scutellum red. Small, body length 7.1-8.4 mm. Apical tergites black, without pale spots. Hind tibia black in apical 1/3. Petiolus usually completely red. Hind femur slender, 3.8x longer than wide. Arctic Siberia..... *I. asiaticus* ROMAN, 1914

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### Zusammenfassung

In der vorliegenden Arbeit werden faunistische und taxonomische Angaben zu 42 Arten der Gattung *Ichneumon* LINNAEUS aus Sibirien gemacht. Sechs Taxa werden das erste Mal in der ostpaläarktischen Region nachgewiesen: *Ichneumon acuticornis* THOMSON, 1896, *Ichneumon exilicornis* WESMAEL, 1857, *Ichneumon fulvicornis* GRAVENHORST, 1829, *Ichneumon karpathica* HEINRICH, 1951, *Ichneumon minutorius* DESVIGNES, 1856 and *Ichneumon veressi* (KISS, 1915).

Von 20 neuen Arten werden die Weibchen beschrieben und illustriert: *Ichneumon altaicurtulus* nov.sp., *Ichneumon berlovi* nov.sp., *Ichneumon brevipunctatus* nov.sp., *Ichneumon breviscopatus* nsp., *Ichneumon genator* nov.sp., *Ichneumon granulatus* nov.sp., *Ichneumon hakassiacus* nov.sp., *Ichneumon inquinatops* nov.sp., *Ichneumon lanceolator* nsp., *Ichneumon mandibulatus* nov.sp., *Ichneumon mesonotator* nov.sp., *Ichneumon nigrostigmaticus* nov.sp., *Ichneumon orientopodius* nov.sp., *Ichneumon paravafer* nov.sp., *Ichneumon paravulnerator* nov.sp., *Ichneumon pseudemancipatus* nov.sp., *Ichneumon rufolateralis* nov.sp., *Ichneumon sayanicus* nov.sp., *Ichneumon scopator* nov.sp. und *Ichneumon thyridiator* nov.sp.

*Ichneumon jakovlevi* KOKUJEV, 1904 wird als neues Synonym zu *Ichneumon cessator* MÜLLER, 1776 gestellt.

Außerdem wird ein neuer Bestimmungsschlüssel für die Weibchen der bisher aus Sibirien bekannten *Ichneumon*-Arten vorgelegt.

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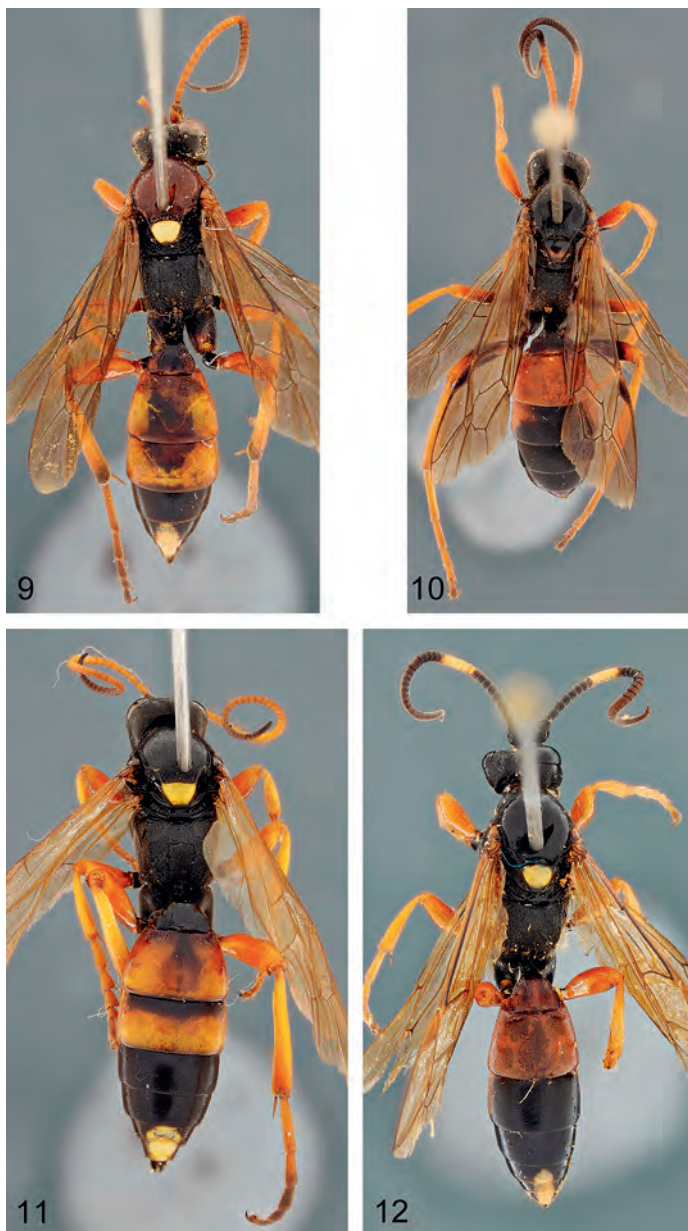
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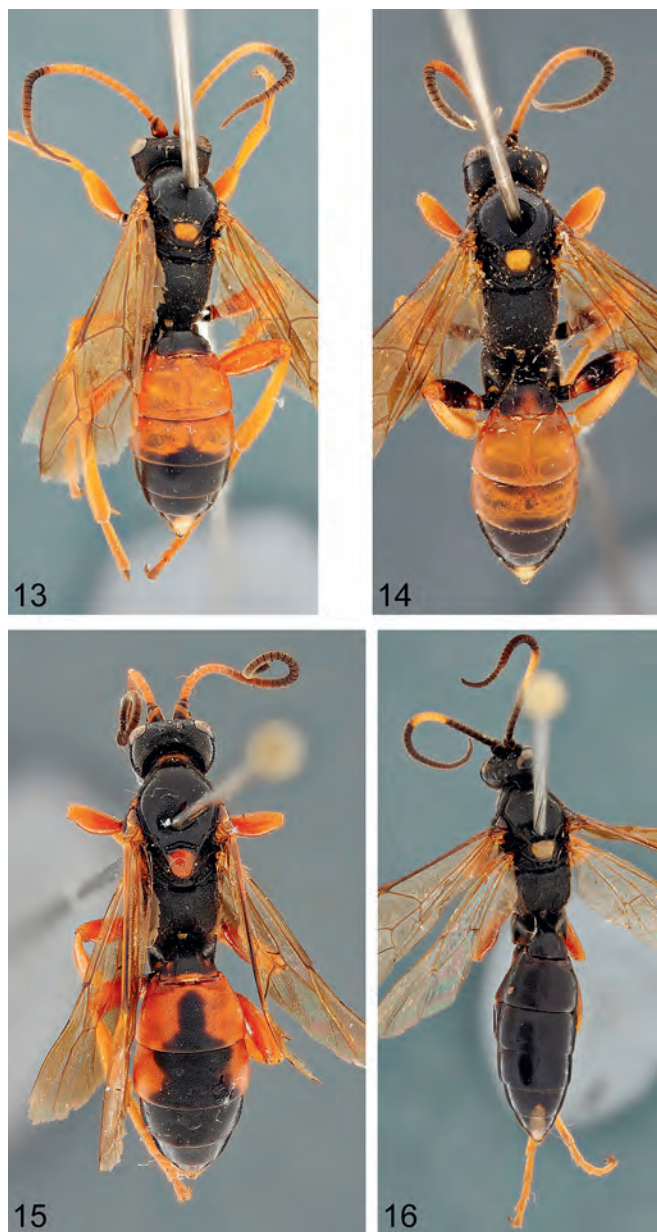
**Figs 1-4:** Habitus of: (1) *Ichneumon berlovi* nov.sp.; (2) *I. brevipunctatus* nov.sp.; (3) *I. genator* nov.sp.; (4) *I. granulatus* nov.sp.



**Figs 5-8:** Habitus of: (5) *Ichneumon hakassiacus* nov.sp.; (6) *I. inquinatops* nov.sp.; (7) *I. lanceolator* nov.sp.; (8) *I. mandibulatus* nov.sp.

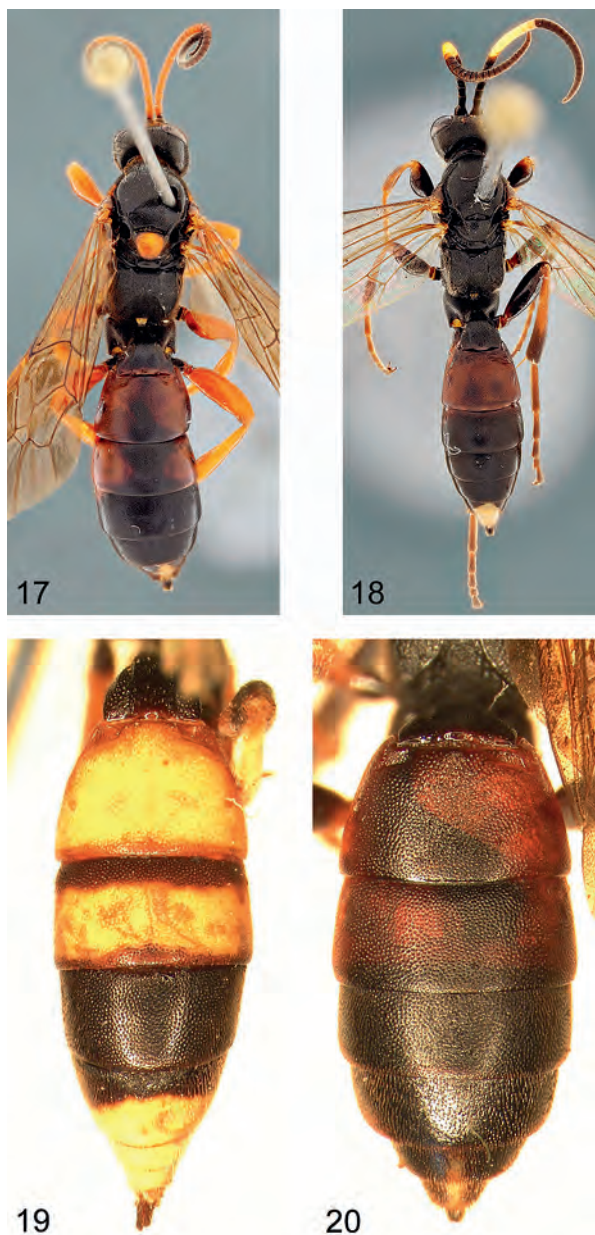


**Figs 9-12:** Habitus of: (9) *Ichneumon mesonotator* nov.sp.; (10) *I. nigrostigmaticus* nov.sp.; (11) *I. orientopodius* nov.sp.; (12) *I. paravafer* nov.sp.



**Figs 13-16:** Habitus of: (13) *Ichneumon paravulnerator* nov.sp.; (14) *I. pseudemancipatus* nov.sp.; (15) *I. rufolateralis* nov.sp.; (16) *I. sayanicus* nov.sp.

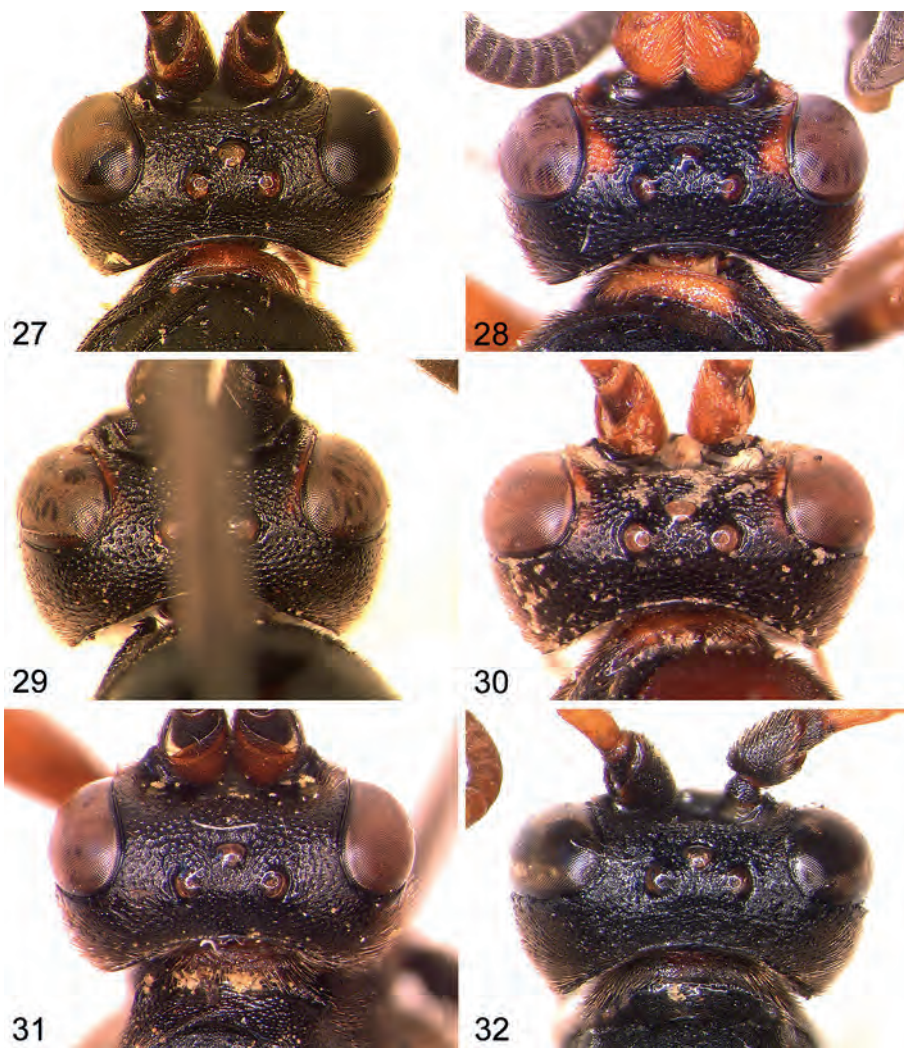




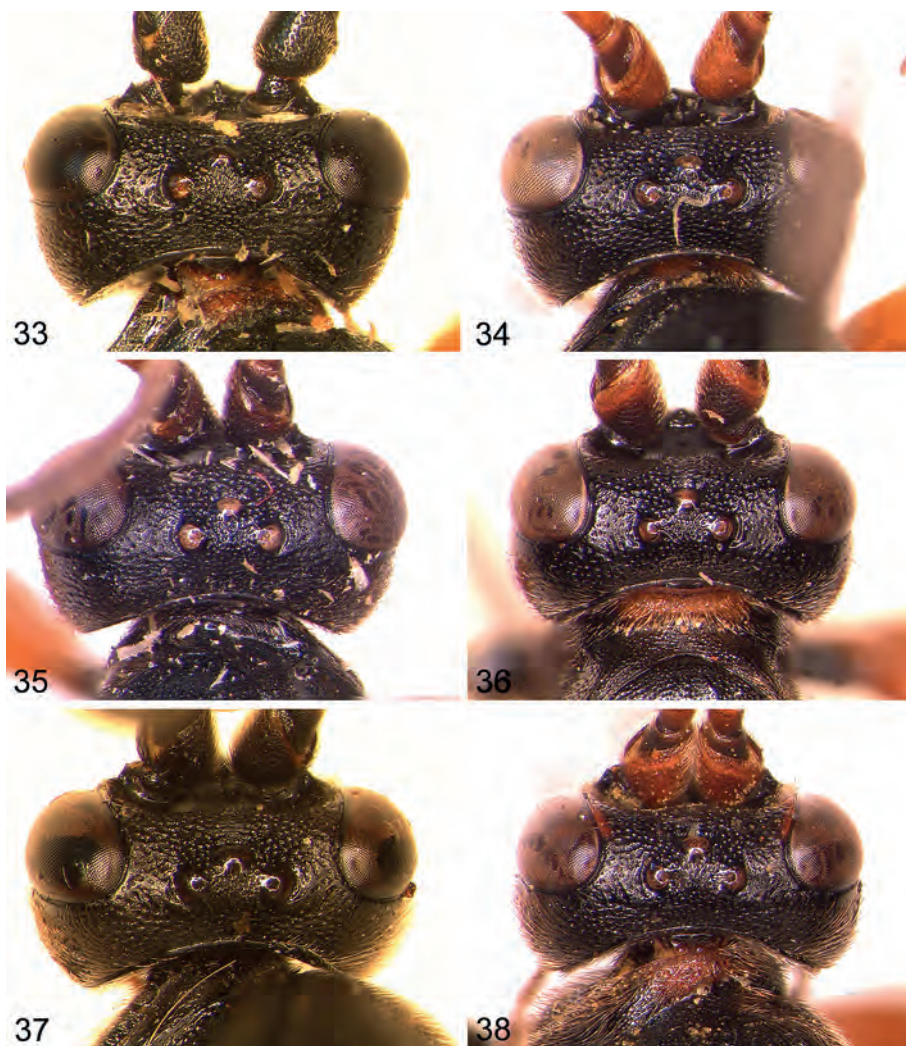
**Figs 17-18:** Habitus of: (17) *Ichneumon scopator* nov.sp.; (18) *I. thyridiator* nov.sp.  
**Figs 19-20:** Metasoma of: (19) *Ichneumon altaicurtulus* nov.sp.; (20) *I. brevipunctatus* nov.sp.



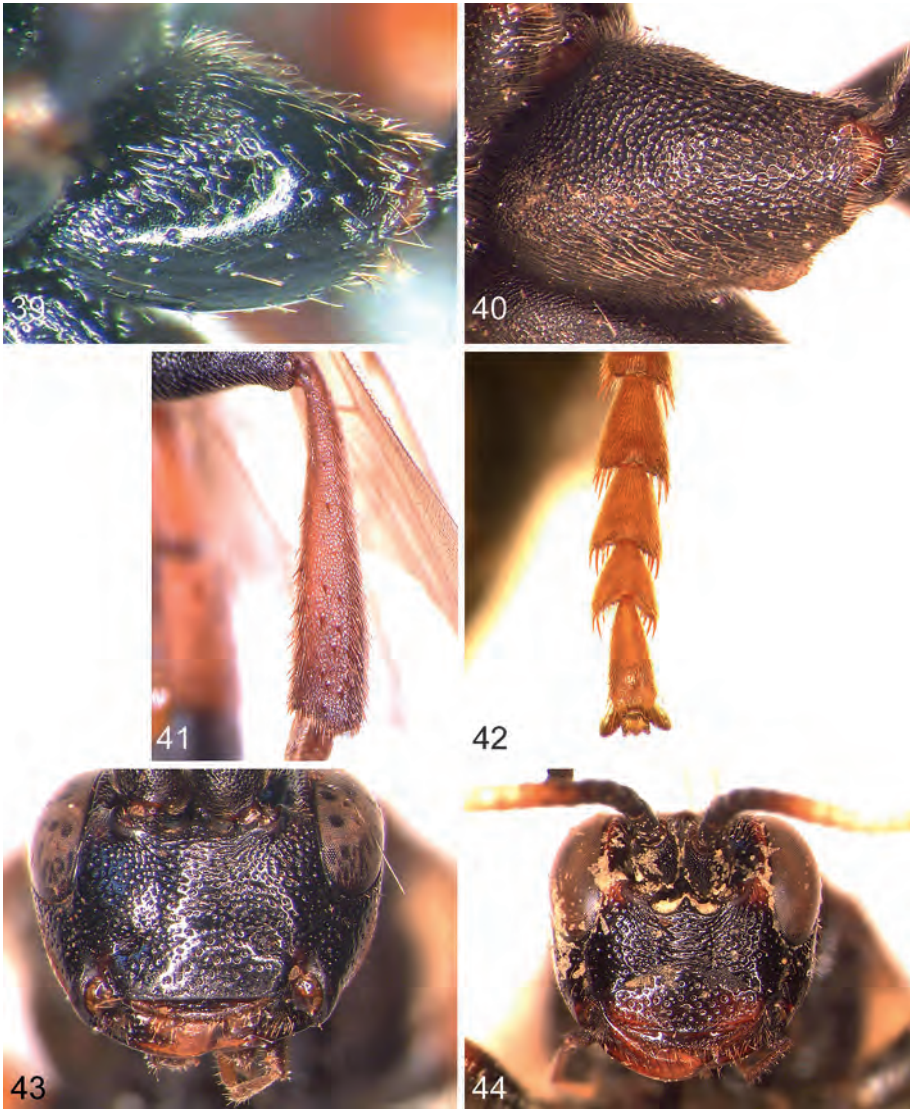
**Figs 21-26:** Head from dorsal of: (21) *Ichneumon berlovi* nov.sp.; (22) *I. brevipunctatus* nov.sp.; (23) *I. breviscopulatus* nov.sp.; (24) *I. genator* nov.sp.; (25) *I. granulatus* nov.sp.; (26) *I. hakassiacus* nov.sp.



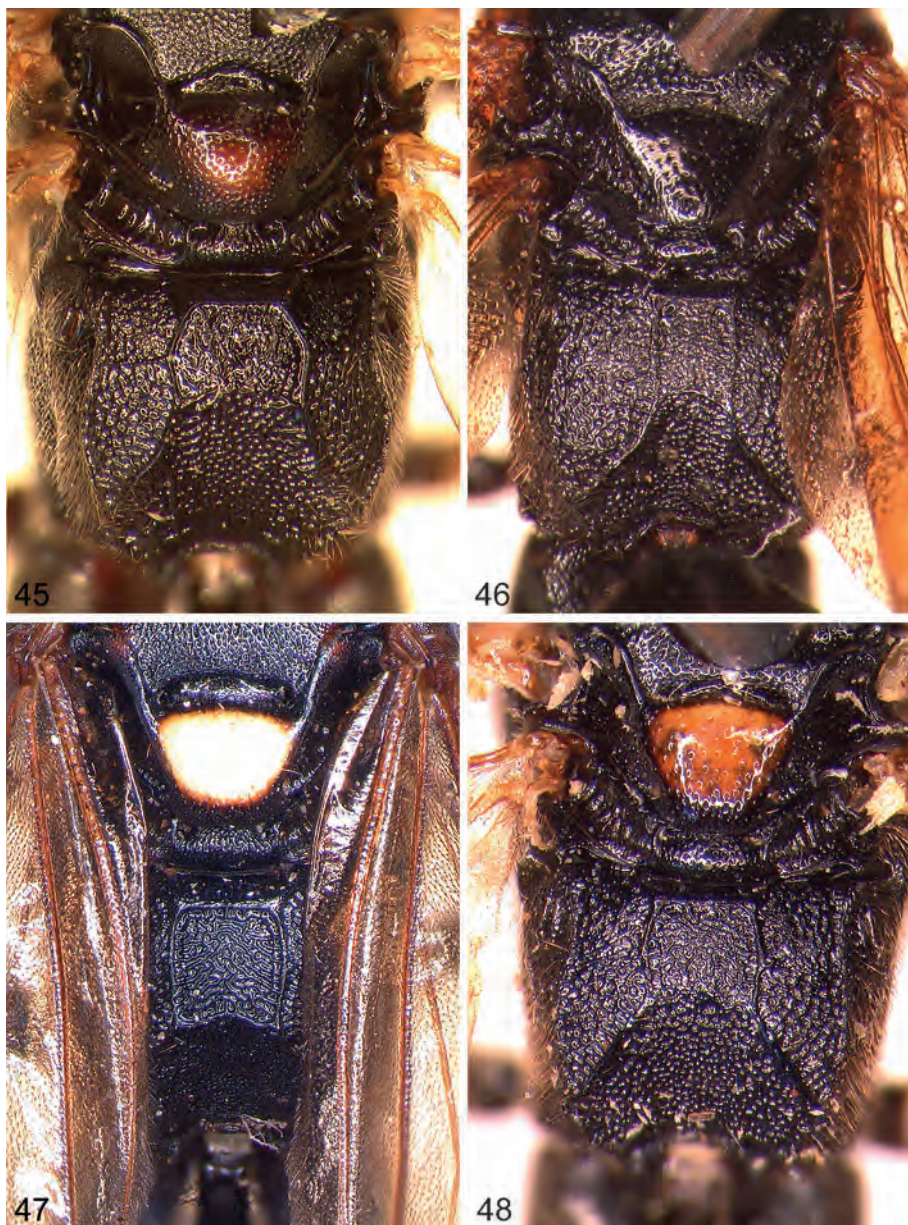
**Figs 27-32:** Head from dorsal of: (27) *Ichneumon inquinatops* nov.sp.; (28) *I. lanceolator* nov.sp.; (29) *I. mandibulatus* nov.sp.; (30) *I. mesonotator* nov.sp.; (31) *I. nigrostigmaticus* nov.sp.; (32) *I. orientopodius* nov.sp.



**Figs 33-38:** Head from dorsal of: (33) *Ichneumon paravafer* nov.sp.; (34) *I. paravulnerator* nov.sp.; (35) *I. pseudemancipatus* nov.sp.; (36) *I. rufolateralis* nov.sp.; (37) *I. sayanicus* nov.sp.; (38) *I. scopator* nov.sp.



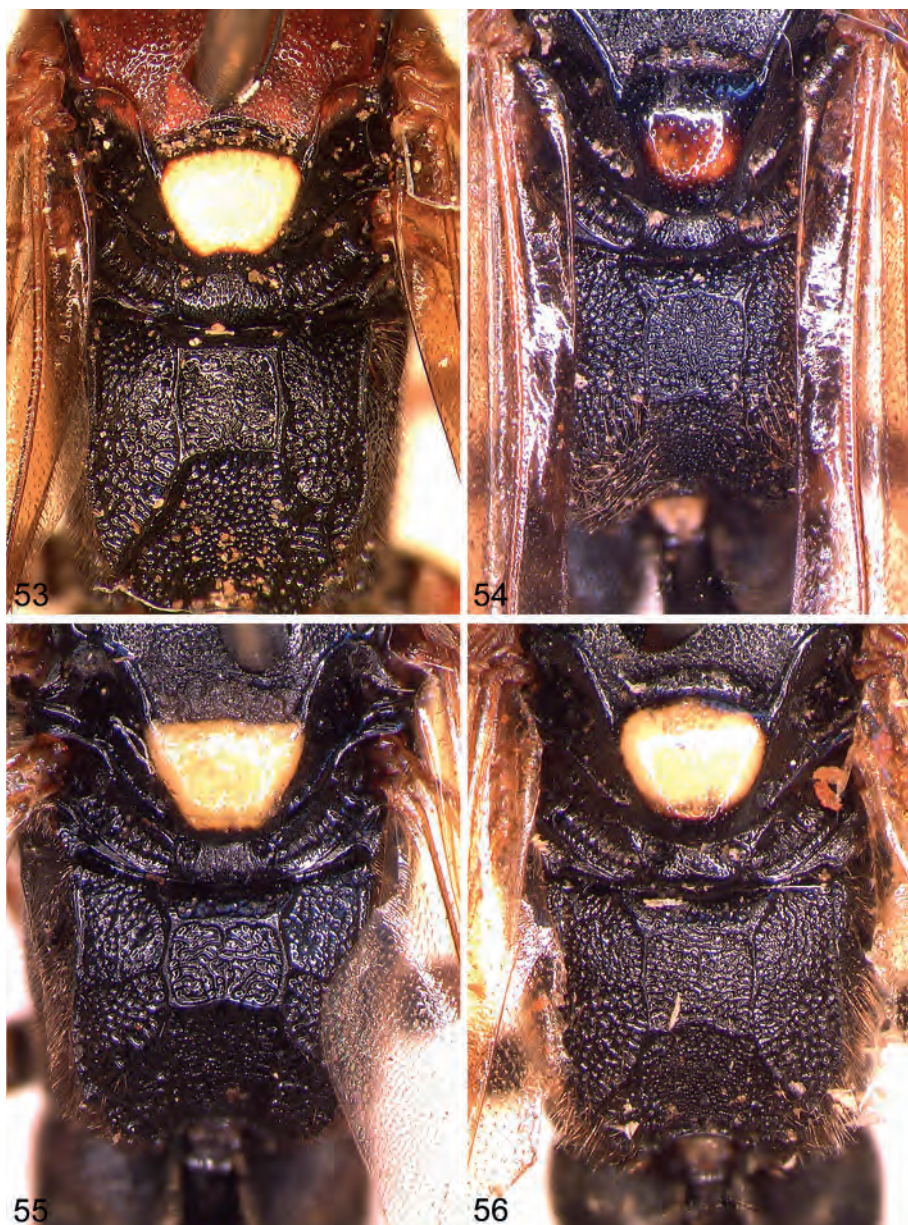
**Figs 39-40:** Hind coxa from lateral of: (39) *Ichneumon brevipunctatus* nov.sp.; (40) *I. breviscopatus* nov.sp. **Figs 41-42:** (41) Hind tibia of *Ichneumon genator* nov.sp. with multiple denticular spurs apico-externally; (42) widened mid tarsus of *Ichneumon orientopodius* nov.sp. **Figs 43-44:** Head from frontal: (43) *Ichneumon mandibulatus* nov.sp.; (44) *I. genator* nov.sp.



**Figs 45–48:** Scutellum and propodeum of: (45) *Ichneumon berlovi* nov.sp.; (46) *I. brevipunctatus* nov.sp.; (47) *I. genator* nov.sp.; (48) *I. granulatus* nov.sp.

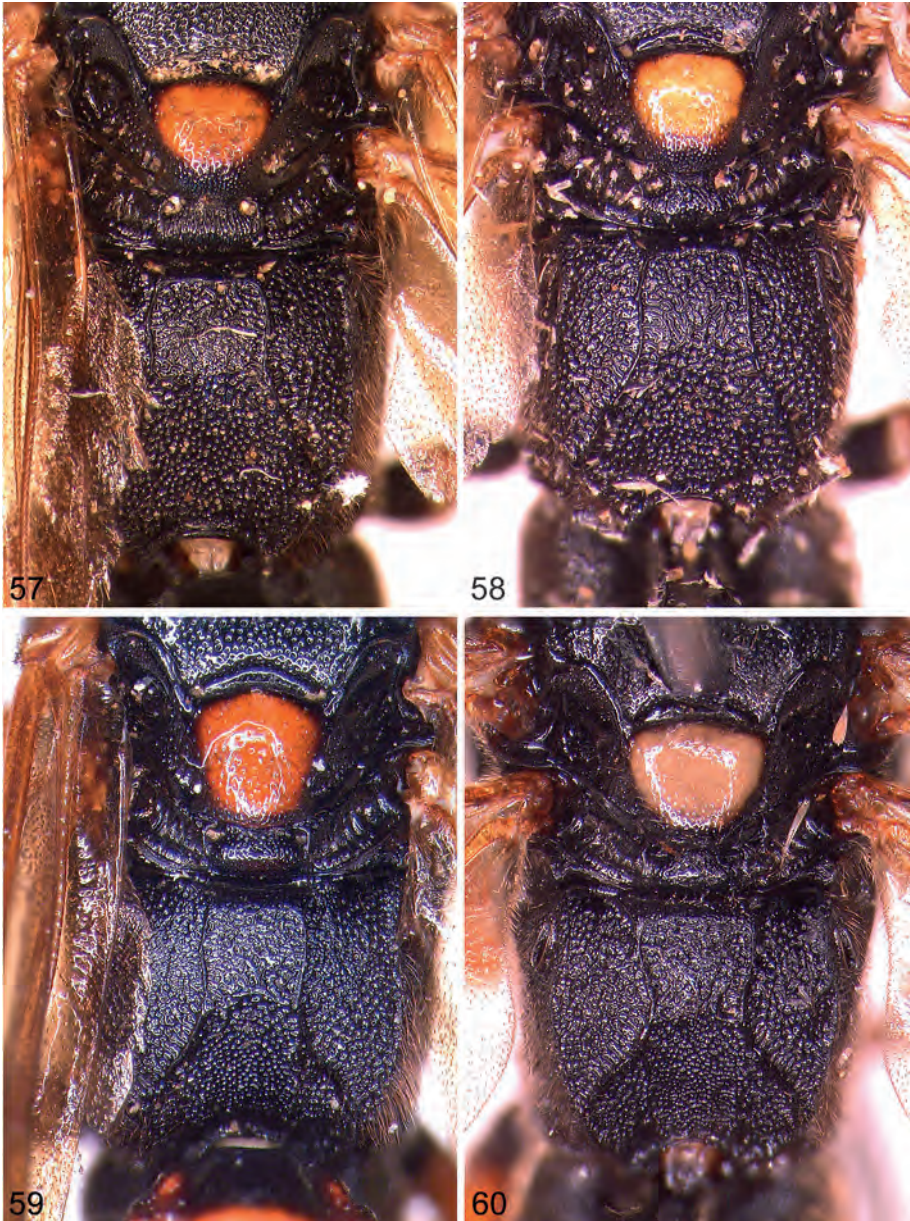


**Figs 49-52:** Scutellum and propodeum of: (49) *Ichneumon hakassiacus* nov.sp.; (50) *I. inquinatops* nov.sp.; (51) *I. lanceolator* nov.sp.; (52) *I. mandibulatus* nov.sp.

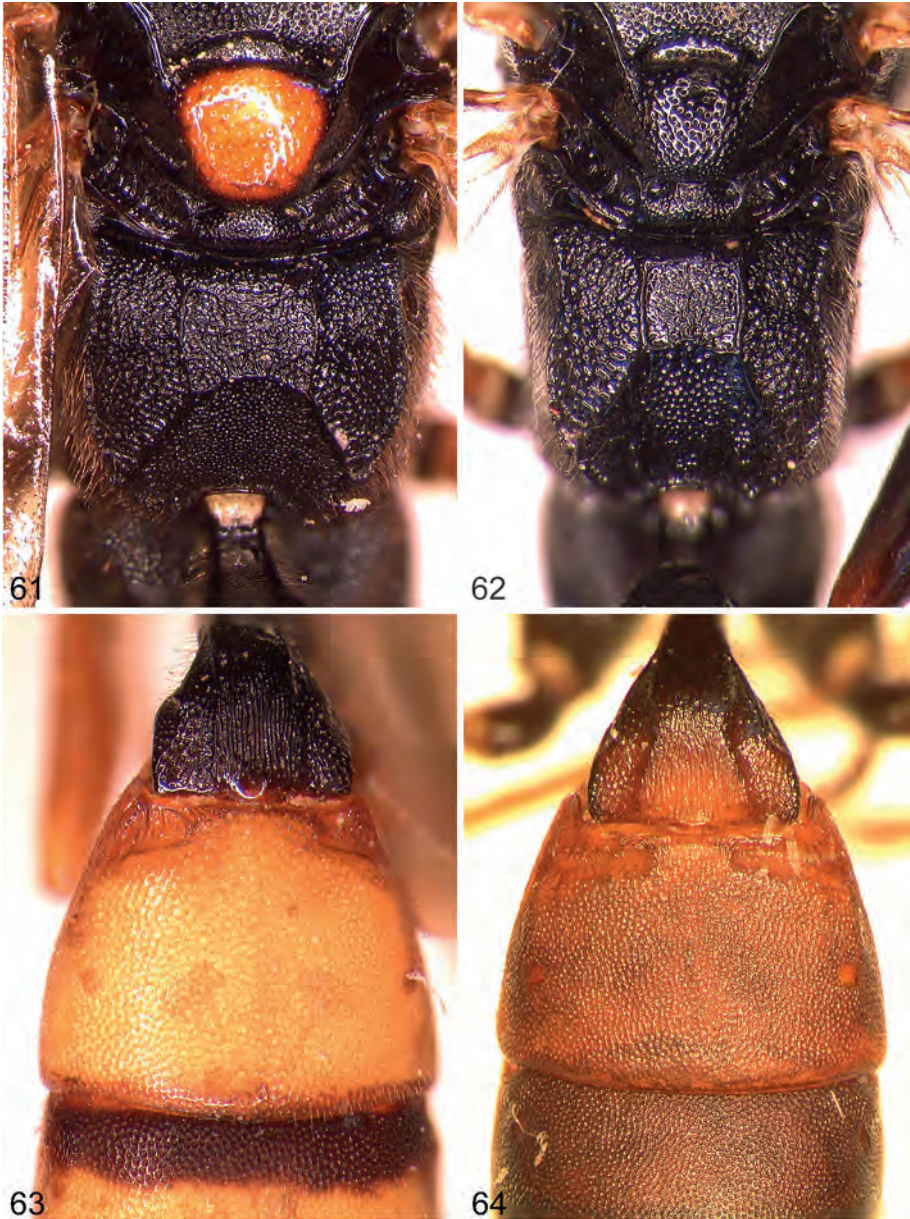


**Figs 53-56:** Scutellum and propodeum of: (53) *Ichneumon mesonotator* nov.sp.; (54) *I. nigrostigmaticus* nov.sp.; (55) *I. orientopodius* nov.sp.; (56) *I. paravafer* nov.sp.





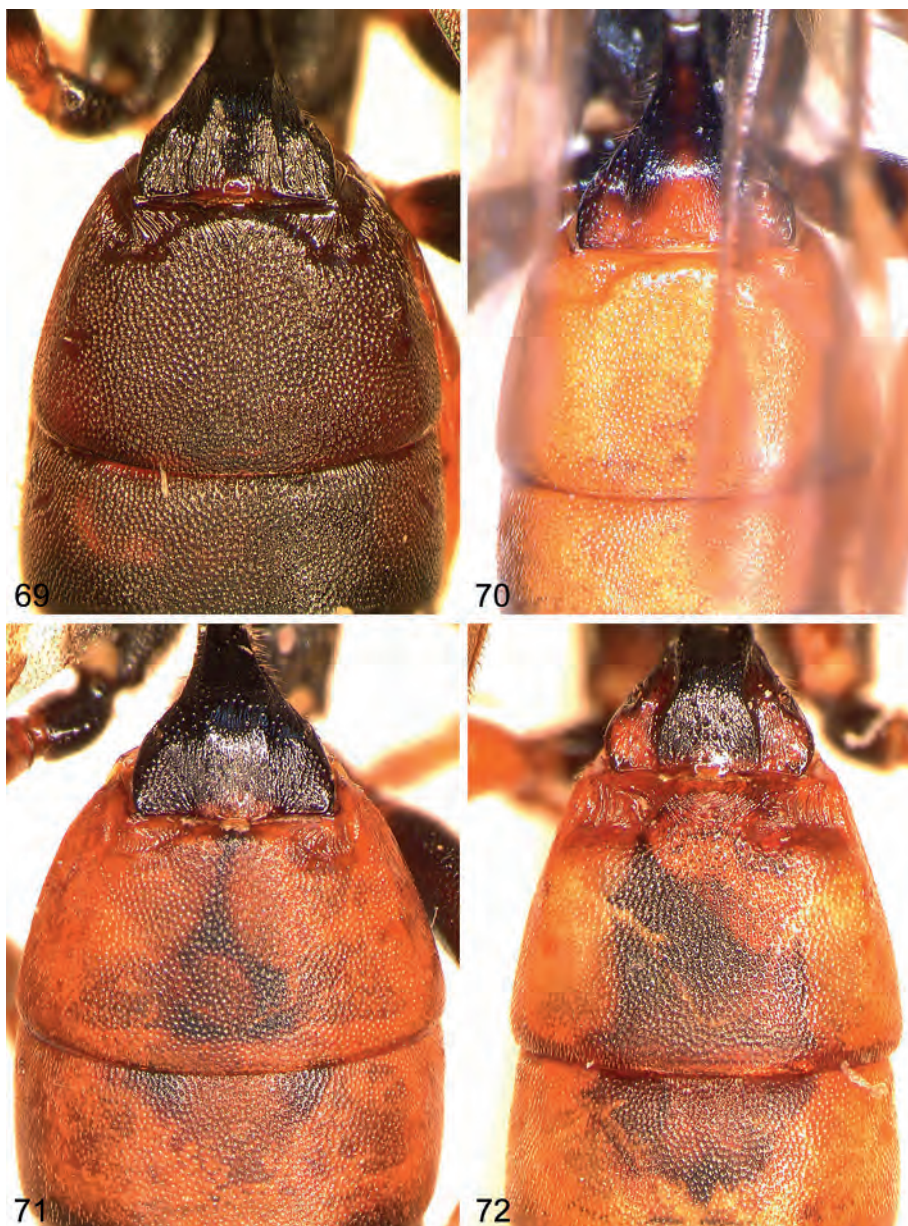
**Figs 57-60:** Scutellum and propodeum of: (57) *Ichneumon paravulnerator* nov.sp.; (58) *I. pseudemancipatus* nov.sp.; (59) *I. rufolateralis* nov.sp.; (60) *I. sayanicus* nov.sp.



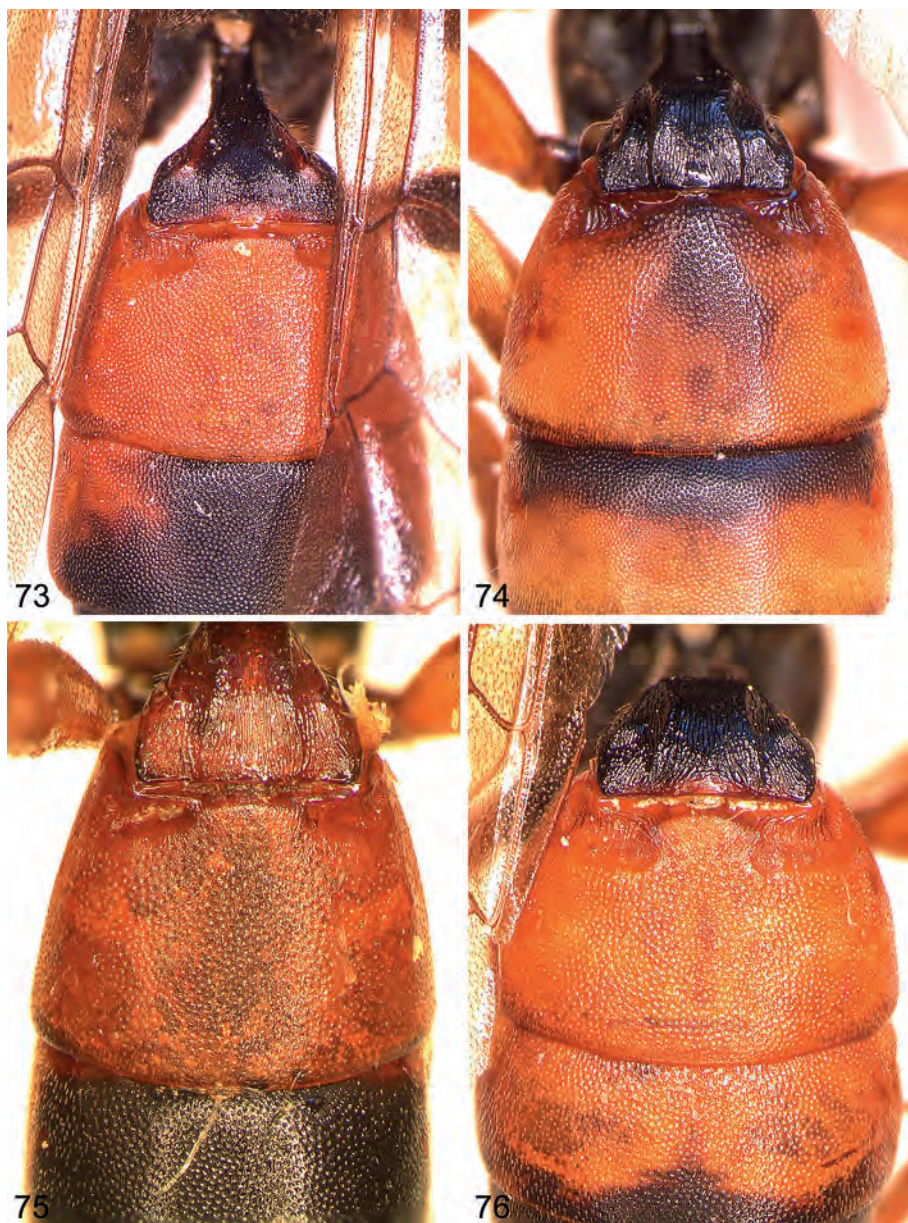
**Figs 61-62:** Scutellum and propodeum of: (61) *Ichneumon scopator* nov.sp.; (62) *I. thyridiator* nov.sp. **Figs 63-64:** Postpetiolus and 2<sup>nd</sup> tergite of: (63) *Ichneumon altaicurtulus* nov.sp.; (64) *I. berlovi* nov.sp.



**Figs 65-68:** Postpetiolus and 2<sup>nd</sup> tergite of: (65) *Ichneumon breviscopatus* nov.sp.; (66) *I. genator* nov.sp.; (67) *I. granulatus* nov.sp.; (68) *I. hakassiacus* nov.sp.



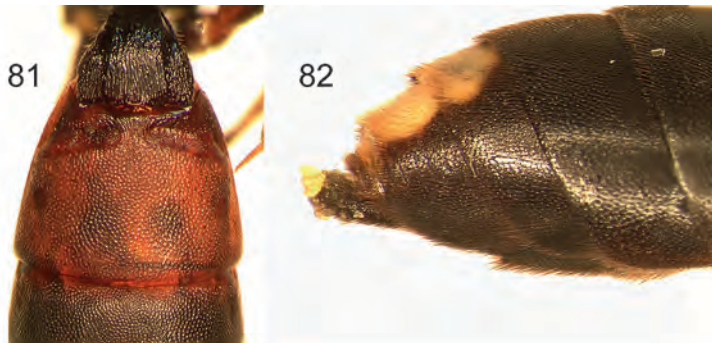
**Figs 69-72:** Postpetiolus and 2<sup>nd</sup> tergite of: (69) *Ichneumon inquinatops* nov.sp.; (70) *I. lanceolator* nov.sp.; (71) *I. mandibulatus* nov.sp.; (72) *I. mesonotator* nov.sp.



**Figs 73-76:** Postpetiolus and 2<sup>nd</sup> tergite of: (73) *Ichneumon nigrostigmaticus* nov.sp.; (74) *I. orientopodius* nov.sp.; (75) *I. paravafer* nov.sp.; (76) *I. paravulnerator* nov.sp.



**Figs 77-80:** Postpetiolus and 2<sup>nd</sup> tergite of: (77) *Ichneumon pseudemancipatus* nov.sp.; (78) *I. rufolateralis* nov.sp.; (79) *I. sayanicus* nov.sp.; (80) *I. scopator* nov.sp.



**Figs 81-82:** (81) *Ichneumon thyridiator* nov.sp.: Postpetiolus and 2<sup>nd</sup> tergite; (82) *Ichneumon orientopodius* nov.sp.: Moderately elongated hypopygium.