Lathroplex anthreni sp. n. (Hymenoptera, Ichneumonidae), a parasitoid on *Anthrenus museorum* (Linnaeus) in southern Finland

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The female of *Lathroplex anthreni* sp. n. (Hymenoptera, Ichneumonidae, Campopleginae) is described from southern Finland and the Karelian Republic, Russia. The new species is compared with *L. clypearis* Thomson, 1887, which is presented as new to Finland. Experimentally the female was found to attack larvae of *Anthrenus museorum* (Linnaeus) (Coleoptera, Dermestidae). The genus *Lathroplex* Förster is regarded as a distinct genus, and not a synonym of *Campoplex* Gravenhorst, because of the different host order, Coleoptera versus Lepidoptera.

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1. Introduction

The campoplegine genus *Lathroplex* was described by A. Förster (1869), but he included no species in it. C. G. Thomson (1887) described the first species, *L. clypearis* and, thus established the genus. The genus was united with *Campoplex* Gravenhorst by Townes *et al.* (1965). Horstmann (1978) redescribed *Lathroplex clypearis* and treated the monotypic genus as distinct.

For several years, as stated by the author at the meeting of the Finnish Entomological Society on 18 October 1996, a small population of another species of *Lathroplex* has lived at my home in Turenki, southern Finland. The purpose of the present paper is to describe the new species.

2. Material and methods

Specimens of *Lathroplex* and *Anthrenus* were caught at my home during several years, they were most easily observed at or near windows. Some dermestid larvae were taken alive and put into a small Petri dish into which some females of *Lathroplex* were released.

Other specimens of *Lathroplex* were searched for among unidentified campoplegine specimens in the collections of the Department of Applied Zoology, University of Helsinki (DAZH), Viikki with the help of Martti Koponen. For comparison the lectotype of *L. clypearis* Thomson was loaned from coll. Thomson, Zoologiska Institutionen, Lund (Dr. Roy Danielsson) and another female of *L. clypearis* from Dr. Klaus Horstmann, Würzburg, Germany.

Specimens were studied under a Leitz stereomicroscope at magnifications of 50x and 100x; the light source was a halogen lamp of 12V 20W with a light beam width of 10 degrees. The light was diffused by placing a piece of thick (0.2 mm) tracing acetate near the specimen. Measurements and drawings were made using a grid of squares (50x50, side 0.20 mm) in one eyepiece. Body part nomenclature follows Townes (1969) and/or Goulet & Huber (1993).

3. Results

3.1. Description of *Lathroplex anthreni* sp. n.

Holotype female. Length of body ca. 3.4 mm, length of fore wing 2.8 mm, antenna ca. 2.85 mm

long, with 26 flagellomeres (anellus not counted and postanellus regarded as flagellomere 1).

Body black. Mandibles (teeth amber red), labrum, palpi, tegula and base of wings yellow. Antenna brown. Fore and mid legs yellowish brown, base of mid coxa infuscate. Hind coxa black, apically reddish brown. Hind femur and tibia brown, trochanter, trochantellus and tarsus yellowish brown. Wings clear, stigma and venation pale brown. Hind margin of metasomal tergum 2 narrowly yellowish. Ovipositor sheath brownish black.

Head finely granulate, covered with short, dense, brownish hairs. In dorsal view head transverse, with genae strongly narrowing behind eyes. Ocelli large. Eyes glabrous, with inner margins rather parallel. Clypeus narrow, in lateral view rounded, apical margin protruding, rounded, sharp. Mandibles small, with upper tooth distinctly longer than lower. Genal carina joining hypostomal carina in an acute angle near base of mandible. Antenna thread-like.

Mesosoma granulate, covered with short brownish hairs. Pronotum ventrolaterally striate. Epomia short. Notauli absent. Speculum smooth. Postpectal carina (Fig. 1) with distinct notch medially, turning to anterior direction. Areolet (Fig. 3) regular, pentagonal. Lower lateral corner of discoidal cell rectangular. Nervulus interstitial. Nervellus broken posteriorly, inclivous, discoidella weak, depigmented. Legs rather slender, inner spur of hind tibia long, reaching middle of metatarsomere 1. Claws small, with ca. 4 oblique teeth. Propodeum (Fig. 5) completely areolated except that areola and petiolar area are confluent, surface sculpture very superficial, faint, shining.

Metasomal tergum 1: petiolus slightly depressed, the lowest part 0.7 as high as the narrowest part wide, postpetiolus with parallel sides. Tergum 2 without thyridia. Ovipositor faintly upcurved. Hairs near ovipositor and on ovipositor sheath slightly thicker, darker than elsewhere.

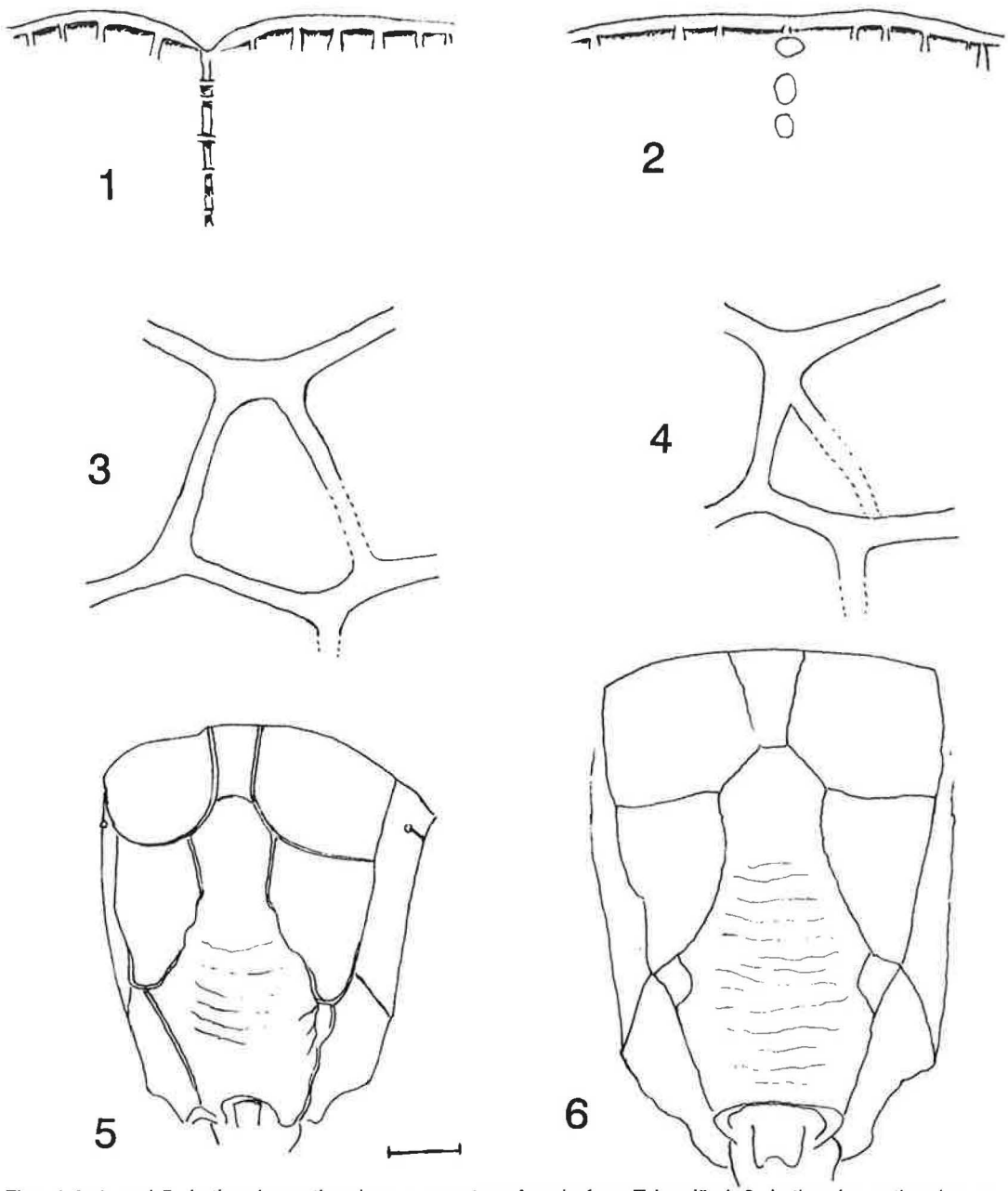
Measurements of holotype in unit lengths (one unit = 25.3 μm), unless stated otherwise. Head: width 29.2 , length 16, height 27. POL 4.7, OOL 4.0, max. diameter of hind ocellus 3.6. Flagellomere 1: length 8.0, width 2.8, flagellomere 2: 6.6, 3: 5.9, 4: 5.9, 5: 5.0, 10: 3.8, 20: 2.6, width 2.9. Mandible: basal width 4, malar space 4.7. Genal carina joining hypostomal carina above base of mandible 1. Mesosoma: length 54, width 29.5, height 37. Hind femur (without trochantellus): length 37, height 8.7. Hind tibia 43, hind tarsus 45. Inner hind spur 11, outer hind spur 7.0. Metatarsomere 1: 20.4, 2: 9.5, 3: 7.0, 4: 4.6, 5: 5.7, hind claw 2.7. Metasomal tergum 1 dorsal length from the insertion area of the extensor tendon to hind margin 26.5. Postpetiolus length 11.5, width 9.7. Tergum 2: length 23, width 20. Ovipositor sheath 17.5, height near apex 2.6. Ovipositor 37, distance of dorsal notch from apex 5.

Paratype females. The length of body varies from ca. 2.4 to 3.4 mm. The number of flagellomeres and corresponding length of fore wing (mean and range, in mm) are as follows:

flagellomeres	fore wing
24 (n=6),	2.41 (2.35-2.5),
25 (n=22),	2.55 (2.4-2.7),
26 (n=26),	2.64 (2.5-2.8),
27 (n=8),	2.75 (2.5-3.0),
28 (n=1),	3.05.

Male. Unknown.

Specimens examined. Holotype female. Finland. Ta: Janakkala, Turenki, [Grid 27° E] 6759:371, human dwelling, 3.4.1992 leg. V. Vikberg (DAZH). Paratypes: Finland, Ta (= EH): Janakkala, Turenki, 6759:371, human dwelling, 6.3.1977 1♀, 26.4.1979 1♀, 1.5.1981 1♀, 21.4. 1983 1♀, 14.3.1984 1♀, 12.4.1985 1♀, 30.4.1985 1♀, 2.5.1985 1♀, 10.7.1985 1♀, 23.4.1986 1♀, 1.4.1988 1♀, 27.4.1988 1♀, 5.4.1989 1♀, 10.4. 1989 2♀, 27.3.1990 1♀, 7.4.1991 1♀, 3.4.1992 1♀, 11.4.1992 1♀, 21.5.1993 1♀, 26.3.1995 1♀, 2.4.1995 1♀, 30.1.1996 1♀, 17.4.1996 1♀, 25.6. 1998 1♀, leg. V. Vikberg. Hattula, 676:34, 20.7. 1982 1♀, leg. Yang Zhongqi. Kangasala, 6819:344, human dwelling, 5.4.1997 2♀, leg. P. Valtonen. Sa (= ES): Mäntyharju, 6811:490, summer residence, 14.6.1984 1♀, leg. O. Peltonen. Ristiina, 6826:502, outbuilding, window, 7.7.1979 1♀, 8.7.1979 3♀, 20.6.1980 1♀, 2.8.1981 1♀, leg. M. Koponen. Mikkelin mlk. (rural municipality), 6830:501, outbuilding, window, 5.7.1987 1♀, 18.7.1987 1♀, 27.6.1992 1♀, 28.6.1992 1♀, leg. M. Koponen. Kb (= PK): Tohmajärvi, 6908: 660, summer cottage, attic window, 17.7.1982 1♀, 18.7.1982 13♀, 19.7.1982 6♀, 20.7.1982 4♀, leg. M. Koponen. Russia, the Karelian Republic ("Itä-Karjala"): Konchozero ("Kenjärvi"), 381 [pale brownish label, number with black underline; according to the notes of the collector the date is 3.7.1942 and the specimen was sieved out among hay at the bottom of an old stack in the middle of the field], 1♀ leg. U. Saalas. — Paratypes are in coll. DAZH, coll. P. Valtonen, Kangasala, coll. V. Vikberg, Turenki, coll. R. Jussila, Paattinen, coll. G. Várkonyi, Kuhmo and coll. K. Horstmann, Würzburg.



Figs. 1-6. 1. and 5. *Lathroplex anthreni* sp. n., paratype female from Tohmajärvi; 3. *Lathroplex anthreni* sp. n., paratype female from Janakkala; 2., 4. and 6. *Lathroplex clypearis* Thomson, female lectotype; 1. and 2. Postpectal carina, anteroventral view; 3. and 4. Areolet, right fore wing from above; 5. and 6. Propodeum, posterodorsal view. Scale bar 0.05 mm. (Figs. 1-4), 0.1 mm. (Figs. 5-6).

3.2. Comparison with *Lathroplex clypearis* Thomson

The specimens of the new species were compared with the descriptions of *Lathroplex clypearis* (Thomson 1887, Horstmann 1978). In addition two females of *L. clypearis* were at hand, both damaged by dermestids. The lectotype of *Lathroplex clypearis* from Sweden, Skåne: Ringsjö (coll. C. G. Thomson, Lund) lacks metasoma beyond

postpetiolus, hind legs are partly eaten and antennae are broken. Length of fore wing is 3.1 mm. Another female from Poland, Łomza, *Betula*, 3.8.1974, J. S. [=J. Sawoniewicz] leg. (coll. K. Horstmann) had most of its wings and apex of metasoma partly eaten, but ovipositor left. Length of its body is ca. 3.4 mm, fore wing 2.7 mm and number of flagellomeres 27. Later third intact female of *L. clypearis* was found from Finland, N: Nurmijärvi, 6705:378, 1.7-6.7.1992, M. Koponen leg. (coll. DAZH). Its body is 3 mm long, fore wing 2.5 mm and number of flagellomeres 27 and 26-27. The species is new for the fauna of Finland.

The two species are close to each other, but there are several differences:

Body size. Large specimens of *L. clypearis* are larger than those of *L. anthreni*. Thomson (1887) and Horstmann (1978) write that the body length of *L. clypearis* is 4 mm or ca. 4.1 mm. Fore wing in lectotype of *L. clypearis* is slightly longer than in any specimens of *L. anthreni* examined.

Number of flagellomeres. In *L. anthreni* larger specimens have higher number of flagellomeres than smaller ones. Horstmann (1978) studied a specimen of *L. clypearis* with 32 antennal segments = 30 flagellomeres. This is a higher number than in any specimen of *L. anthreni* examined.

Colour. The clearest difference is in the colour of the clypeus: *L. anthreni* has a black clypeus and *L. clypearis* a mostly yellow one. The colour of antennae and the legs varies in both species, so they do not offer good characters to distinguish between the species.

Shape of areolet. In *L. anthreni* the areolet is more regular, pentagonal and its outer vein is stronger, while in *L. clypearis* the areolet (Fig. 4) is irregular, oblique and its outer vein is very weak.

Postpectal carina. In *L. clypearis* carina (Fig. 2) is straight and rather even medially, in *L. anthreni* it turns in anterior direction and there is a deep notch in the midline

Structure and surface sculpture of propodeum show clear differences. In *L. clypearis* (Fig. 6) the carinae are weaker, sculpture on first and second lateral area is strong, granulate, matt, in *L. anthreni* carinae are stronger, but surface sculpture is very weak, rather shiny and the area distal of the costula is more sunken so that in profile there is a clear depression.

Cross section of petiolus. Less depressed in *L. clypearis*, the lowest part is 0.8-0.85 as high as the narrowest part is wide.

Ovipositor. Straight in *L. clypearis* and dorsal notch is nearer to apex (female from Poland: 4 units = 0.101 mm, length of ovipositor 38 units = 0.96 mm).

Using these characters the species can be safely distinguished from each others. Thomson (1887) briefly described also the male of *L. clypearis* but his specimens have been lost, perhaps because of that they are not mentioned by Fitton (1982). Horstmann (1978) did not mention any male.

3.3. Observation on the biology

Specimens of *Lathroplex anthreni* appeared at my home in early spring between 1977-1998. Altogether 25 females were captured, most of them were collected at windows in March- May, of these 15 specimens in April. Obviously they emerged from some host in the dwelling. Only two females were captured in June or July, it is possible that they have come from outside. At the same period about 10-20 specimens of *Anthrenus museorum* (Linnaeus) (Coleoptera, Dermestidae), mostly adults but also a small amount of larvae were found in spring each year.

In order to study the ovipositing behaviour of the campoplegine wasp, one captured female on 27 March 1990 was put inside a small Petri dish containing live larvae of *Anthrenus museorum*. The female soon attacked a large larva, seized it with her legs and curved the metasoma, trying to push the ovipositor inside. After some trials she succeeded to insert the ovipositor laterally into the abdomen of the larva between two segments. The oviposition was quick, lasting some seconds. A little later the female attacked also a small larva. During the attack the wasp was below with dorsum on the bottom, holding the small larva above it with her legs and trying to oviposite. The small larva died rather soon.

The larger larva continued to feed, but several days later it died, the body swelled and the parasitoid larva formed a cocoon inside the host larva. I did not succeed to rear an adult from the

cocoon, possibly the conditions were too dry. The experiment was repeated on 3 April 1992 with two females (one of them the holotype), both attacked larvae of *Anthrenus*, but I did not succeed to rear the parasitoid larvae to adults.

Description of the cocoon. Size 4.8 mm long, 1.45 mm wide, thin, whitish, partly transparent, tightly fitting the host larva's skin, which splits along middorsal line, on third thoracic segment splitting is broadest, 0.5 mm. Head width of the host larva 0.74 mm. Inside the cocoon there was a blackened pupa.

4. Discussion

The genus *Lathroplex* Förster now contains two European species. The type species *L. clypearis* Thomson is known from southern Sweden (Thomson 1887), Germany (Kettner 1970), Latvia, Poland, Moldavia: Bessarabiya (Horstmann 1978), the Czech Republic: Bohemia (Šedivý 1989) and southern Finland (see 3.2). It has been reared from *Dermestes* sp. in Moldavia (Horstmann 1978). The mouth parts of the final larval instar were described by Short (1978). *L. anthreni* sp. n. is known from southern Finland and Russian Karelia (the distribution is shown in Fig. 7) and it attacks *Anthrenus museorum*. Thus both species attack the same family of Coleoptera, Dermestidae which is not known to be attacked by any other campoplegine genus in the world. The two species are fairly closely related, so that the description of the genus in Horstmann (1978) covers both. Šedivý (1989) listed one further species *L. caudatus* (Gregor, 1941) from Moravia. However, *Idechtis caudatus* Gregor had earlier been synonymized with *Nemeritis macrocentra* (Gravenhorst, 1829) by Horstmann (1973).

The genus *Lathroplex* has been treated as a distinct campoplegine genus (Thomson 1887, Horstmann 1978, Kasparyan 1981, Šedivý 1989, obviously Carlson (1979) regarded it as distinct because he did not mention it as a synonym of *Campoplex*) or united with *Campoplex* Gravenhorst, 1829 (type species: *Ichneumon difformis* Gmelin, 1790) (Townes *et al.* 1965, Townes 1970, Fitton 1982). The species of the *Campoplex difformis* group parasitize Lepidoptera: Tortricidae (Horstmann 1985) so that it seems advisable to keep the genera as separate.

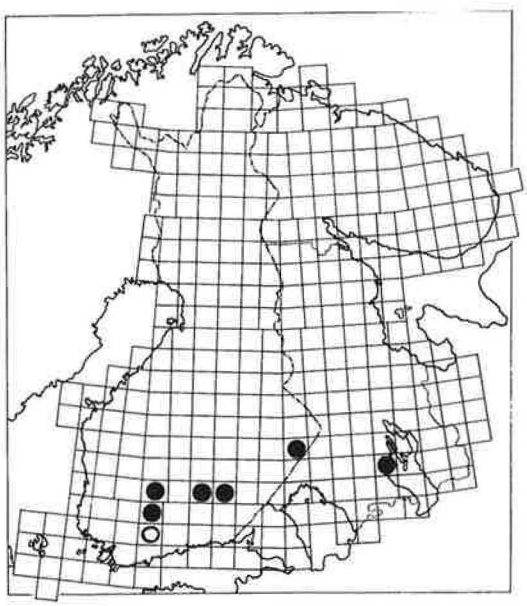


Fig. 7. The known distribution of *Lathroplex anthreni* sp. n. (black circles) and *L. clypearis* Thomson (open circle) in Eastern Fennoscandia, the European UTM grid system map.

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