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TOWARDS THE STUDY OF THE GENUS *TERSILOCHUS* HOLMGREN, 1859 (HYMENOPTERA: ICHNEUMONIDAE: TERSILOCHINAE) OF THE RUSSIAN FAR EAST AND JAPAN

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ABSTRACT

Seven species of the subgenus *Tersilochus*, genus *Tersilochus*, are described from the Russian Far East and Japan in this paper: *T. grandiculus* sp. nov., *T. hokkaidoensis* sp. nov., *T. impunctator* sp. nov., *T. juxtus* sp. nov., *T. konishii* sp. nov., *T. offrenatus* sp. nov. and *T. spasskensis* sp. nov. Two species, *T. curvator* Horstmann and *T. liopleuris* (Thomson), are recorded from the Russian Far East for the first time. A preliminary key to nine species of the subgenus *Tersilochus*, occurring in the Russian Far East and Japan, is given.

Key words: Far East, Ichneumonidae, Japan, key to species, Russia, taxonomy, Tersilochinae, Tersilochus

К ИЗУЧЕНИЮ РОДА *TERSILOCHUS* HOLMGREN, 1859 (HYMENOPTERA: ICHNEUMONIDAE: TERSILOCHINAE) ДАЛЬНЕГО ВОСТОКА РОССИИ И ЯПОНИИ

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РЕЗЮМЕ

Семь видов подрода *Tersilochus* рода *Tersilochus* описаны с Дальнего Востока России и из Японии в этой работе: *T. grandiculus* sp. nov., *T. hokkaidoensis* sp. nov., *T. impunctator* sp. nov., *T. juxtus* sp. nov., *T. konishii* sp. nov., *T. offrenatus* sp. nov. и *T. spasskensis* sp. nov. Два вида, *T. curvator* Horstmann и *T. liopleuris* (Thomson), отмечены на Дальнем Востоке России впервые. Дан предварительный ключ девяти видов подрода *Tersilochus*, обитающих на Дальнем Востоке России и в Японии.

Ключевые слова: Дальний Восток, Ichneumonidae, Япония, определительный ключ, Россия, систематика, Tersilochinae, Tersilochus

INTRODUCTION

Tersilochus Holmgren, 1859 is a moderately large, predominantly Holarctic genus comprising three subgenera with about 60 described species (Khalaim 2007, 2011; Khalaim and Sheng 2009; Yu et al. 2012). Over 50 species of the genus occur in the Palaearctic region, whereas the Nearctic fauna is virtually undescribed (Horstmann 2001). Besides the Holarctic region, several species of *Tersilochus* are known from the Oriental, Afrotropical and Neotropical regions (Khalaim pers. obs.).

The European fauna of the entire genus was revised by Klaus Horstmann (Horstmann 1971, 1981; Horstmann and Kolarov 1988). The subgenus *Gonolochus* Förster, 1869 comprises five European species, occurring predominantly in Southern Europe, and *T.* (*G.*) *caudatus* (Holmgren, 1860), which is abundant and widely distributed across the Palaearctic region, including the Russian Far East (Khalaim 2007). The subgenus *Pectinolochus* Aubert, 1980 comprises 18 Palaearctic species, five of them occurring in the Russian Far East (Khalaim 2007). The largest subgenus, *Tersilochus* s. str., is very poorly studied outside of Europe; only three species of this subgenus are known to occur in the Eastern Palaearctic: two species, *T.* (*T.*) *ningxiator* Khalaim et Sheng, 2009 and *T.* (*T.*) *runatus* Khalaim et Sheng, 2009, were described from the Ningxia Hui Autonomous Region of China (Khalaim and Sheng 2009), and one species, *T.* (*T.*) *granulatus* Khalaim, 2011, was recently described from South Korea (Khalaim 2011).

Species of the genus are known mainly as parasitoids of the beetle families Chrysomelidae, Curculionidae and Nitidulidae, although two species were reared from Eriocraniidae (Lepidoptera) in leaf mines on birch in Europe (Jordan 1998) and some species of the subgenus *Pectinolochus* probably parasitise sawfly larvae of the family Tenthredinidae (Hymenoptera) (Yu et al. 2012).

This contribution begins a study of the subgenus *Tersilochus* of the Russian Far East and Japan. In this paper the most conspicuous and abundant species of the fauna are included. A preliminary key to these species is given.

MATERIAL AND METHODS

This work is based on rich material of the Zoological Institute of the Russian Academy of Sciences, St. Petersburg, Russia (further ZIN) and the National Institute for Agro-Environmental Sciences, Tsukuba, Japan (further NIAES). Material was examined using MBS-10 stereomicroscope. Photographs were taken at ZIN with a DFC 290 digital camera attached to a Leica MZ16 stereomicroscope; images were combined using Helicon Focus software. Wing venation and morphological terms predominantly follow Townes (1969, 1971) with changes according to Khalaim (2011).

SYSTEMATICS

Family Ichneumonidae Latreille, 1802
Subfamily Tersilochinae Schmiedeknecht, 1910
Genus *Tersilochus* Holmgren, 1859

Preliminary key to species of the subgenus *Tersilochus* occurring in the Russian Far East and Japan

1. Head and mesosoma distinctly punctate, mostly smooth between punctures (Figs 8, 9, 30). Notaulus either as irregularly rugulose area or distinct wrinkle. Metacarp almost reaching apex of forewing (Figs 6, 28, 37). Foveate groove of mesopleuron deep and sharp (Figs 30, 40) 2
– Head and mesosoma granulate, impunctate or with very indistinct punctures (Figs 13, 14, 19). Notaulus absent or weak. Metacarp shorter, not reaching apex of forewing (Figs 11, 21, 23, 32). Foveate groove of mesopleuron absent or weak (Figs 14, 19) 4
2. Tarsal claws weakly curved (Fig. 3). Ovipositor sheath distinctly shorter than first tergite (Fig. 6). Foveate groove short, about half as long as mesopleuron . . . . . ***T. grandiculus* sp. nov.**
– Tarsal claws strongly curved (Figs 4, 5). Ovipositor sheath longer, 1.3–2.6 times as long as first tergite (Figs 28, 37). Foveate groove usually longer 3
3. First tergite of metasoma moderately slender, glymma situated near or slightly behind its middle (Figs 40, 41). Thyridial depression distinctly elongate, about 1.5 times as long as broad. Ovipositor very robust (Fig. 43), centrally twice as high as width of hind basitarsus; sheath 1.5–2.6 times as long as first tergite . . . . . ***T. spasskensis* sp. nov.**
– First tergite of metasoma slender, glymma situated far behind its middle (Fig. 28). Thyridial depression as long as broad. Ovipositor slender (Figs 28, 31), centrally about as high as width of hind basitarsus; sheath 1.3 times as long as first tergite . . . . . ***T. konishii* sp. nov.**
4. Ovipositor strongly upcurved at apex (Figs 1, 2). Notaulus with weak wrinkles. Propodeum with basal area (sometimes indistinct) 5
– Ovipositor evenly upcurved. Notaulus completely absent. Propodeum with basal area or basal keel 6
5. Ovipositor very strongly upcurved at apex (Fig. 2). Mesopleuron centrally smooth, with fine but distinct punctures. Foveate groove short and weak, but quite distinct. Flagellum with 18–21 segments . . . . . ***T. liopleuris* Thomson**
– Ovipositor not so strongly upcurved at apex (Fig. 1). Mesopleuron granulate, without distinct punctures. Foveate groove absent or sometimes as more densely granulate or very shallowly wrinkled area. Flagellum with 16–18 segments . . . . . ***T. curvator* Horstmann**

6. Malar space about half as long as basal width of mandible. Flagellum with 18–21 segments. Ovipositor sheath as long as first tergite or shorter (Figs 16, 22) 7
– Malar space longer, 0.8–1.2 times as long as basal width of mandible. Flagellum with 15–17 segments. Ovipositor sheath more than twice as long as first tergite (Figs 23, 32) 8
7. Flagellum very slender, with 19–21 segments (Fig. 12); second flagellomere at least 2.5 times as long as broad. Propodeum with basal area (Fig. 15). Metasoma behind first segment dark brown (Fig. 11) . . . . . ***T. hokkaidoensis* sp. nov.**
– Flagellum less slender, with 18–19 segments (Fig. 17); second flagellomere at most 1.8 times as long as broad. Propodeum with basal keel (sometimes indistinct) (Fig. 20). Metasoma brownish yellow ventrally to dark brown dorsally (Figs 20, 22) . . . ***T. impunctator* sp. nov.**
8. Nervellus of hind wing vertical or slightly reclivous. Propodeum with basal area (Fig. 35). Ovipositor with shallow dorsal subapical depression (Fig. 36) . . . . . ***T. offrenatus* sp. nov.**
– Nervellus of hind wing distinctly reclivous. Propodeum with basal keel (sometimes indistinct) (Fig. 26). Ovipositor with narrow dorsal subapical notch (Fig. 27) . . . . . ***T. juxtus* sp. nov.**

Tersilochus (*Tersilochus*) *curvator* Horstmann, 1981
(Fig. 1)

Material. RUSSIA: 1 female (ZIN), Primorskiy Terr., Gorno-Taezhnaya station, arboretum, 3 May 1983, coll. S.Yu. Sinev. 1 male (ZIN), same data but sampled at light, 15 May 1983. 1 female (ZIN), Sakhalin Prov., south of Sakhalin I., Novoalexandrovsk, 23 May 1973, coll. I.M. Kerzhner. 8 females (ZIN), south of Sakhalin I., 12 km S of Kholmsk, Pravda, 25 May 1973, coll. I.M. Kerzhner. 2 females (ZIN), Sakhalin I., Aniva Distr., 9 km NE of Yuzhnosakhalinsk, Susaninskiy Mts, Chechova Mt., 30 May 1988, coll. Nesterov. 1 female (ZIN), Kurile Islands, Kunashir I., Dubovoe, birch-oak forest, 10 June 1973, coll. I.M. Kerzhner. 1 female (ZIN), Kamchatka Terr., 12 km NW of Petropavlovsk-Kamchatskiy, flood plain forest, 14 June 1975, coll. Barkalov.

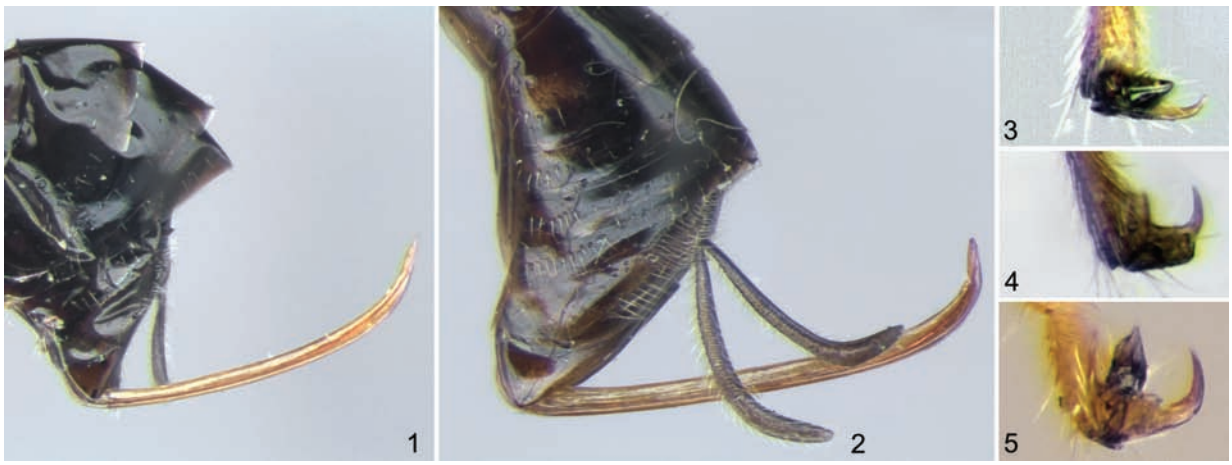
Distribution. Transpalaearctic species: Europe, Russian Far East (Sakhalin I., Kunashir I., Primorskiy Terr., Kamchatka Terr.).

Biology. Reared from a lepidopterous host, *Eriocrania cicatricella* (Zetterstedt, 1839) (Lepidoptera: Eriocraniidae), in leaf mines on birch in Europe (Jordan 1998).

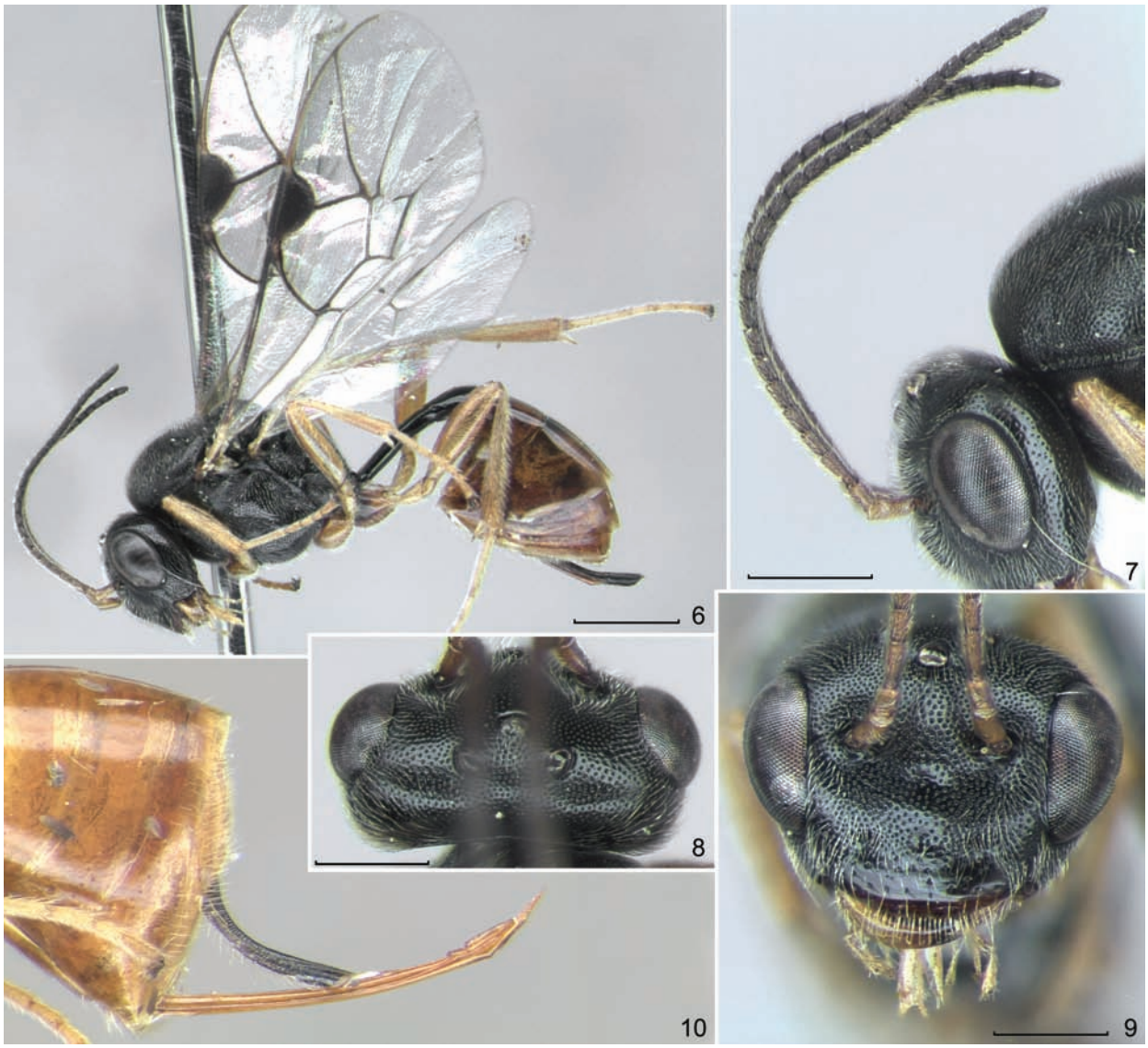
Tersilochus (*Tersilochus*) *grandiculus* sp. nov.
(Figs 3, 6–10)

Holotype. Female – RUSSIA: Primorskiy Terr., Novokachalinsk, Khanka Lake, meadows, bushes, oak-forest, 13 August 2003, coll. S.A. Belokobylskij (ZIN).

Paratypes. RUSSIA: 2 females (ZIN), Primorskiy Terr., 5 km W of Anisimovka, forest, 7 August 1993, coll. S.A. Belokobylskij. 1 female (ZIN), 15 km SW of Spassk-Dal'niy, forest, meadows, 22 July 1991, coll. S.A. Belokobylskij. 1 female (ZIN), Irkutsk, coll. V. Yakovlev.



Figs 1–5. *Tersilochus* spp., females. 1 – *T. curvator* (Hibiny); 2 – *T. liopleuris* (Kamchatka); 3 – *T. grandiculus* sp. nov.; 4 – *T. konishii* sp. nov.; 5 – *T. spasskensis* sp. nov. 1–2 – apex of metasoma with ovipositor, lateral view; 3–4 – claw of hind tarsus.



Figs 6–10. *Tersilochus grandiculus* sp. nov., females (holotype except Fig. 10). 6 – habitus, lateral view; 7 – head with antennae, lateral view; 8 – head, dorsal view; 9 – head, frontal view; 10 – apex of metasoma with ovipositor (paratype, Primorskiy Terr.), lateral view. Scale bar for Fig. 6 = 1.0 mm, for Figs 7–9 = 0.5 mm.

Etymology. From the Latin *grandiculus* (rather large), on account of its large body size.

Differential diagnosis. This is one of the most distinct species of the genus that is immediately recognized by its large body size, distinctly punctate head and mesosoma, and short ovipositor. It differs from two similar Far Eastern species, *T. konishii* sp. nov. and *T. spasskensis* sp. nov., by the weakly curved tarsal claws, shorter foveate groove of mesopleuron and short ovipositor.

Description. Female. Holotype. Body length 5.6 mm. Forewing length 4.6 mm.

Head rounded behind eyes in dorsal view (Fig. 8); temple 0.73 times as long as eye width. Clypeus smooth, distinctly punctate in upper 0.6, punctures are rather dense near upper margin. Mandible robust, with upper tooth longer than lower tooth. Malar space 0.7–0.9 times as long as basal width of mandible. Flagellum of antenna distinctly tapered towards apex, with 23–24 flagellomeres (24 flagellomeres in holo-

type); subbasal flagellomeres about 1.6–1.8 times, mid and subapical flagellomeres 1.4–1.6 times as long as broad (Fig. 7). Face, frons and vertex very densely punctate, smooth and weakly shining between punctures (Figs 7–9); distance between punctures on face and frons shorter than one diameter of puncture. Temple moderately densely punctate, smooth and shining between punctures. Occipital carina complete.

Mesoscutum densely punctate (distance between punctures mostly subequal to one diameter of puncture), very finely granulate peripherally and almost smooth centrally between punctures. Notaulus irregularly rugulose. Mesopleuron distinctly punctate, smooth between punctures. Foveate groove about half as long as mesopleuron, upcurved anteriorly, with strong transverse carinae. Dorsolateral area of propodeum distinctly and densely punctate, smooth between punctures. Basal area of propodeum indistinct, short and broad, widened anteriorly, rather deeply impressed. Basal part of propodeum 0.3 times as long as apical area. Propodeal spiracle moderately large, separated from pleural carina by 1.5–2.0 diameters of spiracle. Apical area flat, punctate anteriorly and irregularly wrinkled posteriorly, rounded anteriorly; apical longitudinal carinae distinct, reaching transverse carina anteriorly.

Forewing with second recurrent vein postfurcal. Intercubitus moderately thick, somewhat longer than abscissa of cubitus between intercubitus and second recurrent vein. First abscissa of radius somewhat longer than width of pterostigma. Metacarp almost reaching apex of forewing. Postnervulus intercepted distinctly below middle. Hind wing with nervellus vertical.

Legs slender. Hind femur 3.7 times as long as broad and 0.78 times as long as tibia. Claws moderately long, weakly curved, not pectinate (Fig. 3).

First tergite 3.0 times as long as posteriorly broad, entirely smooth, with petiole round centrally in cross-section. Glymma joining ventral part of postpetiole by distinct groove, situated behind middle of first tergite. Second tergite 1.1 times as long as anteriorly broad. Thyridial depression shallow, slightly elongate. Ovipositor short, fairly upcurved and thickened apically, with moderately sharp dorsal subapical depression and usually with more or less distinct rounded tooth before this depression (Fig. 10); sheath about 0.75 times as long as first tergite and hind tibia.

Head, mesosoma and first segment of metasoma black. Palpi, mandible (teeth blackish), tegula and legs (hind coxa brownish black basally) brownish yellow; lower 0.3 of clypeus brownish. Scape and pedicel of antenna brownish yellow, flagellum dark brown basally to blackish apically. Pterostigma dark brown. Metasoma behind first tergite reddish brown; tergites 2 and 3 dorsoanteriorly blackish.

Male. Unknown.

Distribution. Southern Siberia (Irkutsk Prov.) and south of the Russian Far East (Primorskiy Terr.).

Biology. Unknown.

Tersilochus (*Tersilochus*) *hokkaidoensis* sp. nov.
(Figs 11–16)

Holotype. Female – JAPAN: Hokkaido I., 35–40 km S of Sapporo, Shikotsuko Lake, 4 September 1999, coll. S.A. Belokobylskij (ZIN).

Paratypes. JAPAN: 12 females, 1 male (ZIN), same data as holotype. 6 females, 3 males (ZIN), Hokkaido I., Sapporo, Mt Maruyama, forest, rocks, 5 September 1999, coll. S.A. Belokobylskij. 2 females (ZIN), same locality and collector, 12 September 1999. 5 females (ZIN), Honshu I., Tochigi Pref., Nikko, forest, 2–3 October 1999, coll. S.A. Belokobylskij.

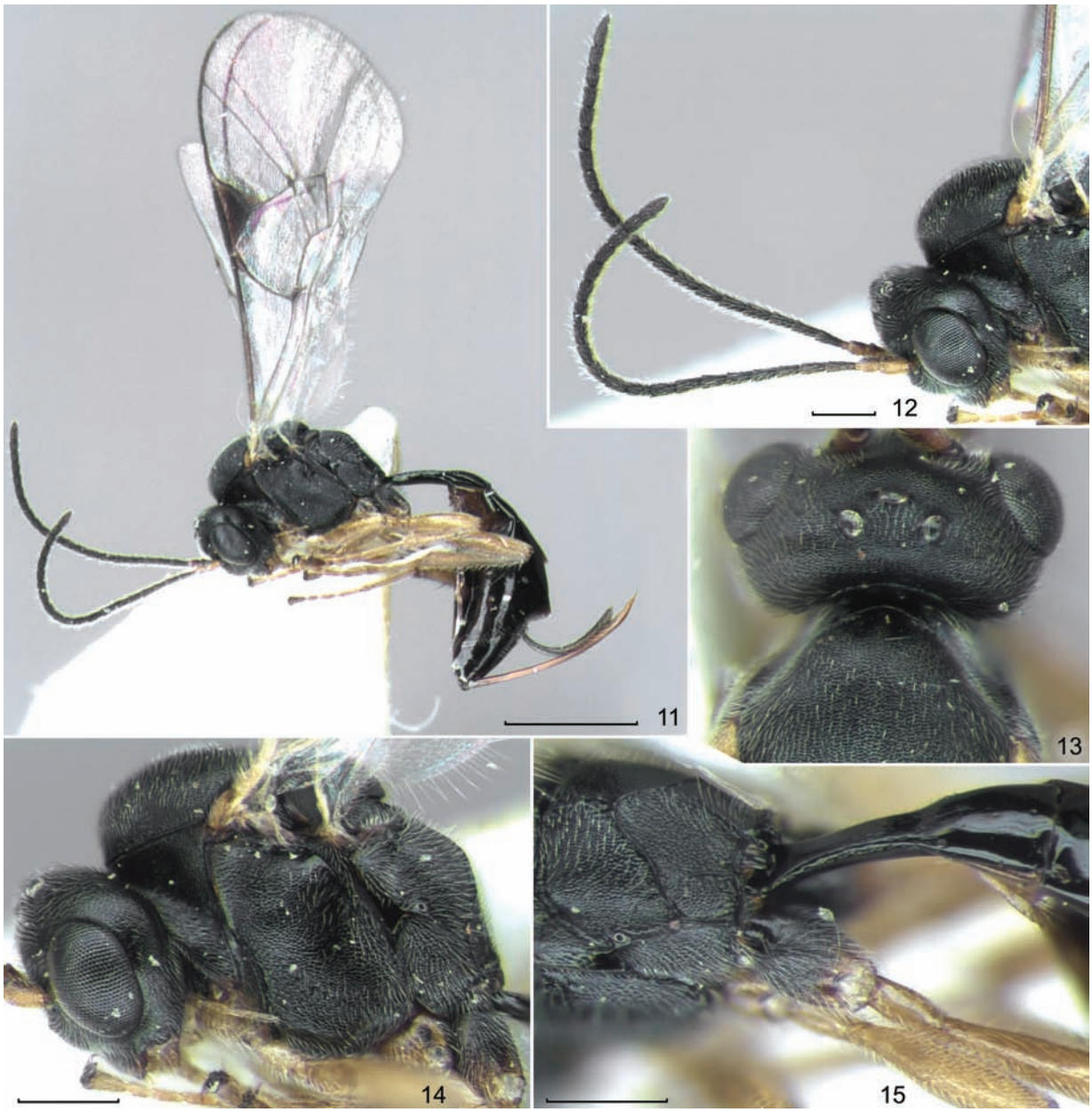
Etymology. Named after the type-locality, Hokkaido.

Differential diagnosis. Differs from other Far Eastern species of the genus by a combination of slender flagellum, granulate and impunctate head and mesosoma, dark brown metasoma and short ovipositor.

Description. Female. Holotype. Body length 3.5 mm. Forewing length 3.3 mm.

Head rounded behind eyes in dorsal view (Fig. 13); temple 0.75 times as long as eye width. Clypeus distinctly convex in lateral view, with lower margin somewhat truncated, smooth in lower third, finely granulate and very finely and sparsely punctate in upper 2/3. Mandible with upper tooth longer than lower tooth. Malar space about half as long as basal width of mandible. Flagellum of antenna very slender, filiform, with 19–21 flagellomeres (20 flagellomeres in holotype); second flagellomere about 2.5 times, mid flagellomeres 1.7–2.0 times, and subapical flagellomeres 1.5–1.7 times as long as broad (Fig. 12). Face, frons, vertex and temple entirely granulate, impunctate; granulation on temple more shallow. Occipital carina complete.

Mesosoma entirely granulate, impunctate; mesopleuron centrally with weak oblique wrinkles. Notaulus absent. Foveate groove of mesopleuron weak and



Figs 11–15. *Tersilochus hokkaidoensis* sp. nov., female (holotype). 11 – habitus, lateral view; 12 – head with antennae and anterior part of mesosoma, lateral view; 13 – head, dorsal view; 14 – head and mesosoma, lateral view; 15 – propodeum and first metasomal segment, dorsolateral view. Scale bar for Fig. 11 = 1.0 mm, for Figs 12, 14 and 15 = 0.25 mm.

short. Propodeum with basal area (often indistinct), which is more or less rectangular, slightly widened anteriorly, 2.5–3.0 times as long as broad and about 0.55 times as long as apical area (Fig. 15). Propodeal spiracle small, adjacent to pleural carina or separated from this carina at most by half diameter of spiracle. Apical area flat, rounded or roundly pointed anteriorly; apical longitudinal carinae weak, not reaching transverse carina anteriorly.

Forewing with second recurrent vein postfurcal. Intercubitus thick and short, much shorter than abscissa of cubitus between intercubitus and second

recurrent vein. First abscissa of radius longer than width of pterostigma. Metacarp somewhat not reaching apex of forewing. Postnervulus intercepted below middle. Hind wing with nervellus vertical or slightly reclivous.

Legs slender. Hind femur 0.89 times as long as tibia. Spurs of hind tibia slightly curved. Claws not pectinate.

First tergite almost 3.0 times as long as posteriorly broad, laterally smooth, dorsally centrally striate; petiole slightly trapeziform centrally in cross-section. Glymma moderately large, joining ventral part of postpetiole by distinct groove, situated distinctly behind middle of first tergite. Second tergite slightly transverse. Thyridial depression about as long as broad. Ovipositor short, weakly upcurved, slightly thickened apically, with weak dorsal subapical depression (Fig. 16); sheath as long as or slightly shorter than first tergite and hind tibia.

Head, mesosoma and first metasomal segment black. Palpi, mandible (teeth reddish) and tegula brownish yellow. Lower half of clypeus brownish yellow to reddish brown. Antenna with scape and pedicel brownish yellow ventrally to brown dorsally, flagellum black. Pterostigma brown. Legs brownish yellow, hind coxa brownish or blackish basally. Metasoma behind first tergite dark brown.

Male. Similar to female, but flagellum with 21–22 segments, malar space shorter and metasomal tergites longer.

Distribution. Japan (Hokkaido and Honshu).

Biology. Unknown.

Tersilochus (*Tersilochus*) *impunctator* sp. nov.

(Figs 17–22)

Holotype. Female – RUSSIA: Primorskiy Terr., Anisimovka, valley forest, meadows, 7 June 1993, coll. S.A. Belokobylskij (ZIN).

Paratypes. RUSSIA, Primorskiy Terr.: 2 females (ZIN), same data as holotype. 4 females (ZIN), 30 km SE of Ussuriysk, Ussuriysk Nature Reserve, mixed forest, 11 June 1995, coll. S.A. Belokobylskij. 1 female (ZIN), 20 km SW of Putsilovka, Monakino, forest, 27 June 1993, coll. S.A. Belokobylskij. 1 female (ZIN), Vladivostok, Sedanka, 14 June 1979, coll. A.G. Zinoviev.

Etymology. The species name refers to the impunctate, granulate head and mesosoma.

Differential diagnosis. Similar to *T. hokkaidoensis* sp. nov. as both have granulate, impunctate head and mesosoma, short malar space, short metacarp and short ovipositor, but differs from *T. hokkaidoensis* by the less slender flagellum, propodeum with basal keel and coloration of metasoma.

Description. Female. Holotype. Body length 3.6 mm. Forewing length 3.25 mm.

Head rounded behind eyes in dorsal view (Fig. 18); temple 0.74 times as long as eye width. Clypeus convex in lateral view, more or less smooth in lower part, sparsely and indistinctly punctate and finely granulate in upper part. Mandible with upper tooth longer than lower tooth. Malar space half as long as basal width of mandible. Flagellum of antenna short, weakly tapered towards apex, with 18–19 flagellomeres (18 flagellomeres in holotype); all flagellomeres moderately elongate (Fig. 17). Face, frons, vertex and temple entirely granulate, impunctate. Occipital carina complete.

Mesosoma granulate, impunctate; mesopleuron centrally with weak slightly oblique wrinkles; apical area of propodeum finely irregularly rugulose. Notaulus absent. Foveate groove of mesopleuron absent or very weak. Propodeum with weak basal keel (sometimes indistinct), which is half as long as apical area (Fig. 20). Propodeal spiracle small; distance between spiracle and pleural carina less than 1.5 diameters of spiracle. Apical area flat, wide, more or less rounded anteriorly; apical longitudinal carinae very weak, usually indistinct.

Forewing with second recurrent vein postfurcal. Intercubitus moderately thick, about as long as abscissa of cubitus between intercubitus and second recurrent vein. First abscissa of radius somewhat longer than width of pterostigma. Metacarp not reaching apex of forewing. Postnervulus intercepted distinctly below middle. Hind wing with nervellus vertical.

Legs slender. Hind femur 0.83 times as long as tibia. Claws moderately long, not pectinate.

First tergite 3.2 times as long as posteriorly broad, usually smooth; petiole trapeziform centrally in cross-section, dorsally and laterally sometimes striate. Glymma moderately large, joining ventral part of postpetiole by distinct groove, situated behind middle of first tergite. Second tergite 1.1 times as long as anteriorly broad. Thyridial depression short. Ovipositor short and slender, weakly upcurved, with shallow dorsal subapical depression and usually also weak tooth before this depression (Fig. 22); sheath

Figs 16–22. *Tersilochus* spp., females. 16 – *T. hokkaidoensis* sp. nov. (holotype); 17–22 – *T. impunctator* sp. nov. (holotype except Fig. 17). 16, 22 – apex of metasoma with ovipositor, lateral view; 17 – antennae (paratype), lateral view; 18 – head, dorsal view; 19 – head and mesosoma, lateral view; 20 – propodeum and base of metasoma, dorsal view; 21 – forewing. Scale bar for Fig. 16 = 0.5 mm.

0.8 times as long as first tergite and 0.75 times as long as hind tibia.

Head and mesosoma black. Palpi, mandible (teeth dark red), lower third of clypeus and tegula brownish yellow. Scape and pedicel of antenna yellowish; flagellum yellowish basally to blackish apically, or entirely black. Pterostigma brown. Legs brownish yellow, all coxae brownish. First metasomal segment brown to brownish black. Metasoma behind first tergite yellowish brown ventrally to brown dorsally.

Male. Unknown.

Distribution. South of the Russian Far East: Primorskiy Terr.

Biology. Unknown.

***Tersilochus* (*Tersilochus*) *juxtus* sp. nov.**
(Figs 23–27)

Holotype. Female – RUSSIA: Sakhalin Prov., Kunashir I., Dubovoe, 10 June 1973, coll. I.M. Kerzhner (ZISP).

Paratypes. RUSSIA, Sakhalin Prov.: 6 females, 4 males (ZIN), same data as holotype. 4 females (ZIN), same locality, 19 July 1973, coll. D.R. Kasparyan. 4 females (ZIN), Kunashir I., 5 km N of Golovnino, Dubovoe, oak-forest, meadows, 25 July 1981, coll. S.A. Belokobylskij. 7 females (ZIN), Kunashir I., volcano Golovnina, Goryachee Lake, on *Sasa* sp. and *Pinus pumila*, 26–28 July 1981, coll. S.A. Belokobylskij. 2 females (ZIN), Kunashir I., volcano Golovnina, frontier post, 24–25 July 1973, coll. D.R. Kasparyan. 1 female (ZIN), Kunashir I., 10 km S of Yuzhno-Kuril'sk, mixed forest, 20 July 1981, coll. S.A. Belokobylskij. 1 female (ZIN), Kunashir I., 2–7 km S of Sernovodsk, 17 July 1973, coll. D.R. Kasparyan. 2 females (ZIN), Sakhalin I., 12 km W Aniva, Urozhaynoe, mixed forest, 9 July 1981, coll. S.A. Belokobylskij.

Etymology. From the Latin *juxtus* (nearly, near, close to).

Differential diagnosis. Differs from the European *T. longicaudatus* Horstmann, 1971 by the short foveate groove of the mesopleuron (absent or vestigial in *T. longicaudatus*), from the Far Eastern *T. offrenatus* sp. nov. by the nervellus of hind wing distinctly reclivous and propodeum with basal keel, and from both species by the ovipositor with narrow dorsal subapical notch (Fig. 27).

Description. Female. Holotype. Body length 3.0 mm. Forewing length 2.7 mm.

Head rounded behind eyes in dorsal view (Fig. 24); temple 0.82 times as long as eye width. Clypeus weakly to moderately convex in lateral view, more or less smooth in lower part, sparsely punctate and evenly granulate in upper part. Mandible with upper tooth longer than lower tooth. Malar space 0.8–1.0 times as long as basal width of mandible. Flagellum of antenna moderately slender, more or less filiform, with 16 flagellomeres (in all specimens); second flagellomere about twice, subapical flagellomeres 1.3–1.5 times as long as broad (Fig. 25). Face, frons, vertex and temple entirely granulate, impunctate. Occipital carina complete.

Mesosoma entirely granulate, impunctate; mesopleuron centrally with weak oblique wrinkles. Notaulus absent. Foveate groove of mesopleuron short, weak. Propodeum with weak basal keel (sometimes indistinct), which is about half as long as apical area. Propodeal spiracle very small; distance between spiracle and pleural carina equal to about one diameter of spiracle. Apical area flat, rounded anteriorly; apical longitudinal carinae weak, usually reaching transverse carina anteriorly.

Forewing with second recurrent vein postfurcal. Intercubitus thick, shorter or subequal to abscissa of cubitus between intercubitus and second recurrent vein. First abscissa of radius longer than width of pterostigma. Metacarp not reaching apex of forewing. Postnervulus intercepted much below middle. Hind wing with nervellus distinctly reclivous (angle about 30°).

Legs slender. Hind femur 0.78 times as long as tibia. Claws not pectinate.

First tergite almost 3.0 times as long as posteriorly broad, partly smooth; petiole slightly trapeziform centrally in cross-section, dorsally and laterally sometimes finely striate. Glymma moderately large, joining ventral part of postpetiole by distinct groove, situated behind middle of first tergite. Second tergite as long as anteriorly broad. Thyridial depression as long as broad or slightly transverse. Ovipositor long and slender, weakly and evenly upcurved, with narrow dorsal subapical notch (Fig. 27); sheath 2.6 times as long as first tergite and 2.4 times as long as hind tibia.

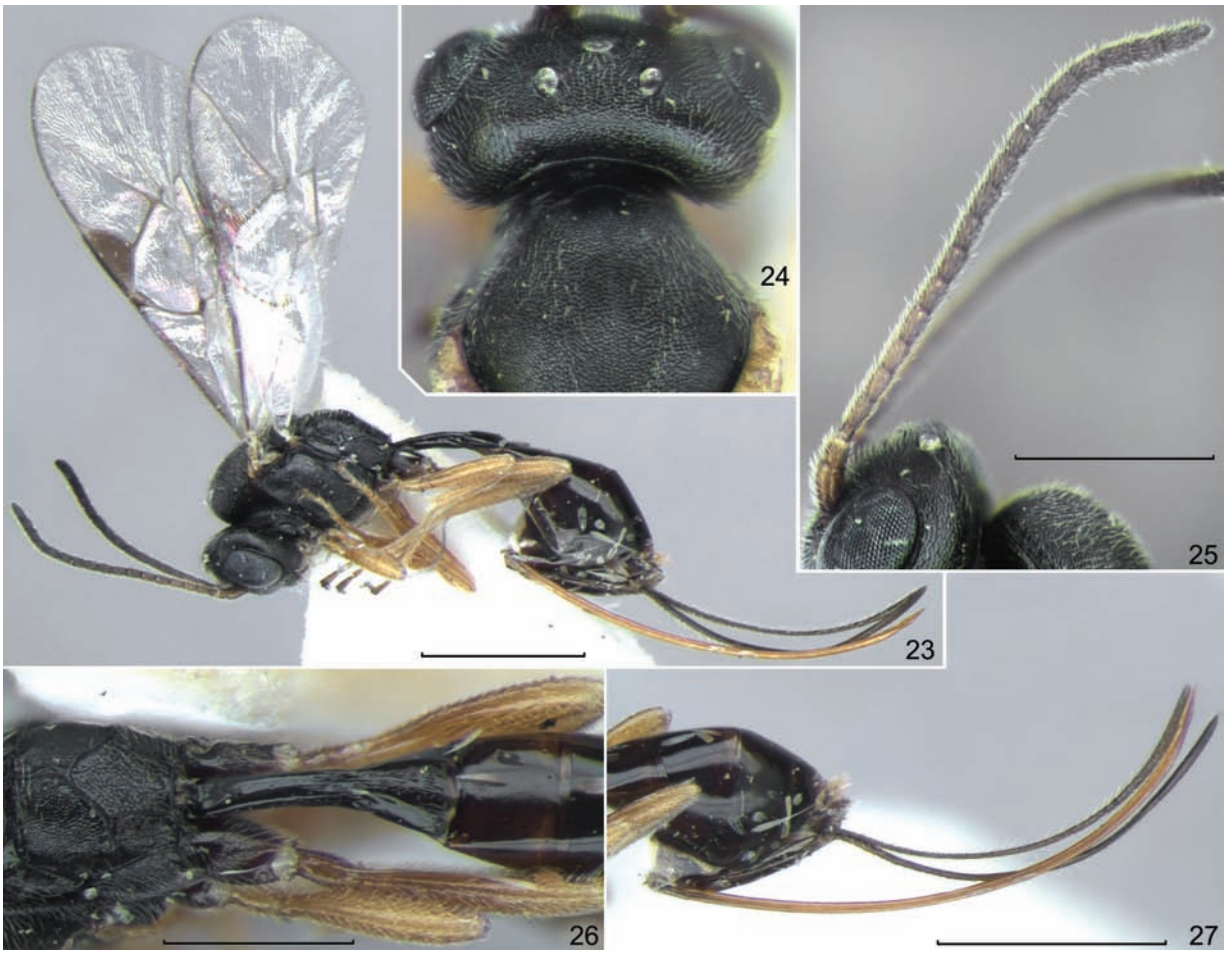
Head and mesosoma black. Palpi, mandible (teeth reddish), lower half of clypeus and tegula brownish yellow. Antenna brown, slightly paler basally. Pterostigma pale brown. Legs brownish yellow, all coxae more or less brownish. First metasomal segment dark brown to brownish black. Metasoma behind first tergite dark brown.

Male. Similar to female, but flagellum slenderer, with 17 segments, malar space shorter and tergites 1 and 2 of metasoma longer.

Variation. Ovipositor sheath 2.5–3.0 times as long as first tergite. Basal flagellomeres sometimes shorter than in description.

Distribution. South of the Russian Far East: Sakhalin Prov. (Sakhalin I., Kunashir I.).

Biology. Unknown.



Figs 23–27. *Tersilochus juxtus* sp. nov., female (holotype). 23 – habitus, lateral view; 24 – head and mesoscutum, dorsal view; 25 – antenna, lateral view; 26 – propodeum and base of metasoma, dorsal view; 27 – apex of metasoma with ovipositor, lateral view. Scale bar for Figs 23 and 27 = 1.0 mm, for Figs 25 and 26 = 0.5 mm.

***Tersilochus* (*Tersilochus*) *konishii* sp. nov.**
(Figs 4, 28–31)

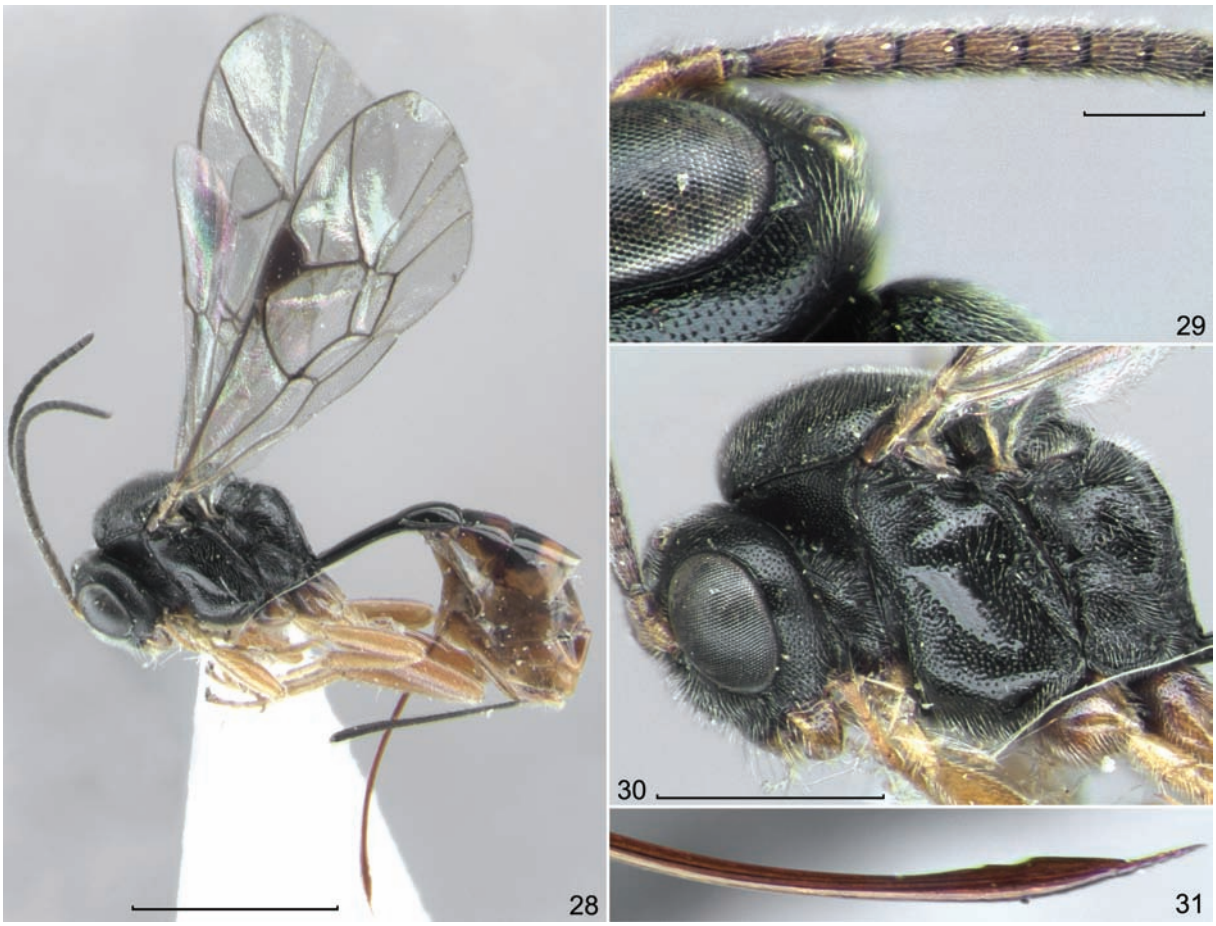
Holotype. Female – JAPAN: Kagoshima Pref., Okuchi City, Oku-Jusso, 19 May 1982, coll. K. Konishi (NIAES).

Etymology. Named in honour of the Japanese expert in Ichneumonidae and collector of the type material, Dr. Kazuhiko Konishi.

Differential diagnosis. Very similar to *T. spasskensis* sp. nov., but ovipositor is shorter and slenderer (Fig. 31), and first metasomal segment longer, with glymma situated far behind the middle of the segment (Fig. 28).

Description. Female. Holotype. Body length 5.6 mm. Forewing length 4.8 mm.

Head rounded behind eyes in dorsal view; temple 0.68 times as long as eye width. Clypeus smooth in its lower part, distinctly punctate and smooth between punctures in upper 0.6. Mandible robust, with upper tooth longer than lower tooth. Malar space half as long as basal width of mandible. Flagellum of antenna weakly tapered towards apex, with 25 flagellomeres; subbasal and mid flagellomeres 1.4–1.7 times, subapical flagellomeres 1.2–1.4 times as long as broad; flagellomeres 2–6 bearing finger-shaped sensory structures at apex of outer surface (Fig. 29). Face, frons and vertex very densely punctate and very finely



Figs 28–31. *Tersilochus konishii* sp. nov., female (holotype). 28 – habitus, lateral view; 29 – base of antenna, lateral view; 30 – head and mesosoma, lateral view; 31 – apex of ovipositor, lateral view. Scale bar for Fig. 28 = 2.0 mm, for Fig. 29 = 0.25 mm, for Fig. 30 = 1.0 mm.

granulate. Temple moderately densely punctate, very finely granulate, centrally almost smooth. Occipital carina complete.

Mesoscutum densely punctate, very finely granulate, centrally almost smooth between punctures. Notaulus deeply impressed, irregularly rugulose. Mesopleuron mostly distinctly punctate, smooth and impunctate centrally above foveate groove and finely granulate peripherally. Foveate groove situated in anterior 0.7 of mesopleuron, rather narrow, strongly upcurved anteriorly, crenulate (Fig. 30). Dorsolateral area of propodeum usually finely and sparsely punctate, smooth between punctures centrally and finely granulate peripherally. Propodeum without distinct basal area, with longitudinal wrinkles dorsally. Basal part of propodeum 0.35 times as long as apical area. Propodeal spiracle moderately large, round; distance between spiracle and pleural carina equal to one diameter of spiracle. Apical area weakly impressed along mid line, irregularly wrinkled, rounded anteriorly; apical longitudinal carinae anteriorly indistinct.

Forewing with second recurrent vein postfurcal. Intercubitus moderately thick, somewhat longer than abscissa of cubitus between intercubitus and second recurrent vein. First abscissa of radius distinctly longer than width of pterostigma. Metacarp almost reaching apex of forewing. Postnervulus intercepted distinctly below middle. Hind wing with nervellus slightly reclivous.

Legs slender. Hind femur 4.1 times as long as broad and 0.86 times as long as tibia. Claws rather strongly curved, not pectinate (Fig. 4).

First tergite 3.1 times as long as posteriorly broad, entirely smooth, with petiole round centrally in cross-section. Glymma rather large, joining ventral part of postpetiole by deep groove, situated far behind middle of first tergite. Second tergite 0.85 times as long as anteriorly broad. Thyridial depression small and sharp, as long as broad. Ovipositor slender, weakly upcurved, somewhat thickened near apex, with wide dorsal subapical depression and two weak rounded teeth before and behind this depression, with very fine teeth ventrally at extreme apex (Fig. 31); sheath 1.3 times as long as first tergite and 1.35 times as long as hind tibia.

Head, mesosoma and first segment of metasoma black. Palpi, mandible (teeth dark red) and lower 0.4 of clypeus yellowish. Scape and pedicel of antenna pale brown; flagellum dark brown basally to blackish apically. Tegula brown. Pterostigma dark brown. Legs brownish yellow, all coxae brownish basally. Metasoma behind first tergite predominantly yellowish brown; anterior 0.3–0.5 of tergites 2–4 dorsally blackish.

Male. Unknown.

Distribution. Southern Japan (Kagoshima Pref.).

Biology. Unknown.

Tersilochus (*Tersilochus*) *liopleuris* Thomson, 1889
(Fig. 2)

Material. RUSSIA: 2 females, 1 male (ZIN), Khabarovsk Terr., S Khabarovsk, Khekhtsir Mts, broadleaved forest, 3 July 1983, coll. D.R. Kasparyan. 3 females (ZIN), same data, but 12 June 1985. 1 female (ZIN), Khabarovsk Terr., 20 km N of Bikin, Boytsovo, forest, 26 May 1993, coll. S.A. Belokobylskij. 1 female (ZIN), Primorskiy Terr., Kedrovaya Pad Nature Reserve, July 1981, coll. D.R. Kasparyan. 1 female (ZIN), Primorskiy Terr., 30 km SE of Chuguevka, taiga, 31 May 1993, coll. S.A. Belokobylskij. 2 females, 2 males (ZIN), Sakhalin Prov., south of Sakhalin I., 12 km S of Kholmsk, Pravda, 25 May 1973, coll. I.M. Kerzhner. 1 female (ZIN), Sakhalin Prov., south of Sakhalin I., Kholmsk Pass, on *Euonymus* sp., 10 June 1972, coll. M.A. Kozlov. 2 females (ZIN), Sakhalin Prov., south of Sakhalin I., Aniva Distr., Novoalexandrovsk, old plain forest, 1 June 1976, coll. Ermolenko. 2 females (ZIN), Sakhalin Prov., Kurile Islands, Kunashir I., Yuzhno-Kuril'sk, 9 June 1978, coll. Ermolenko. 3 females (ZIN), same province and island, Dubovoe, birch-oak forest, 10 June 1973, coll. I.M. Kerzhner. 1 female (ZIN), Kamchatka Terr., Elizovo, herbs in birch forest, 25 July 1985, coll. D.R. Kasparyan.

Distribution. Transpalaearctic species: Europe, Russian Far East (Sakhalin I., Kunashir I., Khabarovsk, Primorskiy and Kamchatka Terr.).

Biology. Unknown.

Tersilochus (*Tersilochus*) *offrenatus* sp. nov.
(Figs 32–36)

Holotype. Female – RUSSIA: Sakhalin Prov., Kunashir I., Sernovodsk, 15 July 1973, coll. D.R. Kasparyan (ZISP).

Paratypes. RUSSIA: 5 females (ZIN), same data as holotype. 1 female (ZIN), same province, island and collector, 2–7 km S of Sernovodsk, 17 July 1973. 1 female (ZIN), Kamchatka Terr., Mil'kovo, birch forest, 7 July 1985, coll. D.R. Kasparyan.

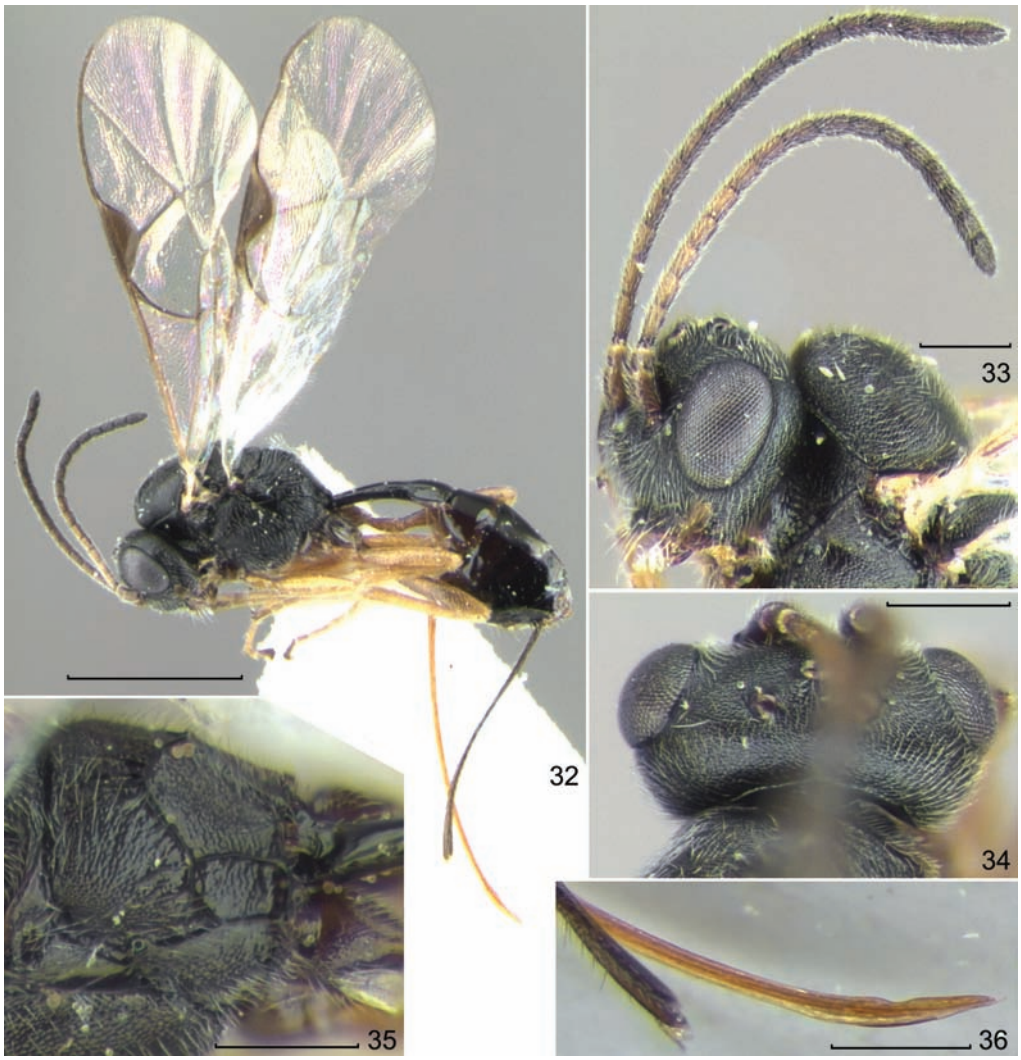
Etymology. From the Latin *offrenatus* (curbed, tamed).

Differential diagnosis. Similar to *T. juxtus* sp. nov. and the European *T. longicaudatus*, but differs from both species by the propodeum with more or less distinct basal area (Fig. 35). Also differs from *T. juxtus* sp. nov. by the nervellus of hind wing vertical or slightly reclivous and ovipositor with shallow dorsal subapical depression (Fig. 36).

Description. Female. Holotype. Body length 3.0 mm. Forewing length 2.7 mm.

Head rounded behind eyes in dorsal view (Fig. 34); temple 0.78 times as long as eye width. Clypeus convex in lateral view, smooth and bent downwards in lower third, finely granulate and finely and sparsely punctate in upper 2/3. Mandible with upper tooth distinctly longer than lower tooth. Malar space 1.0–1.2 times as long as basal width of mandible. Flagellum of antenna filiform, with 15–17 flagellomeres (usually 16 flagellomeres; 16 segments in holotype); second flagellomere 1.8–2.0 times, mid flagellomeres 1.6–1.8 times, and subapical flagellomeres about 1.2 times as long as broad (Fig. 33). Face, frons, vertex and temple entirely granulate, impunctate. Occipital carina complete.

Mesosoma entirely granulate, impunctate. Notaulus absent. Foveate groove of mesopleuron weak and short. Propodeum with basal area (often indistinct), which is 2.0–3.0 times as long as broad, slightly widened anteriorly and about 0.65 times as long as apical area (Fig. 35). Propodeal spiracle small, adjacent to



Figs 32–36. *Tersilochus offrenatus* sp. nov., female (holotype). 32 – habitus, lateral view; 33 – head with antennae and anterior part of mesosoma, lateral view; 34 – head, dorsal view; 35 – propodeum, dorsolateral view; 36 – apex of ovipositor, lateral view. Scale bar for Fig. 32 = 1.0 mm, for Figs 33–36 = 0.25 mm.

pleural carina or separated from this carina at most by one diameter of spiracle. Apical area flat, rounded anteriorly; apical longitudinal carinae anteriorly weak, but usually reaching transverse carina.

Forewing with second recurrent vein postfurcal. Intercubitus thick, about as long as abscissa of cubitus between intercubitus and second recurrent vein. First abscissa of radius longer than width of pterostigma. Metacarp not reaching apex of forewing. Postnervulus intercepted far below middle. Hind wing with nervellus vertical or slightly reclivous.

Legs slender. Hind femur 0.9 times as long as tibia. Claws not pectinate.

First tergite almost 3.0 times as long as posteriorly broad, predominantly smooth, laterally before glymma and dorsally partly sometimes striate; petiole round or slightly trapeziform centrally in cross-section. Glymma moderately large, joining ventral part of postpetiole by distinct groove, situated distinctly behind middle of first tergite. Second tergite as long as broad anteriorly. Thyridial depression strongly transverse. Ovipositor long and slender, upcurved,

with weak dorsal subapical depression (Fig. 36); sheath 2.15 times as long as first tergite and twice as long as hind tibia.

Head, mesosoma and first metasomal segment black. Palpi, mandible (teeth reddish) and tegula brownish yellow. Lower third of clypeus yellow-brown. Antenna dark brown to black. Pterostigma pale brown. Legs brownish yellow, all coxae brown to brownish black. Metasoma behind first tergite dark brown.

Male. Unknown.

Distribution. Russian Far East: Sakhalin Prov. (Kunashir I.) and Kamchatka Terr.

Biology. Unknown.

Tersilochus (*Tersilochus*) *spasskensis* sp. nov.
(Figs 5, 37–44)

Holotype. Female – RUSSIA: Primorskiy Terr., Spassk-Dal'niy, forest, meadows, 8 June 1990, coll. S.A. Belokobylskij (ZIN).

Paratypes. RUSSIA, Primorskiy Terr.: 8 females, 9 males (ZIN), same data as holotype, but 6–15 June 1990. 2 females (ZIN), same locality and collector, 20 June 1996, 30 June 2001. 1 female (ZIN), 30 km SE of Ussuriysk, mixed forest, meadows, 13 July 2001, coll. S.A. Belokobylskij. 2 females (ZIN), 15 km SE of Partizansk, Novitskoe, forest, 19–20 June 1990, coll. S.A. Belokobylskij. 3 females (ZIN), 20 km NW of Partizansk, Brovnichi, forest, 22 June 1990, coll. S.A. Belokobylskij. 1 female (ZIN), 10 km SE of Chernigovka, forest, 20 May 1979, coll. S.A. Belokobylskij. 1 female (ZIN), Chandalaz, 22 km N of Nakhodka, 17–20 July 1999, coll. V.A. Krivokhatsky, O.G. Ovchinnikova. 1 female, 2 males (ZIN), 25–30 km E of Spassk-Dal'niy, cedar-broadleaved forest, 27 June 1985, coll. D.R. Kasparyan. 1 female, 1 male (ZIN), 20 km SE of Spassk-Dal'niy, Evseevka, 28 June 1985, coll. D.R. Kasparyan. 1 female (ZIN), 128 km SSE of Dal'nerechinsk, Pozhicha, Frantsev spring, cedar-broadleaved forest, 22 July 1983, coll. D.R. Kasparyan. Khabarovsk Terr.: 1 female, 1 male (ZIN), Khekhtsir, 17–18 km S of Khabarovsk, broad-leaved forest, 3–5 July 1983, coll. D.R. Kasparyan. 1 male (ZIN), same data, but 20 June 1983. 1 female (ZIN), Voronezh Hills, oak-forest, 1 June 1985, coll. D.R. Kasparyan. JAPAN: 1 female (NIAES), Honshu I., Tochigi Pref., Yaita, Malaise trap, 30 June – 15 July 1989, coll. K. Konishi. 1 female (NIAES), Kyushu I., Miyazaki Pref., Shiiya tôge, 15–16 June 1985, coll. K. Konishi. 1 female (NIAES), Hokkaido, Mt. Tarumae-san, Malaise trap, 11–12 July 1998, coll. K. Konishi. 1 female (ZIN), same data, but 21–26 July 1998.

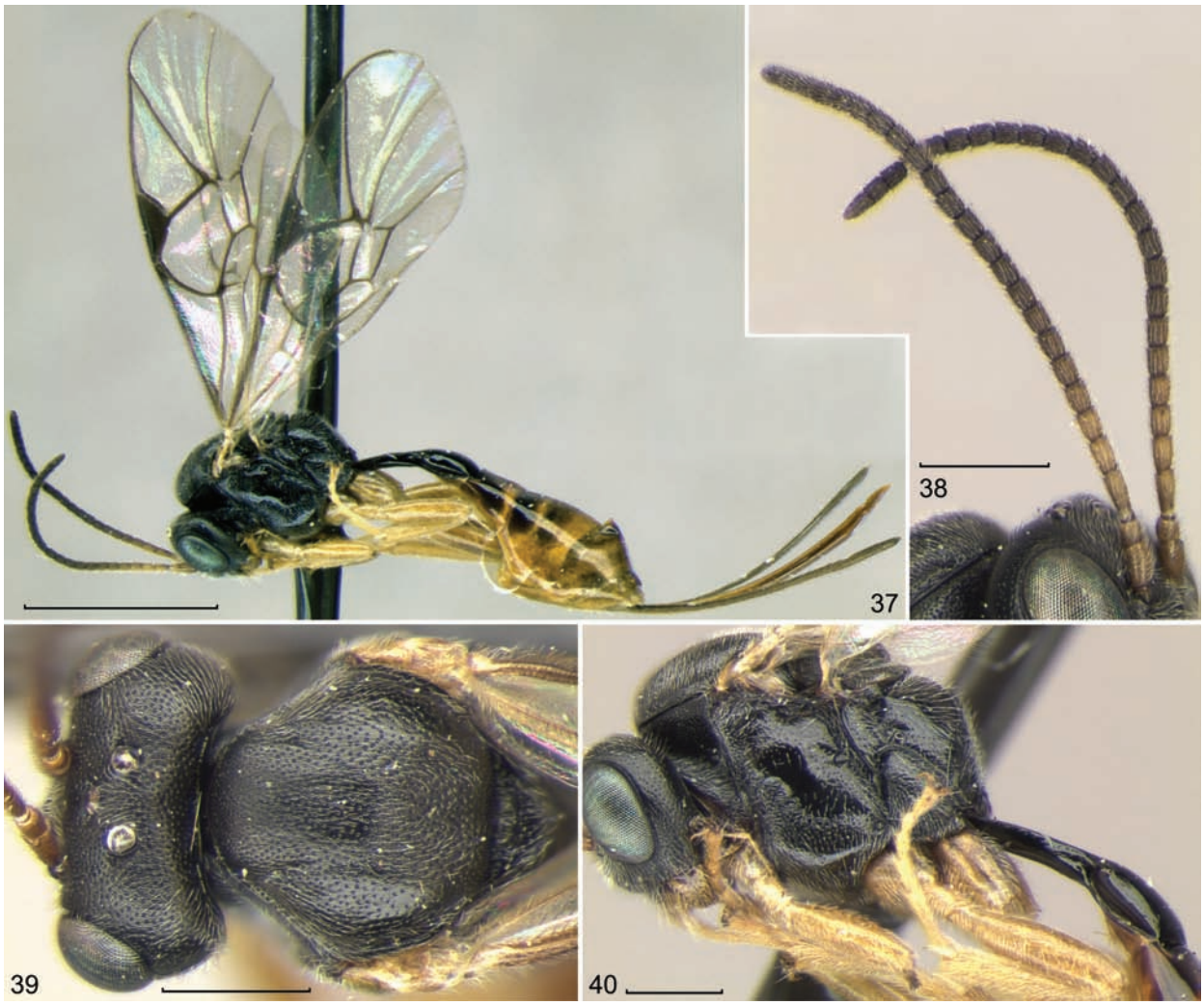
Etymology. Named after the type-locality, Spassk[-Dal'niy].

Differential diagnosis. This is a most distinct species of the genus that is immediately recognized by its large body size and long, robust ovipositor, conspicuously thickened at apex and with rather sharp dorsal subapical depression (Figs 43, 44).

Description. Female. Holotype. Body length 5.6 mm. Forewing length 4.8 mm.

Head rounded behind eyes in dorsal view (Fig. 39); temple 0.7–0.8 times as long as eye width. Clypeus smooth in its lower part, distinctly punctate and smooth between punctures in upper part. Mandible robust, distinctly punctate in basal 0.6, with upper tooth much longer than lower tooth. Malar space 0.5–0.8 times as long as basal width of mandible. Flagellum of antenna weakly tapered towards apex, with 21–24 flagellomeres (23 flagellomeres in holotype); flagellomeres 3–5 about 1.2–1.3 times as long as broad, subapical flagellomeres slightly elongate (Fig. 38); flagellomeres 2–6(7) bearing finger-shaped sensory structures at apex of outer surface (as in Fig. 29, but less conspicuous). Face, frons and vertex densely punctate and very finely granulate (face centrally almost smooth). Temple moderately densely punctate, very finely granulate, centrally almost smooth. Occipital carina complete. Hypostomal carina completely absent, surface polished.

Pronotum with strong transverse rugae in depression along its anterior margin. Mesoscutum densely punctate, very finely granulate or sometimes almost smooth between punctures. Notaulus moderately impressed, irregularly rugulose. Mesopleuron smooth and shining centrally, distinctly punctate peripherally. Foveate groove of mesopleuron long, rather strongly S-curved, crenulate, extending from anterior margin of mesopleuron almost to base of mid coxa. Metapleuron finely and densely punctate (sometimes punctures indistinct and surface more or less coriaceous). Dorsolateral area of propodeum usually smooth and finely punctate. Basal area elongate, impressed, usually about twice as long as broad and 0.4–0.5 times as long as apical area (Figs 41, 42). Propodeal spiracle moderately large, round; distance between spiracle and pleural carina usually equal to 0.5–1.0 diameters of spiracle. Apical area flat, wide,



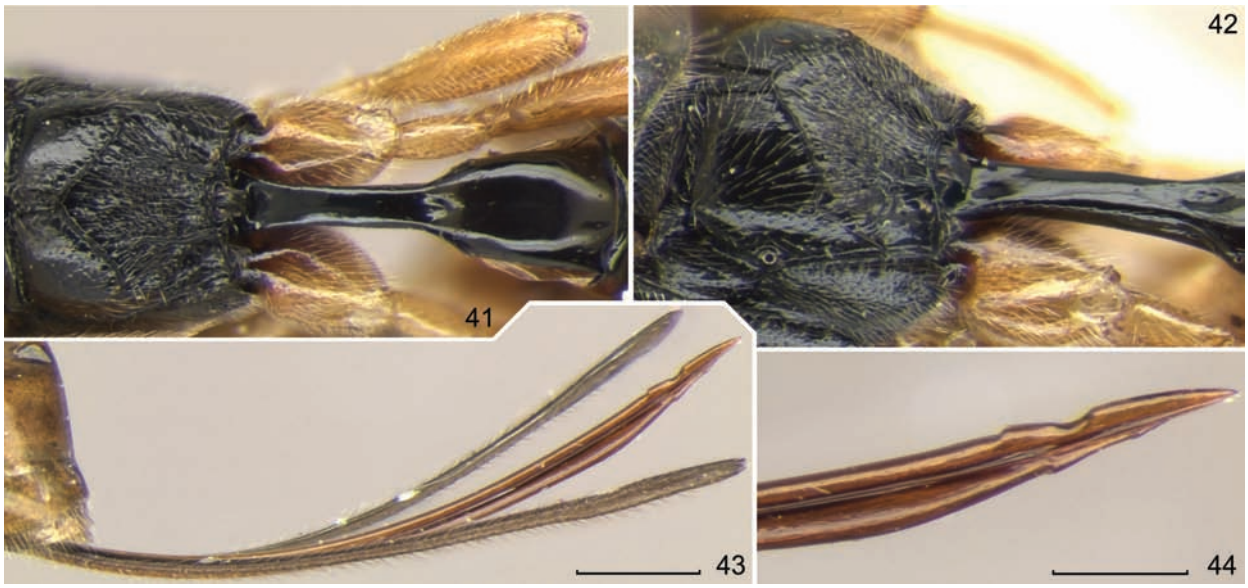
Figs 37–40. *Tersilochus spasskensis* sp. nov., female (holotype). 37 – habitus, lateral view; 38 – antennae, anterolateral view; 39 – head and mesoscutum, dorsal view; 40 – head, mesosoma and first metasomal segment, lateral view. Scale bar for Fig. 37 = 2.0 mm, for Figs 38–40 = 0.5 mm.

rounded anteriorly, coriaceous; apical longitudinal carinae strong posteriorly and indistinct anteriorly.

Forewing with second recurrent vein distinctly postfurcal. Intercubitus moderately thick, about as long as abscissa of cubitus between intercubitus and second recurrent vein. First abscissa of radius about 1.7 times as long as width of pterostigma. Metacarp almost reaching apex of forewing. Postnervulus intercepted somewhat below middle. Hind wing with nervellus vertical.

Legs slender. Hind femur about 4.0 times as long as broad and 0.85 times as long as tibia. Hind tibial spurs weakly curved apically. Claws moderately long, strongly curved, not pectinate (Fig. 5).

First tergite 2.9 times as long as posteriorly broad, smooth dorsally and laterally, with petiole trapeziform centrally in cross-section. Glymma rather large, joining ventral part of postpetiole by deep groove, situated slightly behind middle of first tergite. Second tergite as long as anteriorly broad or somewhat transverse. Thyridial depression deep and sharp, 1.3–1.5 times as long as broad. Ovipositor rather robust, evenly upcurved, thickened towards apex, with conspicuous dorsal subapical depression and with



Figs 41–44. *Tersilochus spasskensis* sp. nov., female (holotype except Figs 41 and 42). 41 – propodeum and first metasomal segment (paratype), dorsal view; 42 – propodeum and first metasomal segment (paratype), dorsolateral view; 43 –ovipositor, lateral view; 44 – apex of ovipositor, lateral view. Scale bar for Fig. 43 = 0.5 mm, for Fig. 44 = 0.25 mm.

weak tubercle before this depression, with fine teeth ventrally (Fig. 44); sheath 2.4 times as long as first tergite and 2.3 times as long as hind tibia.

Head, mesosoma and first segment of metasoma black. Palpi, mandible (teeth dark red), lower 0.3–0.5 of clypeus and tegula yellowish. Scape and pedicel of antenna yellowish; flagellum yellowish basally to blackish apically, or entirely black. Pterostigma brown to dark brown. Legs yellowish; hind (and sometimes mid) femur brownish centrally; hind (and sometimes mid) coxa basally brown or blackish, sometimes almost entirely fuscous. Metasoma behind first tergite predominantly yellowish brown; tergites 2–4 dorsally and laterally brown to dark brown anteriorly and yellowish brown posteriorly.

Male. Similar to female but flagellum with 22–23 segments, slenderer basally, malar space shorter, first tergite partly striate laterally before glymma, second tergite distinctly elongate and thyridial depression weaker and longer.

Variation. Some females from Japan are conspicuously larger, with body length to 6.8 mm and forewing length to 6.0 mm. Foveate groove of mesopleuron sometimes (especially in small specimens) shorter and weaker, developed only in central part of mesopleuron and not reaching prepectal carina anteriorly and base of mid coxa posteriorly. Punctation of head and mesosoma sometimes weaker than in the description. Propodeal spiracle separated from pleural carina by 1.5 or less diameters of spiracle, or spiracle adjacent to the pleural carina. Basal longitudinal carinae of propodeum sometimes indistinct and basal area with longitudinal wrinkles; basal part of propodeum sometimes rather short. Ovipositor sheath usually 2.1–2.6 times as long as first tergite, but some females possess conspicuously shorter ovipositor with sheath only 1.5–1.8 times as long as first tergite. Dorsal subapical depression of ovipositor rather shallow to very deep and sharp.

Remarks. This is a rather polymorphic species, or complex of similar species, with ovipositor sheath varying from 1.5 to 2.6 times the first metasomal segment length, and dorsal subapical depression of the ovipositor shallow to rather deep and sharp. Specimens with short ovipositor usually have deeper dorsal subapical depression of the ovipositor and darker flagellum and hind coxa. Sensory structures on subbasal flagellomeres (as in Fig. 29) are clearly visible

in this species and *T. konishii* sp. nov., but probably also present in many other species of the genus, being hardly visible in a stereomicroscope.

Distribution. South of the Russian Far East (Khabarovsk and Primorskiy Terr.), Japan (Hokkaido, Honshu, Kyushu).

Biology. Unknown.

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REFERENCES

Horstmann K. 1971. Revision der europäischen Tersilochinen I (Hymenoptera, Ichneumonidae). *Veröffentlichungen der Zoologischen Staatssammlung (München)*, **15**: 47–138.

Horstmann K. 1981. Revision der europäischen Tersilochinen II (Hymenoptera, Ichneumonidae). *Spixiana*, Suppl. **4**(1980): 1–76.

Horstmann K. 2001. Type revisions of Tersilochinae described from the Nearctic region (Hymenoptera, Ichneumonidae). *Linzer biologische Beiträge*, **33**(1): 595–601.

Horstmann K. and Kolarov J.A. 1988. Neue Tersilochinen-Arten aus Bulgarien (Hymenoptera, Ichneumonidae). *Spixiana*, **10**(3): 271–277.

Jordan T. 1998. *Tersilochus curvator* Horstmann and *Tersilochus* sp. n. (Ichneumonidae, Tersilochinae), neue Parasitoiden der an Birken minierenden Trugmotten (Lepidoptera, Eriocraniidae). *Bonner Zoologische Beiträge*, **47**(3–4): 411–419.

Khalaim A.I. 2007. 17. Subfamily Tersilochinae. In: Lelej A.S. (Ed.) Opredelitel' nasekomykh Dal'nego Vostoka Rossii [Keys to the insects of the Russian Far East], Vol. IV. Neuropteroidea, Mecoptera, Hymenoptera. Pt 5. Dal'nauka, Vladivostok: 566–597. [In Russian]

Khalaim A.I. 2011. Tersilochinae of South, Southeast and East Asia, excluding Mongolia and Japan (Hymenoptera: Ichneumonidae). *Zoosystematica Rossica*, **20**(2): 96–148.

Khalaim A.I. and Sheng M-L. 2009. Review of Tersilochinae (Hymenoptera, Ichneumonidae) of China, with descriptions of four new species. *ZooKeys*, **14**: 67–81.

Townes H.K. 1969. The genera of Ichneumonidae, Part 1. *Memoirs of the American Entomological Institute*, **11**: 1–300.

Townes H.K. 1971. The genera of Ichneumonidae, Part 4. *Memoirs of the American Entomological Institute*, **17**: 1–372.

Yu D.S.K., van Achterberg C. and Horstmann K. 2012. Taxapad 2012, Ichneumonoidea 2011. Database on flash-drive. www.taxapad.com, Ottawa, Ontario, Canada.

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