

## The identity of *Coleophora euryaula* Meyrick, 1925 and *C. vigilis* Meyrick, 1925 (Lepidoptera, Coleophoridae)

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### Summary

*Coleophora euryaula* Meyrick, 1925 and *C. vigilis* Meyrick, 1925 are diagnosed, their genitalia and larval cases described and illustrated. A lectotype is selected for each species.

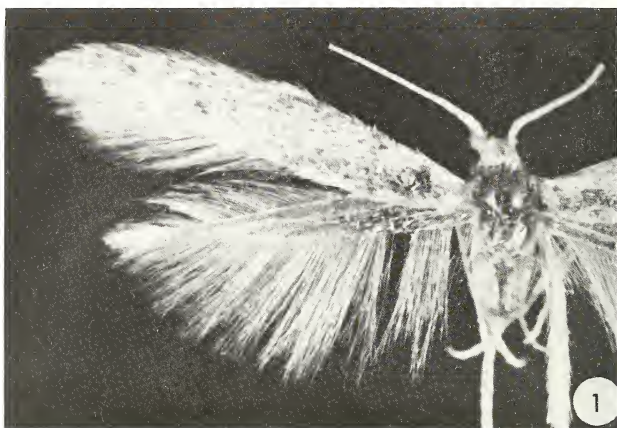
### Résumé

*Coleophora euryaula* Meyrick, 1925 et *C. vigilis* Meyrick, 1925 sont caractérisées, et les genitalia et fourreaux larvaires décrits et illustrés. Des lectotypes sont désignés pour chaque espèce.

*Coleophora euryaula* and *C. vigilis* were described by Meyrick (1925) from specimens from Egypt reared by Anastase Alfieri. Since the publication of these names, the identity of the species has not been verified by examining genitalia and no further specimens have been collected. The species have never been illustrated.

Meyrick indicated that he described each species from two specimens. He retained one specimen of each species for his collection and returned the other to Alfieri, as he did customarily with correspondents. One syntype of each species is now in the British Museum (Natural History) (BMNH) in London. The location of the other syntypes was unknown. During a visit at the U.S. National Museum (USNM) in Washington D.C. in 1990, one of us, JFL, discovered that one of the syntypes of *euryaula* and two specimens of *vigilis* from Egypt reared by Alfieri and identified as "types", were deposited there, along with the Alfieri collection, acquired by the Smithsonian Institution in 1965. The specimens are in excellent condition and are accompanied by the larval cases from which they were reared. We provide here descriptions and

(1) LXXIV<sup>th</sup> contribution to the knowledge of Coleophoridae.



Figs 1,2. Adults of *Coleophora* spp. 1 — *C. vigilis*, ♂ : Egypt, Wadi Hoff, ex *Lycium arabicum* 14.iv.-18.v.1918, Alfieri Collection (USNM) ; 2 — *C. euryaula*, ♀ lectotype : Egypt, Arabian Desert, Wadi Hussein, ex *Astragalus forskahlei* 31.v.1923, Alfieri Collection (USNM).

illustrations of the genitalia and larval cases of these two species, illustrations of the adults, select lectotypes, and indicate the possible placement of these species.

### *Coleophora euryaula* Meyrick, 1925

(Bull. Soc. R. Ent. Egypte 9 : 215)

Type locality : Wadi Hussein, Arabian Desert, Egypt.

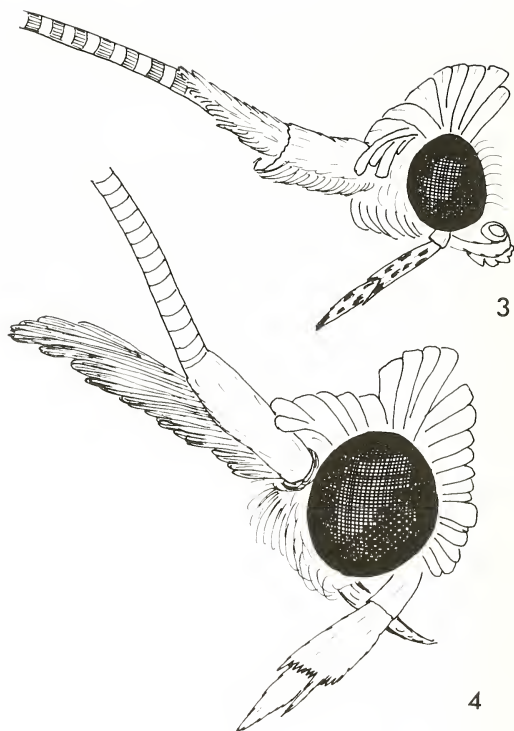
#### *Material examined*

LECTOTYPE (here designated) : ♀, in the USNM, labelled : [1] "Wadi Houssein (désert arabe) Eclos 31.5.1923 de fourreau pris sur Astra-galus Forskali [sic]." [handwritten] ; [2] "Coll. Alfieri Egypte" [printed] ; [3] "Type" [red, printed, probably added by Alfieri] ; [4] "*Coleophora euryaula* n. sp. det. Meyrick" [first two lines handwritten by Alfieri, last line printed] ; [5] "Anastase Alfieri Collection 1965" [printed, with a red bar across length]. [6] "Lectotypus *Coleophora euryaula* Meyrick, Baldizzone & Landry 1992" [red, partly printed, partly handwritten]. The specimen is double-mounted with the larval case pinned on the same block as the adult and is in excellent condition ; genitalia on slide Bldz 10761.

PARALECTOTYPE : sex undetermined, in the BMNH, labelled : [1] "Paralec-totype" [round with purple border, printed] ; [2] "Wadi Hussein Egypt A. bred 6.18" [handwritten] ; [3] "*Coleophora euryaula* Meyr. E. Meyrick det. in Meyrick coll." [handwritten and printed] ; [5] "*euryaula* Meyr." [handwritten]. The specimen consists of only the four wings glued on a card disk ; everything else, including the abdomen, is missing, hence the identity of the specimen could not be assessed. Meyrick also described the larval case but none is present with the specimen.

DESCRIPTION : Meyrick's colour description is accurate and we merely cite him : "Head, palpi, antennae [sic], thorax white, basal joint of antennae rough-scaled anteriorly but not tufted. Forewings yellow-ochreous ; markings snow-white ; a broad costal streak from before middle to near apex, anterior extremity with rounded expansion beneath ; a broad elongate blotch extending along fold from base to 1/3 of wing ; an oval blotch on fold beneath middle of wing ; a broad submedian streak from disc at 3/5 to near termen beneath apex : cilia white, towards base tinged yellowish, at apex a pale yellowish bar. Hindwings whitish-grey ; cilia pale yellowish, becoming whitish towards tips." Female (Fig. 2) ; male unknown. Wingspan 14-18 mm. Head (Fig. 4).

ABDOMEN : Terga 1 + 2 (Fig. 17) with weak posterior lateral struts, transverse strut straight, thin, posterior edge medially interrupted. Spine



Figs 3-4. Heads of *Coleophora* spp., lateral aspect ; 3 — *C. vigilis* ; 4 — *C. euryaula*.

patches of tergum 3 irregularly oval or subquadrate, each with about 40-45 spines.

**FEMALE GENITALIA** (Fig. 15, 16): Tergum 8 membranous, smooth. Sterigma transversely rectangular, caudal margin slightly oblique, smooth, with narrow and shallow medial excavation running nearly parallel-sided to ostium bursae, lined with many relatively long bristles. Colliculum parallel-sided around ostium bursae, about 0.3x width of sterigma, portion cephalad of ostium bursae narrowed, elongate, about as long as sterigma. Spinulate section of ductus bursae long, about 7x length of sterigma, anteriorly recurved, spinules coarse and dense ;



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Figs 5-8. *Coleophora* spp., ♂ abdomen and genitalia. 5 — *C. vigilis* genitalia (slide Bldz 10759): Wadi Hoff, 14.iv-18.v.1918, ex *Lycium arabicum*, Alfieri Collection (USNM); 6 — idem, abdomen; 7 — idem, cucullus, saccus and aedeagus enlarged; 8 — *C. lycii*, ♂ genitalia, cucullus, saccus and aedeagus enlarged (slide Bldz 10790): Ajakguzhumdy, 120 km NNW Bucharu, ex *Lycium ruthenicum* 31.v.1975, leg. Falkovitsh (coll. Baldizzone).

section around ductus seminalis coiled once ; section cephalad of ductus seminalis straight, gradually widened into corpus bursae ; signum medium, with broad base and with spine about length of base. Anterior apophyses shorter than sterigma. Posterior apophyses twice length of sterigma. Ovipositor relatively short ; papillae anales broadly rounded.

*Note* : Meyrick described the scape as “rough-scaled anteriorly but not tufted”, perhaps from a worn specimen. The lectotype has the scape prominently tufted (Figs 2,4), as is characteristic of species with pistol-shaped larval cases.

**LARVAL CASE** (Fig. 19) : Ochreous-whitish, silken, pistol-shaped, nearly straight with very shortly recurved anal “handle”, ventral side without keel, anal “handle” covered with broad, spherical silk sheath ; surface polished, corrugated ; length 14 mm ; mouth opening 45°.

**HOST PLANT** : *Astragalus forskahlei* Boiss. (Fabaceae).

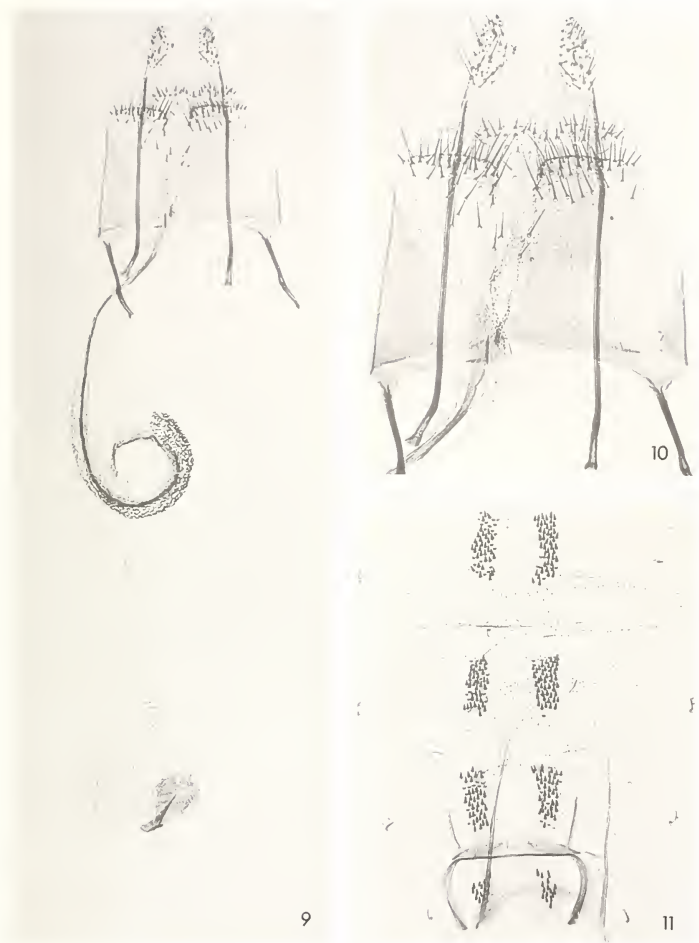
**DIAGNOSIS** : The species is similar in wing pattern and larval case to *Coleophora cartilaginella* Christoph, as was correctly inferred by Meyrick (1925). In female genitalia, the species resembles both *C. cartilaginella* Christoph and *C. spumoseella* Staudinger. It is not possible to elucidate relationships further without knowledge of the male. In female genitalia, *C. euryaula* is distinguished from *C. cartilaginella* as follows : in *C. euryaula*, the posterior margin of the sterigma is broadly rounded, almost trapezoid, the ostium bursae is V-shaped, the spinulate section of the ductus bursae is short and broad, and the median lamina is looped once ; in *C. cartilaginella*, the sterigma is conical-subtriangular, the ostium bursae is rounded, the spinulate section of the ductus bursae is long and narrow, and the median lamina is longer than in *C. euryaula* and looped 2-3 times.

Both *C. vigilis* and *C. cartilaginella* belong to the *vibicella* species group (Falkovitsh, 1973a ; Reznik, 1975), whose adults have a long and projected scale tuft on the scape and whose larvae construct pistol-shaped cases made of silk hardened with a secretion. This large species group constitutes the genus *Multicoloria* of Căpușe (1973), Falkovitsh (1974) and Reznik (1977), now regarded as a synonym of *Coleophora* (Sattler and Tremewan 1978 ; Vives Moreno 1988). Within the *vibicella* group, *C. euryaula* belongs to the *cartilaginella* section, characterised by the forewing mostly ochreous-yellow with 2-3 broad, white streaks or blotches.

### ***Coleophora vigilis* Meyrick, 1925**

(Bull. Soc. R. Ent. Egypte 9 : 215)

Type locality : Wadi Hoff, Egypt.



Figs 9-11. *Coleophora vigilis*, ♀ abdomen and genitalia. 9 — genitalia (slide Bldz 10760) : Wadi Hoff, 14.iv-18.v.1918, ex *Lycium arabicum*, Alfieri Collection (USNM) ; 10 — idem, sterigma and ovipositor enlarged ; 11 — idem, abdomen.

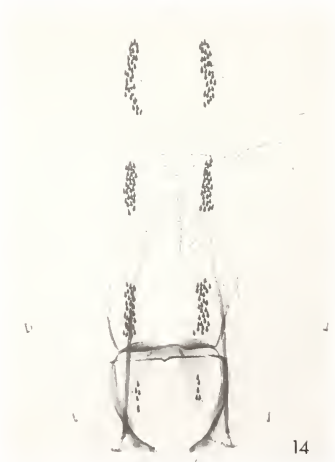
### *Material examined*

LECTOTYPE (here designated): ♀, in the BMNH, labelled: [1] "Wadi Hoff Egypt/ A. bred 5.18" [handwritten]; [2] "E.L. Lycium/ arabicum" [handwritten]; [3] "Coleophora/ vigilis Meyr. 3/4/ E. Meyrick det./ in Meyrick coll." [handwritten and printed]; [4] "B.M./ Genitalia Slide ♀/ 23801" [printed and handwritten; genitalia prep. by Bldz.]; [5] "Lectotype" [round with blue border, printed]; [6] "Lectotype/ Coleophora/ vigilis Meyrick/ Baldizzone". The specimen is in good condition.

The USNM collection contains two specimens, a ♂ and a ♀ mounted on the same polyporous block, labelled: [1] "Eclos 14.4 — 18.5.18./ de fourreaux trouvés/ fixés sur Lycium/ arabicum Schwein./ et rapportés du Wadi/ Hoff le 23.3.18" [handwritten]; [2] "Coll. Alfieri/ Egypte" [printed]; [3] "Type" [red, printed, probably added by Alfieri]; [4] "Coleophora/ vigilis nov. spec./ det. Meyrick" [first two lines handwritten by Alfieri, last line printed]; [5] "Anastase Alfieri/ Collection/ 1965" [printed, with a red bar across length]. [6] ♂ genitalia on slide Bldz 10759; ♀ genitalia on slide Bldz 10760.

It is most likely that the USNM specimens are not syntypes. The "Det. Meyrick" label is not in Meyrick's handwriting and its format does not conform with Meyrick's usual determination labels. According to the original description, *C. vigilis* was based on two males. Reference to Meyrick's notebook in the BMNH indicate that he received an unspecified number of specimens of *C. vigilis* in the second half of 1924 from the "Egyptian Museum". The entry in Meyrick's notebook is as follows: "42. Coleophora vigilis n.sp. ex Lycium arabicum Wadi Hoff. (1 retained)". He retained one of the two specimens for his collection (the one here selected as lectotype) and rewrote its data label as he did for all the specimens in his collection. The second male should presumably be found in the Egyptian Museum, wherever that may be today. Meyrick's notebook records the receipt of a separate consignment of moths in June 1925 from Alfieri, in which eight specimens of *C. vigilis* reared from *Lycium arabicum* are indicated, none being marked as retained. The latter entry reads as follows: "Coleophora vigilis Meyr. (8) ex Lycium arabicum Wadi Hoff". It is clear that the latter batch, to which the USNM specimens undoubtedly belong, was received after the species had been described by Meyrick.

DESCRIPTION: Meyrick's colour description is accurate and we merely cite him: "Head, thorax white. Palpi white, laterally grey except tips of joints. Antennae white, dotted fuscous above, basal joint thickened with rough scales anteriorly. Forewings white, thinly sprinkled dark



Figs 12-14. *Coleophora lycii*, ♀ abdomen and genitalia. 12 — genitalia (slide Bldz 8723): Ajakguzhumdy, 120 km NNW Bucharā, ex *Lycium ruthenicum* 31.v.1975, leg. Falkovitsh (coll. Baldizzone); 13 — idem, sterigma and ovipositor enlarged; 14 — idem, abdomen.

grey scales; second discal stigma distinct, blackish: cilia white. Hindwings light grey; cilia whitish." Male (Fig. 1). Wingspan 12-13 mm. Head (Fig. 3).

ABDOMEN: Terga 1 + 2 (♂ Fig. 6, ♀ Fig. 11) with distinct posterior lateral struts, transverse strut straight, thin, posterior edge broad, medially interrupted. Spine patches of tergum 3 elongate-rectangular, narrower in ♂ than in ♀, each with about 30 spines in ♂, 44-50 spines in ♀.

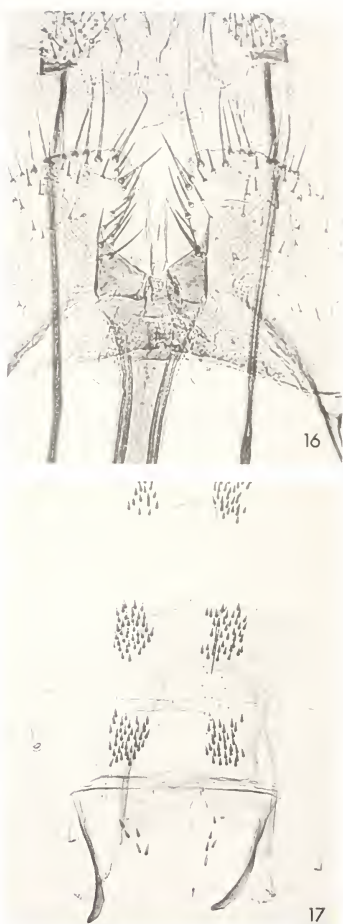
MALE GENITALIA (Figs 5, 7): Tegumen slightly and broadly constricted laterally, pedunculi short. Gnathos knob globular. Arms of transtilla short, narrow, not joined medially. Costa concave. Valvula lightly sclerotised, slightly broader than cucullus, outline somewhat indistinct, with sparse and relatively long setae. Cucullus nearly parallel-sided, extended beyond sacculus. Sacculus thick, somewhat blade-like, apex triangular, ventral margin regularly curved, ventral half sparsely setose. Phallosome rods separate, straight, distally acuminate, unarmed. Cornuti absent.

FEMALE GENITALIA (Figs 9, 10): Sterigma slightly transverse, lightly sclerotised, surface mostly smooth, unsculptured, caudal margin straight, distal quarter densely setose, median groove shallow, somewhat indistinct. Ostium bursae situated near anterior margin of sterigma, lined with pair of longitudinal folds bordering medial groove of sterigma. Colliculum indistinct, lightly sclerotised. Ductus bursae more than 4x length of sterigma; spinulate section of ductus bursae short, beginning far cephalad of ostium bursae, about 2.5x length of sterigma, anteriorly recurved, spinules sparse and small; section around ductus seminalis straight; section cephalad of ductus seminalis with one coil; signum medium, with broad base and with short, blunt spine. Anterior apophyses shorter than sterigma. Posterior apophyses twice length of sterigma. Ovipositor relatively short; papillae anales slightly tapered.

LARVAL CASE (Fig. 18): Brown, of the lobe type, with 6 sections made of leaf cuttings, slightly arched, anteriormost (mouth) section with small ventral bulge; length 14 mm; mouth opening 25-30°.

HOST PLANT: *Lycium arabicum* Schweins. ex Boiss. [= *Lycium europaeum* L.] (Solanaceae).

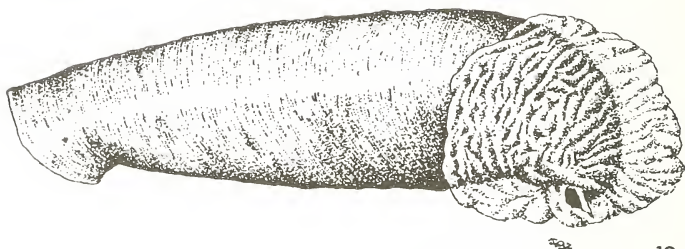
DIAGNOSIS: *C. vigilis* is most similar in coloration of the adult, male and female genitalia and larval case to *C. lycii* Falkovitsh (Falkovitsh, 1972, 1973b), which is known from the Kizil Kum desert of Uzbekistan and whose larvae feed on *Lycium ruthenicum* Murr. Adults of both species have white forewings peppered with dark grey scales. In males,



Figs 15-17. *Coleophora euryaula*, ♀ abdomen and genitalia. 15 — genitalia (slide Bldz 10761, lectotype); Egypt, Arabian Desert, Wadi Hussein, ex *Astragalus forskalei* 31.v.1923, Alfieri Collection (USNM); 16 — idem, sterigma enlarged; 17 — idem, abdomen.



18



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Figs 18-19. *Coleophora* larval cases. 18 — *C. vigilis*; 19 — *C. euryaula*.

there are minor differences in the shape of the sacculus, that of *C. vigilis* being slightly broader and apically blunter (Figs 5,7) than that of *C. lycii* (Fig. 8). There is a slight constriction at the base of the cucullus of *C. lycii*, which is lacking in *C. vigilis*. *Coleophora vigilis* females have wider spine patches on abdominal terga (Fig. 11), an indistinct fold at the ostium, the spinules of the ductus bursae are smaller, less dense, and the signum has a broad base (Figs 9,10); *C. lycii* females have narrow spine patches on abdominal terga (Fig. 14), a marked fold at the ostium, large and dense spinules on the ductus bursae, and a signum with a narrow base (Figs 12,13).

The relationships of *C. vigilis* and *C. lycii* to other members of *Coleophora* remain unresolved. Overall, the male genitalia resemble those of Toll's (1962) group 6 except that the phallosome has two rods rather than being a single tube. In the female genitalia, the spinulate section of the ductus bursae and the signum would associate them to some members of Toll's (1962) group 8. Placement of these species must await a comprehensive phylogenetic analysis of members of the genus.

## Acknowledgements

For the loan of types, we thank R.W. Hodges, USDA, Washington, and K. Sattler, British Museum (Natural History), London. Dr. Hodges kindly provided help during a visit by the first author at the USNM, and information on the Alfieri Collection. Dr. Sattler generously answered our many queries and checked the Meyrick notebook. We thank S.Ya. Reznik, Zoological Institute, St.Petersburg, for information on related species and for specimens of *Coleophora lycii*. J. Cayouette, Centre for Land and Biological Resources Research, Ottawa, kindly verified host plant names.

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