

***Puklina asphodelinae* sp. n. from Bulgaria (Hymenoptera, Eulophidae)**

Peter BOYADZHIEV

Department of Zoology, University of Plovdiv "Paisii Hilendarski", 24 Tsar Asen Str.,
4000 Plovdiv, Bulgaria.

E-mail: boyadz@pu.acad.bg

***Puklina asphodelinae* sp. n. from Bulgaria (Hymenoptera, Eulophidae).** - *Puklina asphodelinae* sp. n., reared from seed capsules of *Asphodeline lutea* in the Besapari hills, Bulgaria, is described and illustrated.

Key-words: Hymenoptera - Eulophidae - Tetrastichinae - *Puklina asphodelinae* - taxonomy - key to species - Bulgaria.

INTRODUCTION

Graham (1991) described the genus *Puklina* with two species from Spain, Sardinia and Libya. He gave its diagnostic characters and created a key to the species. Doganlar (1993) described two new species from France and Turkey.

Species of the genus *Puklina* have the vertex with a pale, weakly-sclerotized postocellar suture, a wedge-shaped scrobal area, a distinct malar sulcus and a dorso-ventrally depressed thorax.

MATERIAL AND METHODS

The species described below was reared from seed capsules of *Asphodeline lutea* Reichenbach (Liliaceae) along with *Eurytoma asphodeli* Hedqvist (Hym., Eurytomidae) in laboratory. The host plant was collected in the Besapari hills, Rhodope Mts., Bulgaria. The type specimens were fixed in 100% alcohol, dried with HMDS or air-dried, and card-mounted. The rest of the material was air-dried and card-mounted. For more accurate examination, antennae, wings, hypopygium and genitalia were slide-mounted in Canada balsam. The paratypes of *Puklina dillerae* Doganlar (3 females and 1 male) and *Puklina gelincika* Doganlar (5 females) were examined for creating a key to species. Terminology and abbreviations follow Graham (1959, 1987).

This work was supported by the fund "Scientific research", of the University of Plovdiv "Paisii Hilendarski".

RESULTS

***Puklina asphodelinae* sp. n.**

Figs 1-7

Puklina depilata Graham, Boyadzhiev (2001).

MATERIAL EXAMINED. *Holotype*: female, Bulgaria: Rhodope Mts., Besapari hills, 2 km W of Novo selo Village, 250 m a. s. l., 19.III.2002, reared (28.V.2002) from seed capsules of *Asphodeline lutea* (Liliaceae) with *Eurytoma asphodeli* (Eurytomidae), dried with HMDS (P. Boyadzhiev). *Allotype*: male, same locality and rearing data as holotype. *Paratypes*: 114 females, 22 males, same locality and rearing data as holotype; 10 females, 2 males, same data as holotype, reared in 18.V.2002 and air-dried; 22 females, 5 males, same data as holotype, reared in 21.V.2002 and air-dried; 50 females, 5 males, same data as holotype, reared in 23.V.2002 and dried with HMDS; 20 females, 9 males, same data as holotype, reared in 31.V.2002 and air-dried.

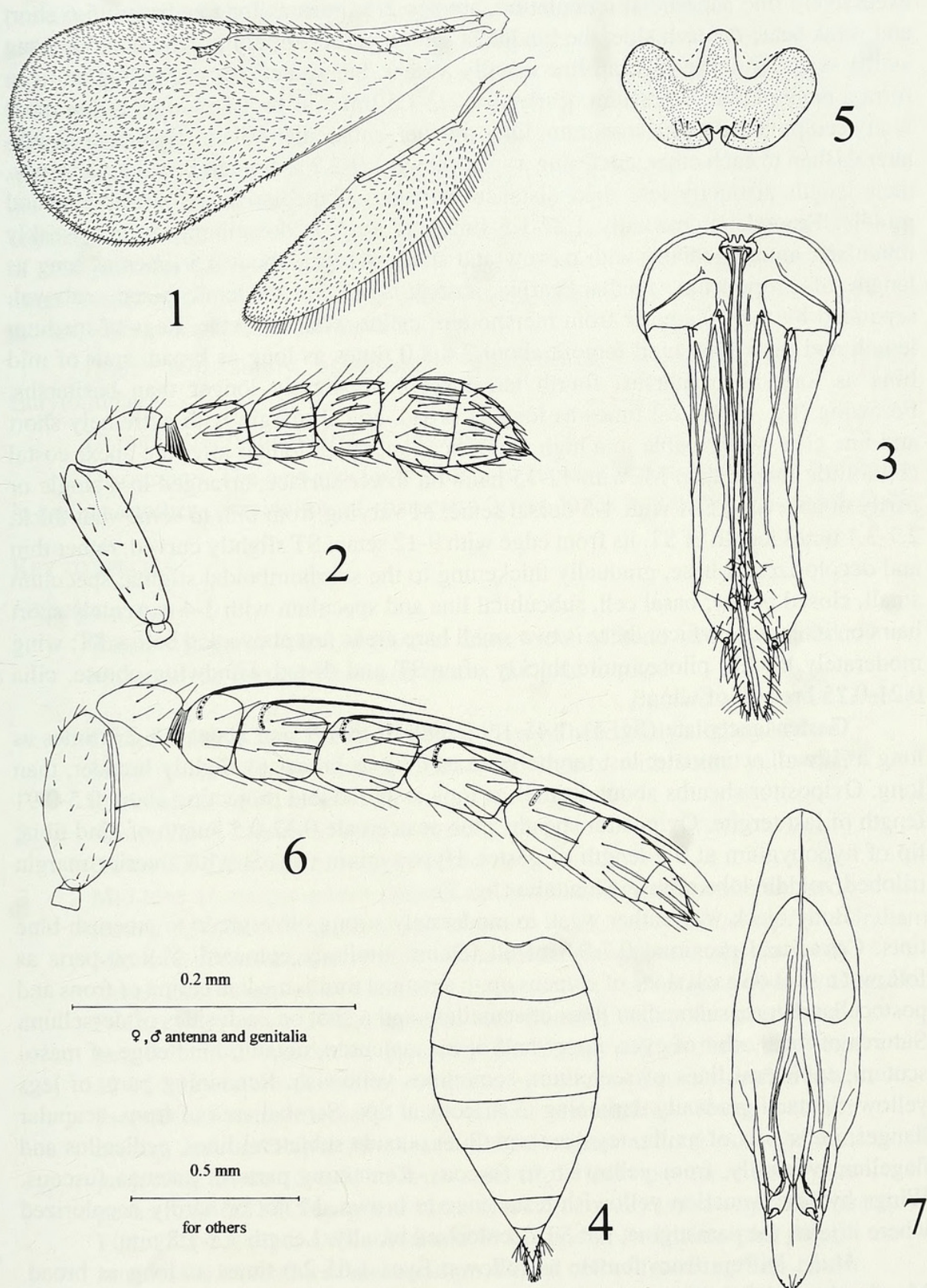
Holotype, allotype, and 30 paratypes are preserved in the collection of Muséum d'histoire naturelle, Geneva; 10 paratypes are deposited in the collection of Zoologische Staatssammlung München; 10 paratypes are deposited in the collection of British Museum (Natural History), London, and 209 paratypes in the collection of Department of Zoology, University of Plovdiv.

Additional material (in the collection of Department of Zoology, University of Plovdiv): 29 females, 11 males, Bulgaria, Rhodope Mts., Besapari hills, Isperihovo Village, 200 m, 18.VI.2000, reared from seed capsules of *Asphodeline lutea* with *Eurytoma asphodeli* (A. Stojanova) (reported as *Puklina depilata* Graham: Boyadzhiev, 2001); 17 females, 11 males, Bulgaria, Rhodope Mts., Besapari hills, Novo selo Village, 250 m, 12.VI.2001, reared from seed capsules of *Asphodeline lutea* with *Eurytoma asphodeli* (P. Boyadzhiev).

DIAGNOSIS. The following combination of features differentiates *Puklina asphodelinae* sp. n. from other species of the genus: 1. Female antenna with 4 anelli; 2. Costal cell of forewing with 12-15 hairs on lower surface, arranged in a single or partly double row; 3. Propodeum anteromedially with narrow and shallow fovea, without median carina; 4. Male antenna with ventral plaque 0.61-0.66 times length of scape, and with 3 anelli; 5. F1 of male antenna with compact whorl of long dark setae which reach about level of the tip of the second segment following that which bears them, the rest of funicular segments with whorls of setae gradually decreasing in length distally.

DESCRIPTION. *Female*. POL (as measured on the uncollapsed head) 2.1-2.5 times OOL. Head in front view subtrapeziform with vertex slightly arched; genae and malar sulcus very slightly curved; scrobes defined by wedge-shaped area; below this area is another one, partly divided by a median longitudinal carina which extends by near to the toruli; Eyes 1.45-1.75 times as long as broad. Mouth about 1.4-1.9 times malar space. Antenna (fig. 2) with scape about 0.67 length of eye, its tip not reaching median ocellus, pedicellus plus flagellum about 0.81-0.92 breadth of mesoscutum; with 4 anelli; pedicellus distinctly longer than F1, 1.6-1.71 times as long as broad; funicle proximally slightly stouter than pedicellus, thickening somewhat distad, its segments subequal in length; F1 about quadrate, F2 very slightly transverse, F3 slightly to distinctly transverse; clava slightly broader than F3, 1.4-1.9 times as long as broad, slightly to distinctly longer than F2 plus F3, C1 broader than long, C2 shorter, C3 very short, spine about 0.4 length of C3, apical seta as long as spine, sensilla moderately numerous, about 0.75 as long as the segments.

Thorax 1.3-1.6 times as long as broad, much broader than high. Pronotum lunate, medially 0.2-0.3 length of mesoscutum, with 10-12 setae before hind margin. Mid lob of mesoscutum nearly flat, slightly broader than long, moderately shiny, with



FIGS 1-7

Puklina asphodelinae sp. n. 1-5, female: (1) fore- and hindwings; (2) antenna; (3) genitalia; (4) gaster; (5) hypopygium. 6-7, male: (6) antenna; (7) genitalia.

excessively fine superficial reticulation, areoles 2-5 times as long as broad; 5-6 short and weak setae on each side, the hindmost seta increase slightly in length and as long as the scutellar setae; median line usually absent, but sometimes collapsing so as to form a median line. Scutellum nearly flat, 1.3-1.5 times as broad as long, rather more finely sculptured than mesoscutum; lines distinct, submedians distinctly nearer to sublaterals than to each other, enclosing a space about 1.9-2.2 as long as broad; setae weak, their length distinctly less than distance between submedian lines, situated behind middle. Propodeum medially 1.22-1.5 times as long as dorsellum; surface weakly reticulate; anteromedially with narrow and shallow fovea about 0.5 times as long as length of propodeum, median carina absent; spiracles moderate sized, suboval, separated by their diameter from metanotum; callus with 2-4 setae. Legs of medium length and thickness: hind femora about 3.6-4.0 times as long as broad, spur of mid tibia as long as basitarsus, fourth tarsal segment slightly longer than basitarsus. Forewing (fig. 1) 2.1-2.2 times as long as broad, apical margin with extremely short and fine cilia, well visible in a high magnification, much longer after the apex; costal cell a little longer than M, with 12-15 hairs on lower surface, arranged in a single or partly double row; SM with 4-5 dorsal setae; M varying from thin to somewhat thick, 2.7-3.1 times length of ST, its front edge with 9-12 setae; ST slightly curved, rather thin and decolorized at base, gradually thickening to the subrhomboidal stigma; speculum small, closed below; basal cell, subcubital line and speculum with 3-4 extremely short hairs on its lower surface; there is two small bare areas just above and below ST; wing moderately thickly pilose, quite thickly after ST and distad. Hindwing obtuse, cilia 0.21-0.25 breadth of wing.

Gaster lanceolate (fig. 4), 1.45-1.9 length of thorax and about 1.8-2.3 times as long as broad, acuminate; last tergite from as long as broad, to slightly broader, than long. Ovipositor sheaths about 4 times as long as broad and projecting about 0.5-0.91 length of last tergite. Ovipositor sheaths plus postcercal 0.32-0.5 length of hind tibia; tip of hypopygium at 0.5 length of gaster. Hypopygium (fig. 5) with anterior margin trilobed, middle lobe obtuse. Genitalia (fig. 3).

Body black with rather weak to moderately strong olive-green to greenish-blue tints. Coxae and proximal 0.7-0.8 of all femora similarly coloured. Yellow parts as follows: a spot on each sides of clypeus up to antennal toruli, median carina of frons and postocellar suture, submedian lines of scutellum and a spot on each sides of dorsellum. Sutures of face, orbit of eyes, upper half of mesopleuron, notauli, hind edge of mesoscutum, sublateral lines of scutellum, sometimes yellowish. Remaining parts of legs yellow, the tarsi gradually darkening to fuscous at tips. Scrobal area of frons, scapular flanges, inner part of axilla, tegulae, scutellum outside sublateral lines, pedicellus and flagellum ventrally, from yellowish to fuscous. Remaining parts of antenna fuscous. Wings hyaline, venation yellowish-testaceous to brown, M not or hardly decolorized where it joins the parastigma, but ST decolorized basally. Length 1.2-1.8 mm.

Male. Differs from female as follows: Eyes 1.65-2.0 times as long as broad. Mouth about 1.2-1.4 times malar space. Antenna (fig. 6) with scape moderately swollen, about 1.9-2.3 as long as broad; ventral plaque 0.61-0.66 times length of scape; pedicellus plus flagellum about 1.2-1.4 breadth of mesoscutum; with 3 anelli; pedicellus about 1.4-1.5 times as long as broad, distinctly longer than F1; funicle

proximally slightly stouter than pedicellus, F1 distinctly transverse, F2-F4 gradually increase in length distally, 1.1-1.5 times as long as broad; clava 2.7-3.2 times as long as broad, slightly longer than F3 plus F4, with C1 and C2 subequal in length, each a little longer than broad, C3 slightly shorter than C2, spine about 0.4 length of C3; sensilla sparse, shorter. Segments of funicle, and first and second segments of clava, with compact whorls of long dark setae: F1 with whorl of setae which reach about to the tip of the second segment following that which bears them, the rest of funicular segments with whorls of setae gradually decreasing in length distally. Submedian lines of scutellum enclosing a space about 2.3-2.6 as long as broad. Forewing: M 2.4-2.7 times length of ST. Gaster oval, as long as head plus thorax and about as broad as thorax, with ventral plica. Genitalia (fig. 7).

HOST. Not surely established, probably *Eurytoma asphodeli* (Hym., Eurytomidae).

ETYMOLOGY. Named after the host plant.

DISCUSSION. The new species is similar to *Puklina dillerae* Doganlar, but differs in having another combination of characters (given in the key to species, couplets 4):

KEY TO SPECIES

Females

- 1 Gaster obtuse at apex. Vertex, in front view of head strongly raised.
Malar sulcus curved. Head and thorax not pale marked
..... *Puklina amblyteles* Graham
- Gaster acute at apex. Vertex, in front view of head, only slightly arched.
Malar sulcus almost straight. Head and thorax with some yellowish
markings of small extent 2
- 2 Gaster 2.5-3.7 times as long as broad 3
- Gaster 1.7-2.3 times as long as broad 4
- 3 Mid lobe of mesoscutum without median line. Ovipositor sheaths pro-
jecting by 0.5-0.75 length of last tergite *Puklina depilata* Graham
- Mid lobe of mesoscutum with median line. Ovipositor sheaths distinctly
longer than length of last tergite *Puklina gelincika* Doganlar
- 4 POL 2.1-2.5 times OOL; Antenna with 4 anelli; Pedicellus plus flagel-
lum 0.81-0.92 breadth of mesoscutum; Costal cell of forewing with
12-15 hairs on lower surface, arranged in a single or partly double row;
Propodeum anteromedially with narrow and shallow fovea, without
median carina; Ovipositor sheaths about 4 times as long as broad and
projecting about 0.5-0.91 of last tergite (fig. 4). Ovipositor sheaths plus
postcercal 0.32-0.5 length of hind tibia *Puklina asphodelinae* sp. n.
- POL 2.75-3.0 times OOL; Antenna with 3 anelli; Pedicellus plus flagel-
lum 0.64-0.8 breadth of mesoscutum; Costal cell of forewing with 18-21
hairs on lower surface, arranged in two complete rows; Propodeum me-
dially smooth and shine; Ovipositor sheaths 3 times as long as broad and
projecting less than half of last tergite. Ovipositor sheaths plus postcer-
cale 0.28-0.3 length of hind tibia *Puklina dillerae* Doganlar

Males

- 1 Antenna with scape strongly swollen, about twice as long as broad, ventral plaque about 0.5 length of scape and situated a little below the middle; flagellum without long dark whorled setae; funicular segments strongly transverse; clava about 1.6 times as long as broad. Vertex, in front view of head strongly raised. Malar sulcus curved. Head and thorax not pale marked *Puklina amblyteles* Graham
- Antenna with scape hardly swollen, about 2.0-3.0 times as long as broad, ventral plaque at last 0.6 length of scape; segments of funicle, and first and second segments of clava, with compact whorls of long dark setae; funicular segments subquadrate; clava 2.7-4 times as long as broad. Vertex, in front view of head, only slightly arched. Malar sulcus almost straight. Head and thorax with some yellowish markings of small extent 2
- 2 Ventral plaque at last 0.75 length of scape 3
- Ventral plaque 0.61-0.71 length of scape 4
- 3 Antenna with scape about 3.0 times as long as broad, ventral plaque extending most of length of scape; segments of funicle, and first and second segments of clava, with compact whorls of dark setae which reach about to the tip of the segment following that which bears them *Puklina depilata* Graham
- Antenna with scape about 2.25 times as long as broad, ventral plaque 0.75 length of scape; segments of funicle, and first and second segments of clava, with compact whorls of dark setae which reach about to the tip of the second segment following that which bears them *Puklina gelincika* Doganlar
- 4 Antenna (fig. 6) with scape 1.9-2.3 times as long as broad, ventral plaque 0.61-0.66 of length of scape, and with 3 anelli; segments of funicle, and first and second segments of clava, with compact whorls of long dark setae; funicular segments with whorls of setae gradually decreasing in length distally – F1 with setae which reach about to the tip of the second segment following that which bears them, F2 with setae which reach about to the middle of the second segment following that which bears them, F3 with setae which reach about to the base of the second segment following that which bears them; clava 2.7-3.2 times as long as broad *Puklina asphodelinae* sp. n.
- Antenna with scape about 2.8 times as long as broad, ventral plaque 0.68-0.71 of length of scape, and with 2 anelli; segments of funicle, and first and second segments of clava, with compact whorls of dark setae which reach about to the tip of the second segment following that which bears them; all funicular segments with whorls of setae not decreasing in length distally; clava about 3.5-4 times as long as broad *Puklina dillerae* Doganlar

ACKNOWLEDGEMENTS

I thank Dr S. Stanev (Natural History Museum, Plovdiv) for determination of the host-plant, and Dr A. Stojanova (Department of Zoology, University of Plovdiv) for determination of *Eurytoma asphodeli* and for giving me her material for the study.

REFERENCES

- BOYADZHIEV, P. 2001. Unknown species of family Eulophidae to the fauna of the Rhodopes (Hymenoptera: Chalcidoidea). *Acta Entomologica Bulgarica* 7(1-2): 11-16. (In Bulgarian, English summary).
- GRAHAM, M. W. R. DE V. 1959. Keys to the British genera and species of Elachertinae, Eulophinae, Entedontinae, and Euderinae (Hym., Chalcidoidea). *Transactions of the Society for British Entomology* 13(10): 169-204.
- GRAHAM, M. W. R. DE V. 1987. A reclassification of the European Tetrastichinae (Hymenoptera: Eulophidae), with a revision of certain genera. *Bulletin of the British Museum (Natural History), Entomology series* 55(1): 392 pp.
- GRAHAM, M. W. R. DE V. 1991. A reclassification of the European Tetrastichinae (Hymenoptera: Eulophidae): revision of the remaining genera. *Memoirs of the American Entomological Institute* 49: 322 pp.
- DOGANLAR, M. 1993. Two new species of *Puklina* Graham, 1991 (Hymenoptera, Eulophidae, Tetrastichinae). *Entomofauna* 14: 390-396.



Boyadzhiev, Peter. 2003. "Puklina asphodelinae sp. n. from Bulgaria (Hymenoptera, Eulophidae)." *Revue suisse de zoologie* 110, 533–539.
<https://doi.org/10.5962/bhl.part.80196>.

View This Item Online: <https://www.biodiversitylibrary.org/item/128300>

DOI: <https://doi.org/10.5962/bhl.part.80196>

Permalink: <https://www.biodiversitylibrary.org/partpdf/80196>

Holding Institution

Smithsonian Libraries and Archives

Sponsored by

Biodiversity Heritage Library

Copyright & Reuse

Copyright Status: In Copyright. Digitized with the permission of the rights holder

Rights Holder: Muséum d'histoire naturelle - Ville de Genève

License: <http://creativecommons.org/licenses/by-nc-sa/3.0/>

Rights: <https://www.biodiversitylibrary.org/permissions/>

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.