

Two new Palaearctic species of *Saotis* Förster, 1869 (Hymenoptera: Ichneumonidae: Ctenopelmatinae)

D.R. KASPARYAN

D.R. Kasparyan, Zoological Institute, Russian Academy of Sciences, Universitetskaya nab. 1, St. Petersburg 199034, Russia.

Two new species of ichneumon-flies are described: *Saotis caucasica* sp. n. from North Caucasus, and Holarctic *S. pygidiator* with four subspecies (*S. pygidiator pygidiator* ssp. n. from Europe, *S. p. ivan* ssp. n. from Transbaikalia, *S. p. arctor* ssp. n. from northern Siberia, and *S. p. nearctor* ssp. n. from Alaska and Canada). *S. pygidiator pygidiator* is reared by J.-P. Kopelke from 3 species of *Pontania*, gall-forming sawflies (Hymenoptera, Tenthredinidae) on *Salix* spp.

Key words: Ichneumonidae, Ctenopelmatinae, *Saotis*, new species

INTRODUCTION

Saotis Förster, 1869 is a moderately large Holarctic genus of a very large ichneumonid subfamily Ctenopelmatinae. All representatives of this subfamily are parasites of the sawfly larvae. The genus may easily be distinguished by strongly compressed abdomen and by broad ovipositor sheath. *Saotis* trophically is connected with species of the gall-forming sawfly genera *Pontania* Costa, 1859 and *Phyllocolpa* Benson, 1960 (Tenthredinidae, Nematinae) on *Salix*, but one species was reared by E. Lindqvist in Finland from *Pontoprastia amentorum* (Förster, 1854) (also of the Nematinae, unpublished data), developing in catkins of *Salix*. Palaearctic species of *Saotis* were reviewed by the author (Kasparyan & Shaw, 2003; Kasparyan, 2007). Sixteen species are recorded in the Palaearctic, and only two species are described from the Nearctic Region (Yu & Horstmann, 2004). Two new species and four new subspecies are described here. *Saotis pygidiator pygidiator* was reared by Jens-Peter Kopelke in Europe from 3 species of *Pontania*, and this nominotypical subspecies is described by the authors together. Some abbreviations used in "Material" to this subspecies are explained in parentheses in the material of the holotype.

MATERIAL AND METHODS

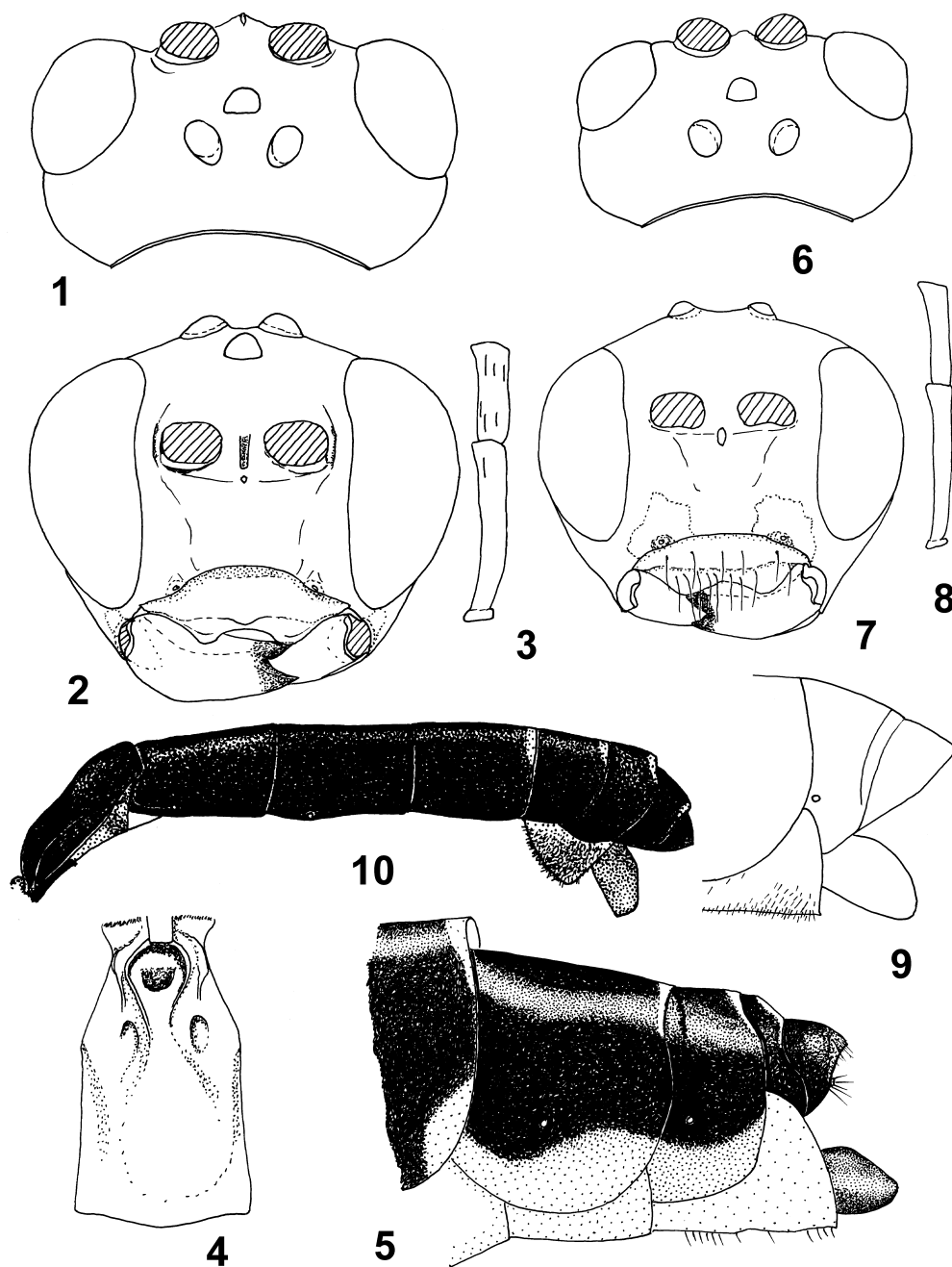
The basic morphometric characters and their abbreviations used in this paper are

listed below: *i. fl* – index flagellaris, ratio of length of first and second flagellar segments combined to eye height (longitudinal diameter); *i. gen* – index genalis, ratio of minimum length of malar space ("gena") to basal width of mandibles; *i. terg* – index tergalis, ratio of length of first metasomal tergite to its maximum width; *i. nrv* – index nervellaris, ratio of length of lower (posterior) section of hind wing nervellus to its entire length; *i. fem* – index femoralis, ratio of length to width of hind femur (in lateral view); *i. tars* – ratio of lengths of first to fifth segments of hind tarsus. The explanations are given also in the description of *Saotis caucasica*. The paper is based on specimens from the Zoological Institute of the Russian Academy of Sciences, St. Petersburg, Russia (ZISP) and specimens borrowed from the American Entomological Institute, Gainesville, Florida, USA (curator D. Wahl) (AEI), and from Forschungsinstitut Senckenberg, Frankfurt am Main, Germany (curator J.-P. Kopelke) (ZMF).

Saotis caucasica sp. n. (Figs 1-5)

Holotype: ZISP, female, **Russia**, *Karachaevo-Cherkessia*, 10 km S of Arkhyz, Kyzgych River, 4 July 1976 (Kasparyan).

Diagnosis. *Saotis caucasica* resembles *S. nigriscuta* (Thomson, 1888) in general appearance; both species have similar structure of the clypeus and apical abdominal tergites,



Figs 1-10. *Saotis* spp. 1-5, *S. caucasica* sp. n., holotype (1, head, dorsal view; 2, head, anterior view; 3, two basal flagellomeres; 4, first metasomal segment; 5, apical metasomal segments of female); 6-10, *S. pygidiator* Kasparyan et Kopelke, sp. n. (6, *S. p. pygidiator* Kasparyan et Kopelke, ssp. n., head, dorsal view; 7, 8, *S. p. arctor* ssp. n., head, anterior view and two basal flagellomeres; 9, *S. p. nearctor* ssp. n., apical metasomal segments of female; 10, *S. p. pygidiator* ssp. n., abdomen).

wide ovipositor sheath, black scutellum, and similar coloration of the hind leg. *Saotis caucasica* differs from *S. nigriscuta* and from most of other species in having malar space very short, flagellum 23-segmented and almost black, and flagellomeres 1 and 2 combined only slightly longer than maximum diameter of the eye (Figs 2, 3).

Description. Female. Fore wing 5.0 mm long. Antenna with 23 flagellar segments; flagellum 4.8 mm long; first and second flagellomeres combined 1.06 times as long as maximum diameter of eye (*i. fl* 1.06), and about 6.5 and 3.5 times as long as wide at their middle (Fig. 3). Head distinctly narrowed beyond eyes (Fig. 1). Clypeus bilobed and sharp at lower margin, in basal 0.65 moderately convex; convexity with median bulge projecting to lower margin (Fig. 2); malar space 0.22 as long as basal width of mandible (*i. gen* 0.22). Mesoscutum mat and finely granulate on central lobe; on lateral lobes almost smooth, with rather dense, superficial, moderately fine setiferous punctures. Mesopleuron (except for speculum) and metapleuron with very fine granulation and rather sparse fine punctures. Propodeum only with weak traces of areas, carinae obliterated, but pleural carina complete; dorsal surface of propodeum distinctly granulate, pleural area superficially scabrous; apical area almost smooth with weak longitudinal rugae. Nervulus postfurcal; nervellus intercepted on lower 0.28 (*i. nrv* 0.28). Hind femur 4.2 times as long as wide (*i. fem* 4.2); ratio of lengths of first to fifth segments of hind tarsus (*i. tars*) 5.0 : 2.5 : 1.9 : 1.1 : 1.8. Abdominal tergites finely granulate, more or less evenly covered with moderately dense hairs. First tergite 1.65 times as long as wide (*i. terg* 1.65), with lateral margins behind spiracles subparallel; dorsal longitudinal carinae short (Fig. 4). Second tergite 1.1 times as long as wide at base, with distinct circular thyridium. Subsequent tergites strongly compressed. Epipleura of tergites 2 and 3 separated by crease. Hind edge of tergites

5-7 distinctly concave. Ovipositor sheath wide (Fig. 5), about 0.8 times as wide as hind femur.

Antenna brownish black, almost black dorsally; scape ventrally in upper half with yellow spot. Head and thorax black with clypeus, mandible, spot between mandibular condyle and eye (just below malar space – Fig. 2), palpi, hind corners of pronotum, a pair of large anterolateral spots on mesoscutum, apex of epimeron, and tegulae yellow. Fore and mid legs pale rufous with coxae and all trochanters light yellow, coxae reddish at base; segments 2-5 of fore and middle tarsi light brownish dorsally. Hind coxa brownish red, darker at base; hind trochanter I reddish brown with apical margin yellow, trochanter II yellow; hind femur red; hind tibia dirty whitish ventrally in basal 0.65, pale rufous dorsally, completely dark brown in apical 0.35; hind spurs light yellowish; hind tarsus brown with extreme base of segments 1 and 2 pale. Pterostigma brown with base (0.25) yellowish. Abdominal tergites blackish; tergites 2-7 dorsally with narrow whitish yellow band on hind margin; sternites yellow; ovipositor sheath blackish brown (Fig. 5).

Male unknown.

***Saotis pygidiator* Kasparyan et Kopelke, sp. n.**
(Figs 6-10)

Diagnosis. *Saotis pygidiator* closely resembles *S. nigriscuta* Thomson in the morphological characters, especially in the rather broad ovipositor sheath, slender basal flagellar segments, and coloration; it differs from *S. nigriscuta* and other congeners in the broad and swollen temples (Fig. 6) and in erect, usually very dense and short pubescence of female's hypopygium (Fig. 9); the nervulus is usually interstitial, or rarely weakly postfurcal; the nervellus is intercepted about at lower 0.1-0.25; the pterostigma often is pale.

Description. Fore wing 4-5 mm long. Antenna with 23-28 flagellar segments, flagellum about as long as fore wing (± 0.07).

i. fl 1.25±0.1. Head not narrowed, temples beyond eyes parallel or slightly swollen (Fig. 6), in Nearctic specimens sometimes weakly narrowed; *i. gen* about 0.4±0.1. Clypeus convex in basal 0.3-0.5, with long setae below basal convexity, its lower margin sharp and broadly concave. Head finely granulate; granulation very uniform on frons, smoothened on temples; face with fine conspicuous punctures. Mesoscutum shiny, smooth, finely granulate on central lobe, evenly covered with short, moderately dense hairs. Mesopleuron shiny, almost smooth. Metapleuron mat, entirely granulate and covered with rather dense hairs. Propodeum with dorsal areas present, sometimes weak, areola narrow; area apicalis rather high; lateral longitudinal carina absent anteriorly, sometimes strongly obliterate; pleural carina complete. Nervulus interstitial or weakly postfurcal, nervellus intercepted about at lower 0.2±0.08. *i. fem* 5.0±0.5. First abdominal tergite finely granulate, with its apical margin polished; *i. terg* 1.7-2.0; dorsal carinae extending at least to level of spiracles. Second tergite with very fine and smoothened granulation and with short and rather sparse hairs. Tergites 2 and 3 slightly elongate; their epipleura separated by crease. Subsequent tergites shiny, almost smooth, covered with moderately dense and moderately short hairs; their epipleura not separated. Hind edge of apical tergites not concave dorsally (sometimes with weak emargination on tergite 6). Tergite 8 short and usually strongly drawn in abdomen. Hypopygium and preceding tergite covered with very dense and short erect hairs (Fig. 10); hypopygium with truncate hind margin and usually weakly concave at middle (Fig. 10) (except for *S. pygidiator nearctor*, Fig. 9). Ovipositor sheath moderately wide (Fig. 9), about 0.8 times as wide as hind femur.

Body black; antennae from brownish to yellowish rufous; mesoscutum usually with anterolateral yellow spots, scutellum black; posterior margin of tergites (3)4-7 with whitish band dorsally. Legs (usually

except for coxae and trochanters) reddish, hind tibia from uniformly pale rufous to dull whitish with darkened dorsal side and apex. Pterostigma usually pale yellowish brown (dark brown in *S. pygidiator ivan*).

The species includes four geographical forms; the differences between these forms are given in the key below.

Key to subspecies of *Saotis pygidiator*

1. Hypopygium covered with dense erect hairs perpendicular on surface of sternite or slightly slanted by apices to its base (Fig. 10). Head not narrowed behind eyes, temples swollen (Fig. 6). *i. fl* 1.25±0.1; first flagellar segment 1.4-1.6 times as long as segment 2. Flagellum 23-28-segmented, about as long as fore wing (±0.1). Pterostigma pale brown to yellowish. Mesoscutum with anterolateral yellow spots; scutellum black. Nervulus interstitial to slightly postfurcal; *i. nro* 0.1-0.2; *i. terg* 1.7-2.0. Ovipositor sheath (Fig. 10) usually reddish brown, about 0.8 times as wide as hind femur. (***S. pygidiator* sp. n.**) 2
 - Hairs on hypopygium sparse and reclinate. Head usually slightly or distinctly narrowed other species of *Saotis*
2. Flagellum slightly longer (1.02-1.1) than fore wing. Face entirely black. Flagellum darkened 3
 - Flagellum slightly shorter (about 0.95) than fore wing. Face often with yellow spots near clypeal fovea. Flagellum almost uniformly yellowish rufous. Pterostigma pale yellowish 4
3. Coxae and trochanters I black. 23-26 flagellomeres. Pterostigma pale brown with dark margins. – West Palaearctic ***S. pygidiator pygidiator* ssp. n.**
 - Coxae, trochanters and femora uniformly light red. 26-28 flagellomeres. Pterostigma blackish brown with small basal white marking. Transbaikalia. ***S. pygidiator ivan* ssp. n.**
4. *i. gen* 0.4-0.5; second flagellar segment 4.5-4.8 times as long as wide at middle. Hind tibia almost uniformly yellowish rufous. – Northern Siberia ***S. pygidiator arctor* ssp. n.**
 - *i. gen* 0.27-0.33; second flagellar segment 5-6 times as long as wide at middle. Hind tibia yellowish rufous with fuscous markings near base and apex. – Nearctic Region ***S. pygidiator nearctor* ssp. n.**

Saotis pygidiator pygidiator
Kasparyan et Kopelke, ssp. n.
 Figs 6, 10

Holotype: Female, **Austria, Steiermark**, Donnersbach, Planneralm B [II] 10.8.89 (Kopelke), ex *Pontania varia* Kopelke (Kopelke det.) [on *Salix myrsinifolia*], [type of galls: RK4], Zucht: Kopelke Nr 15/Q1 1989 [number of sample], Schlüpfdatum 21.5.1990 (ZMF).

Paratypes. **Austria: Steiermark**, 1 female, 6 males, same data as in holotype [1 female – 15/U1 1989, Schlüpfdatum 27.5.90; 2 males – 15/E1 1989, Schlüpfdatum 17.5.90; 2 males – 15/R1 1989, Schlüpfdatum 14.5.90; 2 males – 15/S1 1989, Schlüpfdatum 23.5.90]; **Tirol:** 1 male, Zillertal, Hintertux, Meiental, 1700 m, 13.8 [1989] (Kopelke leg.), ex *Pontania varia* Kopelke (Kopelke det.), [RK4], Zucht: Kopelke Nr 25/S1 1989, Schlüpfdatum 28.5.90; 1 female, 1 male, Ötztal, Öbergurgl, 1800 m, 16.8 89 (Kopelke), ex *Pontania varia* Kopelke (Kopelke det.), on *Salix myrsinifolia*, [RK4], Zucht: Kopelke Nr 37/M and 37/P/1989, Schlüpfdatum 27.9.89 and 28.5.90; 1 female, 1 male, **Salzburg**, Obertauern, 26.8.96 (Kopelke), ex *Pontania foetidae* / *Salix waldsteiniana*, (Kopelke det.), [RK2], Zucht: Kopelke Nr 2Q1 and 2R1 1996, Schlüpfdatum female – 15.5.97, male – 6.5.97. **Schweiz:** **Helvetia**, 3 females, 37/D/1984, 37/E/1984 and 54/S/1984, Wallis, Sass Almagell, 1900 m, 14.8.1984, ex *Pontania breviserratae* Kopelke, 1989 (labeled as “*Pontania* sp. 13”) on *Salix breviserrata* (coll. Kopelke), Schlüpfdatum 18.5.1985 and 22.5.1985; **Graubünden**, 1 female, 45, A1-G1, C1/2000, Juppa, *Pontania varia*, *Salix myrsinifolia*, RK4, 15.08.2000 (Kopelke), Schlüpfdatum 12.03.2001. **Germany?** [in R. Hinz collection, Mus. Munich]: 1 female, without locality data, “P 104 1970”, “2310”, ex *Pontania* sp. All paratypes from Austria (except for 1 female and 1 male in ZISP) and from Switzerland on deposition in ZMF.

Description. **Female** (holotype). Fore wing 4.5 mm, flagellum 4.7 mm long. Antenna with 24 flagellar segments; *i. fl* 1.25. Head not narrowed, temples almost parallel beyond eyes (Fig. 6); *i. gen* about 0.4. Propodeum with weak dorsal areas, areola narrow; area apicalis 0.43 as long as propodeum on midline; lateral longitudinal carina absent anteriorly; pleural carina complete. Nervulus interstitial, nervellus intercepted about

at lower 0.15. *i. fem* 5.0, *i. tars* 4.5 : 2.3 : 1.8 : 1.1 : 1.7; longest tibial spur about 0.4 times as long as hind basitarsus. *i. terg* 2.0; dorsal carinae extending to the middle of tergite 1. Antenna brownish, flagellum at basal 0.2 paler ventrally. Head and thorax black with clypeus, mandible, palpi, hind corners of pronotum, a pair of small anterolateral spots on mesoscutum, and tegulae yellow; apex of epimeron slightly reddish. Fore and middle legs pale reddish; coxae blackish at base and dorsally, and reddish ventrally; all trochanters I blackish, trochanters II yellowish; middle tarsi brownish. Hind coxa black, ventrally at apex reddish brown; hind femur red; hind tibia dirty whitish ventrally, light brownish dorsally, completely dark brown in apical 0.3 and in basal 0.15; hind spurs whitish; hind tarsus light brownish with extreme base of segments 1-4 pale. Pterostigma yellowish with brown margins. Abdominal tergites blackish; tergites 4-7 dorsally with narrow yellow band on hind margin (Fig. 10). Sternites yellow on longitudinal fold; sternite 1 darkened at apical 0.4; hypopygium entirely yellow.

Male similar to female, but slender; fore wing 3.5-4 mm; flagellum with about 23-24 segments; *i. fl* 1.14-1.25; cheeks shorter, *i. gen* about 0.35; coloration paler than in female: face, cheeks from bottom of eye to lower angle of mandibles, ventral spot on scape and pedicel, fore and middle coxae almost entirely, all trochanters (except for hind trochanter I) light yellow. Hind femur darker, from reddish brown to dark brown.

Distribution. Central Europe.

Hosts. *Pontania breviserratae* Kopelke, 1989 (=“*Pontania* sp. 13”) on *Salix breviserrata* with pea-shaped galls, transected horizontally by the leaf blade; *Pontania foetidae* Kopelke, 1989 on *Salix waldsteiniana*, *Pontania varia* Kopelke, 1991 on *Salix myrsinifolia*.

***Saotis pygidiator ivan* ssp. n.**

Holotype: ZISP, female, **Russia, Chita Province**, Ivan-ozero, 70 km NW of Chita, larch forest, 30 July 1975 (Kasparyan).

Paratypes: ZISP, 4 females with same data as in holotype.

Diagnosis. *Saotis pygidiator ivan* differs from other subspecies of *S. pygidiator* in the red coxae and trochanters, blackish pterostigma, flagellum with 26-28 segments (about 23-25 in other subspecies) and shorter hind femur (*i. fem* 4.5-4.75 in *S. p. ivan*, and 5-5.2 in *S. p. pygidiator*). This subspecies closely resembles in the coloration *S. nigriscuta* but may be distinguished from it by very dense and short pubescence of the hypopygium and shape of the clypeus (without median convexity which is present in *S. nigriscuta*).

Description. *Female* (holotype). Fore wing 5.1 mm, flagellum 5.6 mm long. Antenna with 28 flagellar segments; *i. fl* 1.18; *i. gen* 0.37. Nervulus interstitial, nervellus intercepted about at lower 0.15 (0.23 in one paratype). *i. fem* 4.5, *i. tars* 5.2 : 2.8 : 2.1 : 1.1 : 1.7 (segment 3 about 1.2 times as long as segment 5). *i. terg* 1.8; dorsal carinae of tergite 1 short, hardly extend to spiracles level; dorsolateral carina present but very weak beyond spiracles. Tergites 2 and 3 very weakly compressed, shiny, with fine granulation (except for apex); their hairs rather sparse on dorsal surface and denser laterally; subsequent tergites smoother and more or less uniformly pubescent. Tergites 2-5 about 1.1-1.2 as long as wide. Sternites covered with dense hairs; hypopygium covered with very dense and short erect hairs and truncate at apex.

Antenna light brownish. Head and thorax black with clypeus, mandibles, palpi, hind corners of pronotum, a pair of anterolateral spots on mesoscutum, tegulae and apex of epimeron yellow. Legs light reddish; fore and middle tarsi with apical segments brownish dorsally; hind tibia rufous with extreme base and apical 0.3 light brownish; hind spurs pale rufous (brown in one paratype). Hind tarsus light brownish dorsally and rufous ventrally with extreme base of segments 1-4 pale. Pterostigma dark brown with small light yellow marking at base. Abdominal tergites black; tergites 2-7 dorsally

with narrow yellow band on hind margin. Sternites 1-3 light brownish on longitudinal fold; sternites 4-6 yellowish; all sternites laterally with broad longitudinal sclerotized dark brown band; hypopygium in apical 0.4 brownish yellow.

Male unknown.

***Saotis pygidiator arctor* ssp. n.**
(Figs 7, 8)

Holotype: ZISP, female, **Russia**, Yamalo-Nenets National District, Polar Urals, Sob' River, 50 km NW of Labytnangy, marsh and forest, 15 July 1994 (Kasparyan).

Paratype, ZISP, female, **Russia**, Yakutia, Tixi, tundra near observatory, 31 July 1990 (Kasparyan).

Diagnosis. *Saotis pygidiator arctor* differs from *S. pygidiator pygidiator* and from most of congeners in the pale yellowish rufous flagellum of the antennae and yellowish pterostigma; face near clypeal foveae may be with yellow markings (Fig. 7), the hind tibia is almost uniformly pale rufous, basal flagellar segments are very slender (Fig. 8), *i. fl* 1.25. In these characters it closely resembles the North American subspecies *S. pygidiator nearctor*, but *S. p. nearctor* has cheeks shorter (*i. gen* 0.27-0.33) and hind tibia distinctly darkened near the base and at the apex.

Description. *Female* (holotype). Fore wing 4.9 mm, flagellum 4.8 mm long. Antenna with 25 flagellar segments; *i. fl* 1.26; first and second flagellomeres 9.0 and 4.6 times as long as wide at the middle respectively (Fig. 8). Head not narrowed, temples parallel beyond eyes; minimum distance from eye to occipital carina in upper part of temple 0.8 as long as minimum diameter of eye. *i. gen* 0.4. Nervulus weakly postfurcal, *i. nrv* 0.12. *i. fem* 5.2, *i. tars* 4.9 : 2.5 : 1.8 : 1.1 : 1.6. First abdominal tergite mat, distinctly granulate; *i. terg* 1.9; dorsal carinae of first tergite short, hardly extending to spiracles level; dorsolateral carina present but very weak beyond spiracles. Tergites 2 and 3 about as long as wide at base. Tergite 2 very weakly compressed and tergite 3

distinctly compressed; both are shiny, with fine granulation (except for apex); their hairs on dorsal surface moderately sparse; subsequent tergites strongly compressed, smoother and more or less uniformly pubescent. Hypopygium covered with very dense and short erect hairs and truncate at apex.

Antenna yellowish rufous ventrally and light brownish dorsally; base of scape and apical 0.1 of flagellum completely light brownish. Head and thorax black, with markings on face above clypeus (Fig. 7), clypeus, mandibles, palpi, anterior edge of collar, hind corners of pronotum, a pair of large anterolateral spots on mesoscutum (these spots small in paratype), tegulae and apex of epimeron yellow. Fore and middle legs pale reddish; coxae and trochanters yellow with blackish dorsal markings at their bases; all trochanters II yellow. Hind coxa brownish black, slightly reddish ventrally on apex; hind trochanter I blackish with apical margin yellowish; hind femur reddish; hind tibia almost uniformly rufous, slightly infuscate dorsally at base (0.25) and on apex (0.3); hind spurs and hind tarsus uniformly dull rufous. Pterostigma pale, yellowish rufous. Abdominal tergites black; tergites 2-7 dorsally with yellow band on hind margin rather wide on tergites 4-6, epipleura of these tergites also whitish in posterior corners. Sternites widely yellowish on longitudinal fold, sternite 2 slightly fuscous; all sternites laterally with broad longitudinal sclerotized dark brown band; hypopygium completely yellow.

Variability. Paratype from Yakutia darker: face and collar without yellow markings, fore and middle coxae and trochanters I almost entirely black. However, epipleura of tergites 4-6 lighter, almost completely white.

Male unknown.

***Saotis pygidiator nearctor* ssp. n.**
(Fig. 9)

Holotype: AEI, female, USA, Alaska: "Paxon, Alaska, 10.08.1973 (H. & M. Townes)".

Paratypes (AEI). USA, Alaska, 2 females, "Paxon, Alaska, 10.08.1973 (H. & M. Townes)". Canada, British Columbia, 1 female, "B. C., Racing Riv. 2400 ft, 23.08.1973 (H. & M. Townes)".

Diagnosis. *Saotis pygidiator nearctor* differs from *S. pygidiator pygidiator* and from most other congeners in the pale yellowish rufous flagellum of the antenna and yellowish pterostigma; face near clypeal foveae may be with yellow markings, hind tibia is almost uniformly pale rufous; basal flagellar segments are very slender, *i. fl* 1.21-1.35. In these characters it closely resembles northern Siberian subspecies *S. pygidiator arctor*, but *S. p. nearctor* has cheeks shorter (*i. gen* 0.27-0.35), hind femora more slender (*i. fem* 5.1-5.6), and hind tibia distinctly darkened at base and at apex.

Description. *Female* (holotype). Fore wing 5.5 mm, flagellum 5.1 mm long. Antenna with 25 flagellar segments; *i. fl* 1.26; first and second flagellomeres 9.0 and 5.0 times as long as wide at the middle respectively. Head weakly narrowed, temples swollen, but slightly convergent beyond eyes to occipital carina; minimum distance from eye to occipital carina in upper part of temple 0.8 as long as minimum diameter of eye. *i. gen* 0.31. Clypeus convex in basal 0.6, with more than 10 strong setae in lower half of this convexity. Nervulus weakly postfurcal, nervellus intercepted at lower 0.12. *i. fem* 5.6, *i. tars* 5.5 : 2.7 : 2.1 : 1.3 : 1.7; longest spur of hind tibia as long as segment 2 of hind tarsus. First abdominal tergite mat, distinctly granulate; *i. terg* 2.0; dorsal carinae of first tergite extending almost to middle of tergite; dorso-lateral carina present but very weak beyond spiracles. Tergites 2-4 of subequal lengths, each tergite about 1.3 times as long as wide at base. Tergite 2 distinctly granulate, except for hind margin, subsequent tergites shiny, with very fine granulation. Hairs on dorsal surface of tergites 2-5 very scarce and short, subsequent tergites more or less uniformly pubescent. Tergites 3-7 moderately compressed. Hypopygium in apical half covered with very dense and short erect hairs,

truncate at apex, but without membranous concavity at middle (Fig. 9).

Antenna yellowish rufous ventrally and slightly brownish dorsally; base of scape and dorsal surface of pedicel and scape completely blackish. Head and thorax black, with markings on face between clypeal fovea and eye (these marks very weak in one paratype), clypeus, mandibles, palpi, weak spot just beyond mandibles, anterior edge of collar, hind corners of pronotum, a pair of large anterolateral spots on mesoscutum, tegulae and apex of epimeron yellow. Fore and middle legs pale reddish; coxae with blackish dorsal longitudinal band widened at base; trochanters I reddish brown dorsally; all trochanters II yellow. Hind coxa blackish, slightly reddish ventrally on apex; hind trochanter I blackish with apical margin yellowish; hind femur red; hind tibia almost uniformly pale rufous, with small fuscous spot dorsally before base and entirely reddish rufous in apical 0.3; hind spurs and hind tarsus uniformly dull rufous. Pterostigma pale, yellowish rufous. Abdominal tergites black; tergites 2-7 dorsally with yellow band on hind margin which is rather wide on tergites 3-7, epipleura of these tergites also yellowish on margins. Hypopygium completely yellow (Fig. 10).

Male unknown.

Variability. Length of fore wing 4.0-5.5 mm, flagellum about 0.95 times as long as fore wing. Antenna with 23-25 flagellar

segments; *i. fl* 1.21-1.35; second flagellar segment 5-6 times as long as wide at middle. Head weakly narrowed or not narrowed, temples swollen. *i. gen* 0.27-0.38. Nervulus interstitial to weakly postfurcal; *i. nrw* 0.1-0.3; *i. fem* 5.1-5.6; *i. terg* 1.75-2.0.

Distribution. Subarctic zone of Canada and Alaska.

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