

# ***Homoporus anthrisci* sp. n. (Hymenoptera: Pteromalidae) reared from puparia of *Melanagromyza nigrissima* Spencer in stems of *Anthriscus sylvestris* in South Finland**

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The female and male of *Homoporus anthrisci* sp. n. are described from Janakkala, South Finland. The species was reared as a solitary endoparasitoid from puparia of *Melanagromyza nigrissima* Spencer (Diptera: Agromyzidae) in stems of *Anthriscus sylvestris*. Two other species of Pteromalidae, *Syntomopus incisus* Thomson and *Chlorocytus spicatus* (Walker) were also reared from puparia of *Melanagromyza nigrissima* in Janakkala, which is a new host for these two species.

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## **1. Introduction**

*Homoporus* Thomson is one of the largest genera of Pteromalidae with 63 species worldwide (Noyes 2018). From Sweden 17 and from the whole Europe 34 valid species have been recorded (Hedqvist 2003, Noyes 2018). [*Homoporus vassiliefi* Ashmead, 1903 listed in Fauna Europaea by Mitroiu (2013) from East European Russia is actually a species of *Chlorocytus* according to Noyes (2018)].

For 19 European species, no associated hosts are known and those recorded for the 15 remaining species are the following (some species on more than one of the listed taxa): *Tetramesa* and *Eurytoma* species (Eurytomidae) in Poaceae, 11; Cynipidae (Hymenoptera), 3; Cephidae (Hymenoptera), 2; Cecidomyiidae (Diptera), 1; Chloropidae (Diptera), 1; *Melanagromyza* (Diptera: Agromyzidae), 1; and Zygaenidae (Lepidoptera), 1.

From Finland, five species of *Homoporus* have been recorded (Vikberg 1982). None of them have been mentioned in Fauna Europaea or by Noyes (2018). During many years, one apparently undescribed species has been reared several times from stems of *Anthriscus sylvestris* (L.) Hoffm. (Apiaceae) in Janakkala, South Finland. It is described as new in this paper.

## **2. Materials and methods**

Overwintered stems of *A. sylvestris* were cut in spring and taken for rearing. They were kept indoors in plastic bags. A small portion of fly puparia were prepared and kept separately. Emerging insects were killed with ethylacetate, mounted and studied.

The terminology used follows Graham (1969), with some terms included from Gibson (1997). The measurements were made as in Gra-

ham (1969). They were made with an ocular grid in an Ernst Leitz stereomicroscope (objective 8×, eyepiece 12×). As the scale, the measured value 200 corresponded to 1.01 mm in a specimen. The precise measurements (presented in mm) of the female were made from the holotype and of the male from the paratype from Hangastenmäki, emerged on 25.V.1997.

The following abbreviations are used:

- POL: Postocellar line, measured as the distance between the inner margins of the lateral ocelli.
- OOL: Ocello-ocular line, measured as the distance between the outer margin of one lateral ocellus and the inner margin of the compound eye of the same side.
- OD: Ocellar diameter, measured as the maximum width of one lateral ocellus.

### 3. Description of *Homoporus anthrisci* sp. n.

*Type material.* Holotype female: Finland, South Häme, Janakkala, Hangastenmäki (Grid27E 6755:3369 = WGS84 60.886°N 24.588°E), reared from stems of *A. sylvestris*, taken on 20.V.1997, emerged on 26.V.1997, V. Vikberg leg. (coll. FMNH, the Finnish Museum of Natural History (Luomus)).

Paratypes: Janakkala, Hangastenmäki (6755:3369), reared from stems of *A. sylvestris*, taken on 20.V.1997, emerged on 25.V.1997 (one male and one female), on 26.V.1997 (one female) and on 27.V.1997 (one female); another sample taken on 1.IV.2019, emerged on 12.IV.2019 (3 males and 5 females), emerged on 13.IV.2019 (one male and 6 females), V. Vikberg leg. Janakkala, Kalpalinna, Tennis (6759:3369), reared from stems of *A. sylvestris*, taken on 31.III.2016, emerged on 11.IV.2016 (one male and one female) and on 12.IV.2016 (one female), V. Vikberg leg. Paratypes are deposited in coll. FMNH and in the private collection of V. V. Turenki, Finland.

Additional specimen (not paratype): Janakkala, Turenki, Suokulma (6759:3371), one female reared from stems of *A. sylvestris*, taken

on 2.III.2000, emerged on 22.III.2000, V. Vikberg leg.

*Description.* Female (Fig. 1, included also in the photo archives Kotka and Laji.fi of Luomus: <https://kotka.luomus.fi/view?uri=http://id.luomus.fi/GL.9179>). Length of body 2.5–3.0 mm (holotype 2.6 mm).

Head in anterior view broader than high (1.29×), in dorsal view transverse, width/length 2.02, with temples strongly narrowing behind eyes, their length 0.6× length of an eye. Head distinctly broader (1.33×) than mesoscutum. POL:OOL 1.36, OOL = 2.2× OD. Relative width of frons 0.57, height of head 0.65, eye 0.38 × 0.28, malar space 0.22, mouth width 0.39, distance between lower margin of antennal toruli and lower clypeal margin 0.25, between lower margin of toruli and median ocellus 0.35. Antennae inserted above level of ventral edge of eyes. Both mandibles with four teeth, two uppermost smaller than others. Scape shorter (0.81×) than eye height, not reaching median ocellus. Flagellum and pedicel combined 0.93× as long as head width. Pedicel in dorsal view 1.7× as long as wide, both anelli together shorter than broad, first funicular segment shorter (0.8–0.9×) than pedicel, 1.33–1.55× as long as wide, sixth 1.1× as long as wide; clava asymmetric with apical stylus, its first suture oblique, distinctly longer than two preceding segments combined.

Mesosoma measured from anterior margin of pronotum down to apex of propodeum 1.67 times as long as broad (mesoscutum width). Pronotum distinctly narrower (0.83×) than mesoscutum, collar slightly edged anteromedially, very short, one-ninth as long as convex mesoscutum. Scutellum strongly convex, barely broader than long (1.01×), its disk more finely reticulate than disk of mesoscutum; frenum coarsely reticulate. Propodeum rather short, in the middle 0.56× length of scutellum, very shallowly and finely reticulate, median carina distinct as raised reticulate crest; nucha medially 0.42 times as long as propodeum, apically finely transversely striate. Spur of mid tibia half as long as first tarsal segment, latter six times as long as broad. Forewing measurements: costal cell 0.73, marginal vein 0.44, postmarginal vein 0.42, stigmal vein 0.21. Basal cell bare, basal fold with a hair-line; speculum open below; costal cell on upper surface bare, on lower surface with a

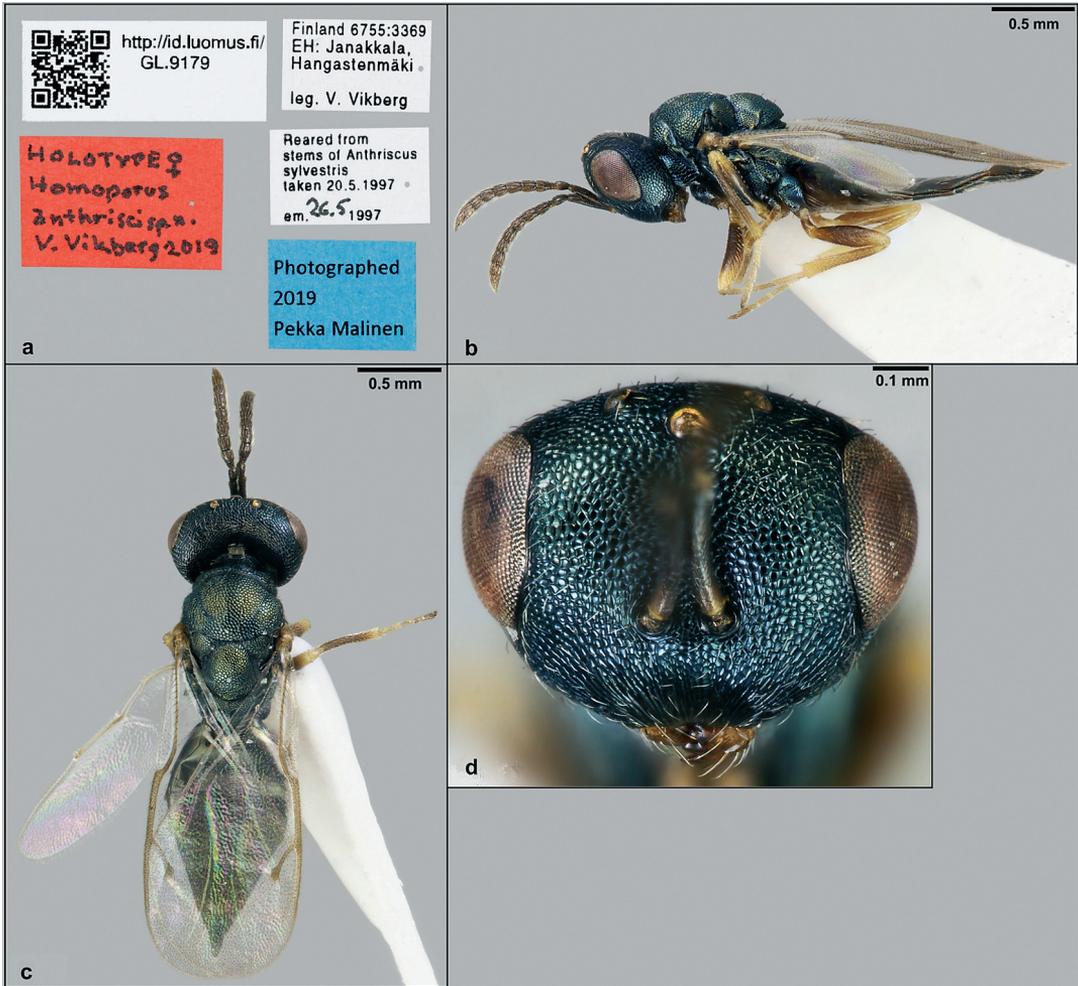


Fig. 1. Holotype female of *Homoporus anthrisci* sp. n. – a: Labels. – b: Body in lateral view. – c: Body from above. – d: Head in anterior view. Photographs by Pekka Malinen.

hair-line accompanied distally by additional hairs in 2–3 rows.

Gaster elongate, apically acute, 1.93–2.28 times as long as broad, 1.06–1.16 times as long as head and mesosoma combined; its dorsum depressed. Last tergum as long as broad.

Colouration. Head dark blue. Eyes and ocelli reddish. Mandibles brown, with darker teeth. Palpi brown. Scape and pedicel black, with slight greenish tint, flagellum blackish brown, funicular segment 6 apically and clava brown. Mesosoma dark blue, frenum and propodeum with greenish tint. Tegula pale brown, wings hyaline, venation pale brown. Coxae dark blue, apically slightly brown, midcoxa also with longitudinal brownish stripe, trochanters brown, trochantelli brownish

yellow, femora brown, distally brownish yellow, tibiae brownish yellow, mid- and hind tibiae medially broadly infusate, tarsi pale yellow, fore tarsus brownish, apical tarsomeres infusate. Gaster dorsally dark, first gastral tergum in basal half greenish, apically cupreous, following terga basally greenish, apically with broad cupreous rings. Sterna medially broadly rufous to cupreous and laterobasally greenish.

Variation of females. Flagellum can be wholly dark. The femora and tibiae can be almost or wholly without infuscation. The only female reared in Suokulma (excluded from the type series) has an unusually short and broad gaster (length/ width 1.58×), which is slightly (0.96×) shorter than head and mesosoma combined.

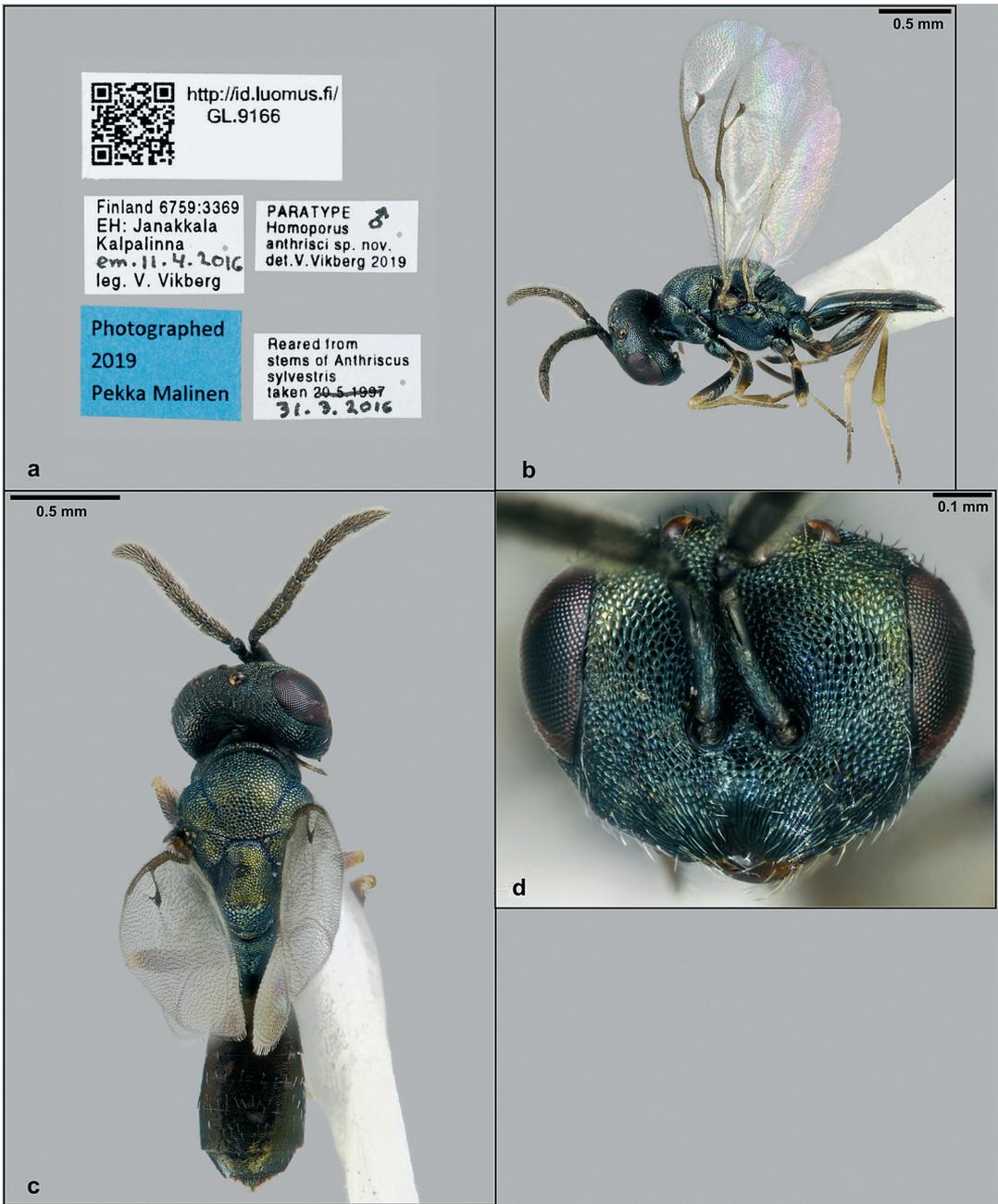


Fig. 2. Paratype male of *Homoporus anthrisci* sp. n. – a: Labels. – b: Body in lateral view. – c: Body from above. – d: Head in anterior view. Photographs by Pekka Malinen.

Male (Fig 2, included also in the photo archives Kotka and Laji.fi of Luomus: <https://kotka.luomus.fi/view?uri=http://id.luomus.fi/GL.9166>). Length of body 1.7–2.3 mm.

Head. Scape not reaching median ocellus, distinctly (0.82×) shorter than eye height, slightly

expanded above middle and with a shiny boss which extends almost half way down; combined length of flagellum and pedicel 1.19 times as long as head width. Pedicel in dorsal view 1.3 times as long as wide, anelli transverse, flagellum filiform, its segments densely covered with short

hairs, first funicular segment 1.7 times as long as wide, 1.5 times as long as pedicel, sixth funicular segment 1.1 times as long as wide, clava as long as two preceding segments combined, without stylus, its sutures straight, apically with very short spine bearing seta, latter longer than spine.

Mesosoma 1.73 times as long as wide. Forewing with marginal vein slightly longer than postmarginal vein and 1.78 times as long as stigmal vein.

Gaster much (0.58–0.77×) narrower than mesosoma, 2.0–2.9 times as long as wide, slightly (0.88–0.97×) shorter than mesosoma.

Colouration. Head mainly dark blue, flagellum blackish. Mesosoma dark blue, frenum and propodeum greenish. Femora black, with greenish shine. Gaster dark, first tergum greenish, distally broadly dark cupreous, terga 2–4 dark cupreous, apex of gaster and ventral side dark greenish.

*Diagnosis.* The female can be recognized by the following characters: The malar space is longer than half the eye height. The width of the mouth is 1.8 times the length of the malar space. Both mandibles have four teeth. Antenna has a scape, which does not reach the median ocellus, and two transverse anelli. The combined length of the pedicel and flagellum is slightly less than the width of the head. The clava has a stylus. The marginal vein of the forewing is slightly longer than the postmarginal vein and it is 1.9–2.1 times longer than the stigmal vein. The gaster is 1.9–2.2 times as long as wide, slightly longer than the head and the mesosoma combined, it is wholly dark. The terga are basally greenish and apically broadly cupreous. The venter is medially broadly rufo-cupreous, but greenish laterally on the bases of the sterna.

Comparison with descriptions of other species of *Homoporus*. Female. In Szélenyi (1956, key pp. 171–172), the female of *H. anthrisci* **sp. n.** runs to couplet 35, but does not fit the characters of *H. cupreus* Erdős or *H. chlorogaster* Thomson (= *H. arestor* (Walker)).

In Delucchi (1957, key pp. 404–408), the female of *H. anthrisci* **sp. n.** runs to couplet 19 and *H. crassiceps* Thomson, but it does not fit all characters of that species.

In Graham (1969, key to females pp. 445–447) the female of *H. anthrisci* **sp. n.** runs to cou-

plet 6, but it does not fit the characters of those species. The vertically descending pronotum and both mandibles having four teeth are similar characters as in *H. destructor*, but that species has a shorter malar space (only one third as long as the eye height) and a shorter gaster (1.4 to 1.65 times as long as broad). *Homoporus luniger* and *H. subniger* have the left mandible with three teeth.

In Dzhankokmen (1999, key pp. 230–234), the female of the new species runs to couplet 12, but all the following species have the metasoma dorsally and ventrally yellow or brownish yellow, without metallic shine.

Bouček (1970) described from Bulgaria one new species, *Homoporus rosae*, and Erdős (1970) described from Hungary four species: *Homoporus glaucae*, *H. pratensis*, *H. smaragdinus* and *H. tompanus*, which are not covered in the keys mentioned above. Their descriptions do not fit with the features of *H. anthrisci* **sp. n.**

Male. Males of many species are unknown. There is only one key to European males.

In Graham (1969, key to males pp. 447–448), the male of *H. anthrisci* **sp. n.** runs to couplet 6, but does not fit the characters of *H. destructor*, *H. luniger* or *H. subniger*.

*Notes on the biology.* The host species *Melanagromyza nigrissima* (Diptera: Agromyzidae) was described from Sweden (holotype from Skåne), Denmark and Finland (Vihti) based on captured males (Spencer 1976). It is a European species recorded since from Belarus, the Czech Republic, Estonia, Latvia, Lithuania, France and Hungary, where its larva was found as an internal stem-borer on *Anthriscus sylvestris* and *Heracleum sibiricum* L. (Papp & Černý 2015).

The specimens of *Homoporus anthrisci* **sp. n.** emerged singly from puparia of *M. nigrissima* by gnawing away the anterior end of the puparium. Two other species of Pteromalidae, which emerged in Janakkala, Hangastenmäki from the puparia of the same agromyzid species, were *Syntomopus incisus* Thomson and *Chlorocyclus spicatus* (Walker). *Melanagromyza nigrissima* is a new host for these two species.

Kocak and Özdemir (2012) reared one female of *Homoporus* from the puparia of *Melanagromyza heracleana* Zlobin from stems of *Heracleum platytaenium* Boiss. in Ankara Province in Turkey and they identified it as *Homoporus*

*febriculosus* (Girault). The agromyzid host in the stem of *Heracleum* suggests that this could be *H. anthrisci* **sp. n.**

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