

A new species of *Parafomoria* Van Nieuwerkerken, and some additional notes on the genus (Lepidoptera: Nepticulidae)

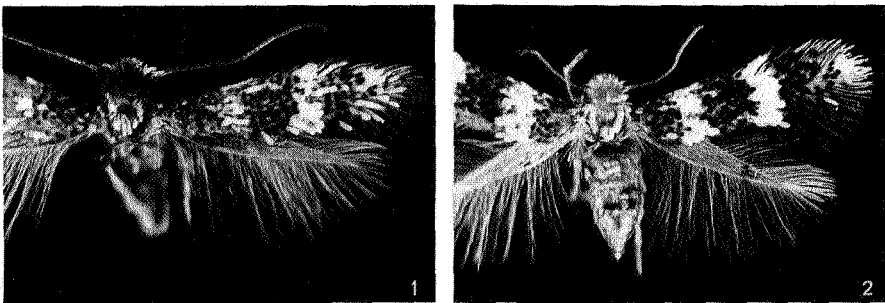
by

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ABSTRACT. — *Parafomoria halimivora* n. sp. is described from southern Spain. It feeds on *Halimium* spp., and is assumed to be the sister-species of *P. helianthemella* (Herrich-Schäffer). The mine and larva of *P. ladaniphila* (Mendes) are described and new distribution and host-plant data for the genus are given.

The Cistaceae feeding genus *Parafomoria* Van Nieuwerkerken, has recently been revised (Van Nieuwerkerken, 1983). The genus occurs predominantly in the Iberian Peninsula, the major centre of the Palearctic Cistaceae. When collecting in Spain, near Marbella, early 1984, with E. Traugott-Olsen, we found many mines on *Halimium* spp., some of which contained larvae, belonging to an unknown nepticulid species. From these I reared the *Parafomoria* species, described below. There are no published records of a nepticulid having been previously found on *Halimium* sp. Some new data on other *Parafomoria* species are also given.



Figs 1-2. *Parafomoria halimivora* n.sp. 1, ♂ holotype; 2, ♀ paratype.

Parafomoria halimivora n. sp. (figs. 1-10)

Type material. — Holotype ♂, Spain (Málaga): Sierra Blanca, 6 km N of Marbella, El Mirador, 800 m, mines 5 and 9.II.1984, *Halimium halimifolium*, e.l. 13.III.1984, E. J. van Nieuwerkerken, genitalia slide VU 1887. Paratypes, 1 ♂, 3 ♀, same data, e.l. 3-14.III (♀ ♀) and 6.IV.1984 (♂); 1 ♀, Spain (Málaga): road to Istan, 2 km S of Istan, 400 m, mines 6.II.1984, *Halimium atriplicifolium*, e.l. 2.III.1984, E. J. van Nieuwerkerken.

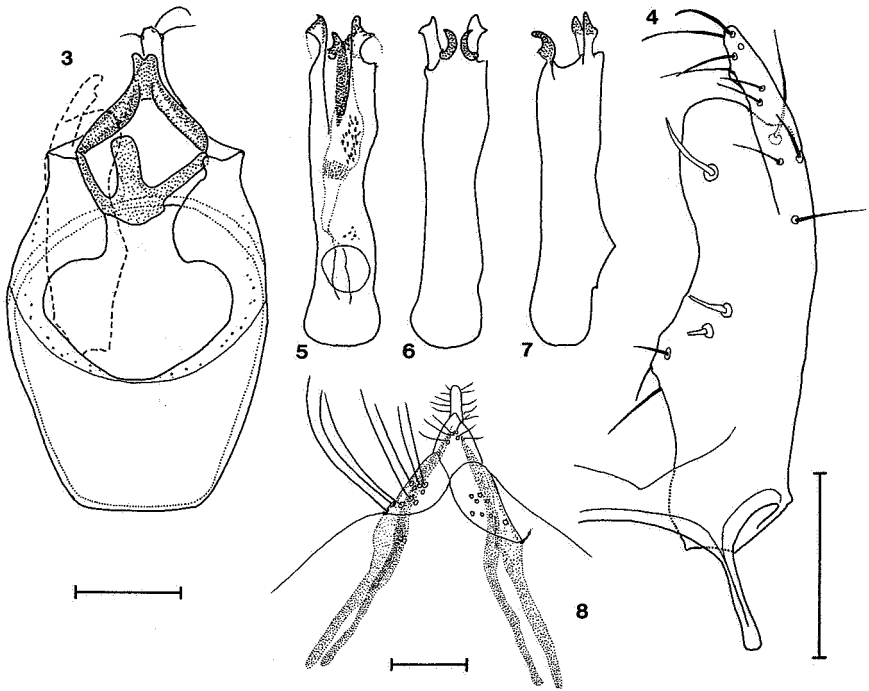
All material in collection of Instituut voor Taxonomische Zoölogie (Zoölogisch Museum), Amsterdam (ZMA).

Male (fig. 1) — Forewing length 2.1-2.3 mm. Frontal tuft mixed black and fuscous, becoming black towards vertex; collar yellowish white. Scape white in anterior half, grey in posterior half, flagellum grey; antennal segments 42-44.

Thorax mixed white and grey.

Forewing greyish black with irregular fasciae, approximately one third and two thirds from base, and several scattered white scales, especially near wing tip; cilia greyish, cilia-line indistinct.

Hindwing with a yellowish-white brush of hair-scales (hair-pencil), of about half hindwing length.



Figs 3-8. Genitalia of *Parafomoria halimivora* n.sp. 3-7. male genitalia, holotype, genitalia slide VU 1887. 3, capsule; 4, valva; 5, aedeagus, ventral aspect; 6, aedeagus, dorsal aspect; 7, aedeagus, lateral aspect; 8, female postabdomen, dorsal aspect, genitalia slide VU 1888. Scales: 0.1 mm, 3 and 5-7 on same scale.

Female (fig. 2) — Forewing length 1.8-2.2 mm. Frontal tuft mixed ochreous - fuscous. Antennal segments 27-30.

Thorax completely white.

Forewing with two almost straight fasciae, more regular than in male, no scattered white scales. Cilia white and grey, cilia-line distinct.

Hindwing without hair-pencil. Otherwise as male.

Venation — Forewing: M fused with R5, A1 + 2 arcuate, as in *helianthemella*.

Male genitalia (figs. 3-7). — Capsule length 305-309 μ m. Vinculum with large ventral plate; lateral arms greatly expanded inwards, ventrally. Tegumen posteriorly produced into a long narrow point, reaching beyond uncus. Uncus posteriorly bilobed, narrow. Gnathos with spatulate central element. Valvae basally separated, length 184-193 μ m, slender, distally produced into a digitate process; inner margin distally produced into a rounded lobe. Juxta absent. Aedeagus 214-244 μ m. Opening of ductus ejaculatorius at one-quarter from anterior end; distally two pairs of carinate processes: a ventral pair of weakly sclerotized, straight processes, and a dorsal pair of small, strongly sclerotized, curved horns. Vesica with few spines and one long cornutus.

Female genitalia (figs. 8, 9) — Ovipositor long-pointed; T8 consisting of two plates, each with 10 long setae; T9 pointed, with a single medial group of 6 setae; S7 long cuspidate, reaching beyond T9 and S8. Bursa very small, with minute pectinations, ductus spermathecae with four convolutions.

Final instar larva — Yellowish, feeding venter upwards. No material available for detailed studies.

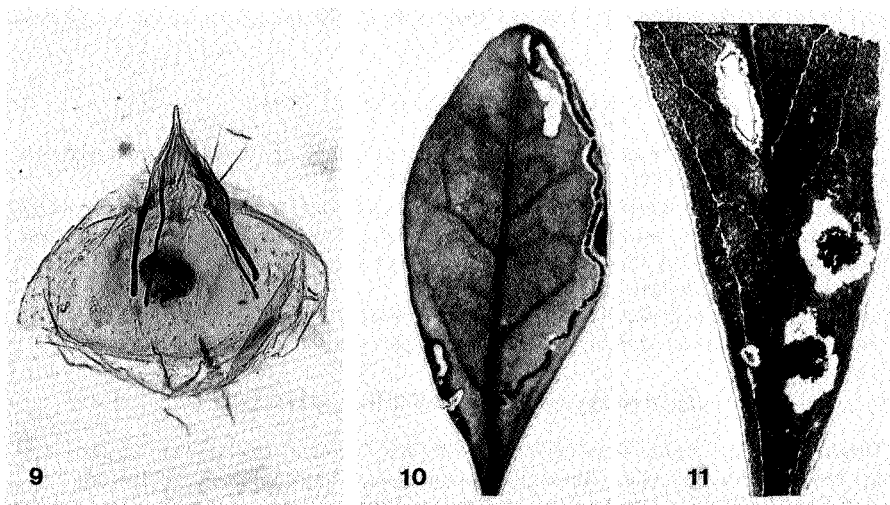


Fig. 9. Female genitalia of *Parafomoria halimivora* n.sp., dorsal aspect, genitalia slide VU 1973.

Figs. 10-11. Mines of *Parafomoria* spp. 10, *P. halimivora* n.sp.; 11, *P. ladaniphila* (Mendes).

Hostplants. — *Halimium halimifolium* (L.) Willk. in Willk. & Lange, *H. atriplicifolium* (Lam.) Spach. (Cistaceae).

Mine (fig. 10) — A narrow tortuous gallery, early part particular narrow and almost invisible; frass in broad central line, leaving clear margins. Larval exit-slit on leaf-upperside. Egg on upper surface.

Life history — Tenanted mines were found in February, amongst a majority of vacated mines. Adults emerging comparatively soon, therefore is it assumed that the species has several generations per year.

Distribution — At present only known from Spain, in the region near Marbella (Andalucia).

P. halimivora can be distinguished from other *Parafomoria* species by the combination of a white thorax, two fasciae and a hair-pencil in the hindwing of the male. In the genitalia it resembles *P. helianthemella* most.

P. halimivora can be included in the key to *Parafomoria* in Van Nieuwerkerken (1983: 458) by changing couplet 4 as follows:

4. ♂ Hindwing with long white brush (hair-pencil). Valva with digitate projection. Aedeagus with two pairs of carinae. ♀ Corpus bursae present 4A
 — ♂ Hindwing without hair-pencil. Valva without digitate projection. Aedeagus with one unpaired dorsal carina. ♀ Corpus bursae reduced 5
 4A Forewing with two white fasciae. Thorax almost completely white. Tegumen pointed. Uncus bilobed. Ductus spermathecae with 4 convolutions *halimivora*
 — Forewing with one more or less distinct fascia and many scattered white scales. Thorax predominantly brown. Tegumen bilobed. Uncus pointed. Ductus spermathecae with 7 convolutions *helianthemella*

Couplet 2: delete tegumen character.

Parafomoria halimivora shares characters 8 and 9 of the cladogram (fig. 65 in Van Nieuwerkerken, 1983) with *pseudocistivora*, *cistivora* and *helianthemella*, and is assumed to belong therefore to the same monophyletic group. Due to the similarity with *helianthemella* it is be-

lied to be its sister-species, but a distinct apomorphy for the species-pair cannot yet be indicated.

Parafomoria cistivora (Peyerimhoff, 1871)

Material: 1 ♂, 2 ♀, France (Bouches du Rhône): Forêt de Gardiole (Aubagne), e.l. 13-24.IX.1971, *Cistus salvifolius*, R. Buvat (coll. ZMA).

This is the first verified record of *cistivora* on *Cistus salvifolius* L., which has also been reared from *C. monspeliensis* L. and *C. ladanifer* L. Apparently the situation is more complicated than was assumed before (Van Nieuwerkerken, 1983), and there appears to be an overlap of hostplants between this and *pseudocistivora*.

In Spain I noticed near San Pedro de Alcantara (Málaga) a single mine, probably belonging to this species, on *Cistus populifolius* L., on which hitherto no nepticulid has been found.

Parafomoria pseudocistivora Van Nieuwerkerken, 1983

Material: Spain: 1 ♂, Marbella, Málaga, 23.IX.1979, C. Gielis (coll. Gielis); 1 ♂, 20 km W Soria, 900 m, 22.IX.1965, H. G. Amsel (Landessammlungen für Naturkunde, Karlsruhe).

As far as I know, these are the first *Parafomoria* specimens collected at light. There is some variation in the shape of the valvae in this species, especially the specimen from Soria differs, so with some hesitation it is identified as *pseudocistivora*.

Parafomoria helianthemella (Herrich-Schaffer, 1860)

Material: 1 ♀, France: Bessans (Savoie), e.l. 23.IV.1980, *Helianthemum*, R. Buvat (ZMA). This is the first adult recorded from France, which therefore confirms earlier records of mines.

Parafomoria ladaniphila (Mendes, 1910)

Material: 4 ♀, Spain (Málaga), 2 km E. of Casares, ± 500 m, mines 8.II.1984, *Cistus ladanifer*, e.l. 11.IV, 25.V, 20.VII and 28-30.VII.1984, E. J. van Nieuwerkerken (ZMA).

Mines and larvae: same data and Spain (Málaga), 3.7 km NW of San Pedro de Alcantara, 300-350 m, 7.II.1984, E. J. van Nieuwerkerken.

In stands of *Cistus ladanifer* L. in Southern Spain, mines of *ladaniphila* were quite common, thus confirming its expected occurrence in Spain. It is difficult to rear, because larvae often become stuck to the very sticky leaves of the hostplant, when they search for a pupation site. The larva and mine are described below.

Final instar larva. — Yellowish, feeding venter upwards. Meso- and metathorax with 10 pairs of setae.

Mine (fig. 11). — Starts as short, very narrow, almost invisible, gallery, soon becoming a circular blotch, in which the frass is concentrated in circular blot in centrum, adhering to upper epidermis. The leaf swells in the position of the mine, forming a blister on the leaf underside. The larva often hides beneath the aggregation of frass. Larval exit-slit on leaf-upperside. Egg on leaf-upperside.

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Nieukerken, E. J. van, 1983. The Cistaceae-feeding Nepticulidae (Lepidoptera) of the western Palearctic region — *Syst. Ent.* 8: 453-478.

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