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**Morphological and biological observations on
Ptochomyza czerny (Strobl) new for Italy^(*)**

Abstract - *Ptochomyza czerny* (Strobl) is recorded for the first time in Italy; the host plant is *Foeniculum vulgare*. Morphological characteristics of the adult and of the larva and considerations on the status of this species are given.

Riassunto - *Osservazioni morfologiche e biologiche su Ptochomyza czerny (Strobl), nuova per l'Italia.*

Viene segnalata la presenza in Italia di *Ptochomyza czerny* (Strobl), di cui è stata individuata la pianta ospite, il finocchio selvatico (*Foeniculum vulgare*). Sono illustrate le caratteristiche morfologiche dell'adulto e della larva e sono effettuate alcune considerazioni sull'inquadramento della specie.

Key words: *Ptochomyza czerny*, Diptera Agromyzidae, *Foeniculum vulgare*, new record.

In occasion of surveys in the year 2001, many plants of *Foeniculum vulgare* Miller with the small leaves infested by larvae of flies were found. In laboratory, adults of a little Agromyzidae, *Ptochomyza czerny* (Strobl) emerged.

This leaf miner is new for Italy, and the host being unknown, the Strobl's description synthetic, without illustrations, I thought interesting to dispose this note.

TAXONOMY

Ptochomyza czerny (Strobl) was placed in the genus *Phytomyza* by Strobl (1905). The Author found a male "in Eichenwäldern bei Valosca" in Dalmatia. The description of this new species was without illustrations. Hendel (1938) referred only the original description, because he was unable to locate the specimen in Strobl's collection and conclude "...sie ist mir bis jetzt nicht untergekommen".

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Only Spencer (1966) found and examined the holotype: so it was possible to draw the aedeagus; the comparison of the distinctive wing venation and of the male genitalia that closely resemble those of *Pt. asparagivora* Spencer, brought to transfer this miner to *Ptochomyza* Hering (1942), a little genus, actually with only 4 species, *Pt. asparagi* Hering, *Pt. asparagivora* Spencer, *Pt. czerny* (Strobl) and *Pt. majeri* (Spencer). The main character on which Hering created this new genus was the presence of only a single notopleural bristle at the centre of the lower margin of the notopleural triangle. This is a characteristic only of *Pt. asparagi* Hering, as the three other species have two notopleural bristles as in *Phytomyza*. Nevertheless, Spencer (1973) proposed to preserve *Ptochomyza* as valid genus, on the basis of the general structure of male genitalia, greatly simplified, on the characteristic form of the head with the orbits strongly projecting and on the wing venation, with the second costal section very short. As concern orbital characteristics, the two species on *Asparagus* sp. have little or; ors and ori on *Pt. czerny* and *Pt. majeri* are normally developed.

ADULT

HEAD: frons strongly projected above eye in profile, conspicuously above lunule (Fig. 1); 2 ori inwards, 1 ors outwards, orbital setulae enough long, lightly proclinate, rare.

Above eye, in profile, cheek forming a broad ring; jowls at deepest point about half height of eye. The lower margin of jowls is hairless, with one strong vibrissa.



Fig. 1 - *Ptochomyza czerny* (Strobl): head.

Third antennal segment a little longer than broad, rounded at the end, with arista virtually bare, conspicuously thickened in the first 1/6.

MESONOTUM: 3+1 dc strongly developed, and with 3-4 other little bristles before the 4 dc, about on the same row.

Acr lacking; notopleural area with two bristles.

Wing: length from 1,3 in male to 1,5-1,6 in female; costa extending only to vein r_{4+5} ; r_{2+3} uniformly curving to costa; r_{4+5} curving up to costa at the end; second costal section very short, about long as fourth; third section about 1/2 than second or fourth; r_{4+5} is clearly stronger than r_{2+3} (Fig. 2).

COLOUR: frons and orbits yellow, all antennal segments yellow, but the third on the outside is most darkened.

Arista brown-blackish in 1/6 proximal more thickened, not so darkened on the remaining; palps slender and yellow. Hind-margin of eye with a black area, that reach the margin of the eye, but both vt on yellow ground.

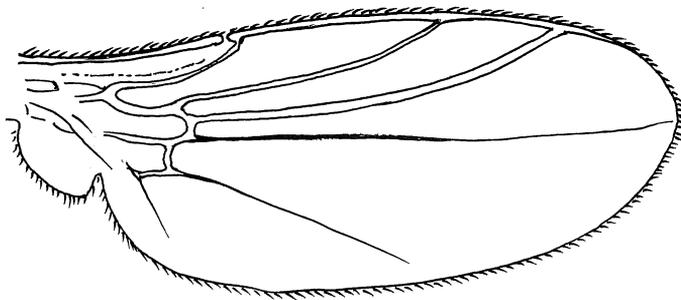


Fig. 2 - *Ptochomyza czerny* (Strobl): wing.

Mesonotum and scutellum blackish-grey; the dark area is somewhat about divided into three band, because we observe an unconsiderable clearing near the rows of dc.

Pleura dark, mesopleura brown-blackish, progressively darkened on lower margin.

Legs yellow, the last 3 tarsomeres only faintly yellowish-brown.

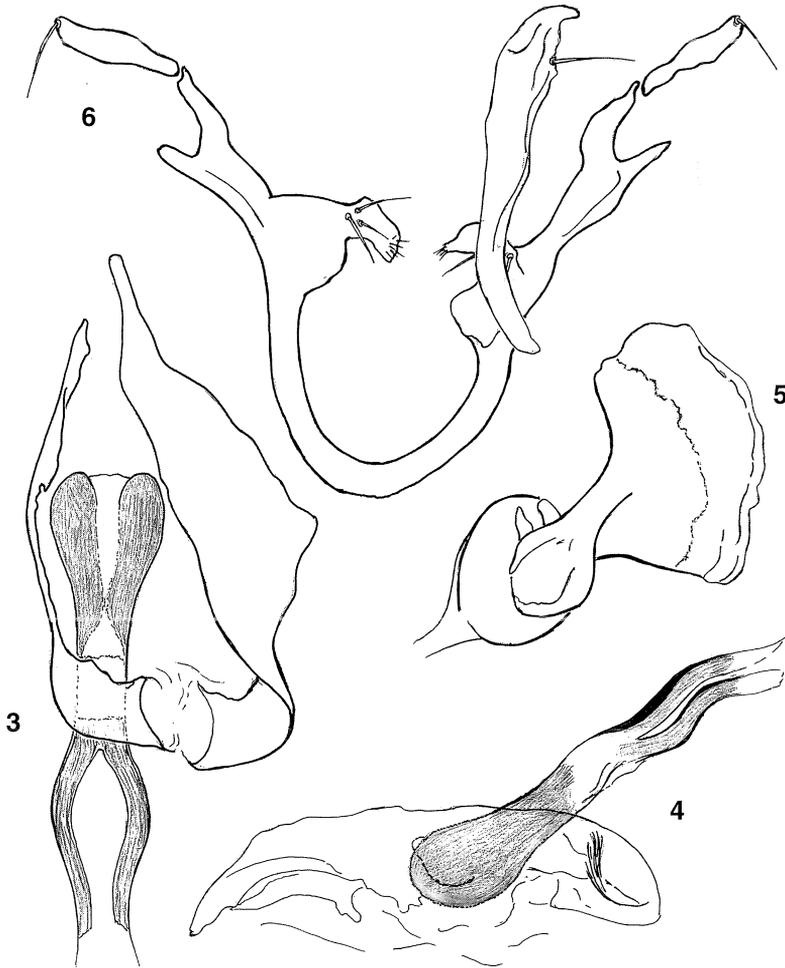
Abdomen with tergites brown, sternites and pleural region yellow. In the female the colour, in general, is more black. The ovipositor sheath is cylindric, black, shining. MALE GENITALIA: aedeagus as in Figs. 3-4. Ejaculatory apodeme in Fig. 5; hypandrium with pregonites and postgonites as in fig. 6.

Locality: Rio Maggiore (Savona), 7/IV/2001; 8/V/2001 ex leaves of *Foeniculum vulgare* Miller.

LARVA: mouth hooks are in Figs. 7-9.

Anterior spiracula (Fig. 10) with five pores; posterior spiracular processes as in Figs. 11-12.

The larva near the mouth hooks is characterized by a dense series of capitate microspines.

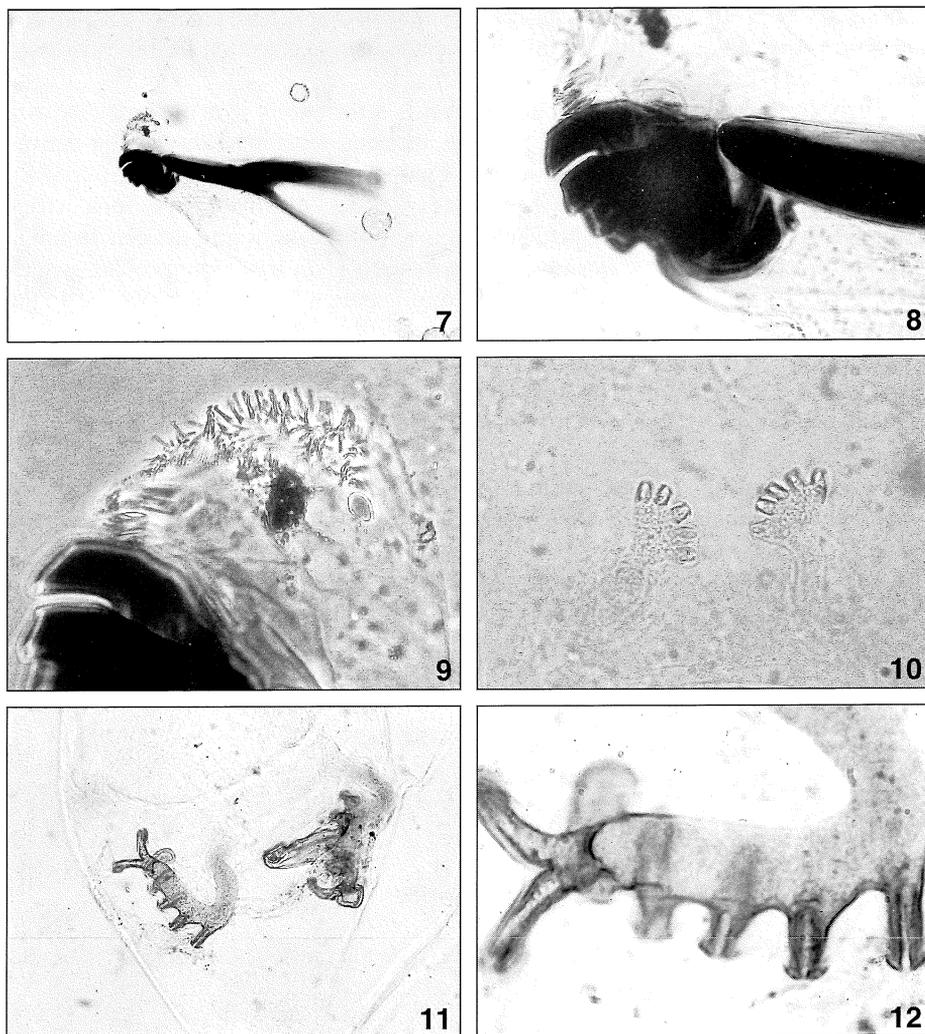


Figs. 3-6 - *Ptochomyza czerny* (Strobl): aedeagus, dorsal view (3); aedeagus, side view (4); ejaculatory apodeme (5); ninth sternite (6).

DISCUSSION

Pt. czerny is a very small species; Strobl affirmed that this miner was “Die kleinste mir bekannte Art.....”.

The other three species of this genus are very little too. This characteristic permit the developments of the larvae in the little space of the infested leaves. In fact the leaves are less than 1 mm wide and, in some cases, it was possible to find two larvae



Figs. 7-12 - *Ptochomyza czerny* (Strobl). Larva: cephalopharyngeal skeleton (7); particular of mouth hooks (8); particular of capitately microspines near the mouth hooks (9); anterior spiracula (10); posterior spiracular process (11); particular of posterior spiracula (12).

in the same mine. It is known that two other *Ptochomyza* are living in almost thread like leaves (*Pt. asparagi* and *Pt. asparagivora*); *Pt. mayeri* attacks the stems of *Clematis recta*.

In occasion of the study of the relationship between host and leaf miners, Spencer (1990) underlined the distance between *Asparagus* (Liliaceae) (host plant of *Pt. aspa-*

ragi and *Pt. asparagivora*) and *Clematis* (Ranunculaceae) (host plant of *Pt. mayeri*) and affirms that it is very difficult to conceive a logical explanation for this host transfer.

Spencer, as a consequence, thought that it is a fortuitous switch, "probably as a result of a mistake in oviposition by some ancestral female". This opinion derives from the acceptance of the botanical sequence proposed by Tamura (1966, 1967, 1968). Considering that the two species on *Asparagus* are widely distributed in Europa, Africa and Asia, Spencer thought that this situation is not of recent origin; the conclusion is that "the exact phylogenetic position of *Ptochomyza* is an intriguing problem which requires further study". I think that the ancestral female was a polyphagous fly. In the Agromyzidae we have many polyphagous species, adapted to live in biochemical environments that are completely different.

So, if I consider Jeremy's insect-plant relationship (Jeremy, 1984), all the species of *Ptochomyza* can be clearly classified into type A, including related insect species on distantly related plant species.

In conclusion, this Agromyzidae, subject to a strong selective pressure, resigned oneself to live in environments impossible to colonize by other miners, for the limited space.

The colonization of *Foeniculum vulgare* (Rosidae, Apioideae) by *Ptochomyza czerny* must be another "old mistake", thank to the ability to fit the little environment of the leaves of this host-plant.

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