

***Euxesta stackelbergi* sp. n. — new species of Ulidiidae (Diptera), discovered under the bark of *Ulmus foliacea* Gilib. in Turkmenistan**

MARINA G. KRIVOSHEINA, NINA P. KRIVOSHEINA

Krivosheina, M. G., Krivosheina, N. P. 1995. *Euxesta stackelbergi* sp. n. — new species of Ulidiidae (Diptera), discovered under the bark of *Ulmus foliacea* Gilib. in Turkmenistan. *Int. J. Dipterological Research*, 6(1): 49—53.

Euxesta stackelbergi sp. n. is described from Turkmenistan. Data on the biology of the species, the morphology of larvae are discussed.

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

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

Key words: Diptera, Ulidiidae, *Euxesta stackelbergi* sp. n., taxonomy, Turkmenistan.

Introduction

The representatives of the genus *Euxesta* Loew are distributed mainly in Western Hemisphere, several species are known from Oriental region. The majority of species are common for tropical and subtropical zones. The representatives of the genus were registered in Palaearctic before — in Italy (Bezzi, 1922), on Azores (Frey, 1949) and referred to North American species *Euxesta nitidiventris* Loew. It was supposed, that the species was introduced there with plant material during war.

The species was mentioned in "Die Fliegen der Palaearktischen Region" under this name (Hennig, 1940). Later these materials from Italy were determined as *Euxesta pechumani* Curr., described also from North America. Besides this the species was registered in Hungary and Slovak Republic (Zaitzev, 1984).

The mistakes in the determination of the species, registered in Europe, possibly happened because Hendel (1909) mentioned that this species is characterized by dark legs, but in the original description the coloration of legs is light.

This work contains the descriptions of imago and larvae of a new species. This study was financially supported by the International Science Foundation (J. Soros), Grant No MDA 000.

Materials and methods

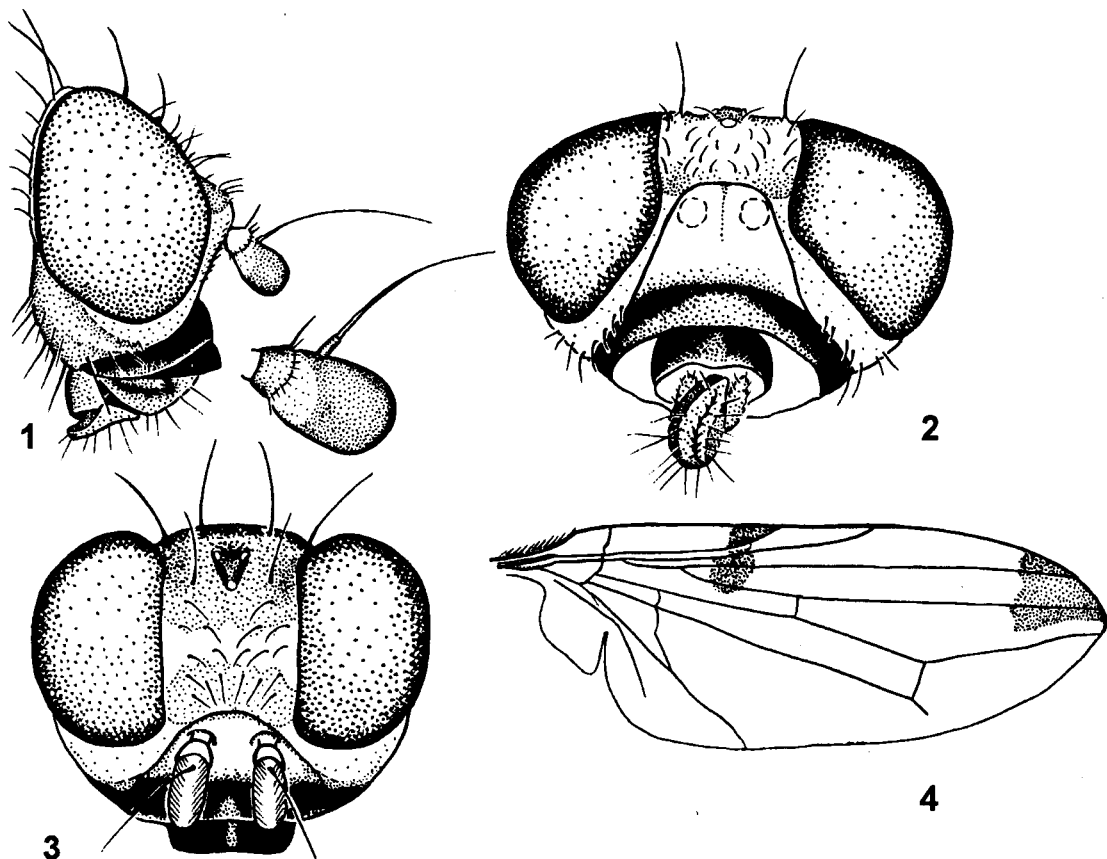
This study is based upon materials from the following Museums, referred to in the text by the following abbreviations:

ZMB — Zoological Museum, Museum für Naturkunde der Humboldt-Universität zu Berlin, BRD

ZMUM — Zoological Museum, Moscow Lomonosov State University, Russia

During the examination of xylobiont insects in Turkmenistan we reared the representatives of the genus *Euxesta* from the larvae found under the bark of *Ulmus foliacea* Gilib. The species proved to be new for science.

For comparison we examined the specimens from the ZMB collection. Material: 2 ♂, "Winter Haven, 5–30–33, Tex., emerged from caged omons, *Euxesta nitidiventris* Loew, det. Reinhard." 1 ♀ with the label "College, 11-18-16,



Figs 1—4. *Euxesta stackelbergi* sp. n., male.
1—3, head lateral, frontal and dorsal view; 4, wing.

Sta., Tx., H. J. Reinhard collector", was wrongly referred to this species, but it has black legs and according to the key to the species of *Euxesta* (Curran, 1935) represents itself *E. notata* Wied., distributed in USA, Mexico and West-India.

***Euxesta stackelbergi* M. Krivosheina et N. Krivosheina sp. n.**
(Figs 1—9)

Type locality. Turkmenistan (Ashgabat suburbs).

Diagnosis. *E. stackelbergi* together with *E. pechumanni* Curr. are close to *E. costalis* Fabr., known from West India, but *E. costalis* have frons narrower than in these both species. *E. stackelbergi* sp.n. differs from *E. nitidiventris* Loew by darker legs (in *P. nitidiventris* femora and mid and hind tibia yellow), larger median spot of the wing and the structure of genitalia (in *E. nitidiventris* abdominal sternites with distinct weakly sclerotized median band, besides

this last abdominal sclerites of other structure). New species is distinguished from *E. pechumanni* Curr. (Curran, 1938) by the following characters: frons wider (*E. pechumanni* with frons 1.5 times as long as wide), other coloration of 3rd antennal segment, smaller apical spot of wing (in *E. pechumanni* the spot extending back to the middle of the apical cell) and halteres (in *E. pechumanni* halteres darker with reddish knob).

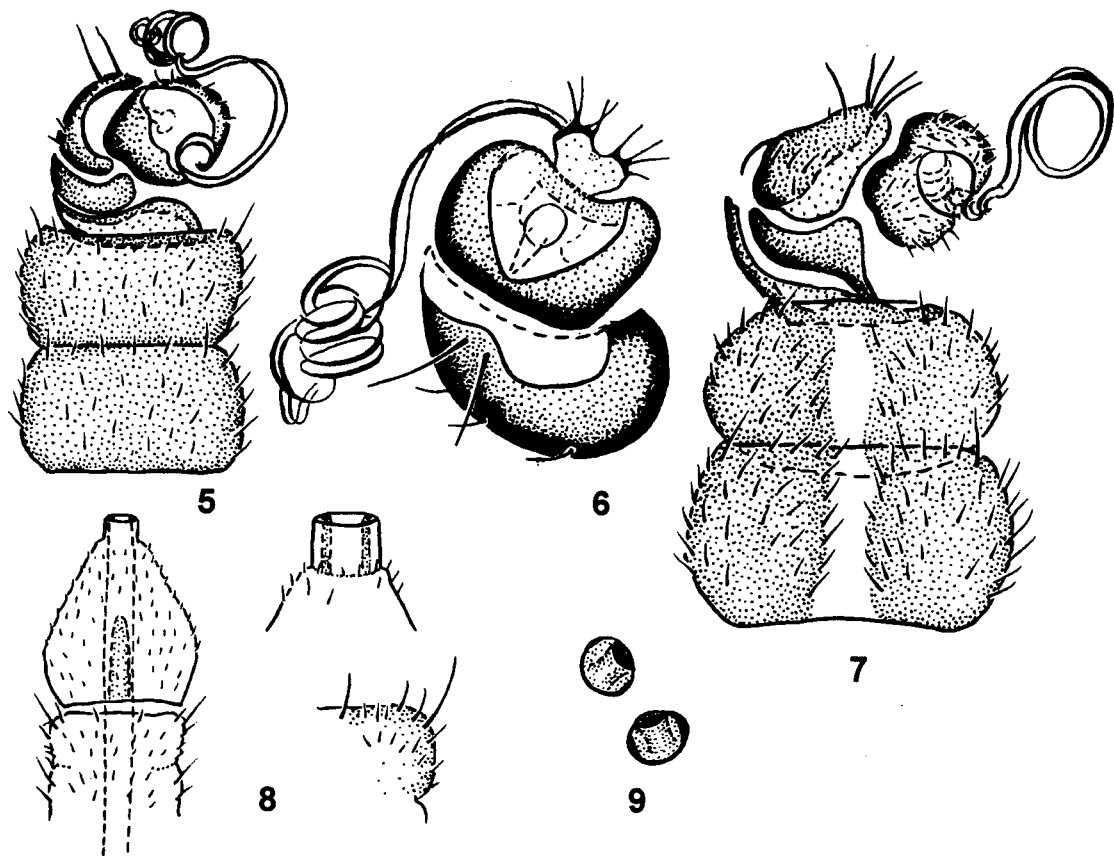
Holotype. ♂, Turkmenistan, Geok-Tepe Reg., Babarab, reared from larvae found under the bark of *Ulmus foliacea* 19.IV.1989, emerged 28.IV.1989 (leg. N.P.Krivosheina).

Paratypes. 5 ♂, 6 ♀, with the same label, reared from the larvae, collected 18—19.04.1989 (leg. N.P.Krivosheina).

(Holotype and 9 paratypes, 4 ♂, 5 ♀, deposited in ZMUM, 2 paratypes, 1 ♂, 1 ♀, deposited in ZMB).

Description. Male. Length 4.2 mm, wing length 3.5 mm. Body dark, uniformly coloured, partly metallic dark-green shining, partly brown.

Head (Figs 1—3). Eyes widely separated. Frons slightly wider than eye, with its width equal to

Figs 5—9. *Euxesta*.

5, 6, *E. stackelbergi* sp. n., end of male abdomen, ventral view; 7, *E. nitidiventris* Loew, the same; 8, 9, *E. stackelbergi* sp. n.: 8, end of female abdomen, 9, spermathecae.

the distance between anterior ocellus and lunule. Frons mainly brownish-red, with curved transverse band in the middle, formed by silvery pollen. Posterior part of frons darker, than anterior ones. Ocellar triangle, triangular parts of vertex near eyes and occiput dark-green, shining. Occiput behind ocellar triangle and eyes with light pollen. Lunule red, face 2-coloured: the part of face under antennae red with dense silvery pubescence, the lower half dark with metallic shining. Parafacia yellow in light pubescence, massive, reaching the lower margin of eyes. Genae and postgenae dark in rare light pollen. Clypeus projecting beyond the margin of mouth cavity, dark, with metallic shining and in sparse light pollen. Palpi and rostrum black. 3rd palpal segment elongated, apically widely rounded. Antennae light-brown, third antennal segment widely rounded at apex, apically darkened, dark-brown, arista black.

Thorax, scutellum and abdomen dark with metallic green shining. Mesonotum mainly with numerous very short and equal dark setae, forming

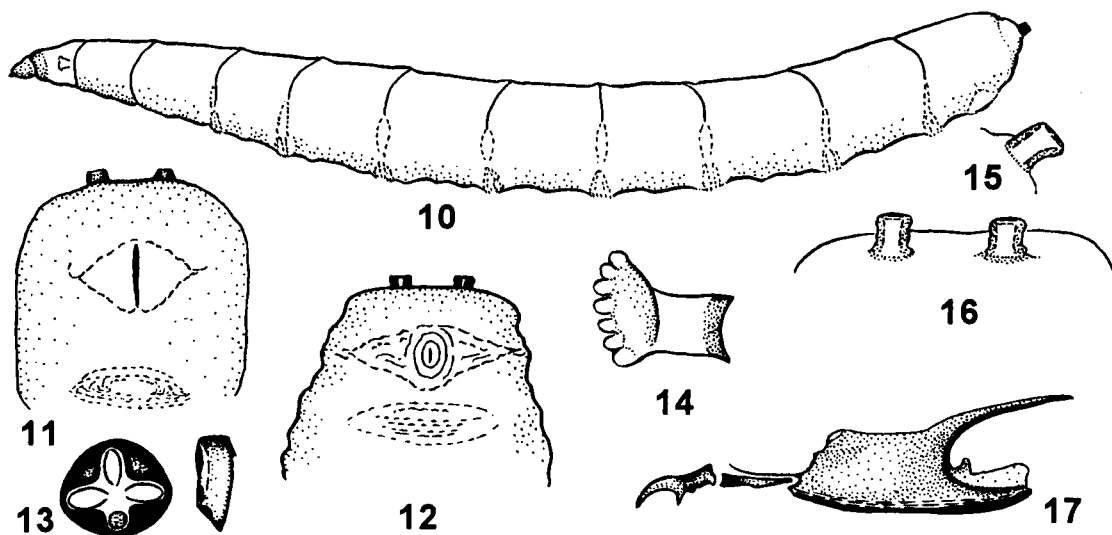
rows. Long black setae represented only by 2 *dc* and prescutellar. Besides this thorax in sparse light pollen, not hiding general coloration. Scutellum with 4 long setae. Legs generally dark. Femora greenish shining, tibiae and tarsi — with brownish shining. Knees and basal tarsal segments yellowish. Halteres with white knob. Wing hyaline with 2 small dark spots, Fig. 4. Median spot represents narrow stripe from the base of *Sc* to the base of *R*_s. Marginal spot also small, going beyond *R*₄₊₅.

Genitalia, Figs 5, 6.

Female: Length 4 mm, wing length 3.5 mm. Resembling male in general coloration.

Genitalia, Figs 8, 9.

Larva, Figs 10—18, 3rd instar. Length 6 mm. Body slender, elongated, narrowed anteriorly and broadly rounded posteriorly. Coloration yellowish. Cuticle smooth without well developed cuticular structures. Segments 1—8 with creeping welts, formed by rows of small spines. Flat cuticular tubercles separating oval swellings, situated at the level of creeping welts along the borders of



Figs 10—17. Morphology of larva and pupa of *Euxesta stackelbergi* sp. n.

10, larva, lateral view; 11, 12, posterior parts of body of larva and pupa, ventral view; 13, posterior spiracles; 14, anterior spiracles; 15, 16, posterior spiracles, lateral and dorsal views; 17, cephalopharyngeal skeleton, lateral view.

segments, the same tubercles present in the lower half of the body between segments. Cephalopharyngeal skeleton typical for this group. Mouthhooks long, simple, without dents. Hypostomal sclerites narrow with almost parallel sides. Pharyngeal sclerites broad and relatively long, with broad ventral appendage, carrying triangular projection. Dorsal projection narrow, apically pointed, somewhat longer than ventral. Parastomal sclerites slender, pointed and curved to the dorsal. Anterior spiracles relatively large, fan-like, with 7 oval projections (Fig. 14). Posterior spiracles short, cylindrical, oblique at moulting junction, Fig. 13. Spiracular openings straight, oval, situated cross-like. Peritreme well developed, dark. Surface of the last segment smooth, any tubercles or structures around spiracular opening absent. Anal split longitudinal. Anal plate rhomb-like, Figs 11, 12. Larvae differ significantly from well studied larvae of *Physiphora demantata* Fabr. by the shape of the body. The larva of *Euxesta eluta* Loew is minutely described in literature (Arce de Hamity, 1986) and generally close to *E. stackelbergi*. Judging by the pictures the main difference (after pictures) is the number of tubercles of anterior spiracle and absence of protuberance on ventral projection of pharyngeal sclerite.

The mode of life of representatives of *Euxesta* generally is not uniform. Usually they settle congestions of various decaying plants. Several species were registered in damaged fruits, in-

cluding citruses (*E. eluta* Loew, *E. notata* Wied.), pineapples (*E. annonae* Fabr.) (Hennig, 1940; Cole, 1969). The larvae of *E. notata* Wied. were also registered in the skin of Greece nut, especially in the case of damaging by the larvae of Tephritidae (Boyce, 1929). The same species was found in narcissus bulbs, in heads of cotton, fetus of sumach fruit and other, the list of literature see Hendel (1910), Hennig (1940). Some species, for example *E. stigmatias* Loew, were registered as pests of corncocks (App, 1938). The larvae of *E. nitidiventris* Loew were reared from sugar corn as well as from yams roots (Chittenden, 1911). Several species were found under the bark of trees. For example, the larvae of *E. nitidiventris* were found under the bark of died pecan *Carya pecan* (Brues, 1902), *E. pechumani* Curr. under the bark of *Ulmus americanus* (Pechuman, 1937, Curran, 1938). Larvae of *Euxesta quaternaria* Loew feed in the apical meristem and other soft growing parts of the palm trees (Yoon and others, 1994). Steyskal pointed out the relationships among the forest ecohabitats of *Euxesta* — *E. nitidiventris* Loew and *E. notata* Wied. (Steyskal, 1968). The larvae of *E. notata* Wied. were discovered also in accumulations of dung together with bran and other wastes from the feed troughs (Hutchinson, 1916).

We discovered the larvae of *E. stackelbergi* under the bark of trunks of *Ulmus foliacea* Gilib., representing artificial plantings along the margins of fruit gardens in Turkmenistan.

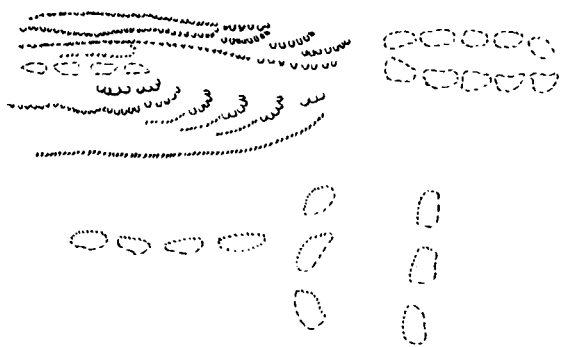


Fig. 18. Cuticular structures of the 6th abdominal segment, ventral view.

Larvae were found in bast of cut lying trunks. Besides *Euxesta* these trunks were usually settled also by the larvae of Cerambycidae, Buprestidae and Ipidae. *Euxesta* larvae aggregated in brown bast in the places where the bark was easily separated from sap-wood. Larvae as a rule concentrated and pupated inside bast as well as inside galleries of beetles. If possible *Euxesta* larvae chose bast close to insect galleries.

Larvae and pupae were collected on the 18–19 of April 1982. Imagoes emerged during 20–28 of April.

Generally about one hundred of larvae and pupae were discovered in one trunk. It is interesting, that in spite of the fact that ecological investigations of xylobiont insects have been conducted during several years, the larvae of *Euxesta* were discovered only once.

There are many literature data, describing the damaging role of *Euxesta* larvae. At the same time there is a large serial of articles, where it is found out that the larvae breed only in fruits and vegetables, mechanically damaged or primarily damaged by other insects. It seems to be more probable that *Euxesta* larvae follow various phytophages and that they are capable to breed in substrata, partly or completely treated or digested by other insects and usually settled by fungi and bacteria. Observations made on *E. stackelbergi* show, that the role of larvae of *E. stackelbergi* is also secondary and they breed in substrata digested by other insects.

Larvae of *E. stackelbergi* are saprophagous, but special investigations are necessary to find out relationships between larvae, fungi and bacteria. To a certain extent the secondary role of larvae is proved by the behaviour of imago. Imagoes of *Euxesta* are attracted by the smell

of vinegar, fermenting fruits and other fermenting substrata (Hennig, 1940).

References

- App, B. A. 1938. *Euxesta stigmatias* Loew, an Otitid fly infesting ear corn in Puerto Rico. *Journ. Agric. Univ. Puerto Rico*, 22: 181–188.
- Arce de Hamity. 1986. Biología de *Euxesta eluta* (Diptera: Ulidiidae). Comportamiento en el ataque y putre faccion de las espigas de maiz. *Acta zool. Lilloana*, 38(2): 119–128.
- Bezzi, M. 1922. Un dittero nord-americano del gen. *Euxesta* stabilio in Italia. *Boll. Lab. Zool. Portici*, 15: 223–225.
- Boyce, A. M. 1929. A new pest of English walnuts in California. *Journ. Econ. Ent.*, 22: 269–279.
- Brues, C. T. 1902. Notes on the larvae of some Texas Diptera. *Psyche*, 9: 351–354.
- Chittenden, F. H. 1911. Notes on various truck crop insects. *USDA, Bur. Entomol., Bull.*, 82(7): 90.
- Cole, F. R. 1969. *The flies of Western North America*. University of California Press: 1–693. Berkeley and Los Angeles.
- Curran, C. H. 1935. New American Diptera. *Amer. Mus. Novitates*, 812: 1–24.
- Curran, C. H. 1938. New American Diptera. *Amer. Mus. Novitates*, 975: 1–7.
- Frey, R. 1949. Tiergeographische Studien über die Dipterenfauna der Azoren. I. Verzeichnis der bisher von den Azoren bekannten Dipteren. *Societas scientiarum Fenn. Commentationes Biologicae*, 8(10): 1–114.
- Hendel, F. 1910. Fam. Muscicaridae, subfam. Ulidiidae. In: Wytmsmann, P. ed., *Genera Insectorum*, 106: 1–76. Bruxelles.
- Hennig, W. 1940. 45. Ulidiidae. In: E. Lindner (ed.): *Die Fliegen der Palaearktischen Region*, 5(1): 1–34.
- Hutchinson, R. H. 1916. Notes on the larvae of *Euxesta notata* Wied. *Proc. Entomol. Soc. Wash.*, 18: 171–177.
- Pechuman, L. L. 1937. An annotated list of insects found in the bark and wood of *Ulmus americanus* L. in New York State. *Bull. Brooklyn Ent. Soc.*, 32: 8–21.
- Riley, C. V. & Howard, L. O. 1894. Larval food of *Euxesta notata*. *Insect life*. Washington, 6(3): 270.
- Steyskal, G. C. 1951. The dipterous fauna of tree trunk. *Mich. Acad. Sci., Arts and Letters, Papers* (1949), 35: 121–134.
- Yoon, J. S., Mathew, M. T. & Holman, R. E. 1983. Biology of *Euxesta quaternaria* Loew (Diptera, Otitidae). *Entomological News*, 94(4): 122–126.
- Zaitzev, V. F. 1984. Family Ulidiidae. In: Á. Soós, (ed.), *Catalogue of Palaearctic Diptera*, 9: 59–66. Budapest.

Received 10.III.1995