

A new *Tischeria* species from Morocco (Lepidoptera, Tischeriidae)

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Summary

The author collected mines on the leaves of *Rubus* at Asni (High Atlas, Morocco) which produced an apparently new *Tischeria* species, which is described here as *Tischeria berberella* n. sp. The new species and its mine are compared with the other west palearctic *Tischeria* species feeding on *Rubus*.

Résumé

L'auteur a trouvé à Asni (Haut-Atlas, Maroc) sur les feuilles de *Rubus* des mines dont il a obtenu une *Tischeria* appartenant à une espèce nouvelle, qu'il décrit sous le nom de *Tischeria berberella* sp. n. Il compare cette nouvelle espèce et sa mine aux autres espèces de *Tischeria* ouest-paléarctiques vivant sur *Rubus*.

During an evening walk on 13th April 1983 in the neighbourhood of the "Grand Hotel du Toubkal" at Asni (High Atlas, Morocco), I immediately noticed the occurrence of lepidopterous mines in the leaves of *Rubus* bushes that were growing along the main road. The mines did not look like the European mines caused by *Tischeria marginata* HAWORTH, but resembled more a *Phyllonorycter*-shaped mine. I started collecting them with the help of a young Berber who showed more interest in entomology than in selling his stones and minerals to the tourists. In less than half an hour I sampled more than 100 mines, which were extremely numerous, turning the leaves different shades of brown, which gave the whole hedge an autumn-like look although it was only early April. When the Berber invited me to have a cup of tea at his house the next day, I once more established the occurrence of the same mines in his village by the colour of the *Rubus* bushes. Almost every leaf contained a mine and some of the leaves were completely covered with them.

From 16th April to 20th May about 120 specimens of a *Tischeria* species emerged. The adults looked very much like *Tischeria ekebladella* BJERKANDER living on oak, but they were totally different from the

European species feeding on *Rubus* : *Tischeria marginea* HAWORTH and *Tischeria heinemanni* WOCKE. In the work of HERING (1957) I found a brief indication of the existence of a certain *Tischeria rubiphagella* AMSEL without much further information. AMSEL described his species with specimens from Palestine, where he caught some adults at light and reared some others on *Rubus*.

At first, I suspected the Moroccan specimens to be *Tischeria rubiphagella*. Most of the external features matched with the original description of this Palestinian species. However, some doubts remained since other characters were not so obvious and the original description contained a rather general description, especially of the male genitalia. There were no pictures or drawings either of the imago, or of the internal structures. Fortunately, I could examine two paratypes of *Tischeria rubiphagella* from the collection in the "Landessammlungen für Naturkunde" at Karlsruhe (West-Germany). Though the Moroccan specimens resembled those of *Tischeria rubiphagella*, they turned out to belong to a hitherto undescribed species. In honour of the young friendly Berber who kindly assisted me in searching the mines, I would like to describe the Moroccan species as :

***Tischeria berberella* n. sp.**

The adults look almost completely like specimens of *Tischeria ekebladella* BJERKANDER. The only difference that can be observed with the naked eye is the colour of the cilia which are pale yellowish-grey in *ekebladella*, but darker grey in *berberella*. Forewing length : 3,8-4,2 mm, average 3,9 mm (both male and female). Male : groundcolour of forewing fulvous, unicolorous except for some darker scales covering the costal basal area. In some specimens these darker scales cover a greater part of the forewing, especially the costal area and in some cases the whole wing is uniformly coloured brown, but never with distinct markings or pattern.

Female : groundcolour and size of forewing similar to male. Cilia on the forewings of the groundcolour at the apex, gradually turning into grey at the inner margin. Hindwings grey in both sexes with grey cilia (distinguishing this species from *T. rubiphagella* which has very light, almost white hindwings and cilia). Thorax and tegulae brown, of the same colour as the darker scales in the forewing. Head covered with fulvous scales, mixed with brown. Face and palpi pale fulvous. Antennae of the male with cilia, 3,3 times as long as the width of the shaft, at least in the basal half of the antennae. Furthermore the antennae bear very small hairs over their whole length. These hairs are shorter than the width of the shaft. In the female the antennae bear only these small hairs.

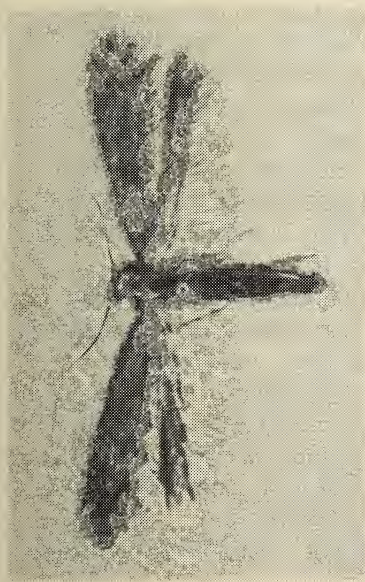


Fig. 1. *Tischeria berberella* n. sp., paratype ♂, Morocco, High Atlas, Asni village, 1150 m alt., e.l. *Rubus* April 1983, W. O. DE PRINS leg.

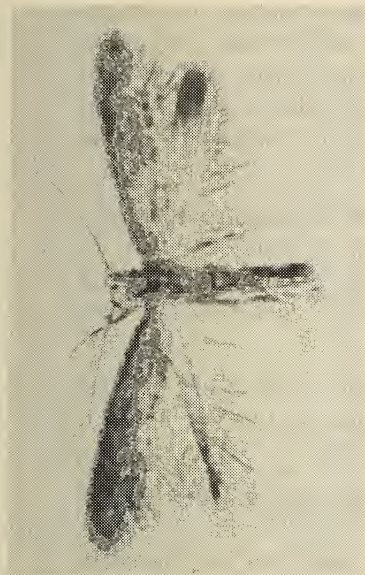


Fig. 2. *Tischeria berberella* n. sp., paratype ♀, Morocco, High Atlas, Asni village, 1150 m alt., e.l. *Rubus* April 1983, W. O. DE PRINS leg.



Fig. 3. *Tischeria rubiphagella* AMSEL, paratype ♂, Palestine, Jericho, 11th April 1930, H. G. AMSEL leg. (coll. Landessammlungen für Naturkunde, Karlsruhe).

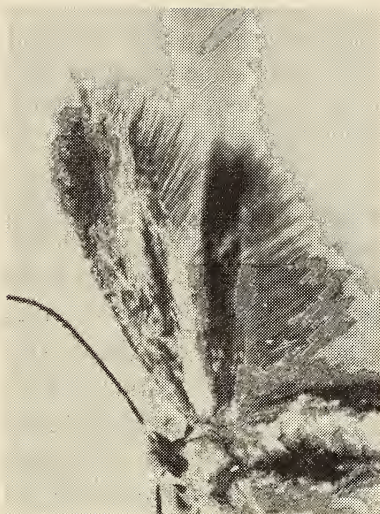


Fig. 4. *Tischeria rubiphagella* AMSEL, paratype ♀, Palestine, Tabgha Tiberias, e.l. *Rubus* 25th April 1930, H. G. AMSEL leg. (coll. Landessammlungen für Naturkunde, Karlsruhe).

Male genitalia with very slender uncus lobes, each ending in a sharp point. Valvae slightly curved upwards, narrow at the base, becoming gradually broader towards the evenly rounded apex. Distal half covered with very small spines pointing towards the base. Aedoeagus slender but ending in two lobes which bear rather strong cornuti. Total length of the aedoeagus somewhat longer than the length of a valva.

Female genitalia : papillae anales as in *Tischeria rubiphagella* with short, but strong setae. Apophyses anteriores much broader than in *T. rubiphagella*. Apophyses posteriores a little broader, but longer, about 8,3 times the length of the papillae anales (6,4 times in *T. rubiphagella*), with slightly curved tips cephalad.

Holotype : ♂, Morocco, High Atlas, Asni village, 1150 m alt., e.l. 1st May, 1983 ; mine in *Rubus*-leaf, sampled on 13th April, 1983.
Allotype : ♀, idem, e.l. 26th April, 1983.

Paratypes : 57 ♂ and 63 ♀, Morocco, High Atlas, Asni village, 1150 m alt., ex *Rubus* mines, e.l. from 16th April until 20th May, 1983. Holotype, Allotype and some paratypes are placed in the collection of the British Museum (Natural History) (London) and some paratypes are placed in the collection of "Landessammlungen für Naturkunde" (Karlsruhe).

Tischeria berberella can easily be distinguished from the other *Rubus*-mining *Tischeria*-species *T. heinemanni* WOCKE and *T. longiciliatella* REBEL by the groundcolour of the forewing which is fulvous in the former and dark grey-brown in the latter species. *T. berberella* is larger than *T. longiciliatella* and *T. rubiphagella* AMSEL. The average forewing lengths in my collection are : *T. longiciliatella* REBEL (3,3 mm), *T. rubiphagella* AMSEL (3,3 mm), *T. marginea* HAWORTH (3,7 mm), *T. berberella* n. sp. (3,9 mm) and *T. heinemanni* WOCKE (4,1 mm). The new species can be distinguished from *T. marginea* HAWORTH by its unicolorous forewings ; the latter species has a dark costa and outer margin. The closest related species is obviously *T. rubiphagella* AMSEL ; apart from its larger size *T. berberella* can be distinguished from it by the grey colour of the hindwings and cilia, which are almost white in *T. rubiphagella*. Females of *T. rubiphagella* are darker than males, while they are of the same colour in *T. berberella*. The male genitalia show distinct differences : slender uncus lobes in *T. berberella*, curved valvae and an aedoeagus with strong cornuti where in *T. rubiphagella* the uncus lobes are broader, the valvae are straight and the aedoeagus is armed with very slender cornuti only. The total length of the aedoeagus in *T. rubiphagella* is almost twice the length of a valva, whereas in *T. berberella* it is not much longer than a valva.

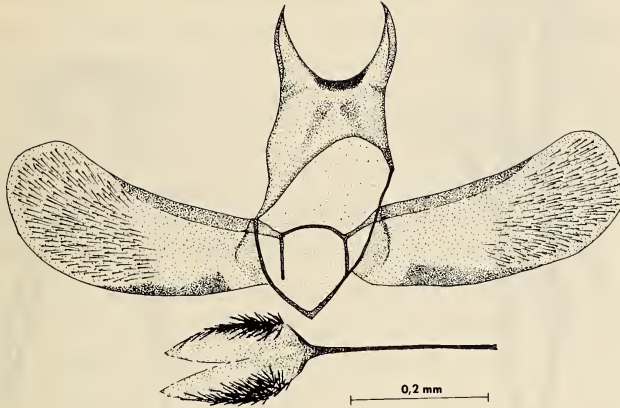


Fig. 5. *Tischeria berberella* n. sp., holotype, male genitalia (prep. nr. 1936, W. DE PRINS), Morocco, High Atlas, Asni village, 1150 m alt., e.l. *Rubus*, 1st May 1983, W.O. DE PRINS leg. (coll. British Museum (Natural History), London).

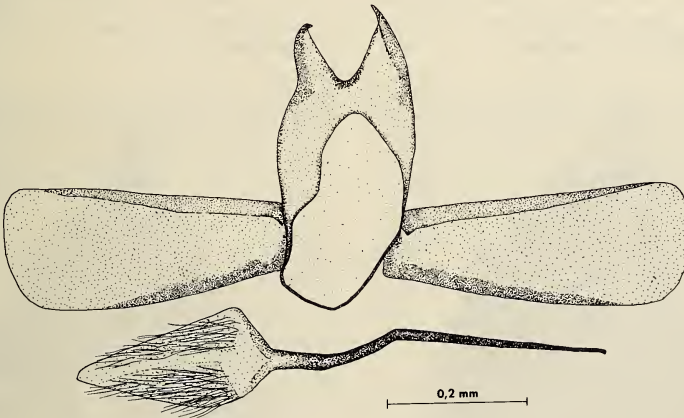


Fig. 6. *Tischeria rubiphagella* AMSEL, paratype, male genitalia (prep. nr. 1944, W. DE PRINS), Palestine, Jericho, 11th April 1930, H. G. AMSEL leg. (coll. Landessammlungen für Naturkunde, Karlsruhe).

T. berberella n. sp. always causes supra mines in *Rubus* leaves. In many cases, there are several mines in one leaf, sometimes the whole leaf is covered with them. The eggs are left on different places on the leaves without any preference for the midrib or the margin. Young mines are coloured light brown, which distinguishes them immediately from the pure white mines caused by *T. marginea*. In later stages the caterpillar



Fig. 7. *Tischeria berberella* n. sp., allotype, female genitalia (prep. nr. 1954, W. DE PRINS), Morocco, High Atlas, Asni village, 1150 m alt., e.l. *Rubus*, 26th April 1983, W.O. DE PRINS leg. (coll. British Museum (Natural History), London).



Fig. 8. *Tischeria rubiphagella* AMSEL, paratype, female genitalia (prep. nr. 1945, W. DE PRINS), Palestine, Tabgha Tiberias, e.l. *Rubus*, 25th April 1930, H. G. AMSEL leg. (coll. Landessammlungen für Naturkunde, Karlsruhe).



Fig. 9. *Tischeria berberella* n. sp., mines in *Rubus* leaf, Morocco, High Atlas, Asni village, 1150 m alt., 13th April 1983, W. O. DE PRINS leg.



Fig. 10. *Tischeria marginea* HAWORTH, mines in *Rubus* leaf, Belgium, Prov. Antwerp, Schilde, 3rd November 1983, W. O. DE PRINS leg.

contracts the leaf in a very characteristic way : every mine contains two lengthwise folds which lay close to each other in the centre of the mine and diverge towards the mine's ends, making the mine look very much like a *Phyllonorycter*-mine. The other *Rubus* feeding *Tischeria* species do not contract their mines in this way. According to HERING (1957) the mine of *T. heinemanni* is flat or almost flat. This author writes that the mines of *T. marginea* and *T. rubiphagella* are very alike, beginning very slender and contorting the leaf in later stages. The mines of *T. longiciliatella* are small, almost round, and very often distorting the margin of the leaves.

I only found the mines of *Tischeria berberella* n. sp. on *Rubus* hedges bordering the main road through Asni and in the Berber village nearby Asni. The species was extremely plentiful here ; almost every leaf contained mines. At the same time there were young and completely developed mines and some imago's as well. The species probably occurs in continuing generations each year. I did not find *Tischeria* mines on the isolated *Rubus* bushes in Taddert (High Atlas) nor in the Agadir region.

Acknowledgements

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