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Contribution to the Lepidoptera fauna of the Madeira Islands Part 3. Elachistidae

With 14 figures

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Summary

A review of the species of the family Elachistidae occurring on Madeira Islands is presented. Two species are recognised to occur there: *Elachista encumeadae* sp. n., which is placed in the *Elachista praelineata* group, and *Perittia carlinella* (WALSINGHAM). An earlier literature record of *P. carlinella* from Madeira is discussed. Descriptions are given for both species, and their adult habitus and genitalia are figured.

Zusammenfassung

Es wird eine Übersicht über die auf den Madeira Inseln vorkommenden Arten der Familie Elachistidae gegeben. Zwei Arten wurden festgestellt: *Elachista encumeadae* sp. n., in die *Elachista praelineata* - Gruppe gehörend, und *Perittia carlinella* (WALSINGHAM). Eine frühere Literaturangabe zu *P. carlinella* von Madeira wird diskutiert. Für beide Arten werden Beschreibungen vorgelegt. Die Falter sowie die Genitalien werden abgebildet.

Key words

Madeira; Microlepidoptera; Elachistidae; new species

The Elachistidae (s. str.) (Gelechioidea) is a family of small-sized Lepidoptera. The larvae of most species with a known biology are leafminers, mainly in monocots. Although the family is nearly cosmopolitan in its distribution, the majority of known species occur in the northern hemisphere (KAILA 1999a). Several species are known to occur on oceanic islands of the Atlantic Ocean. KLIMESCH (1990) records 5 species of Elachistidae from the Canary Islands. One species, *Elachista trifasciata* (WOLLASTON, 1879), occurs on St. Helena. No records are available from the Azores. There is only one imprecise literature record of a species of Elachistidae from Madeira (see below under remarks to *Perittia carlinella*). In this paper we report two species of Elachistidae from Madeira. We confirm the occurrence of *Perittia carlinella* (WALSINGHAM), and describe a species of *Elachista* as new.

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Abbreviations

BMNH:	The Natural History Museum, London, U.K.
NHMW:	Naturhistorisches Museum, Vienna, Austria
ZMUC:	Zoological Museum, University of Copenhagen, Denmark.
ZMUH:	Finnish Museum of Natural History, Zoological Museum, University of Helsinki, Finland.

Elachistidae

Members of the Elachistidae can usually be recognised as belonging to the superfamily Gelechioidea by their smooth-scaled head, sickle-shaped recurved ascending labial palpi and the basally scaled tongue. The elachistids can normally be distinguished from other gelechioids by the following combination of external characters: size small with wingspan usually between 6 and 14 mm, forewing lanceolate, hindwing acute. However, some other gelechioids, e.g., cosmopterigids, agonoxenids and certain other "old momphids", can closely resemble elachistids. Then it may be necessary to examine characters in genitalia or wing venation. The male genitalia of elachistids are symmetrical, usually with a fused, sometimes divided, spinose mesial knob of gnathos, and the uncus is formed as a pair of flat lobes. In the wing venation the elachistids are characterised by the stalked hind wing veins Rs and M1. Terminology in descriptions follows TRAUGOTT-OLSEN & NIELSEN (1977) with some modifications explained by KAILA (1999a and b).

Elachista encumeadae sp. n.

Material examined:

Holotype: ♂, Madeira, Encumeada, 900 m, 13.ix.1997, leg. O. KARSHOLT, Gen. prep. nr. 4932 ♂ O. KARSHOLT (ZMUC). Paratypes, 4 ♂, 2 ♀, same data as holotype, genitalia slide L. KAILA 2919 ♂, 2920 ♂, 2925 ♀) (ZMUC, ZMUH (1 ♂, 1 ♀)). 1 ♀, same data, but la. 2xii.2001, *Festuca donax*, leg. O. KARSHOLT (ZMUC); 1 ♂, Madeira, Faja da Nogueira, 5.vi.1980, leg. P. PASSOS DE Carvalho, genitalia slide BM 22313 ♂ (BMNH).

Diagnosis: Male (Fig. 1). Wingspan 7-8 mm. Labial palpus thin, slightly upcurved, yellow, suffused with dark brown on outer surface of segment II. Head and neck tufts warm yellow. Antenna nearly as long as forewing, dark leaden grey. Thorax and tegulae concolourous with forewing. Forewing black; basal streak small, light yellow; a similarly coloured patch at base of dorsum; an outwards-bent, white band before middle of wing; costal and dorsal spot shining white, sometimes forming an angulated fascia. Fringe scales blackish grey, with yellow tip around apex, and with a black fringe line. Hindwing blackish grey with dark grey fringes. Underside of wings yellowish black.

Female (Fig. 2): Wingspan 8.5 mm. Similar to male, but with more distinct white markings in forewing, and with prominent yellow-brown scale tuft at tip of abdomen.

♂ genitalia: (Figs. 5-10). Uncus lobes conical, swollen, median margin straight, lateral margin somewhat convex; ventral surface covered by long hair-like scales. Posterior margin of tegumen membranous, anterior margin reinforced and indented. Basal arms of gna-

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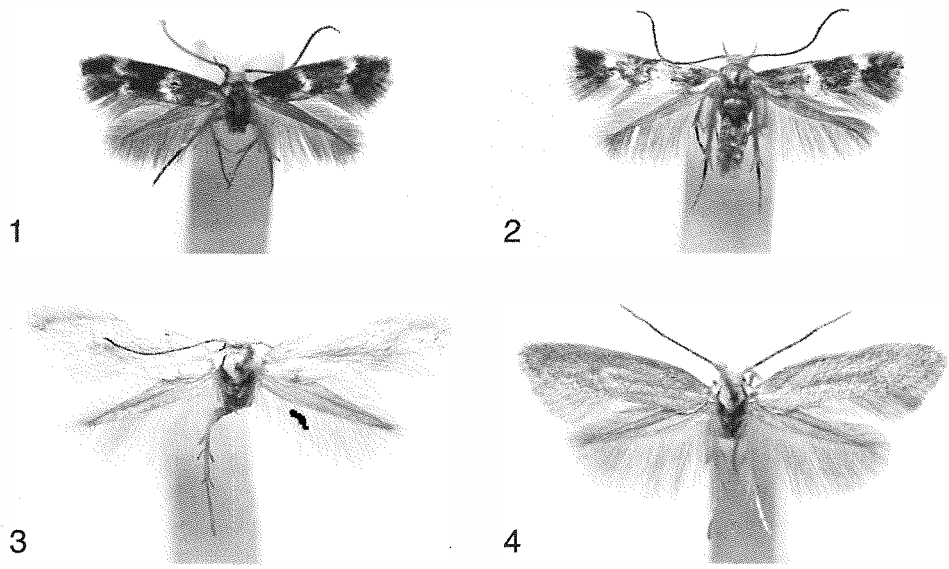
thos straight, medially angled and fused to each other by membranous connection; spinose knob large. Valva short, basal fold of costa basally concave and distally convex, extended to middle of length of valva where it meets distal fold of costa and forms a hump; sacculus nearly straight, without distal spine, fused to cucullus at an obtuse angle; cucullus produced towards costa, distal margin straight. Digitate process short and broad. Median plate of juxta concave, oval, laterally with dorsally projected pickets; juxta lobes laterally produced; median margin straight, fused to distal margin at an obtuse angle; distal margin laterally convex, lateral margin concave; ventral surface setose and wrinkled. Vinculum large U-shaped, without saccus. Aedeagus as long as valva, straight, broadest basally; ductus ejaculatorius posteriorly directed; no caecum; apex dorsally bilobed, ventrally formed as narrow sclerotisation; vesica with large group of stout teeth and another group of small spines.

♀ genitalia: (Fig. 13). Tergum VII broad reniform, densely covered by long yellow-brown hair-like scales. Papillae anales large, rounded, hardly sclerotised. Apophyses nearly straight; apophyses posteriores as long as apophyses anteriores, basally rather broad. Ostium bursae occupies over half of distance between apophyses anteriores, dorsal wall and antrum covered by coarse spines; antrum rather narrow sclerotised band; colliculum posteriorly funnel-shaped and anteriorly narrower, longitudinally wrinkled, as long as apophyses posteriores. Inception of ductus seminalis halfway between antrum and corpus bursae, ductus seminalis basally somewhat swollen. Ductus bursae and corpus bursae joined; length of corpus bursae + ductus bursae three times length of apophyses posteriores. Corpus bursae oval sac without signum or internal spines.



Figs. 1-2: *Elachista encumeadae* sp. n. **Fig. 1,** ♂ holotype. **Fig. 2,** ♀ paratype.
Figs. 3-4: *Perittia carlinella* (WALSINGHAM). **Fig. 3,** ♀ (Madeira). **Fig. 4,** ♂ (Tenerife).

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Bionomy: The larva is a leaf miner in the endemic grass *Festuca donax* LOWE. The holotype and most paratypes were swept in long grass during day shortly before rain. The type locality is *laurisilva* forest, situated north of (below) the Encumeada pass. The collecting dates indicate at least two generations per year.

Remarks: *E. encumeadae* sp. n. belongs to the *Elachista praelineata* group (see KAILA, 1999b). The species of the group are usually easy to distinguish by a dense group of long hair-like scales in tergum VII of the female. From the superficially similar representatives of the *Elachista bifasciella* group (see TRAUGOTT-OLSEN & NIELSEN, 1977) they can also be distinguished by the two-branched hindwing vein CuA. Additionl, more subtle characteristics are explained by KAILA (1999a, b). The group is widely distributed in temperate, subtropical and tropical regions of the world (KAILA, 1999a, b, 2000 and unpublished data). One species, *E. bromella* CHRÉTIEN, 1915 is known from North Africa, one species, *E. canariella* NIELSEN & TRAUGOTT-OLSEN, 1987 from the Canary Islands, and one species, *E. sicula* PARENTI, 1978 from southern Italy. The short valvae of *E. encumeadae* sp. n. suggest that it could be closest related to these three species. The shape of the valva is longer and narrower in, e.g., all the Nearctic representatives of the group (see KAILA, 1999b) than in *E. encumedae*. The very strong spiculation in the vesica in the male, and the short and wrinkled colliculum + ductus bursae are unique for *E. encumeadae*. Externally, *E. encumeadae* is easy to distinguish from these other species by the darker ground colour and bright markings of the forewing; the other species are pale ochroeous (see NIELSEN & TRAUGOTT-OLSEN [1987] for illustration of *E. canariella*, PARENTI [1972] for *E. bromella* and PARENTI [1978] for *E. sicula*).

No species of Lepidoptera similar to *E. encumeadae* is found on Madeira.

The new species is named after the type locality, [Boca da] Encumeada on Madeira, one of the most important localities for endemic Lepidoptera on the island.

Perittia carlinella (WALSINGHAM, 1908)

Records in the literature:

Polymetis carlinella WALSINGHAM: PASSOS DE CARVALHO, 1995: 577.

General distribution:

Outside Madeira *carlinella* is only known from Tenerife and La Palma in the Canary Islands (KLIMESCH, 1990).

Diagnosis: Adult, ♂, ♀ (Figs. 3-4). Wingspan 10-11 mm. Labial palpus thin, rather short, straight, creamy white. Head and neck tufts light brownish white. Scape of antenna whitish, flagellum dark brown, articles with indistinctly paler rings. Thorax and tegula concolourous with forewing. Forewing creamy white, more or less covered with light brown-tipped scales. Hindwing grey, with light grey fringe scales. Underside of wings yellowish grey, darkest in forewing.

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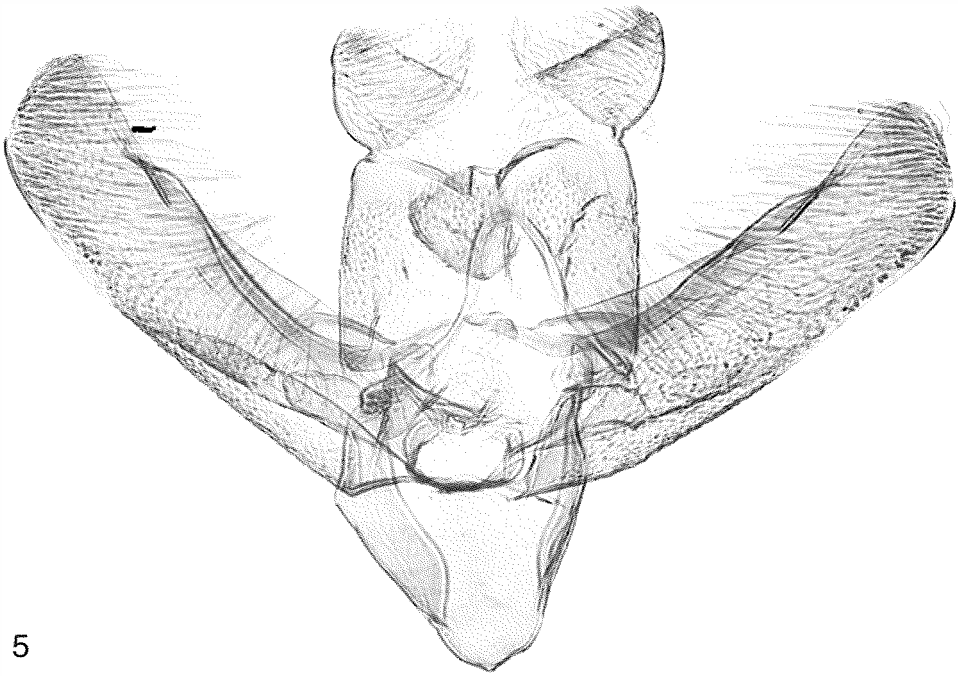

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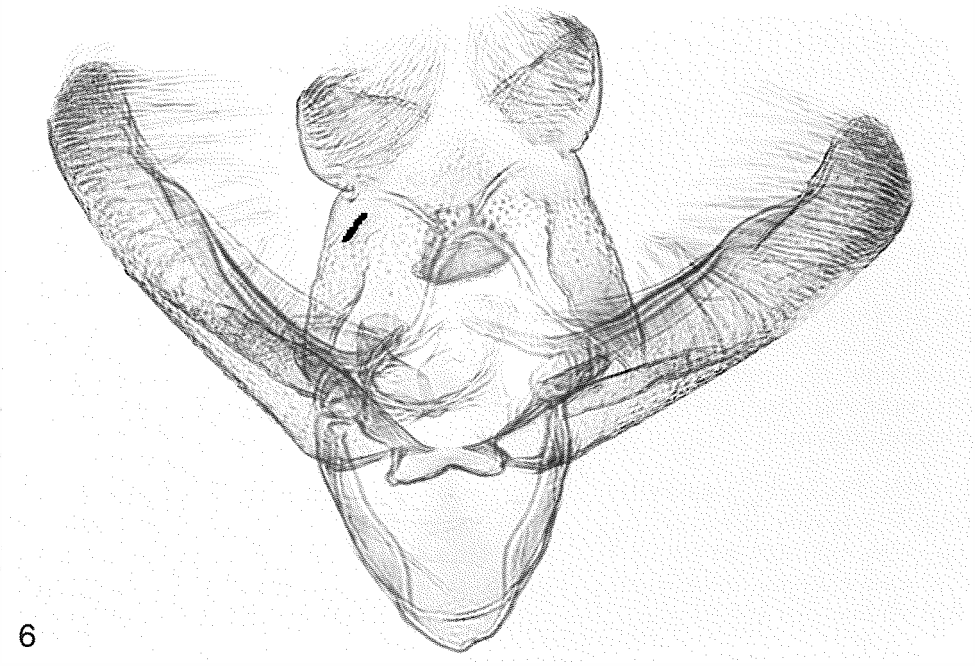

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Figs. 5-6: Male genitalia of *Elachista encumeadae* sp. n. paratype, overview. **Fig. 5,** slide LK 2920. **Fig. 6,** slide LK 2919.

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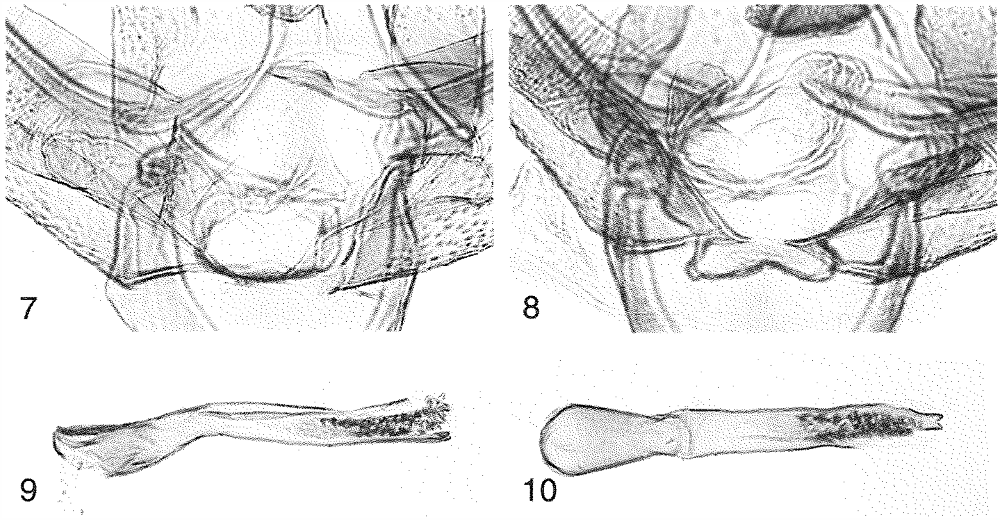

Figs. 7-10: Male genitalia of *Elachista encumeadae* sp. n. paratype. **Figs. 7-8.** Details with juxta and digitate process. **Fig. 9-10.** Aedeagus. **Figs. 7, 9,** slide LK 2920. **Figs. 8, 10,** slide LK 2919.

Male genitalia (Figs. 11-12): Uncus reduced to a pair of small setose swellings. Basal arms of gnathos distally fused, gnathos with an oval spinose mesial knob. Valva with parallel-sided costa and sacculus, width slightly more than half length of costa; costa straight, distally prolonged as short tongue-shaped appendix with small upcurved apical tooth; termen concave, sacculus straight, distally rounded, forming nearly right angle when meeting termen. Ventral shield of juxta small, broadly U-shaped, setose; dorsal shield large, triangular. Aedeagus straight, (without manica) 0.6 times the length of valva, basally with large bilobed manica, basal opening posteriorly directed, without caecum, broadest basally and tapered towards oblique apex; no cornuti.

Female genitalia (Fig. 14): Papillae anales dorsally fused distally forming pointed apex, entirely sclerotised. Apophyses straight and stout, apophyses posteriores about 1.5 as long as apophyses anteriores. Ostium bursae oval, situated in the middle of sternum VIII; no antrum present; colliculum about as long as length of sternum VIII, sclerotised; ductus seminalis incepted at anterior end of colliculum; ductus bursae straight, membranous, more than three times as long as colliculum; corpus bursae rounded, without signum or internal spines.

Bionomy: The host plant in the Canary Is. is *Carlina salicifolia* CAV. (KLIMESCH 1990). A description (with a figure) of the leaf mine was published by HERING (1927: 483). The early stages have not yet been found in Madeira. The few Madeiran specimens studied by us were collected in light traps placed close to the sea, below the sea cliffs, in the north-western part of the island. The collecting dates indicate at least two generations.

Material examined:

2 ♀, Porto Moniz, sea level, 7.vii.1993, leg. O. KARSHOLT (ZMUC, ZMUH).

1 ♂, Porto Moniz, sea level, 9.x.1994, leg. O. KARSHOLT (ZMUC).

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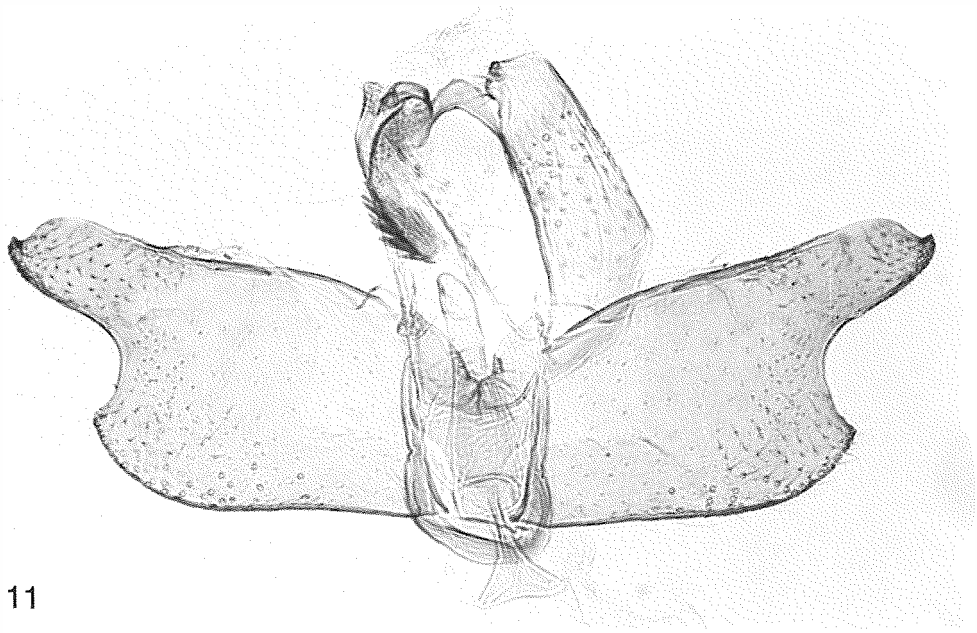

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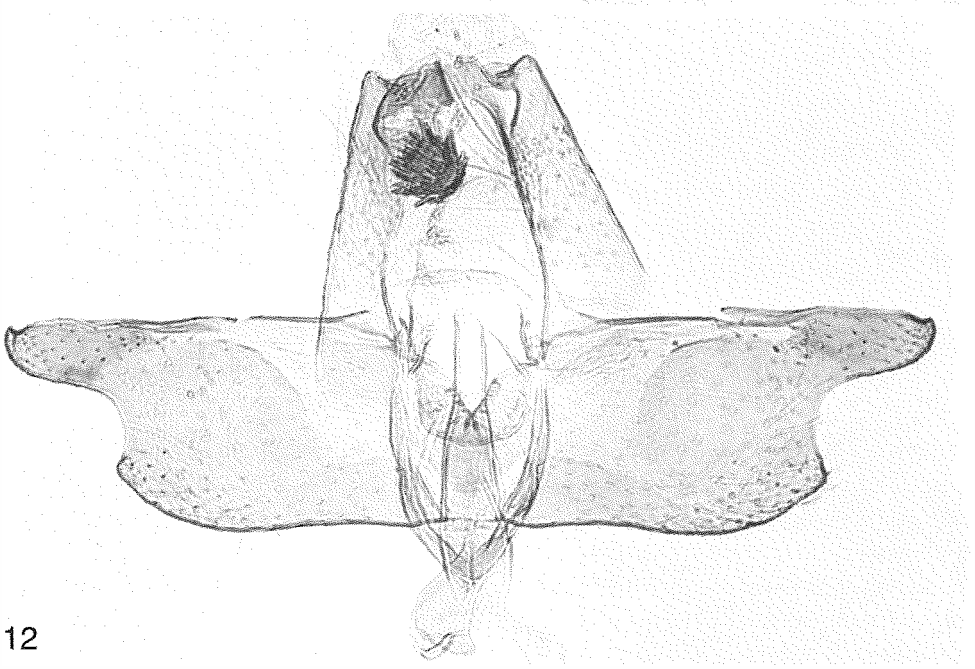

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Figs. 11-12: Male genitalia of *Perittia carlinella* (WALSINGHAM). **Fig. 11,** Madeira: Porto Moniz, slide LK 2921. **Fig. 12.** Tenerife: Güimar, Mirador, slide LK 1785.

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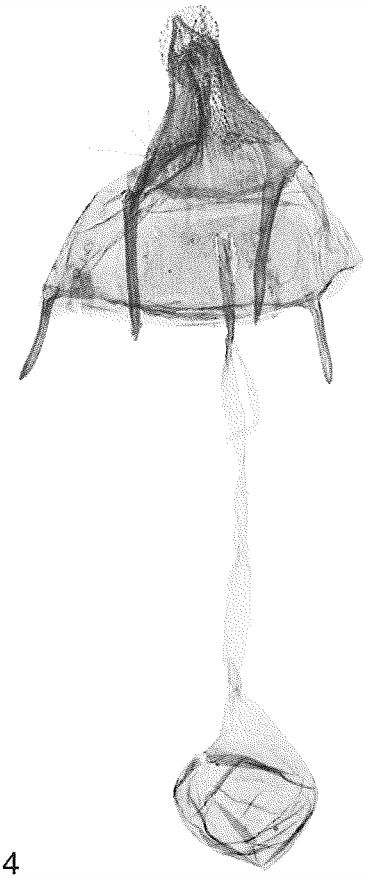

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Fig. 13: Female genitalia of *Elachista encumeadae* sp. n. paratype, slide LK 2925.
Fig. 14: Female genitalia of *Perittia carlinella* (WALSINGHAM), Madeira: Porto Moniz, slide LK 2926.

Remarks: The generic synonymisation follows KAILA (1999a).

A couple of specimens from Tenerife differ from the Madeiran ones in being more greyish and in having darker antennae. However, the genitalia appear identical in these specimens.

P. carlinella differs from other Madeiran Lepidoptera by its small size and its nearly unicolourous cream-white forewings.

PASSOS DE CARVALHO (1995) listed *carlinella* from Madeira without information on locality, date or collector. The list of Microlepidoptera from Madeira published by PASSOS DE CARVALHO is discussed in some detail by KARSHOLT (2000: 401-402). It was based on a draft compiled by John Bradley, which also included information received from N. L. Wolff. In Wolff´s card index on Lepidoptera from Madeira (kept in ZMUC) there is a card for *Polymetis carlinella* which, beside of a reference to its original description, says: "1 ex. Kasy". This refer to the former curator of Lepidoptera at NHMW, Fritz Kasy, who

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also collected some Lepidoptera in Madeira. We have been unable to trace material of *carlinella* collected by Kasy in Madeira, but this note has perhaps been the basis of its inclusion in PASSOS DE CARVALHOS's list.

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We thank Kevin Tuck (BMNH) for showing OK drawers with unidentified Microlepidoptera from Madeira, and for loan of the single specimen of an elachistid therein. We moreover acknowledge the photographic work by Geert Brovad, and the linguistic correction by Mary E. Petersen, both ZMUC.
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