

A NEW *DICRANOPTYCHA* FROM ISRAEL, WITH NOTES ON TAXONOMY
AND CLASSIFICATION OF THE GENUS (DIPTERA: LIMONIIDAE)

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ABSTRACT

Dicranoptycha freidbergi n. sp. is described from Israel, and the male and female terminalia are illustrated. The new species belongs to the group referred to as the subgenus *Ulugbekia* Savchenko, 1970. Taxonomic characters within *Dicranoptycha* and rejection of the subgenus *Ulugbekia* are discussed.

KEY WORDS: Diptera, Limoniidae, Israel, *Dicranoptycha freidbergi* n. sp., *Ulugbekia*, taxonomy, classification.

INTRODUCTION

Through the kind cooperation of Dr. Amnon Freidberg, the Limoniidae from the collection of the Tel-Aviv University became available for study. This rather rich material comprises many species, most of them new to Israel and some representing undescribed taxa. Results of the examination of this material will be published successively. In this paper, the description of a new species of *Dicranoptycha* Osten-Sacken, 1860 is presented.

Although some uncertainty arose lately about the systematic position of *Dicranoptycha* (cf. Savchenko, 1982; Stary, 1987; Oosterbroek and Theowald, 1991; Savchenko et al., 1992), the genus has recently been assigned to the subfamily Limoniinae (Stary, 1992).

Terminology essentially follows McAlpine (1981). Some terms used by Young (1987) for various elements of the male terminalia of *Dicranoptycha* are added.

Dicranoptycha freidbergi n. sp.

(Figs. 1-3)

DESCRIPTION. Body length 9-10 mm, wing length 7.5-8.5 mm.

Male. Head Heavily grey pruinose, suffused with brownish on frons. Bristles around eyes about twice as long as narrowest width of frons. Rostrum and palpus dark brown. Antenna reaching approximately to base of wing. Scape and pedicel brown to dark brown, the former with greyish brown pruinosity, the latter slightly shining. Flagellomeres long-oval, with verticils 1.5-2 times as long as respective segments. At least first flagellomere yellow, following flagellomeres becoming darker (concolorous with pedicel) towards distalmost segments.

Thorax: Generally brown to greyish brown, dull, darker and largely whitish pruinose on pleura.

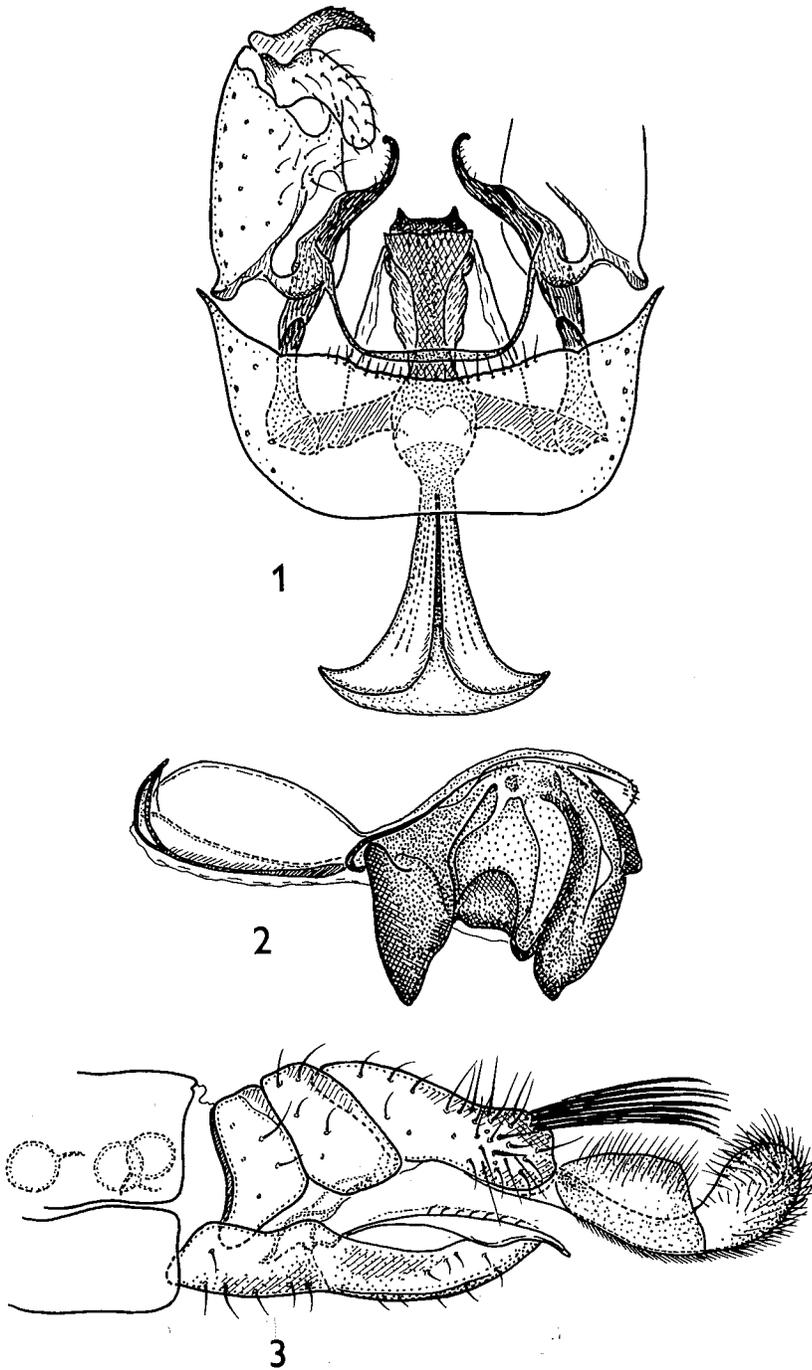
Prescutum without any conspicuous pattern. Wing rather narrow, with membrane

strongly tinged with yellowish brown, more intensely so along distal fore margin so that costal stripe is observable between vein C and what usually is referred to as vein R1 (in fact a serial vein R1/R2/R3 in *Dicranoptycha* and the other Limoniinae). In addition, longitudinal veins slightly seamed with darker tinge, faded gradually from apex towards base and from vein R4 to vein A2. Veins yellowish brown. Venation generally typical for genus. Compared to European species, wing margin is longer and more densely fringed. Halter yellowish brown, generally of the same tinge as wing, paler at base. Coxae brown to dark brown, sparsely whitish pruinose. Trochanters pale yellow. Femora pale yellow, somewhat darkened distally. Tibiae pale yellow throughout. Distal tarsal segments slightly darkened.

Abdomen: Brown, generally somewhat darker than dorsal parts of thorax, dark brown on segments 7–8 forming what may be called subterminal ring, indistinct and somewhat diffuse at proximal border. Male terminalia (Figs. 1–2) bright brown, contrasting with dark brown segments 7–8. Tergum 9 (T9) and sternite 9 (S9) fused into basal ring, as typical for genus. T9 shallowly and broadly emarginate posteriorly. S9 interrupted medially, largely membranous in anterior part, posterior region with produced lobes that sometimes touch each other medially. Outer gonostylus (= outer dististyle) dark pigmented, sickle-shaped, pointed at tip and sparsely denticulate on outer distal half, distinctly shorter (about 2/3) than fleshy inner gonostylus. Lateral process of vesica (interbase of Starý, 1972) long, reaching to about 2/3 length of gonocoxite (= basistyle), dark pigmented, expanded in proximal half to form broad blade applied upon inner basal side of gonocoxite; distal half slender, hook-shaped, curved outwards, with obtuse, rounded apex, set with few short setae on outer margin. Aedeagus greatly modified, of highly complex structure, with sclerotized elements strongly curved downwards and compressed laterally into block (Fig. 2). Vesica rather small, with straight outspread lateral apodemes and with anterior apodemes forming large fan provided with high dorsal crest. Somewhat sclerotized filament, with dorsal membranous flange, extends from each side of distal end of aedeagus connecting it to lateral apodeme of vesica.

Female. Resembling male in general appearance. Bristles around eyes appearing longer and denser than in male. Wing membrane slightly darker. Abdomen without distinct subterminal ring on tergites 7–8; however, female T10 dark brown or blackish, contrasting with yellowish brown cerci. Female terminalia (Fig. 3): T10 with erect setae that become longer and denser distally and with dense row of exceedingly long and stout, bronze bristles along posterior end, directed posteriorly and reaching beyond mid-length of cercus; row narrowly separated in middle of T10. Cercus conspicuously modified, subequal in length to T10, expanded and rounded apically, broadly spoon-shaped. Ventral margin of proximal half of cercus greatly expanded outwards, rolled up to form large pocket, with hind margin rather straight and vertical. Expanded portions of cercus densely set with rather long, suberect, fine golden hairs. Spermathecae generally pale (Fig. 3). Sclerotized part of duct somewhat shorter than diameter of spermatheca.

MATERIAL EXAMINED. (4♂, 10♀). Holotype ♂, ISRAEL: Tel Dan, 10.vi.1976, A. Freidberg; in the entomological collection of Tel-Aviv University (TAU). Paratypes: ISRAEL: Tel Dan, 10.vi.1976, A. Freidberg (1♀); Panyas [= Baniass], 13.vi.1982, A. Freidberg (1♀); Montfort, 2.vi.1981, A. Freidberg (1♂); Bet Hillél, 15.v.1985, I. Nussbaum (1♂); Park Hayardén, 7.v.1987, A. Freidberg and Ilan Yarom (1♂, 2♀); Hefa [= Haifa], 13.v.1978, A. Freidberg (1♀); Zomet Ha'Amaqim (Jalame), 18–22.v.1993, A. Freidberg (1♀), 26–30.v.1993,



Figs. 1-3. *Dicranoptycha freidbergi* n. sp. 1. Male terminalia, general, dorsal view (holotype). 2. Aedeagus, lateral view (holotype). 3. Female terminalia, lateral view (paratype, Hefa).

A. Freidberg (3 ♀); Me'ir Sheféya, 18.vi.1982, I. Nussbaum (1 ♀). The paratypes are deposited in TAU and J. Starý's collection, Olomouc.

DISCUSSION. The genus *Dicranoptycha* is distributed in all zoogeographic regions except Australia and Oceania and comprises 84 described species distributed as follows: 21 species are Palaearctic (1 species recorded also as Oriental), 7 — Oriental, 31 — Afrotropical, 23 — Nearctic, and 3 — Neotropic (Central America only) (Alexander, 1965; Alexander and Alexander, 1970, 1973; Hutson, 1980; Oosterbroek and Jonas, 1986; Savchenko et al., 1992). Hence, the genus is most diverse in the Afrotropical region, with 22 species recorded from Madagascar. Starý (1972) revised the five European species and Young (1987) presented an excellent revision of the Nearctic species.

The genus had not been divided into subgenera until Savchenko (1970) proposed the subgenus *Ulugbekia* for *D. mirabilis* Savchenko, based on the strongly expanded cerci of the female. The subgenus contains only two species: *D. mirabilis* Savchenko, 1970 (type species) from Turkmenistan, Uzbekistan, Tadjikistan, and possibly also Asia Minor, and *D. savtshenkoi* Mendl, 1976 from the Greek islands of Rhodos, Lesbos and Samos.

Based on the structure of the female cerci, *D. freidbergi* n. sp. clearly belongs to the subgenus *Ulugbekia*. It may be differentiated from the above-mentioned species by structural details of the female cercus (length of cercus, shape of its expanded portions; Fig. 3 and comparable figures in Savchenko, 1970 and Mendl, 1976) and by the distinctive male terminalia (Figs. 1–2 and comparable figures in Savchenko, 1975 and Mendl, 1976), with the most obvious character displayed by the dark pigmentation of the lateral processes of the vesica. In addition to the genital characters, some external traits can be used to distinguish the new species from its two closest congeners, such as absence of the prescutal stripes (stripes indicated for both *D. mirabilis* and *D. savtshenkoi*), and coloration of wings (no costal stripe or other seams mentioned for the other two species).

Although *Ulugbekia* is treated here as a subgenus of *Dicranoptycha*, *D. freidbergi* n. sp. is not formally classified in it, because, in my opinion, *Ulugbekia* does not deserve the rank of a subgenus. The remarkable structure of the ovipositor is the only diagnostic character for *Ulugbekia*. It indicates a highly apomorphic, possibly adaptive step that may be regarded as an evolutionary continuation of what was diagnosed by Young (1987) for the North American *Dicranoptycha melampygia* Alexander, 1950 species group. In that group, some important initial changes are observable in the structure of the female terminalia (partial whorl of stout setae, or bristles, around posterior end of T10; cercus with expanded apex and flared ventral margin) that seem to represent links with the condition in *Ulugbekia*. Hence, if the latter were accepted as a subgenus, the species groups defined by Young (1987) would also have to be regarded as subgenera. Alternatively, as far as the male terminalia are considered, the group related to the European *D. livescens* Loew, 1871 (including *D. paralivescens* Starý, 1972, *D. recurvispina* Savchenko, 1974 and possibly others) differs strikingly from the remaining *Dicranoptycha* in the structure of the outer gonostylus, and this may then well be a reason for a subgeneric separation.

The genus *Dicranoptycha* appears rather uniform in external characters and it is not advisable to split it into subgenera on the basis of single genital characters, however remarkable and unique they may seem. Therefore, I consider *Ulugbekia* an untenable taxon that should be rejected. For comparison, within the subgenus *Lunatipula* Edwards, 1931 of the genus *Tipula* Linnaeus 1758 in the related family Tipulidae, the ovipositor varies drastically,

yet the validity of this subgenus is not controversial. Further study may reveal whether the species assigned recently to *Ulugbekia* are to be treated as a separate species group.

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REFERENCES

- Alexander, C.P.** 1965. Family Tipulidae. In: A catalog of the Diptera of America north of Mexico. Edit. A. Stone et al. U.S. Department of Agriculture, Agriculture Handbook No. 276. pp. 16–90.
- Alexander, C.P. and Alexander, M.M.** 1970. Family Tipulidae. In: A catalogue of the Diptera of the Americas south of the United States. Vol. 4. Edit. N. Papavero. Museu de Zoologia, Universidade de São Paulo, São Paulo. 259 pp.
- Alexander, C.P. and Alexander, M.M.** 1973. Family Tipulidae. In: A catalogue of the Diptera of the Oriental Region. Vol. 1. Edit. M.D. Delfinado and D.E. Hardy. The University Press of Hawaii, Honolulu. pp. 10–224.
- Hutson, A.M.** 1980. Family Tipulidae. In: Catalogue of the Diptera of the Afrotropical Region. Edit. R.W. Crosskey. British Museum (Natural History), London. pp. 47–91.
- McAlpine, J.F.** 1981. Morphology and terminology — adults. In: Manual of Nearctic Diptera. Vol. 1. Edit. J.F. McAlpine et al. Research Branch, Agriculture Canada Monograph No. 27. Biosystematics Research Centre, Ottawa. pp. 9–63.
- Mendl, H.** 1976. Neue Limoniiden aus dem Allgu und von Rhodos (Diptera, Limoniidae). *Nachrichtenblatt der Bayerischen Entomologen* 25:33–40.
- Oosterbroek, P. and Jonas, T.** 1986. Catalogue of the Australian–Oceanian Tipulidae (Insecta, Diptera). Amsterdam (privately published). 242 pp.
- Oosterbroek, P. and Theowald, Br.** 1991. Phylogeny of the Tipuloidea based on characters of larvae and pupae (Diptera, Nematocera) with an index to the literature except Tipulidae. *Tijdschrift voor Entomologie* 134:A 211–267.
- Savchenko, E.N.** 1970. A new subgenus and species of Mosquito-Limoniidae from the genus *Dicranoptycha* O.-S. (Diptera, Limoniidae). *Dopovidi Akademiyi Nauk Ukrayinskoyi RSR Seriya B* 1970:563–566 (in Ukrainian, English summary).
- Savchenko, E.N.** 1975. On taxonomy and geographical distribution of Limoniid fly *Dicranoptycha (Ulugbekia) mirabilis* Sav. (Diptera, Limoniidae). *Doklady Akademii Nauk Ukrainskoi SSR Series B* 1975:1042–1045 (in Russian, English summary).
- Savchenko, E.N.** 1982. Limoniidae: Eriopterinae. Fauna Ukrainy 14(3). Akademia Nauk Ukrainskoi SSR, Naukova Dumka, Kiev. 335 pp. (in Ukrainian).
- Savchenko, E.N. et al.** 1992. Family Limoniidae. In: Catalogue of Palaearctic Diptera. Vol. 1. Edit. A. Soós. Hungarian Natural History Museum, Budapest. pp. 183–369.
- Starý, J.** 1972. European species of the genus *Dicranoptycha* Osten-Sacken (Diptera, Tipulidae). *Acta Entomologica Bohemoslovaca* 69:401–416.
- Starý, J.** 1987. Limoniidae. In: Enumeratio insectorum Bohemoslovakiae — Check list of Czechoslovak insects, II (Diptera). Edit. J. Jezek. *Acta Faunistica Entomologica Musei Nationalis Pragae* 18:17–25.
- Starý, J.** 1992. Phylogeny and classification of Tipulomorpha, with special emphasis on the family Limoniidae. *Acta Zoologica Cracoviensia* 30:11–36.
- Young, C.W.** 1987. A revision of the crane fly genus *Dicranoptycha* in North America. *University of Kansas Science Bulletin* 53:215–274.