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A new species of clearwing moth from the Far East of Russia and its sex attractant

(Lepidoptera, Sesiidae)

by

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Abstract: A new species, *Synanthedon cerskisi* spec. nov., from the Far East of Russia is described and figured. By screening 2,13- and 3,13-octadecadienyl acetates and alcohols (2,13- and 3,13-18:Ac/OH) in a mixture of E2,Z13-18Ac and Z3,Z13-18:Ac, ratio of 9:1 was found to be most effective for male attraction. Preliminary data indicate that males search for females early in the afternoon, between 3 and 4 p.m.

This paper is devoted to the description of another new clearwing moth from Russia, this time from the Far East. In addition, a range of sex attractants was tested, with one mixture revealed as most efficient for male attraction. The holotype of this new species is deposited in the collection of the Zoological Institute of the Russian Academy of Sciences, St.-Petersburg, Russia. The paratypes have been shared between the collections of the Institute of Ecology, Vilnius, Lithuania, Dr. O. GORBUNOV, Moscow, Russia (CG), and Entomological Museum of Dr. U. EITSCHBERGER, Marktleuthen, Germany.

Synanthedon **cerskisi** GORBUNOV, spec. nov.

(Figs. 1–4, colour plate XIIIb, fig. 1)

Material: Holotype ♂, Russia, Far East, Maritime Prov., Khasan Distr., Gusevskii Rudnik, 18.–26.VII.1992, leg. J. MIATLEUSKI. Paratypes, 12 ♂♂, same locality and date, leg. J. MIATLEUSKI and R. MOZURAITIS.

Description: Holotype ♂. Body length is 11.8 mm; forewing is 9.0 mm; antenna is 6.1 mm. Head: browngrey with a bright white strip laterally; the vertex black with a greenish sheet; the labial palpi black dorsally and orange-yellow laterally; the antenna is black with a bronzed sheet, with a narrow yellow strip ventrally; the pericephalic hairs are yellow. Thorax dorsally completely black with bronzed-green metallic sheet, laterally black with a large yellow spot. The legs are grey-brown to black, with an admixture of individual yellow scales; the fore coxa is yellow with a narrow grey-brown strip internally; the hind tibia is yellow with a narrow, black with violet sheet strip dorsally from base to base of midspurs and with a broad, black with violet sheet ring distally; the spurs are pale yellow. Abdomen is black with greenish-violet sheet; dorsally segments nos. 2 and 4 each with a narrow, distal, yellow strip; ventrally segments nos. 4–7 are completely yellow; the anal tuft is

lanceolate, dorsally black with greenish-violet sheet, ventrally black with admixture of individual yellow-orange scales medially. The forewing from above is black with bright bronzed sheet; costal and anal margins as well as apical area between veins R4 – R5 and R5 – M1 distally with admixture of individual yellow-orange to yellow scales; discal spot eventually completely orange-yellow; the transparent areas are well-developed, and covered by dense colourless scales; the external transparent area is divided into five elongate cells, about twice as broad as the discal spot and as broad as the apical area; from below with an elevated number of yellow-orange to yellow scales at costal and anal margins as well as in the apical area between veins; the cilia are dark grey. The hindwing is transparent; the veins are black with a bronzed lustre; the discal spot is extremely small and narrow, reaching only to the base of vein M2.

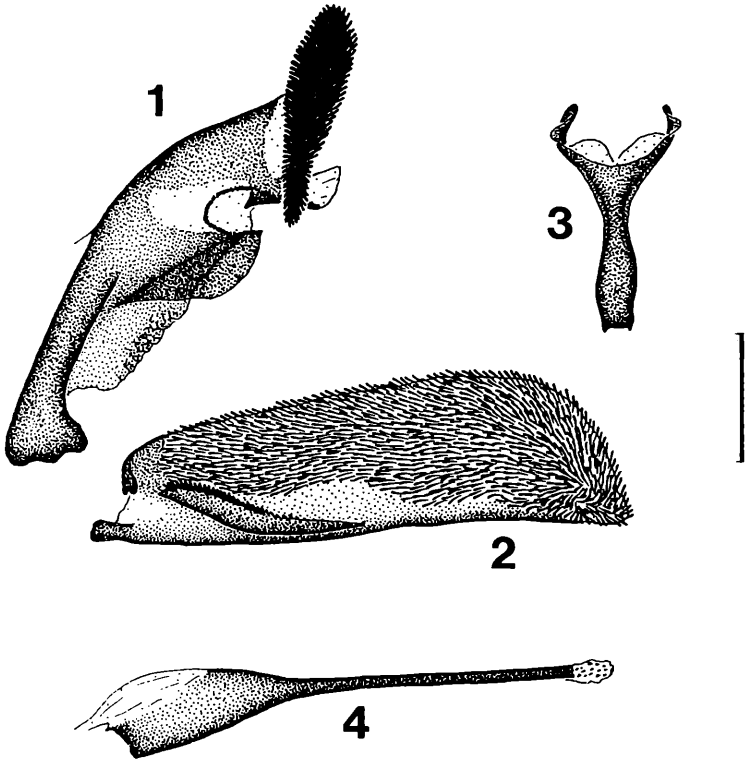
Genitalia: Tegumen-uncus complex (fig. 1) narrow; the scopula androconialis is well-developed; the crista gnathi lateralis is oval, the crista gnathi medialis is broad and long, with a lot small wrinkles; valve (fig. 2) elongate trapeziform, crista sacculi long pocket-shaped, with a row of flat-topped setae at top margin; saccus (fig. 3) a little broadened subbasally, with a slightly bifurcate base, about twice as long as vinculum; aedoeagus (fig. 4) very narrow, about 1.3 times as short as valve; vesica with rows of numerous but small cornuti.

Female: unknown.

Variability: The paratypes display no differences from the holotype in the general colour pattern, but slightly vary in the number of yellow-orange scales at the discal spot of the forewing. In addition, the paratypes vary somewhat in size: the body length 10.5 – 12.6 mm; the forewing 8.5 – 10.0 mm; the antenna 5.9 – 6.5 mm.

Diagnosis: Habitually, this new species seems to be the closest to *S. andrenaeforme* (LASPEYRES, 1801) (colour plate XIIIb, fig. 2) and *S. ulmicolum* YANG & WANG, 1989 (colour plate XIIIb, fig. 3), but it differs clearly from them by the presence of orange-yellow scales at the discal spot of the forewing (in the species compared completely black) and completely black anal tuft dorsally (yellow distally in the species compared). In addition, *S. cerskisi* spec. nov. is distinguishable from *S. andrenaeforme* by the white lateral strips on the frons. From *S. tosevskii* SPATENKA, 1987 (colour plate XIIIb, fig. 4), the new species can be separated by the completely yellow sternites nos. 4 – 7 of the abdomen and coloration of the abdomen dorsally (in *S. tosevskii* each of tergites nos. 2, 4 and 6 with a narrow yellow strip distally, and the anal tuft yellow distally). From *S. yanoi* SPATENKA & ARITA, 1992, *S. cerskisi* spec. nov. can be easily distinguished by the white lateral strips on the frons (completely dark brown in the species compared) and colour of the discal spot of the forewing (in *S. yanoi* blackish-brown). It is interesting to note that the sex attractant of the morphologically most closely related species *S. andrenaeforme* consists of the same chemicals as the attractant *of S. cerskisi* spec. nov., but in the opposite ratio of 1:10 (PRIESNER et al., 1986). The difference is great enough to support the validity of both taxa as separate species.

Bionomics: the host plant is unknown. Imagos fly in July.



Figs. 1–4: Male genitalia of *Synanthedon cerskisi* spec. nov., paratype: 1) tegumen-uncus complex; 2) valve; 3) saccus; 4) aedoeagus. Line on the right – 0.5 mm.

Habitat: Small clearings in river valleys with bushes and insular trees, turning into a broad-leaved forest with admixture of *Pinus koraiensis* further away from the river.

Etymology: The joint team from Russia and Lithuania has named the above new species after JONAS CERSKIS (Russian transcription: IVAN DEMENTYEVICH TSCHERSKYI), a distinguished personality with a tragic fate, well-known in both Lithuania and Russia. Born on 03.V.1845, he passed away on 25.VI.1892 and was an outstanding explorer of Eastern Siberia, geographer, geologist and paleontologist. He was exiled to Siberia from Lithuania for participation in the 1863 uprising against Zarist Russia, and the Tcherskogo Mountain Range which marks the border between East Siberia and the Far East. Lithuania commemorates the 130th anniversary of the uprisal this year.

Sex attractant: The following chemical substances were tested: all possible (four) stereoisomeres of both 3,13-octadecadienyl acetate(3,13-18:Ac) and 3,13-octadecadienol (3,13-18:OH) as well as two isomeres (E2,Z13- and Z2,Z13-) both of 2,13-18:Ac an 2,13-18:OH. Details of their synthesis and purity see in MAEORG et al. (1989) and BUDA et al. (1993). In all, 12 separate compounds were tested. The compounds were also binary mixed, each mixture prepared in three different ratios (1:1; 9:1; 1:9). Not all possible mixtures were used containing Z2,Z13-18:Ac and corresponding alcohol. One replicate consisted of 59 different variants including control (without any chemical). Altogether, three replicates were used. Each compound or mixture tested was applied to a rubber dispenser at a rate of 0.5 mg/cap. Each bait was placed into a white delta-shaped trap, Atracon A, with exchangeable bottom covered with Pestifix glue. Traps were fixed onto bush or tree branches 1–1.5m above ground-level. The distance between traps was no less than 25m. Moths flew throughout the trapping period, from 18.–26.VII.1992. Sixty-five males were trapped in sticky traps. All were attracted to baits containing mixtures with the common component Z2,Z13-18:Ac, although the chemical alone was not attractive. Most of the males (61) were captured in traps baited with a mixture of E2,Z13-18:Ac and Z3,Z13-18:Ac in a ratio of 9:1. Only three males were attracted by the same mixture in a ratio of 1:1, and one male was trapped with E2,Z13-18:Ac and Z2,Z13 18:Ac in a ratio of 1:9. A mixture of E2,Z13- and Z3,Z13-18:Ac (9:1) has been shown to be statistically significantly ($P < 0.001$) the most efficient, as determined by the Duncan multiple range test with RQ ($x+0.5$) transformation, where x is the number of moths captured per trap. Thirteen males were collected with butterfly-net at the trap with the most efficient attractant. Only those specimens have been used for the description and considered as types.

References

BUDA, V., MAEORG, U., KARALIUS, V., ROTHSCHILD, G. H. L., KOLONISTOVA, S., IVINSKIS, P. & R. MOZURAITIS (1993): C-18 dienes as attractants for eighteen clearwing (Sesiidae), tineid (Tineidae) and choreutid (Choreutidae) moth species. – J. Chem. Ecol. **9**(4):799–813.

MAEORG, U. J., BUDA, V., KOLONISTOVA, S. F. & V. A. KARALIUS (1989): Synthesis and biological activity of two isomers of 3,13-octadecadienols and their acetates as attractants for Lepidoptera. – Abstracts, 32nd IUPAC Congress, August 2–7; Stockholm, p.71.

PRIESNER, E., DOBLER, G. & S. VOERMAN (1986): Synergism of positional isomers in sex-attractant systems of clearwing moths (Sesiidae). – Entomol. Exp. Appl. **41**(3): 311–313.

Explanation of colour plate XIIIb (p. 443)

Fig. 1: *Synanthedon cerskisi* spec. nov., holotype ♂.
Fig. 2: *Synanthedon andrenaeforme* (LASPEYRES, 1801), ♂, Slovakia, 1981, ex l., Z. LASTUVKA leg. (CG).
Fig. 3: *Synanthedon ulmicolum* YANG & WANG, 1989, ♂, Far East of Russia, Ussuri region, Spask distr., Jakovlevka, 26.VII.1926, DIAKONOV, FILIPJEV leg. (CG).

Fig. 4: *Synanthedon tosevskii* SPATENKA, 1987, ♂, Kirgizstan, Sarykamysh Mts., 2000m, 41°55'N, 74°03'E, 24.–26.VII.1993, O. GORBUNOV leg. (CG).

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