

# Revision of the Palaearctic genus *Trachyusa* Ruthe (Hymenoptera: Braconidae)

C. van Achterberg & J.P. O'Connor

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The Palaearctic genus *Trachyusa* Ruthe, 1854 (Braconidae: Alysiinae: Alysiini) is revised and one new species, *T. nigrothoracica* spec. nov., is described and fully illustrated. A key to the species is added. Lectotypes are designated of *Alysia aurora* Haliday, 1838 and of *Trachyusa nigriceps* Ruthe, 1854.

C. van Achterberg, Nationaal Natuurhistorisch Museum (Rijksmuseum van Natuurlijke Historie), Postbus 9517, 2300 RA Leiden, The Netherlands.

J.P. O'Connor, National Museum of Ireland, Kildare Street, Dublin 2, Ireland.

## Introduction

The species of the genus *Trachyusa* Ruthe, 1854 (Braconidae: Alysiinae: Alysiini) are comparatively rarely collected. The distribution of the genus seems to be restricted to Europe, with an extension to the Ural area. Its biology is unknown; the few host records by Rudow (1918: 4, 15) concern Sphecidae (*Rhopalum*), Cimbicidae (*Cimbex*) and Bostrychidae. These records are certainly wrong (all Alysiinae are endoparasites of cyclorraphous dipterous larvae, and the records by Rudow have never been corroborated), but they may indicate the micro-habitat of the dipterous host. If this is correct then *Trachyusa* species parasitize some dipterous larvae living in or on twigs. The genus is easy to recognize because of the granulate sculpture of the second and third metasomal tergites and by the absence of the dorsope (figs. 9, 14, 15).

For the terminology used in this paper, see van Achterberg, 1988: 5-11. The type-depositories are abbreviated as follows: BMNH= The Natural History Museum, London; NMI= National Museum of Ireland; RMNH= Nationaal Natuurhistorisch Museum, Leiden; TMA= Természettudományi Múzeum Allatára, Budapest.

## *Trachyusa* Ruthe, 1854 (figs. 1-16)

*Trachyusa* Ruthe, 1854: 351; Shenefelt, 1974: 1027-1028; Tobias, 1986: 157. Type-species: *Trachyusa nigriceps* Ruthe, 1854 (by monotypy; examined).

*Cosmiocarpa* Foerster, 1862: 264. Type-species: *Alysia aurora* Haliday, 1838 (by original designation; examined). Synonymized by Reinhard (1866: 90) by transfer of type-species, but synonymy already indicated by Foerster (1862: 283).

Diagnosis.— Antennal segments 29-34, third antennal segment (slightly) longer than fourth segment and segment not widened (fig. 5); maxillary and labial palpi with 6 and 4 segments, respectively; eyes glabrous; ventral margin of clypeus convex

(fig. 6); anterior tentorial pits medium-sized (fig. 6); third tooth of mandible without ventral protuberance (fig. 2), and carina connected to third tooth, with small protuberance on second tooth (fig. 3); pronope absent (fig. 8); notauli present and with a medio-longitudinal groove posteriorly (figs. 9, 16); precoxal sulcus present medially (fig. 5); metanotum slightly protruding dorsally (fig. 5); vein 2-SR of fore wing longer than vein 3-SR (fig. 1); vein m-cu of fore wing (sub)interstitial (fig. 1); vein CUIb of fore wing absent, resulting in an open first subdiscal cell (fig. 1); pterostigma of female elliptical (fig. 1), and of male widened (fig. 7); veins cu-a of hind wing and 1-SR+M of fore wing present (fig. 1); vein M+CU of hind wing subequal to vein 1-M or shorter (fig. 1); tarsal claws medium-sized, simple and without lobe (fig. 11); dorsope of first tergite absent (figs. 9, 14, 15); second metasomal tergite and basal half of third tergite granulate (figs. 5, 9); second and third tergites with sharp lateral crease (fig. 5); ovipositor sheath short, slightly protruding beyond apex of metasoma, and normally setose (fig. 5); ovipositor slender, normal, without notch and somewhat curved ventrad.

Distribution.— West Palaearctic: four species.

#### Key to species of the genus *Trachyusa*

1. Mesoscutum slender (fig. 8); posterior half of precoxal sulcus (as far as present) weakly sculptured and narrow (fig. 5); fourth antennal segment largely dark brown; part of pterostigma distad of vein r comparatively long and its posterior margin slightly curved (figs. 1, 7); (West and Central Europe) ..... 2
  - Mesoscutum comparatively robust (fig. 16); posterior half of precoxal sulcus distinctly sculptured and wider; fourth antennal segment largely brownish-yellow; part of pterostigma distad of vein r short and its posterior margin distinctly curved (fig. 13); (Central Europe) ..... 3
2. Pterostigma of ♀ rather dark brown; mesosoma black(ish); antennal segments of ♀ 29-30, of ♂ 30-31; third antennal segment dark brown basally ..... *T. nigrothoracica* spec. nov.
  - Pterostigma of ♀ largely pale yellowish; mesosoma (except propodeum, metanotum, and frequently mesosternum) largely yellowish-brown, exceptionally mesoscutum largely infuscated; antennal segment of ♀ 30-34, of ♂ 29-34; third antennal segment yellowish basally ..... *T. aurora* (Haliday)
3. Notauli on posterior half of mesoscutal disc deeply impressed (fig. 16); mesoscutum black; first metasomal tergite usually more slender (fig. 15) ..... *T. szépligetii* Papp
  - Notauli on posterior half of mesoscutal disc at most shallowly impressed; mesoscutum brownish-yellow; first tergite rather robust (fig. 14) ..... *T. bucephala* Papp

#### *Trachyusa aurora* (Haliday, 1838) (fig. 7)

*Alysia* (A.) *aurora* Haliday, 1838: 217.

*Cosmiocarpa aurora*; Foerster, 1862: 264.

*Trachyusa aurora*; Shenefelt, 1974: 1028; Tobias, 1986: 157.

*T. nigriceps* Ruthe, 1854: 352. Synonymized by Reinhard, 1866: 90.

Material.— Lectotype of *aurora* here designated, ♀ (NMI), on Walker-card, with on reverse side "1b 86", labelled "Box 6 AWS/British Holiday 20.2.82", "*Alysia aurora* Hal., ♀, Type!, AWS, 17.10.1936". Paralectotypes: 3 ♂♂; 2 ♂♂ (NMI), one from box 6 and one from box 10; 1 ♂ (RMNH), "Halid., Anglia", and on reverse side of card "1b 113". The 11 specimens from box 25 (NMI) are excluded because specimens in this box are not usually types. Lectotype of *nigriceps* here designated, ♀ (BMNH), "Type", "B.M. Type Hym. 3.c.794", "B.M. Type Hym. *Trachyusa nigriceps* Ruthe, 1854", "*Tr. nigriceps* m., Hasenheide [Germany], 17.8.[18]53" (handwritten label by Ruthe), "*T. nigriceps* Rut., "59 101, Germany". Paralectotypes (3 ♀♀ + 1 ♂) not examined.

The Netherlands: 7 ♀♀ + 2 ♂♂ (RMNH) from Nunspeet (Gld., Mythstee, 7.vii.1984), Oostvoorne (Z.-H., dunes, 28.vi.-15.vii.1974), St. Pietersberg (L., c. 150 m, 27-31.vi.1988), Waarder (Z.-H., 18-30.vi.1972, and 14-16.vi.1973), and Wijster (Dr., 27.vii.-9.viii.1973, 19-26.vii.1974, 21-28.vii.1975). Ireland: 4 ♀♀ + 2 ♂♂ (NMI) from Castlebridge (Wx., 18.vii.1937), Athdown (Wi., 24.vii.1939), Tollymore Park (Do., 16.vii.1961), Trawalua (Sl., 22.vi.1959), and Tullybrannigan (Do., 16.vii.1957). Sweden: 2 ♂♂ (RMNH) from Kulavik (Hallandsl., 25.vi.1977), and Särö-Hamra (Hallandsl., 26.vi.1977). West Germany: 2 ♀♀ + 1 ♂ (RMNH) from Crefeld. East Germany: 1 ♂ (RMNH) from Thüringen.

Very similar to *T. nigrothoracica* spec. nov., but differs by its colour and usually by the larger number of antennal segments. Antennal segments of ♀ 30(2), 31(2), 32(3), 33(2), or 34(1), and of ♂ 29(2), 30(2), 31(2), 32(1), 33(1), or 34(1). Length of first metasomal tergite is 1.3-1.5 times its apical width. In the area where both species occurred, *T. aurora* appeared later than *T. nigrothoracica*.

Known from Austria, Czechoslovakia, East Germany, England, Hungary, Ireland, Italy, Netherlands, Poland, Sweden, USSR (Krasnodarskij area), West Germany, and Yugoslavia.

### *Trachyusa bucephala* Papp, 1967

(fig. 14)

*Trachyusa bucephala* Papp, 1967: 300-302, figs. 8-12, 16; Shenefelt, 1974: 1028; Tobias, 1976: 157.

Material.— Holotype, ♀ (TMA) from Hungary, Budapest (Sashegy); 1 ♀ + 1 ♂ (RMNH), "Budapest, Hármashatár-hegy", "1972.vi.6., leg. Papp J.", "*Trachyusa bucephala* Papp, det. Papp, 1975".

Known from Central Europe and Ural area only: Austria, Hungary, USSR (East Ural).

### *Trachyusa nigrothoracica* spec. nov.

(figs. 1-6, 8-12)

*Trachyusa aurora* var. 2 Marshall, 1894: 369.

*T. aurora* ab. *bicolor* Papp, 1967: 300 (unavailable name).

Material.— Holotype, ♀ (RMNH), "Nederland, Wijster (Dr.), opposite Biol. Station, 16-23.vi.1975, C.v.Achterberg". Paratypes: 3 ♀♀ + 3 ♂♂; 3 ♀♀ (RMNH), topotypic, but 15-21.vi.1972, 22-28.vi.1973, and 1-17.vi.1974; 1 ♂ (NMI), Ireland, "Ballin Lough, Waterford, S4 403, 4.vii.1989, J.P. & M.A. O'Connor"; 1 ♂ (NMI), Ireland, "Glen of Downs, Co. WI., 15.7.[19]40, B.P. Beirne"; 1 ♂ (NMI), Ireland, "Cauhoo, Co. CV., 21.6.[19]42, R.C. Faris".

Holotype, ♀, length of body 2.7 mm, of fore wing 2.5 mm.

Head.— Antennal segments 29, length of third segment 1.1 times fourth segment, length of (somewhat curved) third, fourth and penultimate segments 4.1, 3.7, and 2.0 times their width, respectively (figs. 4, 5); length of maxillary palp 0.9 times height of head; length of eye in dorsal view 1.5 times temple; OOL:diameter of ocellus:POL = 10:5:7; face largely smooth (except for some microsculpture); anterior tentorial pits removed from eye by diameter of pit; clypeus convex and smooth; length of malar space 0.3 times basal width of mandible; length of mandible about twice its maximum width and smooth (figs. 2, 3).

Mesosoma.— Length of mesosoma 1.6 times its height; side of pronotum crenulate medially and posteriorly, and remainder largely smooth (fig. 5); precoxal sulcus only medially distinct, crenulate and area above it granulate (fig. 5); remainder of mesopleuron smooth; only ventral half of pleural sulcus distinctly crenulate, its dorsal half finely crenulate (fig. 5); metapleuron densely reticulate-punctate; notauli completely impressed, narrow and its posterior half largely smooth (fig. 8); mesoscutal lobes rather convex and largely smooth, except for some indistinct granulation near notauli, and setose only near notauli and medio-anteriorly; medio-longitudinal groove of mesoscutum shallow and smooth (fig. 8); scutellum smooth and rather flat; medially metanotum with short carina, but remainder rather crest-like protruding dorsally (figs. 5, 8); surface of propodeum densely and finely reticulate-punctate, its medial carina and medial area absent.

Wings.— Fore wing: r:3-SR:SR1 = 2:10:40; r originating near apical 0.4 of pterostigma, part of pterostigma distad of r medium-sized and posterior margin slightly curved (fig. 1); 1-SR+M slightly sinuate; 1-CU1:2-CU1 = 1:7; 2-SR:3-SR:r-m = 15:10:8.

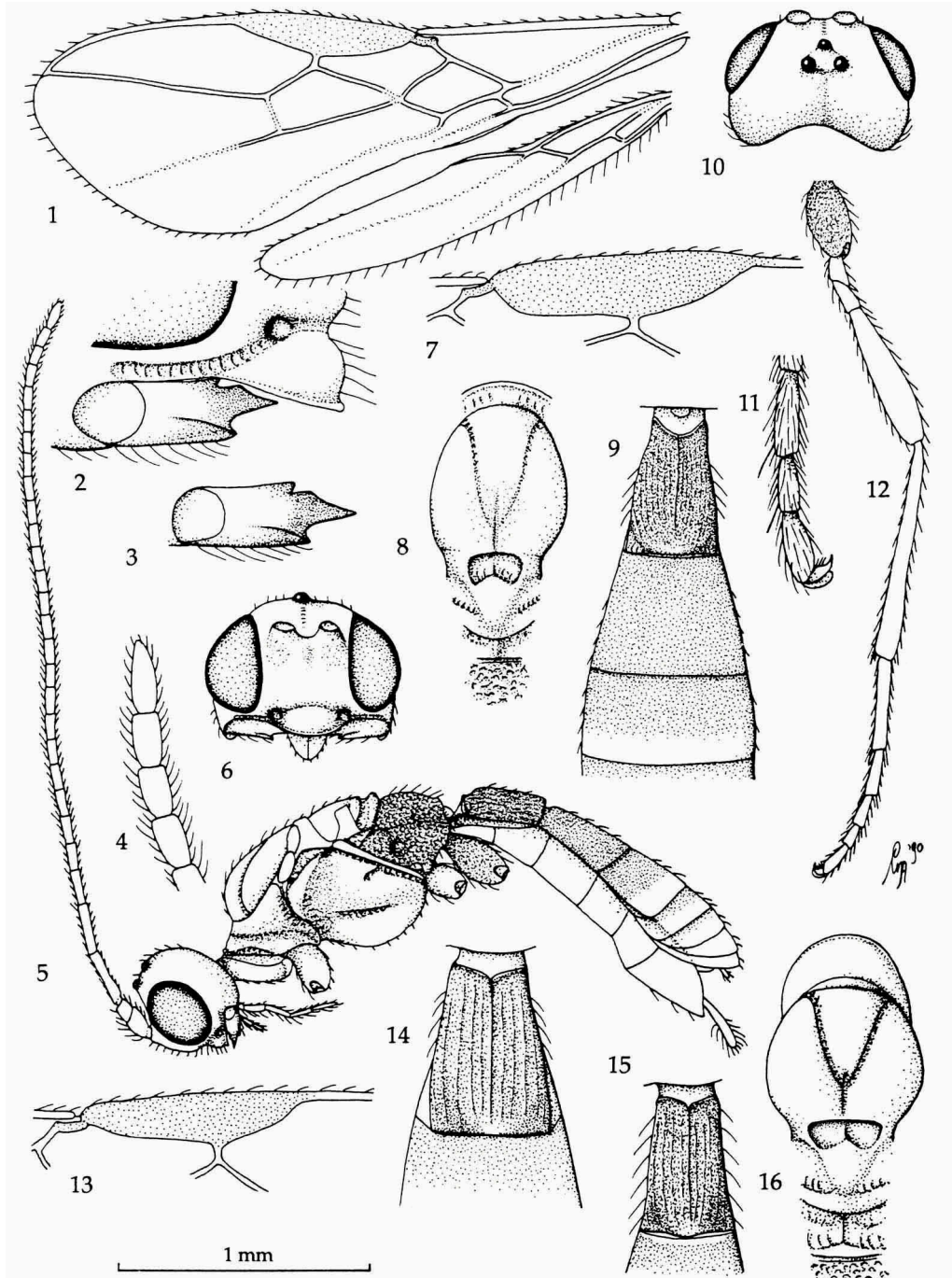
Legs.— Hind coxa densely granulate-rugulose; length of femur, tibia and basitarsus of hind leg 4.4, 9.2, and 7 times their width, respectively; length of hind tibial spurs 0.3 and 0.2 times hind basitarsus, hardly longer than surrounding setae (fig. 12).

Metasoma.— Length of first tergite 1.5 times its apical width, its surface densely reticulate-rugulose, its dorso-lateral carinae absent, and its dorsal carinae united basally and up to basal 0.8 of tergite (fig. 9); length of second tergite 1.2 times longer than third tergite; second and basal 0.6 of third tergite granulate; second suture narrow and smooth (fig. 9); length of ovipositor sheath 0.08 times fore wing; hypopygium large and rather acute apically (fig. 5).

Colour.— Black; palpi and legs (but telotarsi infuscated), scapus and pedicellus ventrally brownish-yellow; remainder of antenna, pronotum largely, tegulae, first tergite largely, and metasoma ventro-apically dark brown; remainder of metasoma yellowish-brown; veins and pterostigma rather dark brown; wing membrane slightly infuscated.

Variation.— Antennal segments of ♀ 29(2), or 30 (1), of ♂ 30(1) or 31(2); length of fore wing 2.5-2.8 mm; length of ovipositor sheath 0.08-0.12 times fore wing; vein r of fore wing wide or slender (figs. 1, 7); hind coxa yellowish or slightly infuscated basally; length of first tergite 1.3-1.5 times its apical width; first tergite largely yellowish or dark brown; scutellum more or less triangularly protruding anteriorly (cf. fig. 8, 16), or nearly straight anteriorly; scapus may be brown ventrally, but pedicellus always yellowish ventrally.

Note.— Morphologically very similar to *T. aurora*, but we have never seen intermediates (albeit that the mesoscutum and mesosternum of *aurora* may be largely



Figs. 1-6, 8-12, *Trachyusa nigrothoracica* spec. nov., ♀, holotype; fig. 7, *T. aurora* (Haliday), ♂, The Netherlands, Wijster; figs. 13, 15, 16, *T. szeptigetii* Papp, ♀, Italy, Belluno; fig. 14, *T. bucephala* Papp, Hungary, Budapest. 1, wings; 2, mandible, full sight on third tooth; 3, id., but full sight on first tooth; 4, apex of antenna; 5, habitus, lateral aspect; 6, head, frontal aspect; 7, 13, pterostigma; 8, 16, mesosoma, dorsal aspect; 9, first-third metasomal tergites, dorsal aspect; 10, head, dorsal aspect; 11, hind tarsal claw; 12, hind leg; 14, 15, first metasomal tergite, dorsal aspect. 1, 5, 12: scale-line (= 1 ×); 2, 3: 3.2 ×; 4, 11: 2.5 ×; 6-8, 9, 10, 13-16: 1.4 ×.

infuscated, but never black). The fact that both species were collected within the same square meter at Wijster, supports our view that *T. nigrothoracica* is not just a colour variety of *T. aurora*. The new species has been reported from Central Europe by Papp (1967: 300).

***Trachyusa szepligetii* Papp, 1967**  
(figs. 13, 15, 16)

*Trachyusa szepligetii* Papp, 1967: 302-304, figs. 2, 3, 13, 15; Tobias, 1986: 157.

*T. szepligetii*; Shenefelt, 1974: 1028.

Material.— Holotype, ♀ (TMA) from Romania, Tasnad; 1 ♀ + 1 ♂ (RMNH), "Austria, Stmk.(46), Ennstaler A., Huber Alm-Mödlinger Hütte", "1400 m, sonnig (46) windstill, 28.7.1970, leg. Fischer"; 1 ♀ (RMNH), "Italia (Bolzano), Sarntal, 1250 m, 26.vi.1976, C.J. Zwakhals"; 1 ♀ (RMNH), "Italy, Belluno, 1220 m, Cortina d'Ampezzo, 30.vi.1987, C.J. Zwakhals"; 2 ♀♀ (RMNH), "Austria: Tirol, Bach (Lechtal), 1200 m, 18.vii.1989, C.J. Zwakhals, RMNH'90".

Restricted to Central Europe. Although the type was collected in a lowland area, all other records are from 1200-1400 m. Known from Austria, Italy (new record), and Romania.

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