

SEVEN NEW SPECIES OF ELACHISTIDAE (LEPIDOPTERA) FROM THE USSR

Sruoga, V., 1990. Seven new species of Elachistidae (Lepidoptera) from the USSR. *Tijdschrift voor Entomologie* 133: 75-84, figs. 1-26. [ISSN 0040-7496]. Published 31 July 1990. Seven new species of Elachistidae are described from Tadzhikistan and Turkmeniya (Soviet Central Asia) and Primorskiy Kray (Soviet Far East). They belong to the genera *Perittia* Stainton, *Elachista* Treitschke, *Biselachista* Traugott-Olsen & Nielsen and *Cosmiotes* Clemens. The male external features and genitalia are described and figured in detail. The distribution is mapped. A historical review of studies on USSR Elachistidae is provided in the introduction.

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INTRODUCTION

Elachistidae larvae are typically leafminers of herbaceous, monocotyledonous plants, belonging to the families Poaceae, Cyperaceae and Juncaceae. Some species are leafminers of herbaceous dicotyledons belonging to the Boraginaceae, Lamiaceae, Asteraceae and Cistaceae (Traugott-Olsen & Nielsen 1977). Only in a few cases Elachistidae larvae mine leaves of woody Caprifoliaceae (*Lonicera*). Elachistidae larvae form galleries or blotches between the upper and lower epidermis layers and feed on the green parenchyma. The adult moths are small, with a wingspan of 6 to 13 mm. The forewings of the majority of species are brownish-grey with one fascia or two fasciae. Some Elachistidae are unicolorous brown, white or cream.

The family is widely distributed. However, revisions of Elachistidae are only published for the Nearctic fauna (Braun 1948) and the North European fauna (Traugott-Olsen & Nielsen 1977).

The last decade a considerable number of taxonomic papers has been published with descriptions of new species from western and central Europe, northern Africa, the Canary Islands, western and central Asia (Parenti 1978, 1981, Traugott-Olsen 1985a, 1985b, 1988, Nielsen & Traugott-Olsen 1978b, 1981, 1987, Whitebread 1984) and also from Japan (Kuroko 1982, Parenti 1983). The Elachistidae fauna of the USSR has been poorly studied. In the "Keys to the insects of the European part of the USSR" (Falkovitsh 1981) 77 species of Elachistidae have been treated, including figures of their genitalia. This key was entirely based on Traugott-Olsen & Nielsen's book (1977) on the Fennoscandian and Danish fauna, and did not provide original data on Elachistidae from the USSR territories.

As early as the mid-19th century, five species of Elachistidae were recorded from Latvia, i.e. *Elachista quadripunctella* (Hübner), *E. luticomella* Zeller, *E. pollinariella* Zeller, *E. albifrontella* (Hübner) and *E. argentella* (Clerck) (Lienig 1846). Nine other species were added by Nolcken (1871), i.e. *Elachista regificella* Sircom, *E. humilis* Zeller, *E. pulchella* (Haworth), *E. bisulcella* (Duponchel), *E. cerusella* (Hübner), *E. gleichenella* (Fabricius), *Biselachista serricornis* (Stainton), *B. utoella* (Frey) and *B. albidella* (Nylander). Nolcken (1871) also recorded 16 species for the Estonian fauna. Twenty-four species were included in the Catalogue of Russian Lepidoptera by Ershov & Fild (1870). Teich (1889, 1893, 1899) recorded five additional species of Elachistidae for the Baltic fauna: *Elachista eleochariella* Stainton, *E. pullicomella* Zeller, *E. biatomella* Stainton, *E. dispilella* Zeller and *Cosmiotes freyerella* (Hübner). The Estonian entomologist Petersen (1924) mentioned 25 species for the Estonian fauna, four of which (*Elachista apicipunctella* Stainton, *E. megerlella* Stainton, *E. poae* Stainton and *E. pomerana* Frey) were recorded for the first time for the eastern Baltic region (the present Baltic republics). Some additional data on the Baltic Elachistidae were provided by Saar (1930), Palionis (1932), Brandt (1942), Prüffer (1947) and Kuusik (1962). Elachistidae from other eastern European regions are dealt with by Schille (1931): he noted 32 species from eastern Poland (now parts of the Ukraine).

In recent years investigations on Elachistidae of various regions in the USSR (including the Baltic republics) have been intensified. Šulcs & Šulcs (1983, 1984, 1987), Savenkov (1984, 1987) and Ivinskis et al. (1985) recorded 48 species of Elachistidae for the three Baltic republics, and two more

species will be added shortly (N. Savenkov pers. comm.). From other regions of the European part of the USSR the studies in the Vyborg reserve near Leningrad are worth mentioning: 17 Elachistidae were recorded here (Sukhareva & Falkovitsh 1984). Further, Sinev (1988) found two species, *Elachista nielswolffi* Svensson and *Cosmiotes exactella* Herrich-Schäffer, in the Murmansk region in 1979-1980, amongst a considerable number of Lepidoptera species. Material of the Crimean Elachistidae is still under study (Yu. Budashkin pers. comm.).

Hitherto, only one work dealt with the Elachistidae of the Asiatic part of the USSR (Falkovitsh 1986), in which one new genus (*Kumia* Falkovitsh) and three new species (*Kumia integra*, *Elachista ilicrina* and *E. manca*) were described.

From this review it is clear that the Elachistidae fauna of the USSR is very imperfectly known, and further studies are urgently needed for a better understanding of this rich and interesting fauna.

This paper contributes with the description of seven new species from two regions in the Asiatic part of the USSR.

MATERIAL AND METHODS

Methods for preparation of genitalia largely follow Falkovitsh & Stekolnikov (1978). The genitalia of the *Cosmiotes* species are figured here with the valvae in situ, because of difficulties in spreading them without damage. The genitalia were studied with a Biolam microscope and a MBS-10 stereomicroscope, using the drawing apparatus according to Gorodkov (1961) for the line figures.

The material studied has been collected during expeditions to largely unexplored and little known areas of Soviet Central Asia. In addition material from Tadzhikistan and Primorskiy Kray collected by R. Puplesis in 1982 to 1986 has been studied.

Locality names are spelled in accordance with the Times Atlas of the World (comprehensive edn. 1975 and later).

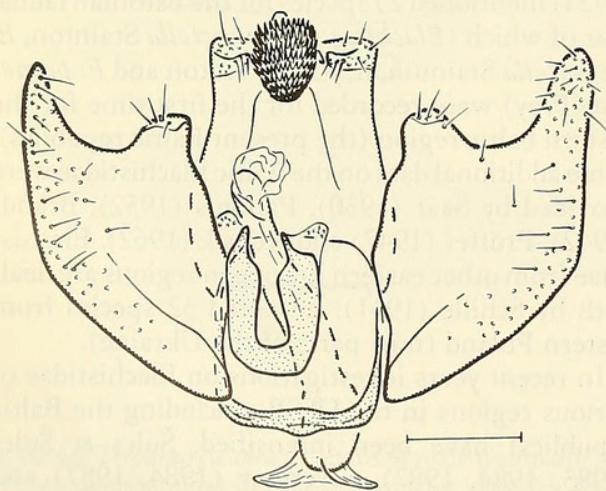


Fig. 1. *Perittia biloba*, holotype: male genitalia. Scale 0.1 mm.

The type specimens are deposited in the collection of the "Minology" working group, Department of Zoology, Pedagogical Institute, Vilnius, Lithuania (MG) and in the collections of the Zoological Institute of the USSR Academy of Sciences in Leningrad (ZIAS).

TAXONOMY

Perittia biloba sp. n. (figs. 1, 25)

Type material. — Holotype ♂: USSR, Tadzhikistan, 30 km N Dushanbe, env. Varzob (Kondara), 27.vi.1986, R. Puplesis (MG).

Diagnosis. — Related to *P. lonicerae* (Zimmerman & Bradley), distinguished from this species by the shape of the valvae and juxta, the basal part of the aedeagus and the shape of the tegumen.

External characters. — Male (female unknown). Forewing length 3.0 mm. Frons, neck tufts and scape white, some brown scales. Antenna white and brown ringed. Labial palp slightly mottled by white and brownish scales. Thorax and tegulae strongly mottled by white and brown scales. Forewing, ground colour white, strongly mottled due to brown tipped scales; basal part of costa densely covered by dark brown scales; cilia grey; cilia line indistinct. Hindwing brownish; cilia light creamy grey.

Male genitalia (fig. 1). — Uncus lobes small, with short setae. Gnathos more or less rounded when ventrally viewed. Tegumen widening basally. Valva short and broad, costa strongly sclerotized, narrow, convex, slightly setose, sacculus curved to angular, cucullus distinct but narrow, setose. Juxta U-shaped, lobes long, broad, distally with acute spine-like process; digitate process very small, slightly setose. Vinculum typical for the genus, weakly developed. Aedeagus strongly sclerotized, slightly tapering to distal end, two triangular lobes at base.

Biology. Unknown. Holotype caught in June.

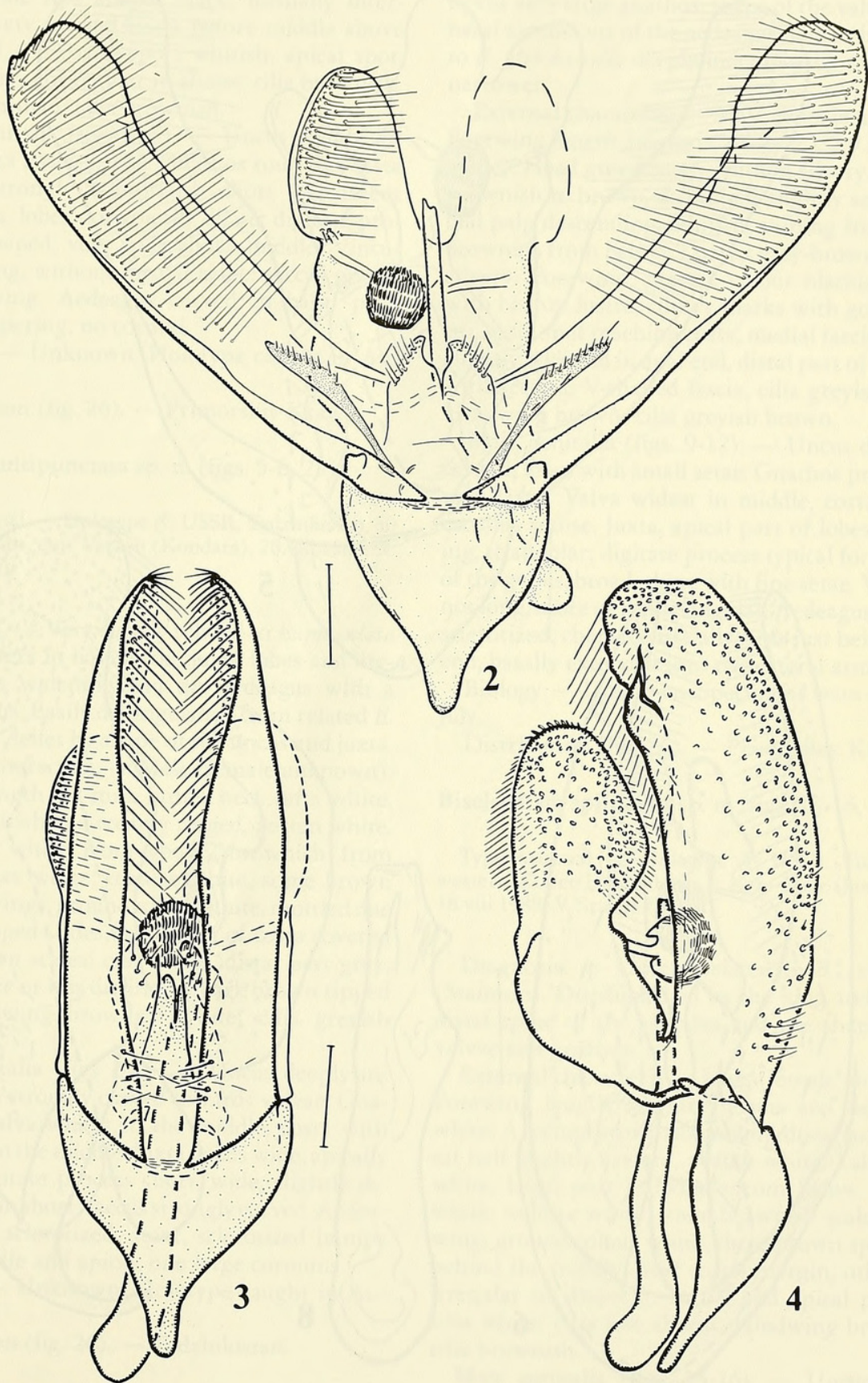
Distribution (fig. 25). — Only known from the holotype, Tadzhikistan.

Elachista fuscofrontella sp. n. (figs. 2-4, 26)

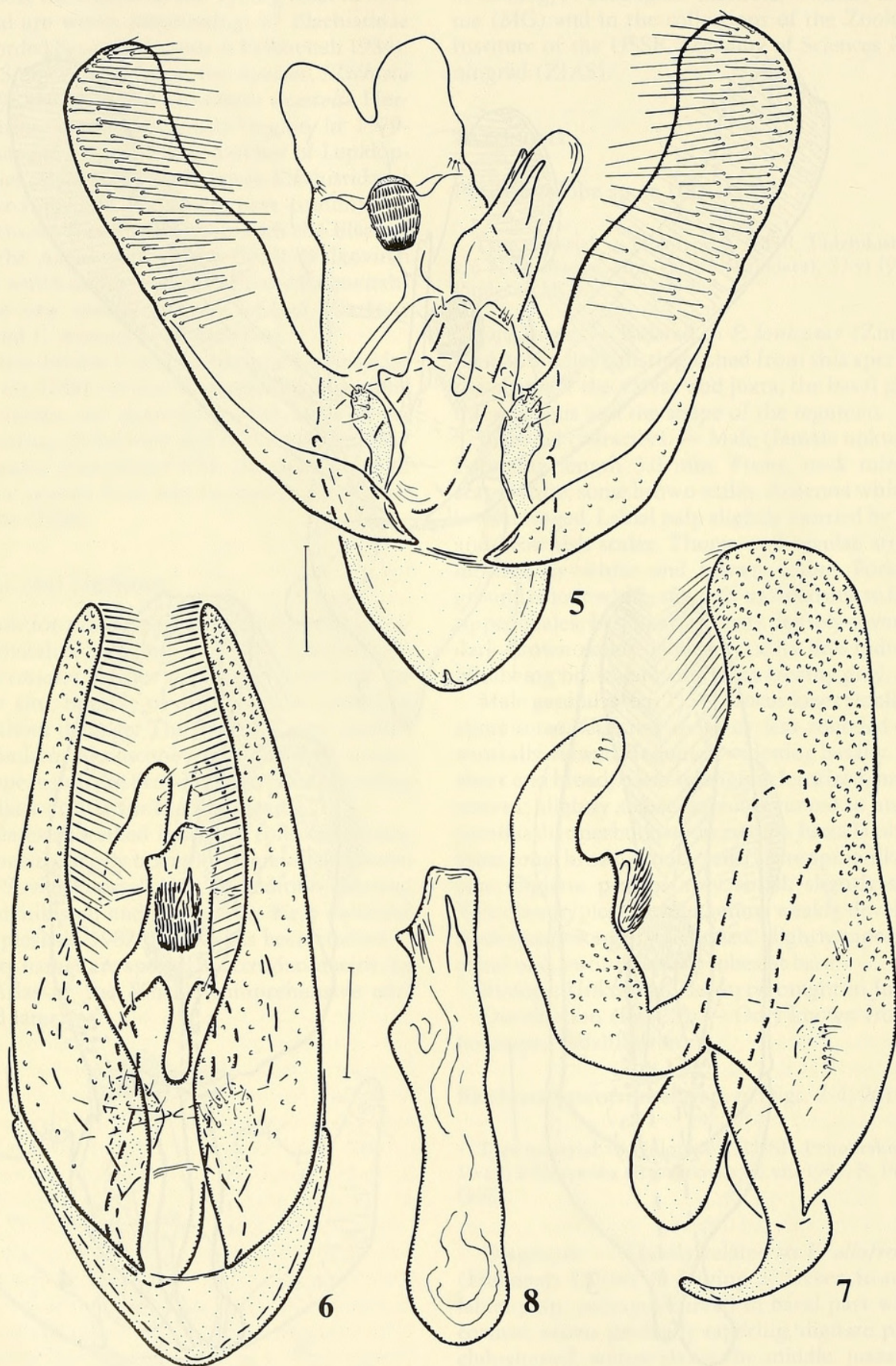
Type material. — Holotype ♂: USSR, Primorskiy Kray, 10 km S Slavyanka (Ryazanovka), 5.viii.1983, R. Puplesis (MG).

Diagnosis. — Closely related to *E. albifrontella* (Hübner). Differs in having a darker frons and labial palp, aedeagus curved in basal part without cornuti, saccus gradually tapering, digitate process club-shaped, widest above the middle, juxta lobes not dilate.

External characters. — Male (female unknown). Forewing length 3.0 mm. Frons, neck tuft greyish brown, silvery lustre. Antenna greyish and dark



Figs. 2-4. *Elachista fuscofrontella*, holotype. 2-3, male genitalia ventral view; 4, male genitalia lateral view. Scale 0.1 mm.



Figs. 5-8. *Elachista multipunctata*, holotype, male genitalia. 5-6, ventral view; 7, lateral view; 8, aedeagus. Scale 0.1 mm.

brown ringed, slightly serrate distally. Labial palp whitish from above, dark brown from below. Thorax and tegulae greyish brown, some silvery lustre. Forewing, ground colour dark grey, strongly mottled, scale tips almost black; medially interrupted, silvery, curved fascia before middle above fold; tornal and costal spots whitish, apical spot, shiny, silvery, not regular in shape; cilia brownish. Hindwing brown; cilia brownish.

Male genitalia (figs. 2-4). — Uncus deeply indented, lobes large, setose. Gnathos rounded; costa of valva strongly sclerotized, short prominent hump. Juxta, lobes not apically dilate; digitate process club-shaped, very wide above middle. Vinculum, not long, without medial ridge; saccus gradually narrowing. Aedeagus curved in basal part, gradually tapering, no cornuti.

Biology. — Unknown. Holotype caught in August.

Distribution (fig. 26). — Primorskiy Kray.

Elachista multipunctata sp. n. (figs. 5-8, 25)

Type material. — Holotype ♂: USSR, Tadzhikistan, 30 km N Dushanbe, env. Varzob (Kondara), 20.viii.1986, R. Puplesis (MG).

Diagnosis. — Very closely related to *E. maculata* Parenti. Differs in having the juxta lobes and digitate process widening and the aedeagus with a large cornutus. Easily distinguished from related *E. pollinariella* Zeller by shape of the uncus and juxta.

External characters. — Male (female unknown). Forewing length 3.4 mm. Frons, neck tufts white. Antenna whitish and creamy ringed, pecten white. Labial palp white from above, brownish from below. Thorax white; tegulae white, some brown scales. Forewings, ground colour white, mottled due to brown tipped scales, basal part of costa covered by dark brown scales; cilia white, distal part grey; cilia line more or less distinct by dark brown tipped scales. Hindwing brownish white; cilia greyish white.

Male genitalia (figs. 5-8). — Uncus deeply indented, lobes strongly curved towards valvae. Gnathos oval. Valva widest in the middle, costa with convex lobe in the middle. Juxta, lobes wide, apically tapering; digitate process short, wide, slightly setose. Vinculum short; saccus strongly curved. Aedeagus strongly sclerotized, stout, sclerotized humps past the middle and apical, one large cornutus.

Biology. — Unknown. Holotype caught in August.

Distribution (fig. 26). — Tadzhikistan.

Elachista megagnathos sp. n. (figs. 9-12, 26)

Type material. — Holotype ♂: USSR, Primorskiy Kray, 20 km E Ussuriysk (Gornotayeznoe), 6.vii.1982, R. Puplesis (MG).

Paratype: 1 ♂, same data, 7.vii.1982 (ZIAS).

Diagnosis. — Closely related to *E. gleichenella* (Fabricius), easily distinguished from this species by the very large gnathos, shape of the valva and the basal extensions of the aedeagus. Uncus in contrast to *E. gleichenella* deeply indented, digitate process narrower.

External characters. — Male (female unknown). Forewing length 2.6 mm (holotype), 2.9 mm (paratype). Head grey-brown, shining silvery. Antenna brownish to brown, distal half slightly serrate. Labial palp descending, whitish, shining from above, brownish from below. Thorax grey-brown, shining silvery. Forewing, ground colour blackish brown with bronze lustre, silvery marks with goldish lustre, basal spot reaching costa, medial fascia distinct, slightly widened in anal end, distal part of forewing with second, V-shaped fascia, cilia greyish brown. Hindwing brown; cilia greyish brown.

Male genitalia (figs. 9-12). — Uncus deeply indented, lobes with small setae. Gnathos prominent, very large. Valva widest in middle, costa convex, cucullus setose. Juxta, apical part of lobes narrowing, triangular; digitate process typical for majority of the genus, broad, short with fine setae. Vinculum not long, more or less triangular. Aedeagus strongly sclerotized, characteristically bent just below distal end, basally extended into two lateral arms.

Biology. — Unknown. Specimens were caught in July.

Distribution (fig. 26). — Primorskiy Kray.

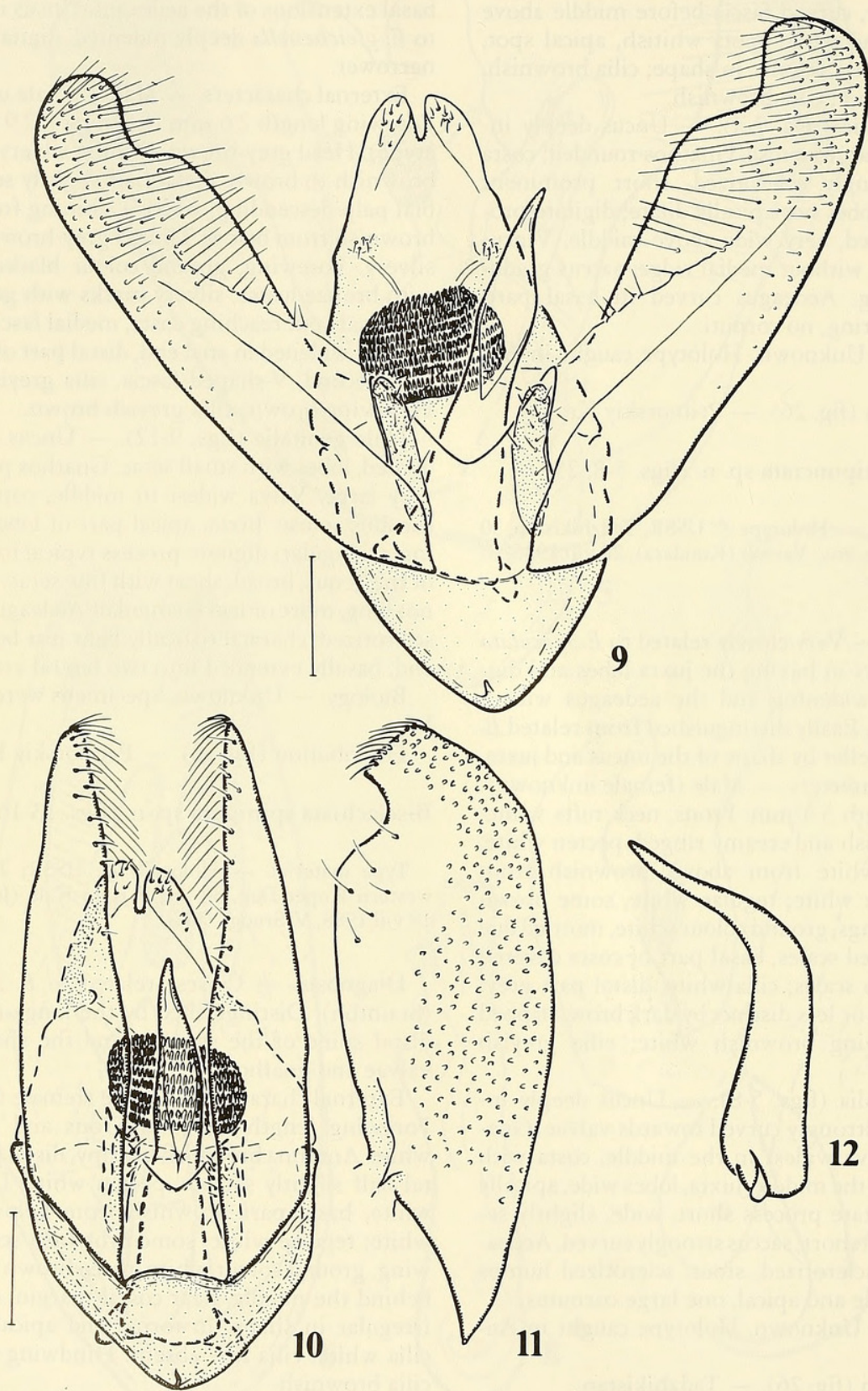
Biselachista spinigera sp. n. (figs. 13-16, 25)

Type material. — Holotype ♂: USSR, Turkmeniya, western Kopet Dag, 30 km E Kara-Kala (Juvan-Kala), 18.viii.1988, V. Sruoga (MG).

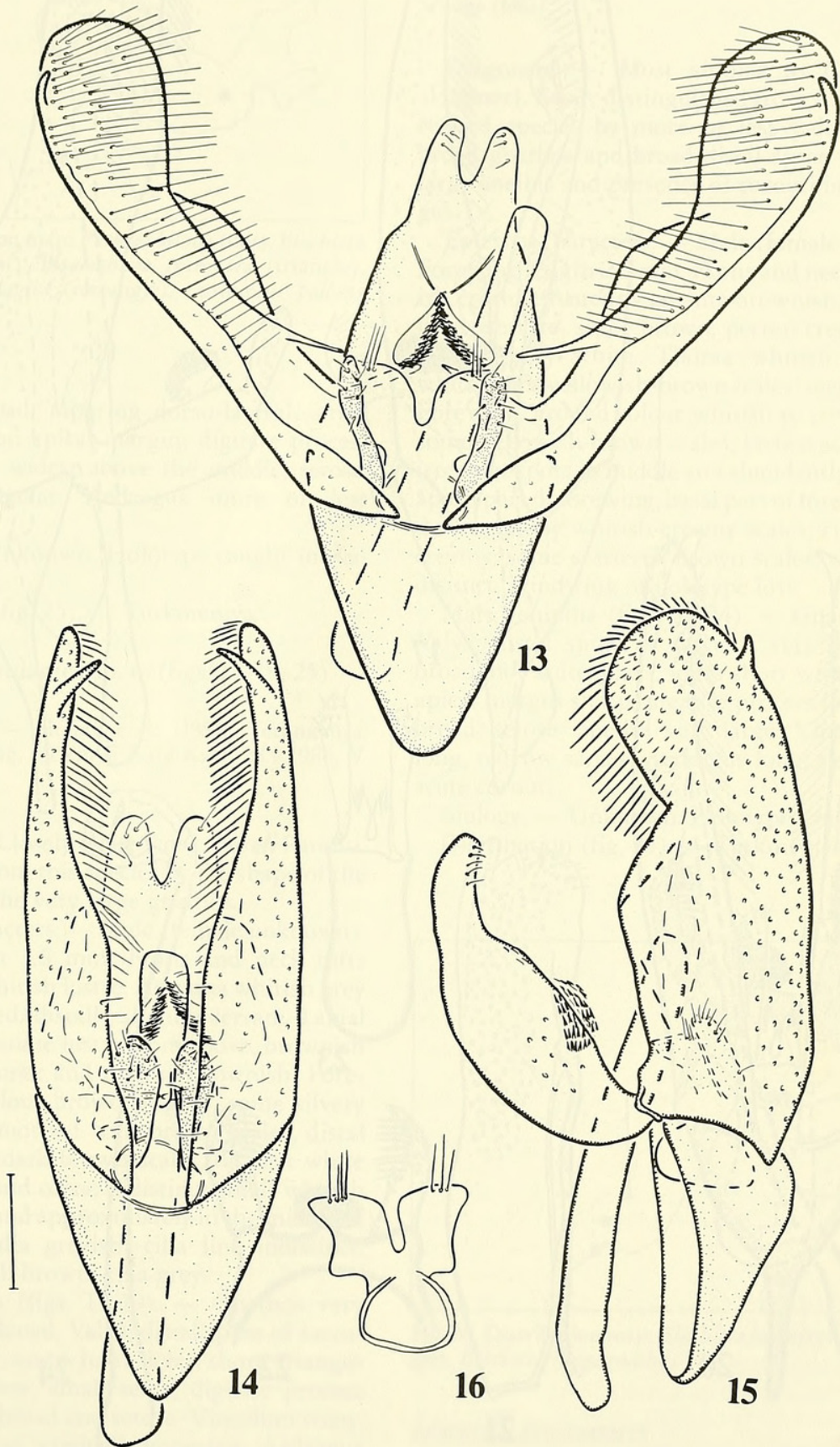
Diagnosis. — Closest related to *B. sericornis* (Stainton). Distinguished by the long and distinct distal spine of the sacculus and the shape of the valvae and gnathos.

External characters. — Male (female unknown). Forewing length 3.7 mm. Frons and neck tufts white. Antenna brownish-creamy, distal part of distal half slightly serrate, pecten white. Labial palp white, basal part brownish from below. Thorax white; tegulae white, some brownish scales. Forewing, ground colour white, three brown spots, one behind the middle, near costal margin, other two, irregular in shape, in tornal and apical position; cilia white; cilia line absent. Hindwing brownish; cilia brownish.

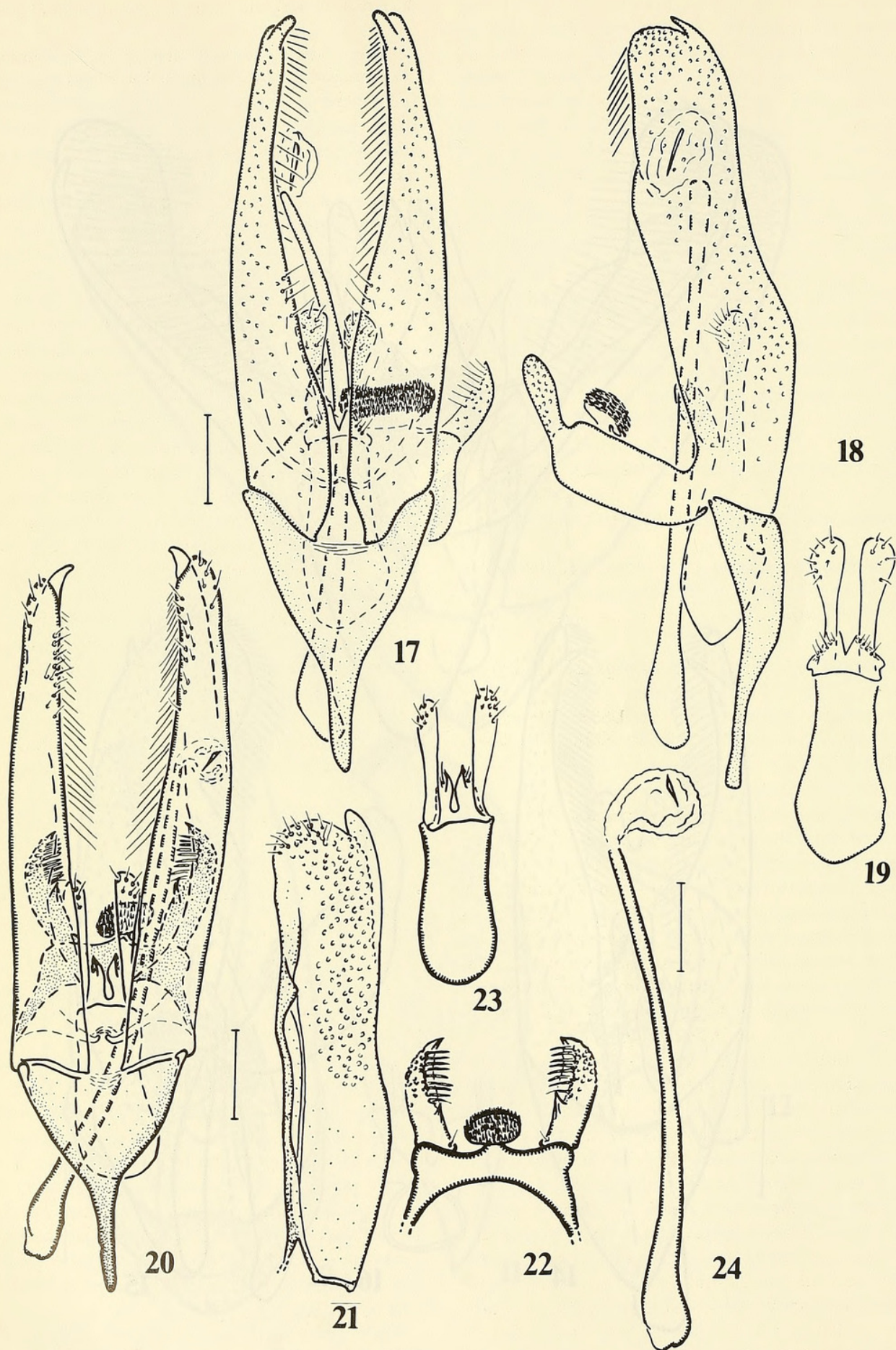
Male genitalia (figs. 13-16). — Uncus deeply indented, lobes slightly setose. Gnathos, lobes elongate. Tegumen basally widening. Valva, sacculus with long and distinct distal spine, costa strongly convex in the middle, cucullus widely rounded.



Figs. 9-12. *Elachista megagnathos*, holotype, male genitalia. 9-10, ventral view; 11, valva, lateral view; 12, aedeagus, lateral view. Scale 0.1 mm.



Figs. 13-16. *Biselachista spinigera*, holotype, male genitalia. 13-14, ventral view; 15, lateral view; 16, juxta. Scale 0.1 mm.



Figs. 17-24. Male genitalia. 17-19. *Cosmiotes kopetdagica*, holotype. 17, ventral view; 18, lateral view; 19, juxta, anellus and digitate process. 20-24. *Cosmiotes pallens*, holotype. 20, ventral view; 21, valva, lateral view; 22, uncus, gnathos and tegumen; 23, juxta, anellus and digitate process; 24, aedoeagus. Scale 0.1 mm.

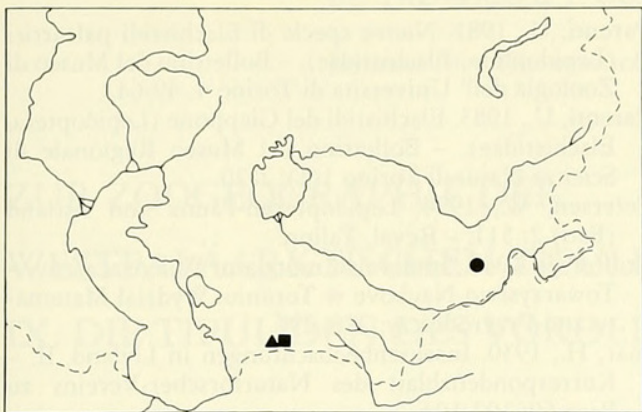


Fig. 25. Distribution map: *Perittia biloba* (dot), *Elachista multipunctata* (dot), *Biselachista spinigera* (triangle), *Cosmiotes kopetdagica* (rectangle), *Cosmiotes pallens* (rectangle).

Juxta, lobes broad, tapering dorso-lateral, small group of setae on apical margin; digitate process narrow at base, widest above the middle, setose. Vinculum triangular. Aedeagus more or less straight.

Biology. — Unknown. Holotype caught in August.

Distribution (fig. 25). — Turkmeniya.

Cosmiotes kopetdagica sp. n. (figs. 17-19, 25)

Type material. — Holotype ♂: USSR, Turkmeniya, western Kopet Dag, 40 km E Kara-Kala, 28.v.1988, V. Sruoga (MG).

Diagnosis. — Closely related to *C. amseli* Parenti. Distinguished from this species by the shape of the juxta lobes and the very large gnathos.

External characters. — Male (female unknown). Forewing length 3.6 mm. Frons and neck tufts greyish white, whitish lustre. Antenna whitish grey and brown ringed, distally slightly serrate. Labial palp white with some lustre from above, brownish from below. Thorax and tegulae brownish. Forewing, ground colour brownish grey, some silvery lustre, strongly mottled with brown scales, distal part mottled by dark brown scales, distinct white spots at tornus and costa, indistinct small whitish spots near costa and approximately in the middle of the forewing; cilia greyish; cilia line indistinct. Hindwing greyish brown; cilia grey.

Male genitalia (figs. 17-19). — Gnathos very large, oval, broadened. Valva, distal spine of sacculus large, distinct, acute. Juxta, lobes short, triangular in ventral view, small setae; digitate process long, distal part broad and setose. Vinculum triangular; saccus long, gradually tapering. Aedeagus long and slender, curved at base, long spine-like cornuti.

Biology. — Unknown. Holotype caught in May.

Distribution (fig. 25). — Turkmeniya.

Cosmiotes pallens sp. n. (figs. 20-24, 25)

Type material. — Holotype ♂: USSR, Turkmeniya, western Kopet Dag, 40 km E Kara-Kala, 28.v.1988, V. Sruoga (MG).

Diagnosis. — Most similar to *C. freyerella* (Hübner). Easily distinguished from this and other related species by more or less pale forewings, broad gnathos and broad distal spine of sacculus, large anellus and presence of cornuti in the aedeagus.

External characters. — Male (female unknown). Forewing length 2.5 mm. Frons and neck tuft whitish creamy. Antenna creamy brownish, distal part finely serrate, scape brown, pecten creamy. Labial palp creamy white. Thorax whitish to creamy white, some yellowish-brown scales; tegulae brown. Forewing, ground colour whitish to creamy white, some yellowish-brown scales, brown scales in two irregular spots in middle and abundantly present in apical part of forewing, basal part of forewing paler, dominated by whitish-creamy scales; cilia greyish-creamy, some scattered brown scales; cilia line indistinct. Hindwing of holotype lost.

Male genitalia (figs. 20-24). — Gnathos broad. Valva, distal spine of sacculus very distinct and broad, not acute. Juxta, lobes short with fine setae, apical margin sharp; digitate process long, distally broad, setose; anellus very large. Vinculum with long, narrow saccus. Aedeagus long, slender, with acute cornuti.

Biology. — Unknown. Holotype caught in May.

Distribution (fig. 25). — Turkmeniya.

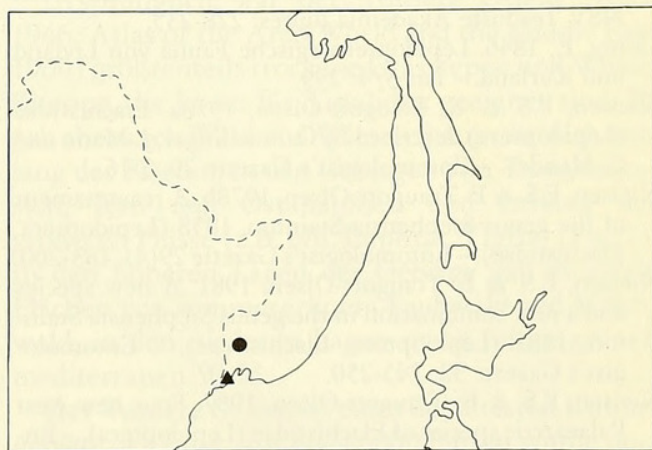


Fig. 26. Distribution map: *Elachista fuscofrontella* (triangle), *Elachista megagnathos* (dot).

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