

A new species of *Perittia* STAINTON from Switzerland (Elachistidae) (*)

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Summary

A new species of the genus *Perittia* STAINTON is described from the Valais, Switzerland : *Perittia weberella* sp.n. The larva mines the leaves of *Lonicera*, like its congeners, and can occur together with *P. herrichiella* (H.-S.). The larval habits, mining Caprifoliaceae and pupating in bark, are considered as possible autapomorphies for *Perittia*. Consequently, the genus *Swezeyula* ZIMMERMAN & BRADLEY, erected for a species imported into Hawaii on *Lonicera japonica* from Japan, is synonymised with *Perittia*, creating a new combination : *Perittia loniceræ* (ZIMMERMAN & BRADLEY).

Zusammenfassung

Eine neue Art der Gattung *Perittia* STAINTON ist aus dem Wallis, Schweiz beschrieben : *Perittia weberella* sp.n. Die Raupe miniert die Blätter von *Lonicera*, wie ihre Gattungsgenossen, und kann zusammen mit *P. herrichiella* (H.-S.) vorkommen. Die Lebensweise der Raupe, auf Caprifoliaceae minierend und Verpuppung in Rinde, wird als wahrscheinliche Autapomorphie für *Perittia* betrachtet. Daraus folgt, dass die Gattung *Swezeyula* ZIMMERMAN & BRADLEY, für eine Art erstellt die nach Hawaii an *Lonicera japonica* von Japan importiert wurde, mit *Perittia* synonymisiert wird, was eine neue Kombination zur Folge hat : *Perittia loniceræ* (ZIMMERMAN & BRADLEY).

At the beginning of July 1980, I found larvae of what I assumed to be *Perittia herrichiella* (H.-S.) mining the leaves of *Lonicera xylostium* near Sierre, Switzerland. I placed the mines in tubes with cork stoppers, in which the larvae duly pupated. Knowing that the species was univoltine, the pupa overwintering, I was very surprised when about three weeks later, I found that the moths had already begun to emerge. Only then did I suspect that they might not be *herrichiella*. TRAUOGOTT-OLSEN and NIELSEN (1977) treat two species of the genus *Perittia* : *herrichiella* (H.-S.) and

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obscuripunctella (STT.). It was soon clear that the species I had bred was neither of these species, differing markedly in external appearance, genitalia of both sexes and their biology. HERING (1957) gives no additional species of Elachistidae feeding on *Lonicera*. I therefore submitted the species to E. TRAUOGOTT-OLSEN and E. SCHMIDT NIELSEN, both of whom considered it to be an undescribed species. I would like to name this species after the eminent swiss microlepidopterist Dr. h.c. Paul WEBER (1881-1968).

PERITTIA WEBERELLA sp.n.

Type material :

Holotype ♂ : VS, Schweiz, Pfywald, 570 m [UTM ref. :] LS/92. Bred 12-22.7.1981 ex larva or pupa on *Lonicera xylosteum*, taken 8.7.1981. S. E. WHITEBREAD.

Allotype ♀ : Same data as holotype except bred 31.7.1980 from larva taken 8.7.1980.

Paratypes : 5 ♂♂, 1 ♀ with same data as allotype except bred 30.7-2.8.1980 ; 5 ♂♂, 1 ♀ with same data as holotype ; 3 ♂♂ with same data as holotype except bred 28.3-1.4.1982.

Not included in type material : 2 ♂♂, 1 ♀ in poor condition, bred 1980. The holotype and allotype will be deposited in the British Museum (Natural History).

Imago (fig. 1) : Male similar to female. Wingspan 6-7 mm. Head and neck tufts whitish grey. Thorax and tegulae greyish black with ochreous scales on metathorax. Antennae black, whitish below, broadly ringed whitish grey, about two-thirds length of forewing, distally slightly serrate. Labial palpi drooping, whitish above, fuscous below, as long as width of head. Forewings rather coarsely and loosely scaled. Scales very pale grey to white, tipped dark grey to black giving an overall effect of black, finely sprinkled whitish. A roughly triangular tornal spot creamish white occasionally mixed black. Some white scales also on the dorsum at about one-third, sometimes reaching beyond fold, and again in middle of wing just beyond tornus. Towards base of dorsum, a few ochreous scales. Fold and area between dorsal and torsal spots more intensely marked black, sometimes forming a broad fascia from dorsum to costa. Cilia creamish white at apex beyond black cilia line, otherwise grey. Hindwings grey, cilia similar. Abdomen greyish black, whitish below, posterior margin of each segment pale grey. A few silvery white scales especially on first two segments. Forelegs black, each segment apically ringed white. Third



Fig. 1. *Perittia weberella* sp.n. ♂ Pfywald, Valais, Switzerland. Bred 1.4.1982 ex larva *Lonicera xylosteum*, taken 8.7.1981, S. E. WHITEBREAD.



Fig. 2. *Perittia herrichiella* (H.-S.) ♀ Pfywald, Valais, Switzerland. Bred 1.6.1983 ex larva *Lonicera xylosteum*, taken 8.7.1981, S. E. WHITEBREAD.

segment white below. Midleg black mixed grey, whitish at tip of each segment. Hindlegs dark grey, whitish below. Spurs, long tibial hairs and apical ring of each segment also whitish.

Venation (fig. 3): Spur from base of retinaculum on Sc present in forewing of male, M_3 absent. Chorda possibly present very weakly in centre of cell.



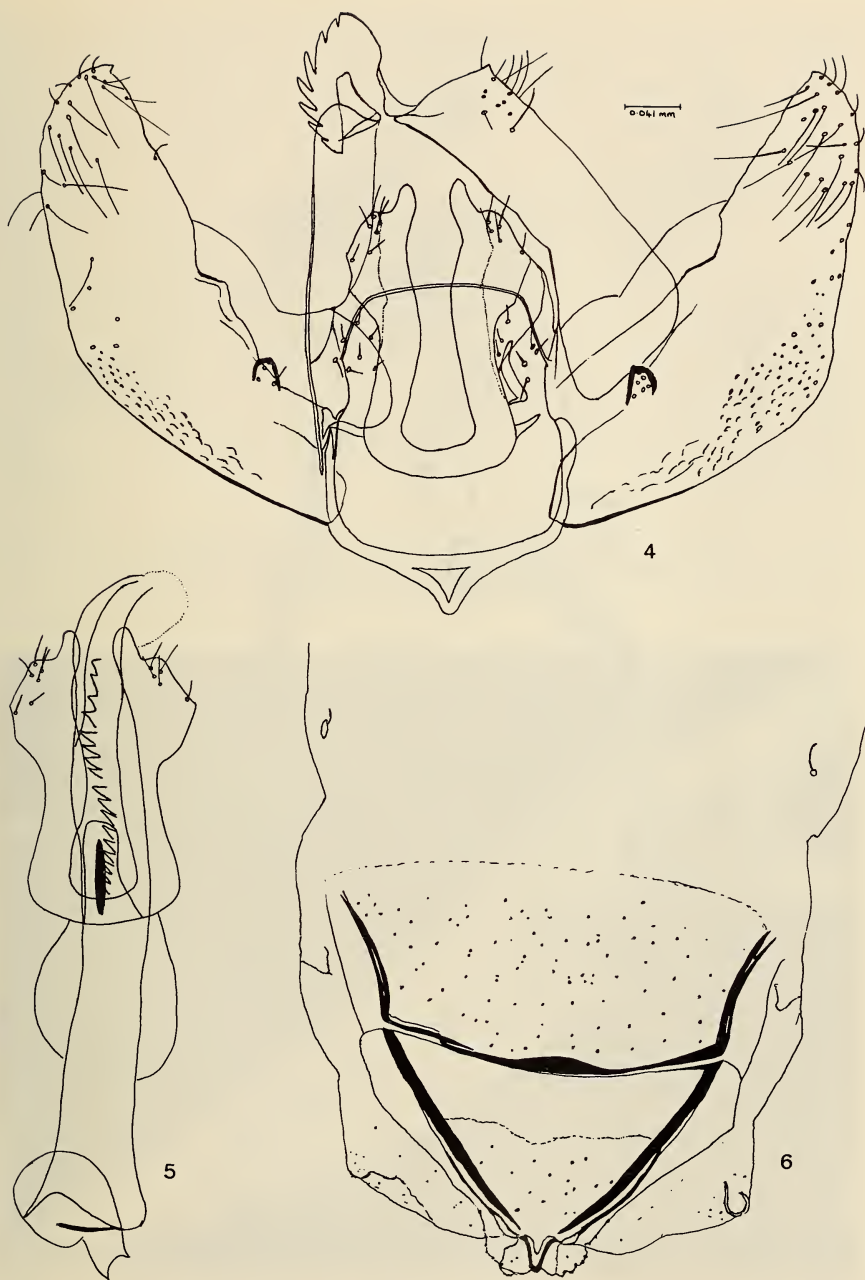
Fig. 3. *Perittia weberella* sp.n. Wing venation. S.E.W. prep. no. 282.

Genitalia ♂ (figs. 4, 5): Uncus shallowly indented, lobes with a few setae. Valve relatively short, broadest just before the middle, tapering through a slight cucullus to a very short apical point. Costa almost straight, a small indentation at one half. A short process from middle of valve at one quarter. Digital process absent. Juxta deeply indented, lobes fairly long, broader in middle with a thumb-like projection apically. Apical margin with a few short setae. Vinculum short, V-shaped. Aedeagus longer than valve, distally slightly curved and tapering. A row of about 17 small teeth in distal half.

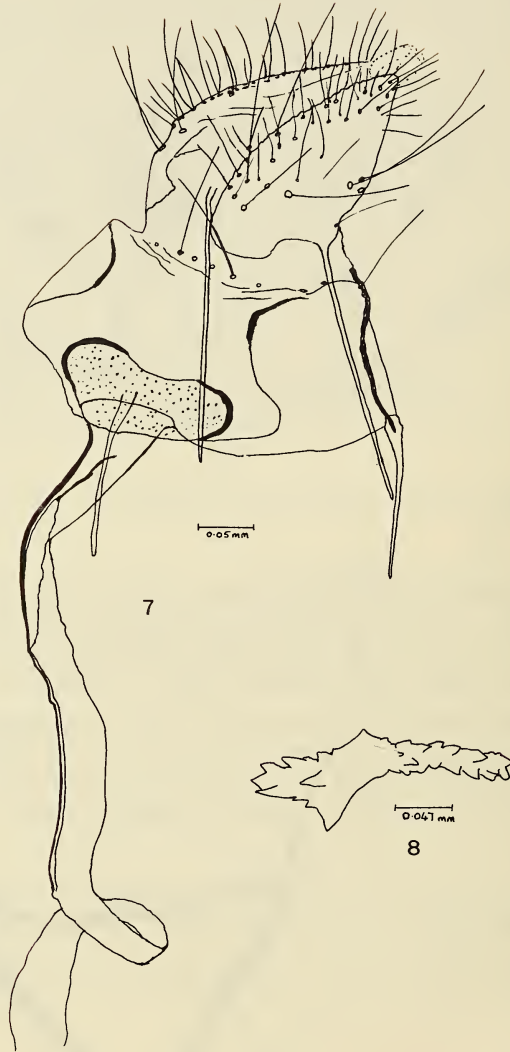
Genitalia ♀ (figs. 7, 8): Apophyses anteriores a little more than half the length of apophyses posteriores. Ostium bursae oval, posterior margin indented. Antrum with almost parallel sides leading into colliculum. Corpus bursae with numerous minute spines and a strongly dentate signum.

Early stages :

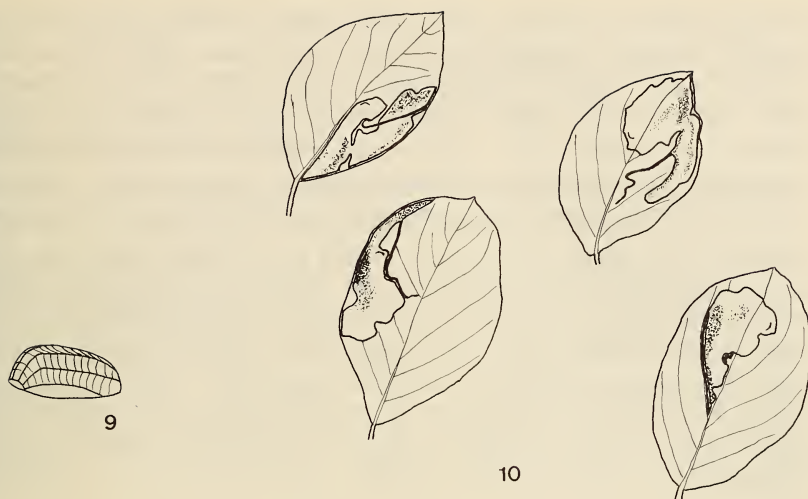
Egg (fig. 9): Elongate oval, appressed, larger at one end, with 7 longitudinal ribs, laid on the underside of a leaf of *Lonicera xylosteum* well away from the margin, occasionally against the midrib.



Figs. 4-6. *Perittia weberella* sp.n. S.E.W. prep. no. 197 - 4 : Male genitalia, aedeagus removed. - 5 : Aedeagus and juxta. - 6 : First abdominal segments.



Figs. 7-8. *Perittia weberella* sp.n. S.E.W. prep. no. 239. - 7 : Female genitalia, without bursa. - 8 : Signum.



Figs. 9-10. *Perittia weberella* sp.n. - 9 : Egg. - 10 : Leaf-mines.



Fig. 11. *Perittia weberella* sp.n. Cocoon attached to the underside of a twig of *Lonicera xylosteum*. The moth has emerged through the top end.

Larva : Approx. 5 1/2 mm when full grown. Whitish, tinged red on thoracic segments, appearing greenish in the mine. Head brown with inverted black V-mark. The prothoracic plate with two pairs of brown spots. Anterior pair small, irregularly circular, posterior pair larger, distinctly star-shaped. Four smaller, less marked brown spots between prothoracic legs. Mesothorax marked reddish antero-laterally. Thoracic legs with 3 broad brown rings. Anal plate longitudinally split. Setae short.

Mine (fig. 10) : Begins as a narrow gallery more or less filled with frass, fairly straight after a few early turns, widening only slightly before abruptly changing into a much broader gallery with dispersed frass and finally into a blotch which often absorbs the gallery. The frass in the blotch is deposited along one or more edges. The mine is sometimes restricted to the centre of the leaf, but usually reaches the margin at some point. The larva leaves the mine through the underside. Up to three mines in one leaf.

Pupa : Length 3 mm, reddish brown, smooth, depressed, abdominal segments not flexible.

Cocoon (fig. 11) : Narrow, constructed of silk adorned with pieces of bark. Attached to the underside of twigs or small branches of the foodplant, often no wider than the cocoon itself. Almost perfectly camouflaged.

Life history : Probably partially bivoltine. Larvae feed in June and July producing moths in July and August. A second generation of larvae would be expected in August and September, producing moths in May. Three July larvae produced moths the following year.

Parasites : Two chalcid parasites were bred in July 1981 from larvae in mines. These have been identified by Dr. R. R. ASKEW, Manchester, as 2 ♀ *Pnigalio soemius* (WALKER), stating that they are rather atypical, but probably fall within the range of that species.

Distribution : Known only from the type locality, a warm sandy pine forest, well known for its special fauna and flora, where it appears to be very local.

DISCUSSION

At the same locality, in 1981, I also found larvae of *Perittia herrichiella* (H.-S.) on the same bushes of *Lonicera* as *weberella*. Whereas *weberella* had largely pupated by this time, *herrichiella* mines were all tenanted. The two species can easily be distinguished. The mine of *herrichiella* starts near the base of the leaf, proceeding along the margin before forming a

large blotch. The mine is larger than that of *weberella*, the frass is deposited against the leaf margin and the mines tend to be of a lighter brown colour. The egg of *herrichiella* has fewer ribs. The larva of *herrichiella* is reddish, whereas that of *weberella* is whitish, marked red, appearing greenish in the mine.

In a corked tube standing upright, *weberella* larvae pupated successfully on the cork, whereas *herrichiella* larvae attempted to pupate on the glass bottom, some successfully in a white silken cocoon. When inverted, the remaining *herrichiella* pupated on the cork. This would suggest that in the wild, *herrichiella* pupates near the base of the stem or on the ground as stated by TRAUOGOTT-OLSEN and NIELSEN (1977). Indeed, whereas the cocoon of *weberella* is narrow, allowing it to pupate on the narrowest twig, the cocoon of *herrichiella* is much broader, oval-shaped and therefore more adapted to pupating on a flatter surface. I was not able to find *herrichiella* cocoons in the wild. Neither species actually bores into the stem as stated by TRAUOGOTT-OLSEN and NIELSEN (1977). *Weberella* attaches itself to the underside of a twig, then arches its head back over its body, spinning a cocoon from tail to head, ornamenting it as it goes with pieces of the outer surface of the bark.

Three July pupae of *weberella* emerged only the following March/April (by forcing) showing that the species is not wholly bivoltine. All *herrichiella* pupae overwintered as expected. However, one of these pupae overwintered twice, emerging 1.6.1983 (fig. 2). From the *herrichiella* material, the following chalcid parasites emerged :

- 2 ♀♀, 1 ♂ *Pnigalio soemius* (WALKER) ex larva in mine.
- 1 ♀ *Epiclerus temenus* (WALKER) ex larva in mine.
- 2 ♀♀ *Tetrastichus* sp. ex larva in cocoon.

The external features and biology of *weberella* suggest a close relationship to the other 2 central european *Perittia* species. However, the male genitalia are atypical of the genus. TRAUOGOTT-OLSEN and NIELSEN (1977 : 41) mentions several species of *Perittia* with a mediterranean distribution. All these species have since been removed to other genera (NIELSEN in litt.). Compared to *herrichiella* and *obscurepunctella*, *weberella* lacks the abruptly narrowed terminal part of the valve, so characteristic of the other two species. Also, the valve process is absent in *herrichiella* and *obscurepunctella* as also is the V-shaped vinculum. The teeth present in the aedeagus of *weberella* are absent in the other two species. The currently recognised european genera, considered more primitive than *Elachista*, are *Mendesia* JOANNIS, *Perittia* STAINTON, *Polymetis* WALSINGHAM and *Stephensia* STAINTON. LERAUT (1980) places *Urodeta* STAINTON in

the family Momphidae. The main plesiomorphy separating these from the higher genera is the non-monocotyledon feeding habit. *Stephensia*, as recently revised by NIELSEN and TRAUOGOTT-OLSEN (1978a, 1981), has a single probable autapomorphy in the presence of a pair of anterior projecting processes from the anterior margin of tergite VIII in the female; also the uncus is well developed. These characters are absent in *weberella*. *Stephensia* species feed on Lamiaceae and Boraginaceae. *Polymetis* feeds on Asteraceae, the papillae anales possess strong teeth ventro-medially and the antennae have fine ciliae; otherwise very similar to *Perittia* (NIELSEN and TRAUOGOTT-OLSEN, 1978b). *Mendesia* is characterised by the absence of a signum in the female, the presence of a chorda and vein M3, and absence of a spur from the base of Sc in the male forewing. They feed on Boraginaceae.



Figs. 12-15. Valves of *Perittia* spp. - 12: *lonicerae* (ZIMM. and BRAD.) - 13: *obscurepunctella* (STT.) - 14: *herrichiella* (H.-S.) - 15: *weberella* sp.n.

The three characters mentioned above which are present in *weberella*, but absent in *herrichiella* and *obscurepunctella*, are also absent in the remaining genera. However, as these parts of the male genitalia have not been considered to be of generic importance in the allied genera, it is best

to consider the larval foodplant, a member of the Caprifoliaceae and the habit of pupating in bark as probable autapomorphies for *Perittia*, as suggested by TRAUOGOTT-OLSEN and NIELSEN (1977 : 30-31).

A further species of Elachistidae feeding on *Lonicera* was described by ZIMMERMAN and BRADLEY (1950), who also erected a new genus, from Hawaii : *Swezeyula lonicerae*. The larva also pupates under the bark of the foodplant *Lonicera japonica*. The species has since been shown to have been imported into Hawaii from Japan. In the original description, the authors also considered *Swezeyula* to be very close to *Perittia*. The differences between the two genera were the shape of the valve (figs. 12-15), a slight difference in the origin of vein M_1 , *Swezeyula* has the proboscis shorter than the palpi, the antennal insertion contiguous with the eyes and erectile hair scales on the head. The first two points fall within the range of *Perittia* and characters three and four are also shared with *herrichiella* and *weberella*. There is therefore no reason to retain *Swezeyula* as a valid genus and the species should be referred to as *Perittia lonicerae* (ZIMMERMAN and BRADLEY) COMB. NOV.

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