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New data on the taxonomy and biology of the flies from the genus *Turanodinia* Stackelberg (Diptera, Odiniidae)

NINA P. KRIVOSHEINA, MARINA G. KRIVOSHEINA

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The revision of the materials of the genus *Turanodinia* Stackelberg collected on the territory of the Middle Asia and Kazakhstan is made. *T. coccidarum* Stack. is redescribed. A new species — *T. stackelbergi* spec.nov. and its subspecies *T. stackelbergi graciosa* ssp. n. are described. The data on the morphology of the larvae, breeding in the congestions of sap of deciduous trees — Ulmus foliacea and Populus diversifolia are given.

N.P.Krivosheina. A.N.Severtzov Institute of Ecology and Evolution, Russian Academy of Sciences, 33 Leninsky Prospect, 117071 Moscow, Russia.

M.G.Krivosheina. A.N.Severtzov Institute of Ecology and Evolution, Russian Academy of Sciences, 33 Leninsky Prospect, 117071 Moscow, Russia.

Key words: Diptera, Odiniidae. *Turanodinia stackelbergi* sp. n., *T. stackelbergi graciosa* ssp. n., taxonomy.

Introduction

The two species of *Turanodinia* Stackelberg are distributed in Palaearctic: *T. coccidarum* Stack., described from the Middle Asia (Uzbekistan) and *T. tisciae* (Papp), described from Hungary (Stackelberg, 1944, Papp, 1987). The larvae of *T. coccidarum* were found in egg mass of *Pseudococcus comstocki*. The larvae of the latter species were discovered in sap congestions on the trunk of Populus alba (Papp, 1995).

Materials and methods

During this study mainly the collection of the Institute of Ecology and Evolution (IEE, Moscow) was used. It contains imaginal materials of *Turanodinia* from Turkmenistan, Tadjikistan and Kazakhstan, reared from sap congestions on the trunks of various deciduous trees.

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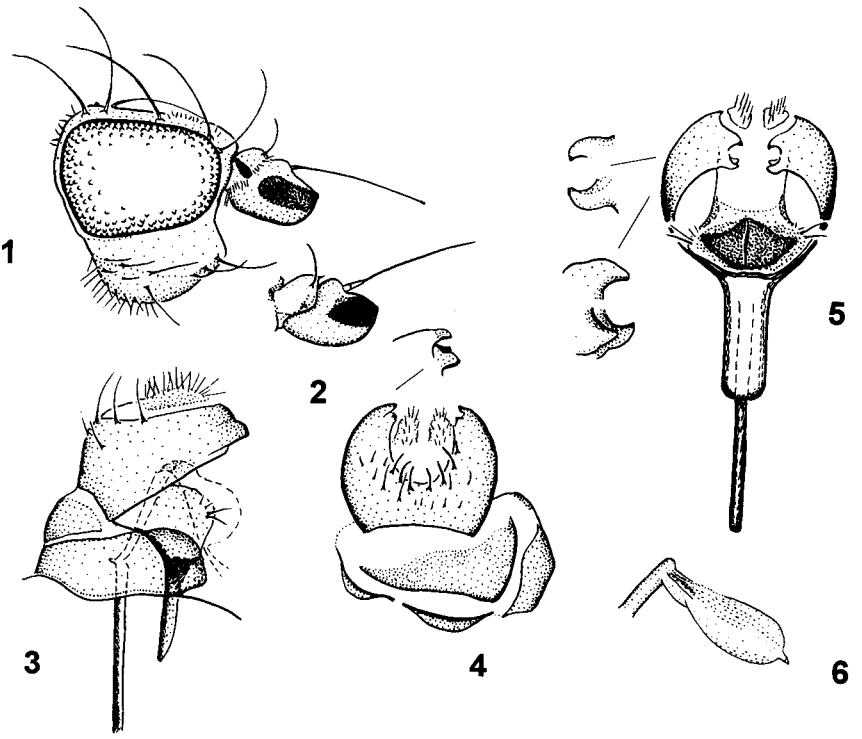
Description of species

Turanodinia stackelbergi N. Krivosheina et M. Krivosheina, sp. n.

(Figs 1—6)

Type locality. Turkmenistan (Geok-Tepe District, Askhabad suburbs), Uzbekistan (Bukhara)

Diagnosis. Second antennal segment with exterior narrow dark brown stripe. Upper brown pleural stripe, occupying suprahumeral and supraalar areas, is relatively narrow, its width is lesser than the length of *rm*. The stripe is narrowed anteriorly and doesn't reach anterior spiracle, as a rule ending at the level of the anterior notopleural seta. Dark stripe on *mcu* with parallel sides.



Figs 1—6. *T. stackelbergi* sp. n., imago.
1, head of female, lateral view; **2,** second and third antennal segment, internal view; **3, 4,** the end of male abdomen, lateral and external views; **5,** epandrium, internal view; **6,** the end of aedeagus, lateral view.

Holotype. 1 ♂, **Turkmenistan**, Geok-Tepe, reared from larvae collected in sap on Ulmus foliacea, 27.IV.1982 (leg. N. P. Krivosheina).

Paratypes. 7 ♂, the same place, 29.IV.1982, 30.IV. 1982, 2.V.1982, 5.V.1982, 6.V.1982, 10.V.1982; 15 ♀, the same place, 29.IV.1982—10.V.1982; 3 ♂, **Turkmenistan**, Chardzhou (Daynau), 23.IV.1973, 28.IV.1973, 29.IV.1973; 1 ♀, Askhabad suburbs (Gyaurs), 16.V.1984 (all leg. N. P. Krivosheina); 1 ♀, **Uzbekistan**, Jargak, Chatyrchi, NW Bukhara, 21.V. 1929, (L. Zimin).

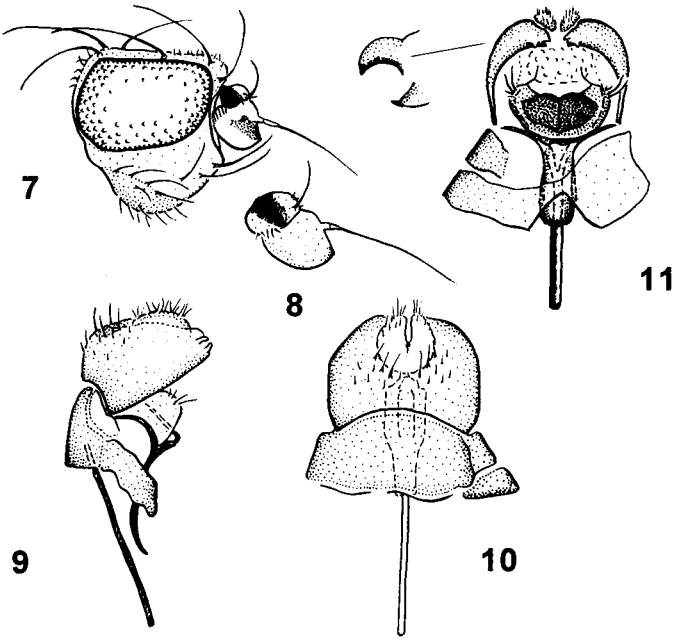
Holotype and paratypes are deposited in Zoological Museum of Moscow University.

Description. Male. Length 3.5 mm, wing 3.0 mm. Body light with white pollen.

Head. Eyes elongated, narrowing anteriorly, 4.5 : 2.7 as long as high. Frons broad, flat, with parallel sides, 3.5 : 2 times as wide as the eye. Frons yellowish anteriorly and grey in front of the ocellar triangle. 2 *orb s*, 1 *fr s*, both long. There are thin rare hairs in the middle of frons, forming transverse row. Generally the position of these hairs unstable. Small dark setae-like hairs are regulated in one row on postcranium. Face smooth without carina, antennae widely separated, with distance between them no lesser than 1/4 of the distance between eyes. Genae massive, their height is equal to those of the 3rd antennal segment near arista. Antenna yellow. First antennal segment brownish dorsally, second with dense silvery pollen, brighter on the apical part, with narrow brownish-black exterior stripe. Third antennal segment yellow with inclined dark exterior stripe, beginning from its median part and ending in the upper corner near arista: the same internal stripe present.

Thorax. Mesonotum dark with white pollen. Scutellum yellow. Pleurae with 2 typical brown stripes, the upper is relatively narrow, lesser than rm, short, beginning behind postpronotum and weakly developed below the wing. Dark stripe is situated also on mesonotum above notopleural suture. Legs light-yellow with dark bands and stripes. Fore coxa light-yellow. Fore femur with exterior dark stripe. Hind femur with exterior dark spot near apex, surrounding 1 long seta. Fore tibia with a dark spot near base. Middle tibia with small exterior spots near base and near apex and long median stripe. Hind tibia with dark apical and basal bands. Halteres white. Wing hyaline with typical small spots at the end of R_1 and on transverse veins. R_1 in the middle, base and apex of R_{2+3} and R_{4+5} darkened. Black spot with long black hairs is situated near the end of R_1. The spots on transverse veins with parallel sides.

Abdomen dark with thick light pollen, the basic coloration is visible near the bases of light hairs where the pollen is less intensive.



Figs 7—11. Morphology of male of *T. stackelbergi graciosa* ssp. n.
7, head, lateral view; **8,** second and third antennal segments, internal view; **9—11,** the end of male abdomen, lateral, external and internal views.

Genitalia (Figs 3—5). Epandrium with a small apical opening and well developed sclerites surrounding it. Dents of epandrium are of equal size, at least the inner no longer than the exterior one.

Female (Figs 1, 2) resembling male.

Larva (Figs 17—26). Description. Snow-white, narrowed anteriorly, smooth, only with rows of small spines forming creeping welts. Creeping welts present on the segments 2—7, each including 4 rows of larger spines arranged chessboard fashion. These groups of spines are surrounded by 1 row of smaller ones. 8th abdominal segment with 2 oval large lobes bordering anal opening; which sometimes may be invaginated. The end of the body with massive tubercles, carrying posterior spiracles. Cephalopharyngeal sceleton of the typical structure (Figs 25—26): with massive curved blunt and rounded apically mouthhooks. Small dental sclerites present. Ventral appendages of pharyngeal sclerites with projection, pharyngeal membrane well developed with distinct longitudinal ribs. Such structure of pharyngeal membrane is typical for the saprophages not for predators (Zimin, 1948). Ventral sclerites carry sensor organs. Anterior spiracles represent themselves elongated somewhat broadened apically projection, carrying 6 spiracular openings. Posterior spiracles are situated on a massive tubercle, slightly projecting beyond its surface, far enough from each other. There are no any spines or tubercles around spiracles.

Diagnosis. Only one larvae of *Turanodinia* — *T. tisciae* (Papp) was detail described before (Papp, 1995). For our sorrow it proved impossible to find differences between the larvae of the two species, basing only on the description and the figures. Some varieties in the structure of the cephalopharyngeal sceleton and the position of posterior spiracles might be the result of various positions of the larvae in preparations.

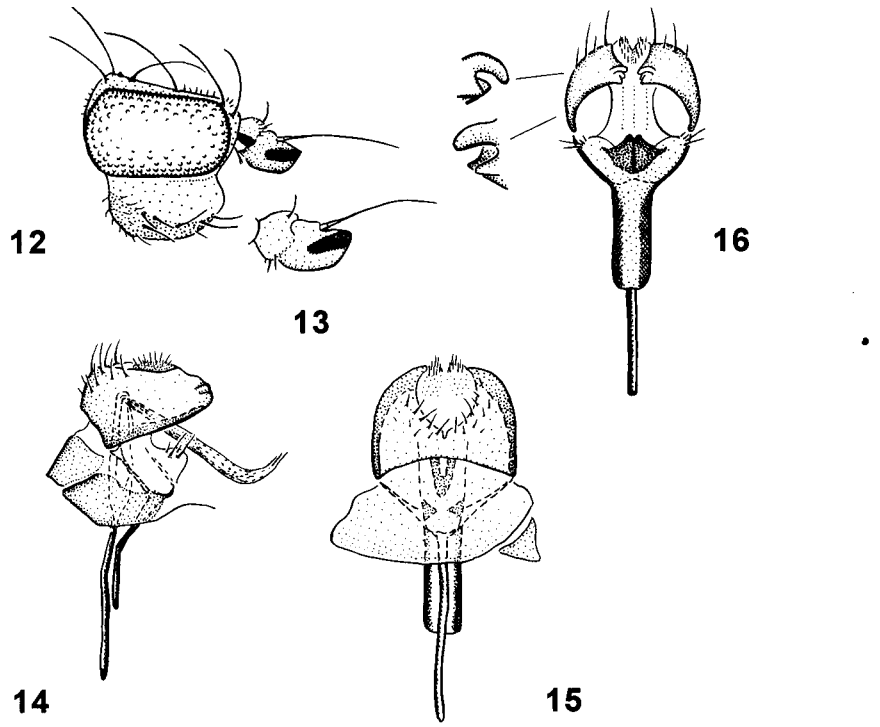
Biology. The life in congestions of sap on trunks is evidently typical for the larvae of *Turanodinia*. It was shown on the examples of *T. tisciae* (Papp, 1995) and above mentioned species. The life-history of *T. coccidarum* was not detail described (Stackelberg, 1944), but the fact that the larvae bred in eggs masses of *Pseudococcus comstocki* Kuw. does not contradict our conclusions. The matter is that *P. comstocki* is polyphagous species, connected with many deciduous trees, its eggs survive winter in the holes of bark.

Turanodinia stackelbergi graciosa N.Krivosheina et M.Krivosheina ssp. n.

(Figs 7—11)

Type locality. Turkmenistan, Kazakhstan.

Diagnosis. Second antennal segment with dark stripes, one exteriorly and one interiorly. Third



Figs 12—16. *T. coccidarum* Stack.
12, head, lateral view; **13,** second and third antennal segments, internal view; **14, 15,** the end of abdomen, lateral and exterior views; **16,** epandrium, internal view.

antennal segment with washed median exterior spot and light interiorly. Upper dark pleural stripe well developed, but short, beginning at the level of the anterior notopleural seta. Dark spot on *mcu* oval, slightly narrowed posteriorly.

Holotype. 1 ♂, **Kazakhstan**, Dokuchaevka, 17.08. 1975 (A. I. Zaitzev).

Paratypes. 2 ♂, **Turkmenistan**, Geok-Tepe, 30.04. 1982; 1 ♀, the same place, 15.05.1984 (N. P. Krivosheina).

Holotype and paratypes are deposited in Zoological Museum of Moscow University.

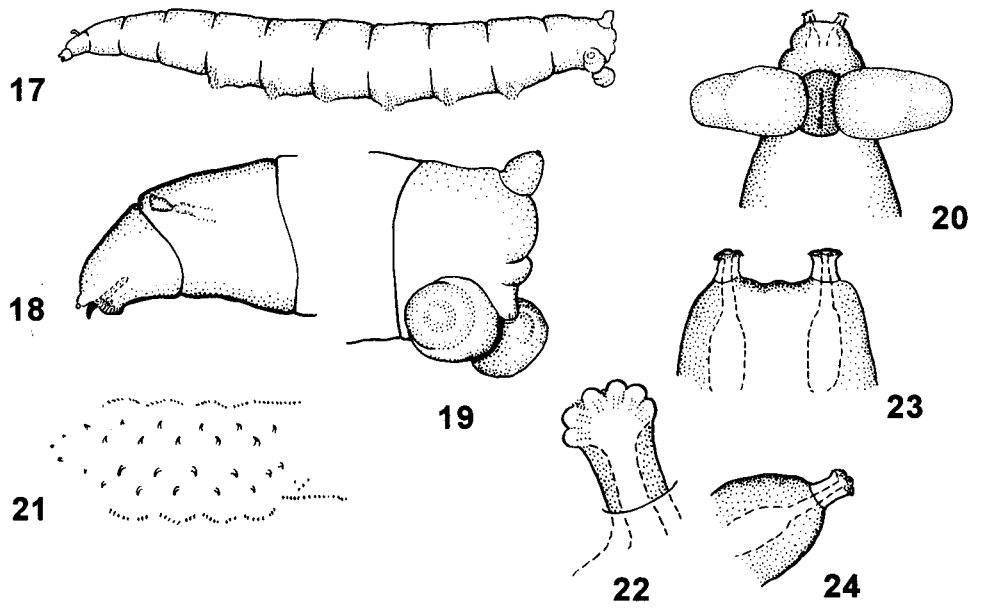
Description. Resembling *T. stackelbergi* sp. n., but the characters mentioned in the diagnosis. Genitalia have now clear differences from *T. stackelbergi*. The only character which proved impossible to check is the structure of the apex of aedeagus, which is too weakly sclerotized in the holotype specimen of the subspecies.

T. coccidarum Stackelberg, 1944
(Figs 12—16)

Diagnosis. Second antennal segment with dark exterior stripe. Third antennal segment with one dark exterior and one interior stripes. Upper brown pleural stripe long, massive, broad, with parallel sides, reaches anterior spiracle. Transverse vein mcu with a big black spot in the anterior half.

Material. 4 ♂, 1 ♀, **Turkmenistan**, Tedzhen suburbs, from larvae beeding in the tunnels of cerambycid beetle Aeolesthes sarta, 5.VI.1983 (B. M. Mamaev); 1 ♂, 2 ♀, **Turkmenistan**, Mary, from larvae breeding in sap congestions on the trunks of Ulmus foliacea, 10.V.1971, 14.V.1971; 3 ♀, **Turkmenistan**, Chardzhou (Daynau), from larvae, collected under the bark of Populus diversifolia, 30.IV.1973, 2.V.1973, 9.V.1973 (N. P. Krivosheina).

Description. Male (Figs 12—16). Body light. Wing with typical small spots at the apex of R_1 and on transverse veins. The description given by Stackelberg (1944) is complete enough, but several characters need to be added. Antenna yellow. Second antennal segment with silvery-white pollen, especially thick at apex. Internal surface of the segment with brown short hairs. Exterior surface with the same hairs and besides this it has narrow brown stripe. Third antennal segment internally with brownish spot in the apical half in front of arista. Exterior surface with long brown median stripe. Arista most darkened, white in base. Eyes oval, narrowing anteriorly, almost twice



Figs 17—24. Morphology of larva of *T. stackelbergi* sp. n.
17, larva, lateral view; **18,** anterior part of the larva, lateral view; **19, 20,** posterior end of the body, lateral and ventral views; **21,** ventral spines of the 5th segment; **22,** anterior spiracle; **23, 24,** posterior spiracles, dorsal and lateral views.

(3.6 : 2) as long as high. Genae massive, 2 times lesser than the eye's height. Upper dark stripe, situated below notopleural suture, broad, not narrowing, its width exceeding the length of *rm*. The stripe reaches anterior spiracle. Transverse vein *rm* with narrow dark stripe, and *mcu* with round dark spot in the anterior half, and narrow stripe posteriorly.

Genitalia. Epandrium with deep opening. Epandrial margin with 3 projections, the interior of which is the longest, 2 times as long as wide.

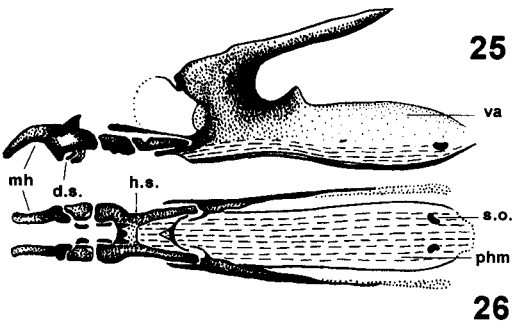
Female. Resembling male. Spermatheca round, flat with a small projection in the middle. Ovipositor with long narrow cerci.

Biology. The larvae of the species live in congestions of sap, but besides this they are often found in the galleries of wood-destroying insects.

Key to *Turanodinia* species

1. First antennal segment dark, second — with brown stripe on the exterior as well as on the interior surface, third antennal segment light internally . . . ***T. stackelbergi graciosa*** **ssp. n.**
— First antennal segment light, second — with brown stripe exteriorly and light interiorly, third antennal segment with exterior and interior dark spots, varying in intensity of coloration and shape 2

2. Transverse vein *mcu* with dark and parallel-sided stripe. Upper dark pleural stripe short and narrow, not reaching anterior spiracles . . . . . ***T. stackelbergi*** **sp. n.**
— Transverse vein *mcu* with round spot in the anterior half and narrow stripe in the posterior half. Upper pleural dark stripe wide, reaching anterior spiracles . . . . ***T. coccidarum*** **Stack.**



Figs 25—26. Cephalopharyngeal sceleton of the larvae of *T. stackelbergi* sp. n., lateral and dorsal views.
ds – dental sclerite, *hs* – hypostomal sclerite, *mh* – mouthhooks, *phm* – pharyngeal membrane, *so* – sensory organ, *va* – ventral appendages of pharyngeal sclerites.

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