

# New western Palaearctic *Dinotrema* species with mesoscutal pit and only medially sculptured propodeum (Hymenoptera, Braconidae, Alysiniinae)

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## Abstract

Descriptions of four new species of the genus *Dinotrema* Foerster with a mesoscutal pit and only medially sculptured propodeum are given. *Dinotrema alysiae* **sp. n.** (Denmark, England, Netherlands, Spain), *D. paramicum* **sp. n.** (Denmark, Finland), *D. tirolense* **sp. n.** (Italy) and *D. valvulatum* **sp. n.** (Denmark, Italy).

## Keywords

Braconidae, Alysiniinae, *Dinotrema*, new species, western Palaearctic

## Introduction

The genus *Dinotrema* Foerster, 1862 is the largest genus of the subfamily Alysiniinae with approximately 320 species described worldwide (Yu et al. 2005). About 250 species of this genus were recorded in the European fauna (Fischer 1972, 1973a, 1993, 1996; van Achterberg 1988; Tobias 2003, 2004a, 2004b, 2006, etc). In spite of this number, numerous Palaearctic *Dinotrema* species remain undescribed up to now.

The current status of the genus *Dinotrema* was established by van Achterberg (1988), and this genus differs from the closely related *Aspilota* Foerster, 1862 in the size of paraclypeal areas which are not connected to the inner eye margin. *Dinotrema* species are parasitoids of Diptera mainly belonging to the family Phoridae (van Achterberg 1988) as well as Anthomyiidae and Platyppezidae (Fischer et al. 2008).

We have revised the available type material of this genus of the European fauna to estimate the real composition of *Dinotrema* species and prepare a new determination key for these species. In this paper, four new species with a mesoscutal pit and only medially sculptured propodeum are described and illustrated, viz. *Dinotrema alyisiae* sp. n., *D. paramicum* sp. n., *D. tirolense* sp. n., and *D. valvulatum* sp. n.

For the terminology of the morphological features and sculpture, measurements and wing venation nomenclature, see Fischer (1973b). The following abbreviations, generally accepted in the taxonomy of Hymenoptera, are used in the paper: POL – postocellar line; OOL – ocular-ocellar line; OD – maximum diameter of lateral ocellus. The types of species described are deposited in the following museums: Entomological Collection of the University of Valencia (Valencia, Spain; further – ENV), Natural History Museum (London, England; – BMNH), Naturhistorisk Museum (Århus, Denmark; further – NMA), Naturalis Biodiversity Center (Leiden, Netherlands; further – RMNH) and Zoologische Staatssammlung München (Germany; further – ZSSM).

## Taxonomical part

### *Dinotrema alyisiae* Munk & Peris-Felipo, sp. n.

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[http://species-id.net/wiki/Dinotrema\\_alyisiae](http://species-id.net/wiki/Dinotrema_alyisiae)

Figs 1–13

**Type material.** Holotype, female (NMA), “Denmark, E-Jutland, Mols Strandkær, 56°14'N 10°25'E, 02.09.1991, Munk”. Paratypes: 2 females (NMA), “same label as holotype but, 30.07.1991, Munk”; 2 females (NMA), “Denmark, E-Jylland, Yolling Skov sw. of Skanderborg, 06.09.1986, Munk”; 1 female (RMNH), Netherlands, Waarder (Z.H.), Oosteinde, 30–31.08.1974, C. v. Achterberg”; 2 females (BMNH), “England, Bramham Park Nat., Hants., ex. *Callomyia amoena*, 1985, R.E. Evans”.

**Other material:** 1 female (ENV), “Denmark, E-Jutland, Højkol Skov, 56°05'N 9°38'E, 11.09.2000, Munk”; 1 female (ENV), “Spain, Navarra, Artikutza, Mixto M-1, 16.10.1995, L. Murguia”; 1 female (ENV), “Spain, Navarra, Artikutza, Mixto M-2, 24.07.1995, L. Murguia”.

**Diagnosis.** This new species resembles *D. erythropum* Foerster and *D. valvulatum* sp. n. *Dinotrema alyisiae* sp. n. differs from *D. erythropum* in having the first flagellar segments 3.50 times as long as wide (2.50 times in *D. erythropum*), middle flagellar segments 1.90–2.00 times as long as wide (1.40 times in *D. erythropum*), first metasomal



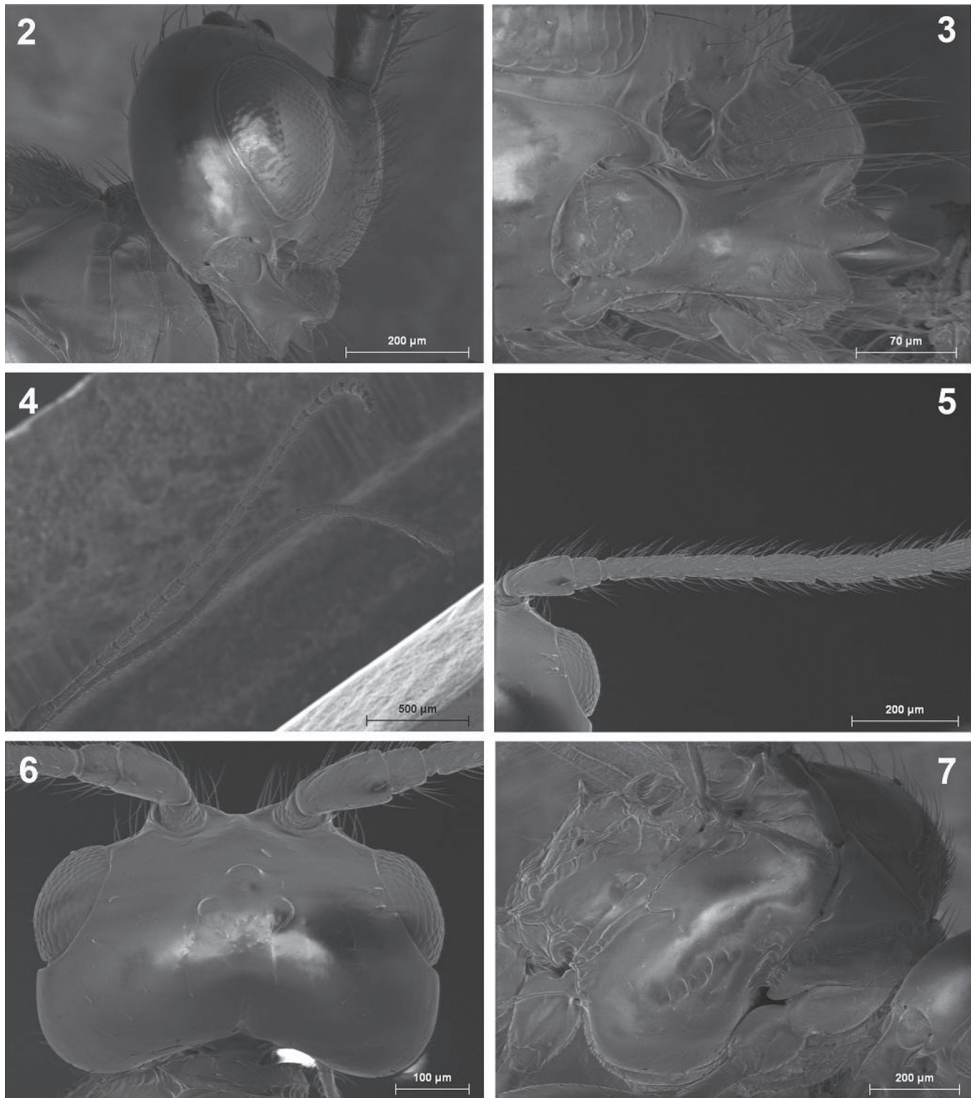
**Figure 1.** *Dinotrema alysiae* sp. n. (female). Habitus, lateral view.

tergite 1.45 times as long as apical width (1.70 times in *D. erythropum*), mesoscutal pit oval (slender and very long in *D. erythropum*), and lower tooth shorter than upper tooth (longer in *D. erythropum*). The new species differs from *D. valvulatum* in having the first metasomal tergite almost entirely smooth (sculptured with two dorsal carinae in *D. valvulatum*) and ovipositor distinctly shorter than metasoma (ovipositor as long as metasoma in *D. valvulatum*).

**Description.** Holotype, female, length of body 2.30–2.40 mm, of fore wing 3.30–3.35 mm.

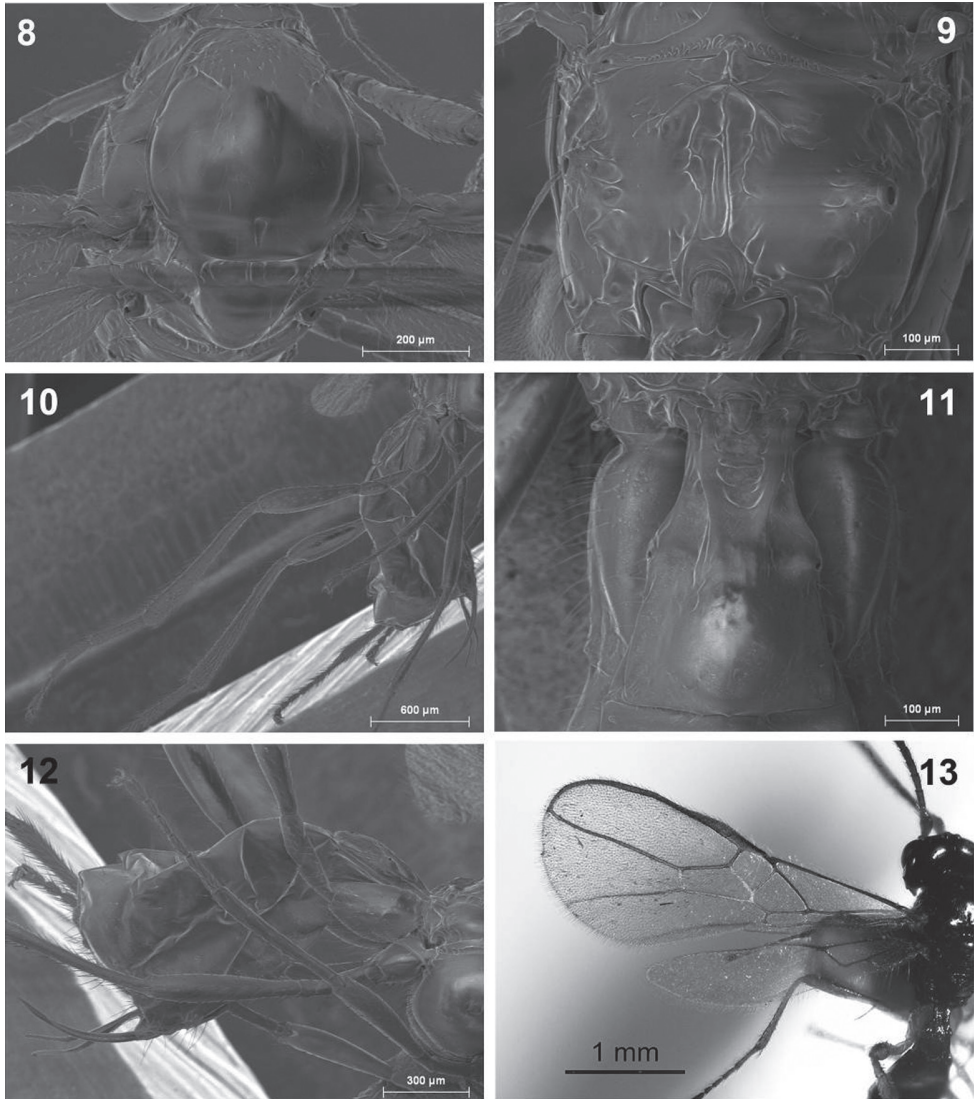
*Head.* In dorsal view, 1.85–1.90 times as wide as its median length, 1.40 times as wide as mesoscutum, smooth, with rounded temples behind eye. Eye in lateral view 1.60–1.65 times as high as wide and 1.05–1.10 times as wide as temple. POL 3.15–3.20 times OD; OOL 3.25–3.30 times OD. Face 1.80–2.00 times as wide as high; inner margins of eyes subparallel. Clypeus 1.90–1.95 times as wide as high, slightly curved ventrally. Diameter of paraclypeal fovea half distance between clypeus and eye. Mandible widened towards apex, 1.50 times as long as its maximum width. Upper tooth weakly shorter and as wide as base of middle tooth. Middle tooth the longest, wide basally and pointed apically. Lower tooth rather long, but weakly shorter and wider than upper tooth, rounded apically. Antenna thick, 24–25-segmented. Scape 2.40–2.45 times as long as pedicel. First flagellar segment 3.50 times as long as its apical width, 1.10–1.15 times as long as second segment; second segment 2.60–2.65 times as long as its maximum width. Third to twenty-second flagellar segments 1.90–2.00 times as long as their width; twenty-third segment 2.40 times as long as wide.

*Mesosoma.* In lateral view, 1.30 times as long as high. Mesoscutum 1.05–1.10 times as long as maximum width, with two rows of two setae. Notauli mainly ab-



**Figures 2–7.** *Dinotrema alysiae* sp. n. (female). **2** Head, lateral view **3** Mandible **4** Antenna **5** Basal segments of antenna **6** Head, dorsal view **7** Mesosoma.

sent. Mesoscutal pit present, oval. Prescutellar depression smooth, with lateral carinae. Sternaulus (= precoxal suture) present, not reaching anterior and posterior parts of mesopleuron. Posterior mesopleural furrow smooth below. Propodeum with median longitudinal carina running from anterior to posterior margin, in anterior third with transverse angulated carina, with additional long subparallel carinae laterally to median one; from lateral carinae emerging short carinae not reaching with the propodeal edges. Propodeal spiracles relatively small.



**Figures 8–13.** *Dinotrema alysiae* sp. n. (female). **8** Mesonotum **9** Propodeum **10** Hind leg **11** First metasomal tergite **12** Metasoma and ovipositor **13** Fore and hind wings.

*Legs.* Hind femur 4.10 times as long as wide. Hind tibia weakly widened to apex, 9.10 times as long as its maximum subapical width, 1.10 times as long as hind tarsus. First segment of hind tarsus 2.65 times as long as second segment.

*Wings.* Length of fore wing 2.35–2.40 times its maximum width. Vein r1 present. Radial cell reaching to apex of wing, 3.40–3.45 times as long as its maximum width. Nervulus distinctly postfurcal. Brachial cell closed, 3.25 times as long as its maximum width. Hind wing 5.00 times as long as its maximum width.

*Metasoma*. Distinctly compressed. First tergite weakly widened towards apex, 1.45 times as long as its apical width, almost entirely smooth. Ovipositor as long as first tergite, shorter than metasoma, 0.40–0.45 times as long as hind femur.

*Colour*. Body, mandible and first metasomal tergite dark brown. Legs brown. Wings hyaline. Pterostigma brown.

Male unknown.

**Etymology.** The name is referring to the general size and shape of the body which is very similar as species of *Alysia* genus.

***Dinotrema paramicum* Munk & Peris-Felipo, sp. n.**

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[http://species-id.net/wiki/Dinotrema\\_paramicum](http://species-id.net/wiki/Dinotrema_paramicum)

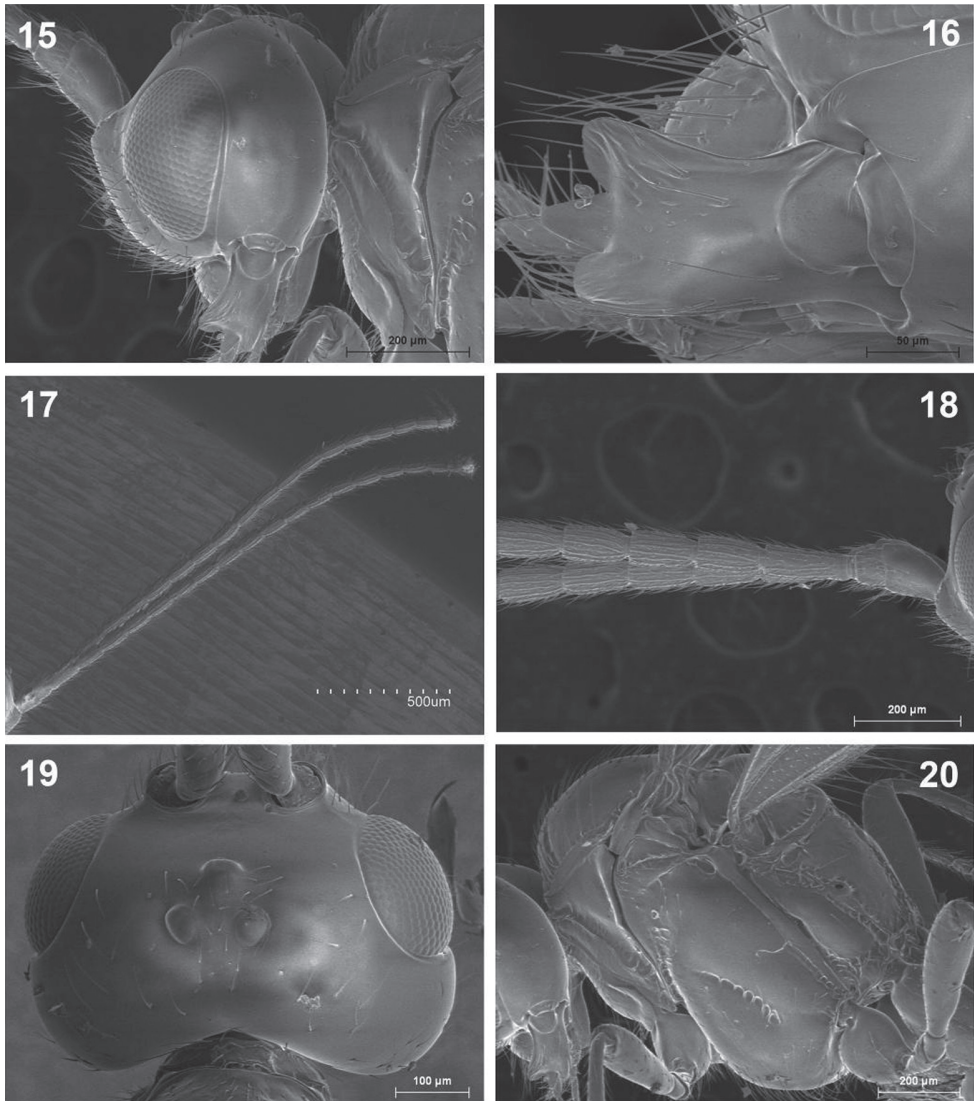
Figs 14–26

**Type material.** Holotype: 1 female (NMA), “Denmark, E-Jutland, Mols, Strandkær 56°14'N 10°25'E, 30.09.1982, Munk”. Paratypes: 2 females (NMA), same label as holotype; 1 female (ENV), same label as holotype; 1 female (NMA), “Finland, E.S. Ristlina, 6826:501, 06.08.1978, M. Koponen”; 1 female (ENV), “Finland, U. Nurmijärvi, 6715:376, 05.08.1976, M. Koponen”.

**Diagnosis.** This new species resembles *D. kempei* (Hedqvist) but differs in having first metasomal tergite 2.30–2.35 times as long as its apical width (3.50–4.00 times in *D. kempei*), mesoscutal pit rounded (elongated in *D. kempei*), prescutellar depression rec-



**Figure 14.** *Dinotrema paramicum* sp. n. (female). **14** Habitus, lateral view

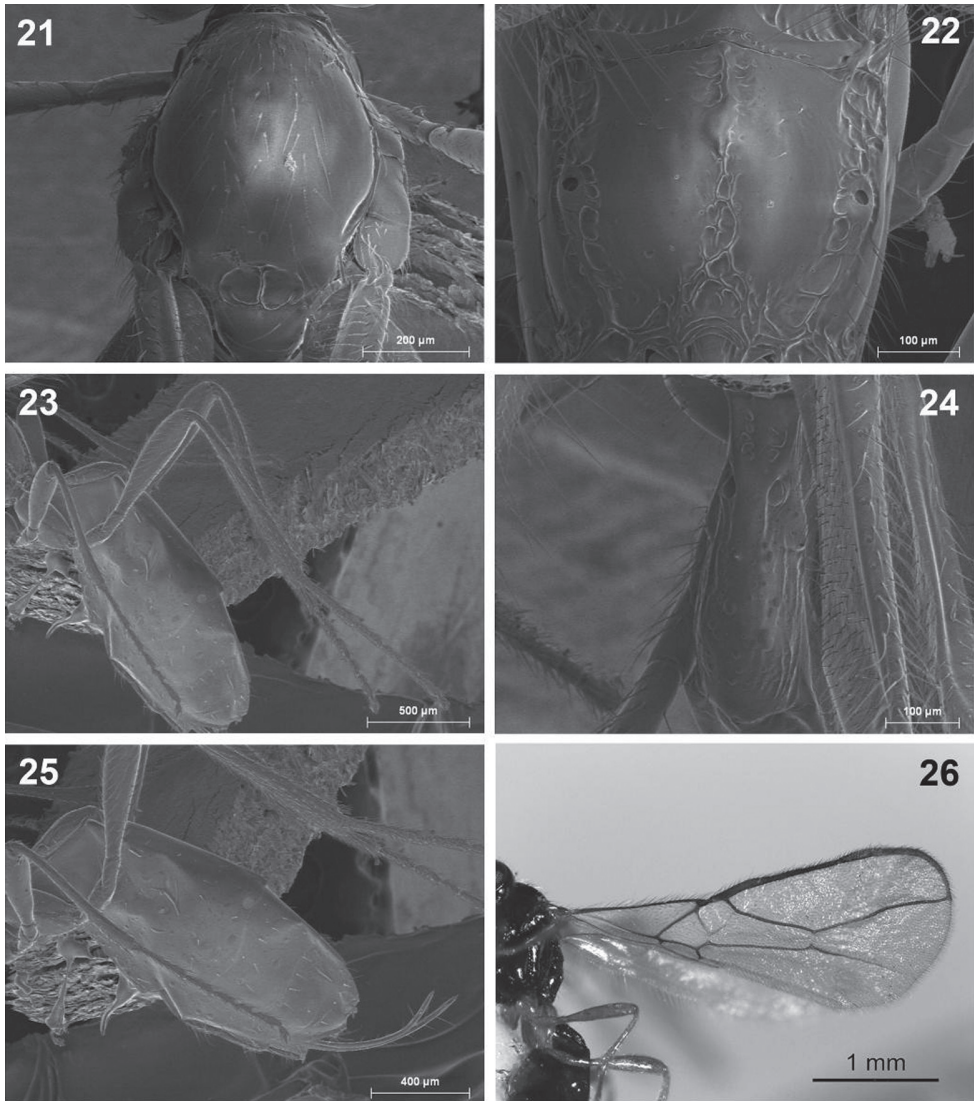


**Figures 15–20.** *Dinotrema paramicum* sp. n. (female). **15** Head, lateral view **16** Mandible **17** Antenna **18** Basal segments of antenna **19** Head, dorsal view **20** Mesosoma.

tangular and without lateral carinae (square and with lateral carinae in *D. kempei*) and mesoscutum with two rows of double setae (with two rows of single setae in *D. kempei*).

**Description.** Holotype, female, length of body 2.70–2.80 mm, of fore wing 3.25–3.30 mm.

*Head.* In dorsal view, 1.60–1.65 times as wide as its median length, 1.45–1.50 times as wide as mesoscutum, smooth, with rounded temples behind eye. Eye in lateral view 1.75 times as high as wide and 0.90–0.95 times as wide as temple. POL 2.60–2.65 times OD; OOL 2.60–2.65 times OD. Face 1.60 times as wide as high;



**Figures 21–26.** *Dinotrema paramicum* sp. n. (female). **21** Mesonotum **22** Propodeum **23** Hind leg **24** First metasomal tergite **25** Metasoma and ovipositor **26** Fore and hind wings.

inner margins of eyes subparallel. Clypeus 2.65 times as wide as high, slightly curved ventrally. Diameter of paraclypeal fovea less than half of distance between clypeus and eye. Mandible widened towards apex, 1.20 times as long as its maximum width. Upper tooth distinctly shorter and wider than middle tooth and wider than lower tooth. Middle tooth the longest, wide basally and pointed apically. Lower tooth rounded apically and longer than upper tooth. Antenna thick, 23-segmented, as long as body. Scape 1.55–1.60 times as long as pedicel. First flagellar segment 3.00 times as long as its apical width, 1.05–1.10 times as long as second segment; second segment 2.35 times as



long as its maximum width. Third to twentieth flagellar segments 1.70–1.80 times as long as their width; twenty-first segment 2.20 times as long as wide.

*Mesosoma.* In lateral view, 1.10–1.15 times as long as high. Mesoscutum 1.10 times as long as maximum width with two rows of double setae. Notauli mainly absent. Mesoscutal pit present, rounded. Prescutellar depression smooth, without lateral carinae. Sternaulus (= precoxal suture) present, not reaching anterior and posterior parts of mesopleuron. Posterior mesopleural furrow smooth. Propodeum with median longitudinal carina running from anterior to posterior margin. Propodeal spiracles small.

*Legs.* Hind femur 4.15–4.20 times as long as wide. Hind tibia weakly widened to apex, 9.75 times as long as its maximum subapical width, 1.05–1.10 times as long as hind tarsus. First segment of hind tarsus 1.85 times as long as second segment.

*Wings.* Length of fore wing 2.60–2.70 times its maximum width. Vein r1 present. Radial cell reaching to apex of wing, 3.95–3.40 times as long as its maximum width. Nervulus distinctly postfurcal. Brachial cell closed, widened apically, 3.40 times as long as its maximum width. Hind wing 4.50–4.60 times as long as its maximum width.

*Metasoma.* Distinctly compressed. First tergite weakly widened towards apex, 2.80 times as long as its apical width, almost entirely smooth. Ovipositor 1.90–1.95 times as long as first tergite, shorter than metasoma, 1.55–1.60 times as long as hind femur.

*Colour.* Body and legs brown to dark brown. Wings hyaline. Pterostigma brown.

Male unknown.

**Etymology.** The name is from Greek “para” meaning “elongate” and “micus” from Latin meaning “character” and referring to the general shape of the body.

### ***Dinotrema tirolense* Munk & Peris-Felipo, sp. n.**

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[http://species-id.net/wiki/Dinotrema\\_tirolense](http://species-id.net/wiki/Dinotrema_tirolense)

Figs 27–39

**Type material.** Holotype: 1 female (ZSSM), “Italy, St. Peter/Ahrntal, Südtirol, 1950 m., Ja/26.08.1967, Haeselbarth”. Paratype: 1 female (ENV), same label as holotype but, “1800 m., Jh/26.08.1969, Haeselbarth”.

**Diagnosis.** This new species resembles *D. sylvestre* Tobias but differs in having the mesoscutal pit present (absent in *D. sylvestre*), mandible 1.55–1.60 times as long as wide (as long as wide in *D. sylvestre*), first flagellar segment 4.25 times as long as wide (3.50 times in *D. sylvestre*), middle flagellar segments 3 times as long as their width (2.00 times in *D. sylvestre*) and hind femur 5.00 times as long as its maximum width (4.00 times in *D. sylvestre*).

**Description.** Holotype, female, length of body 1.90–1.95 mm, of fore wing 3.00 mm.

*Head.* In dorsal view, 1.80 times as wide as its median length, 1.30–1.35 times as wide as mesoscutum, smooth, with rounded temples behind eye. Eye in lateral view



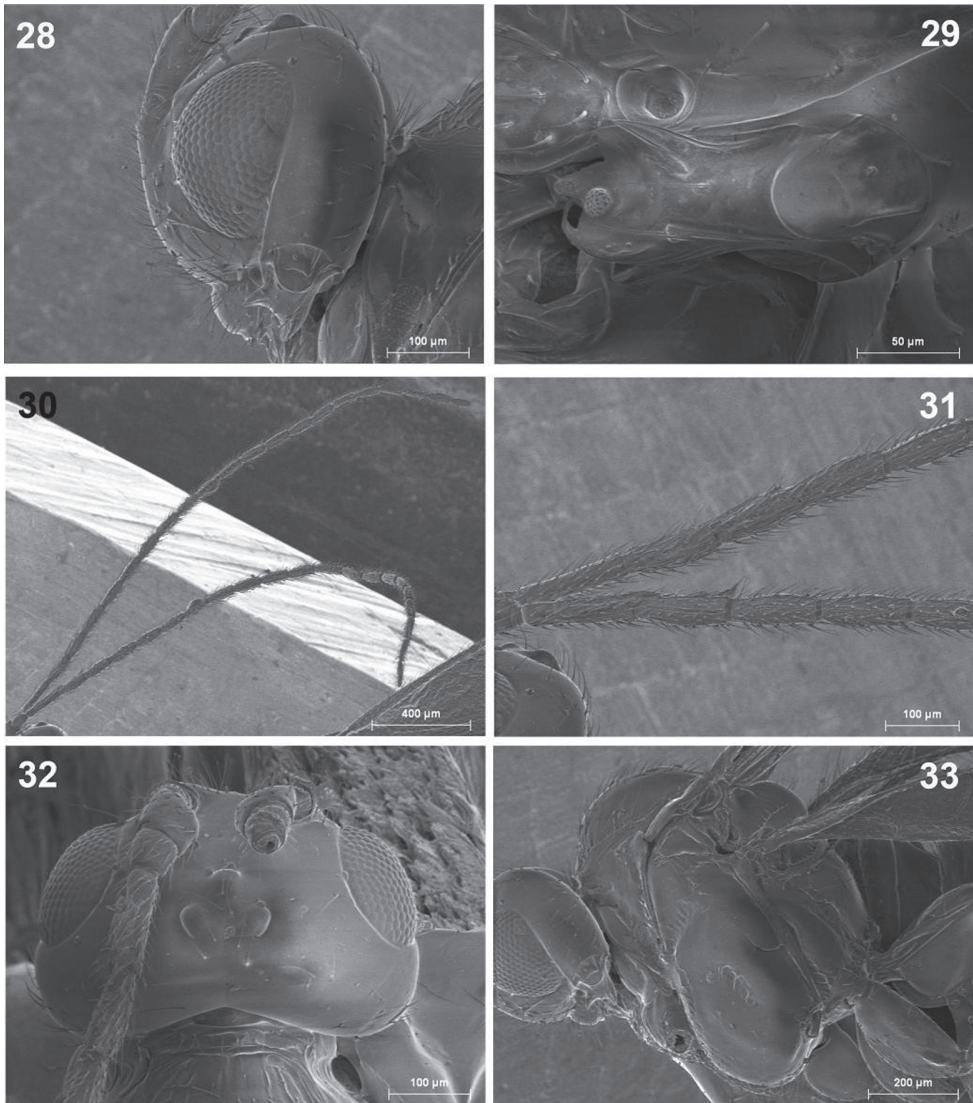
**Figure 27.** *Dinotrema tirolense* sp. n. (female). **27** Habitus, lateral view.

1.60–1.65 times as high as wide and 1.05–1.10 times as wide as temple. POL 2.85–2.90 times OD; OOL 2.75–2.80 times OD. Face 1.50–1.55 times as wide as high; inner margins of eyes subparallel. Clypeus 1.65 times as wide as high, slightly curved ventrally. Diameter of paraclypeal fovea less than half of distance between clypeus and eye. Mandible weakly widened towards apex, 1.55–1.60 times as long as its maximum width. Upper tooth distinctly shorter than middle tooth. Middle tooth the longest, widened basally and pointed apically, wider than upper and lower tooth. Lower tooth rounded apically and longer than upper tooth. Antenna thick, 23-segmented, as long as body. Scape 1.65–1.70 times as long as pedicel. First flagellar segment 4.25 times as long as its apical width, 1.25–1.30 times as long as second segment; second segment 3.00 times as long as its maximum width. Third to twentieth flagellar segments 3.00 times as long as their width; twenty-first segment 2.50 times as long as wide.

*Mesosoma.* In lateral view, 0.95 times as long as high. Mesoscutum as long as maximum width with three rows of two setae, two around notauli and one in middle part. Notauli mainly absent. Mesoscutal pit present, rounded. Prescutellar depression smooth, with small lateral carinae. Sternaulus (= precoxal suture) present, not reaching anterior and posterior parts of mesopleuron. Posterior mesopleural furrow smooth. Propodeum smooth, with incomplete median longitudinal carinae not crossing line of spiracles. Propodeal spiracles small.

*Legs.* Hind femur 5.00 times as long as wide. Hind tibia weakly widened to apex, 11.40 times as long as its maximum subapical width, 1.15–1.20 times as long as hind tarsus. First segment of hind tarsus 1.50 times as long as second segment.

*Wings.* Length of fore wing 2.30 times its maximum width. Vein r1 present. Radial cell reaching to apex of wing, 4.75 times as long as its maximum width. Nervulus



**Figures 28–33.** *Dinotrema tirolense* sp. n. (female). **28** Head, lateral view **29** Mandible **30** Antenna **31** Basal segments of antenna **32** Head, dorsal view **33** Mesosoma.

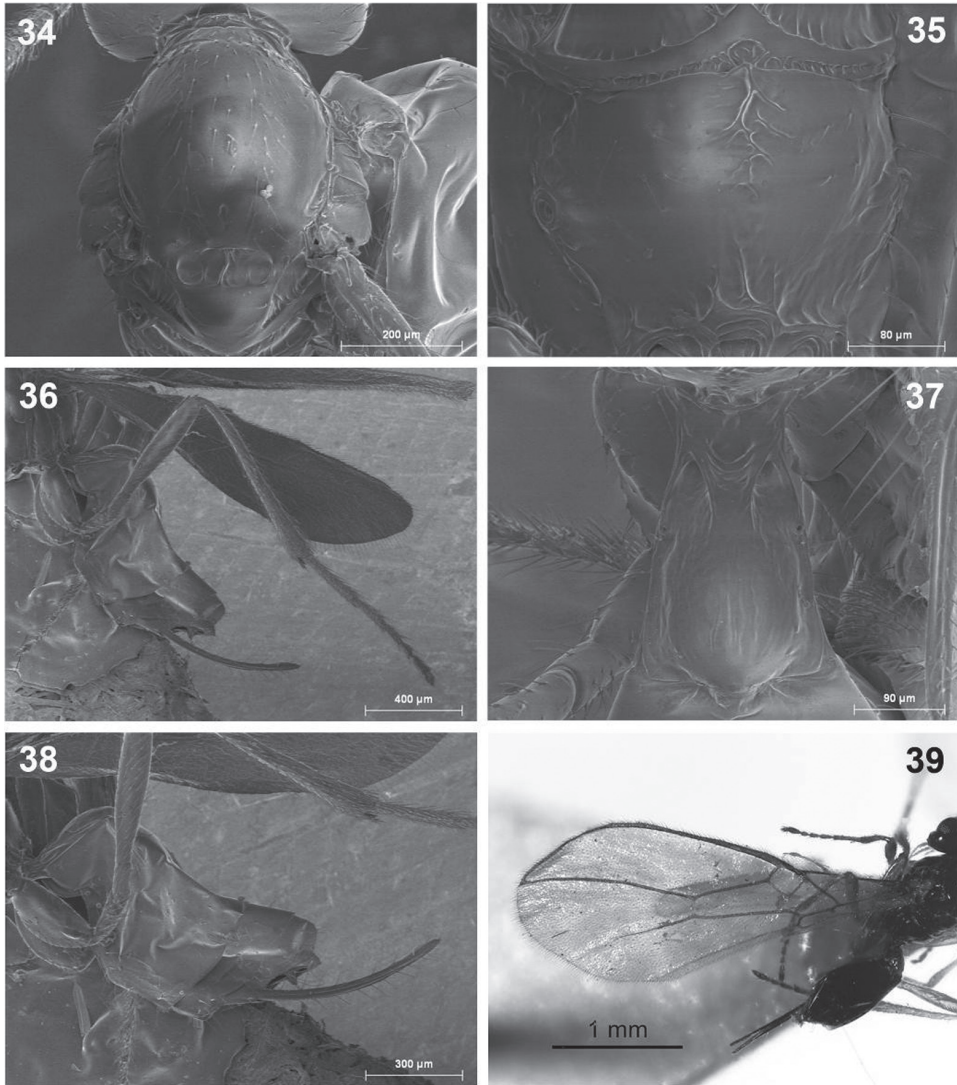
distinctly postfurcal. Brachial cell closed, widened apically, 3.50 times as long as its maximum width. Hind wing 4.80–4.90 times as long as its maximum width.

*Metasoma.* Distinctly compressed. First tergite weakly widened towards apex, 1.60 times as long as its apical width, almost entirely smooth. Ovipositor 1.85–1.90 times as long as first tergite, shorter than metasoma, 1.15–1.20 times as long as hind femur.

*Colour.* Body and legs brown to dark brown. Wings hyaline. Pterostigma brown.

Male unknown.

**Etymology.** The name is from geographical area “Tirol”, the type locality of species.



**Figures 34–39.** *Dinotrema tirolense* sp. n. (female). **34** Mesonotum **35** Propodeum **36** Hind leg **37** First metasomal tergite **38** Metasoma and ovipositor **39** Fore wing.

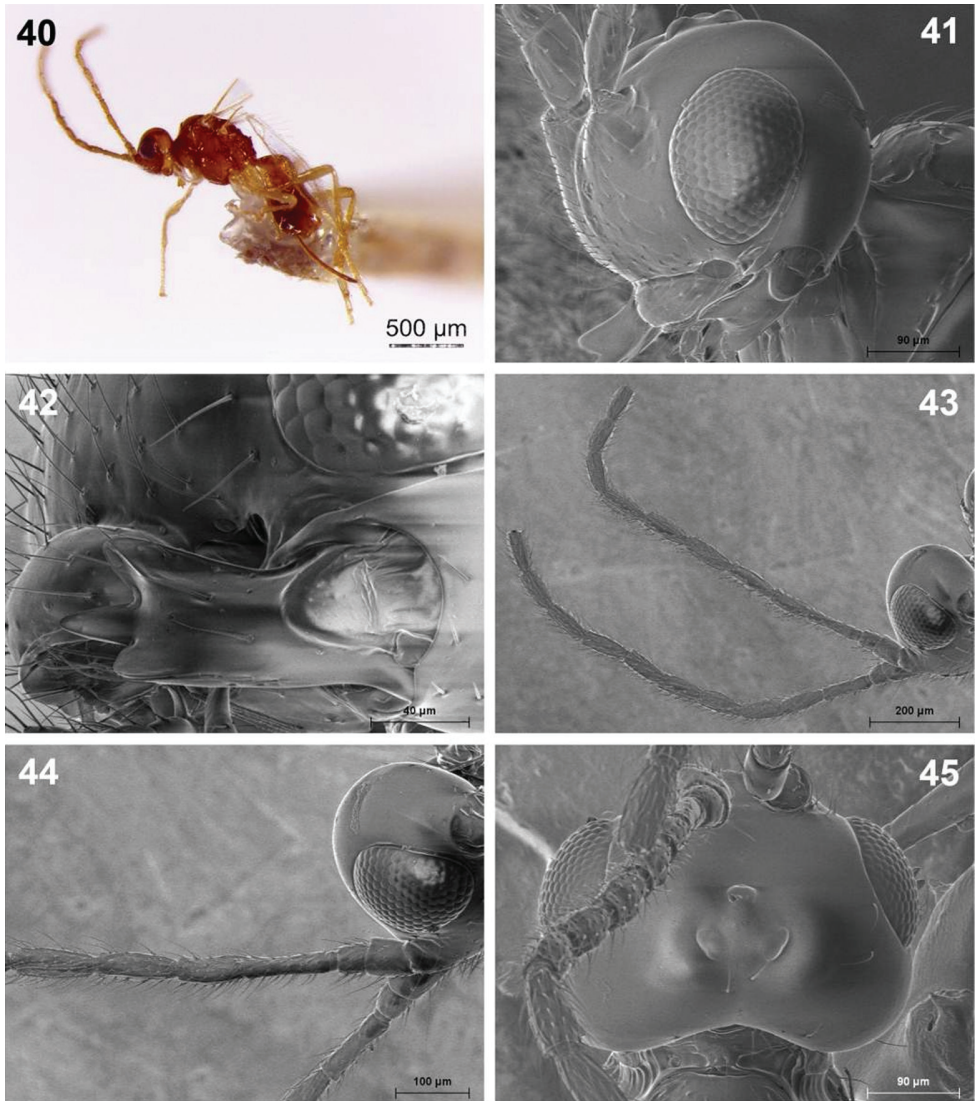
***Dinotrema valvulatum* Munk & Peris-Felipo, sp. n.**

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[http://species-id.net/wiki/Dinotrema\\_valvulatum](http://species-id.net/wiki/Dinotrema_valvulatum)

Figs 40–51

**Type material.** Holotype: 1 female (NMA), “Denmark, E-Jutland, Højen Bæk, 5 km S of Vejle, 07.07.1984, Munk”. Paratype: 1 female (NMA), same label as holotype, both specimens were collected in a deciduous wood with *Alnus*, *Fraxinus* and *Fagus* on



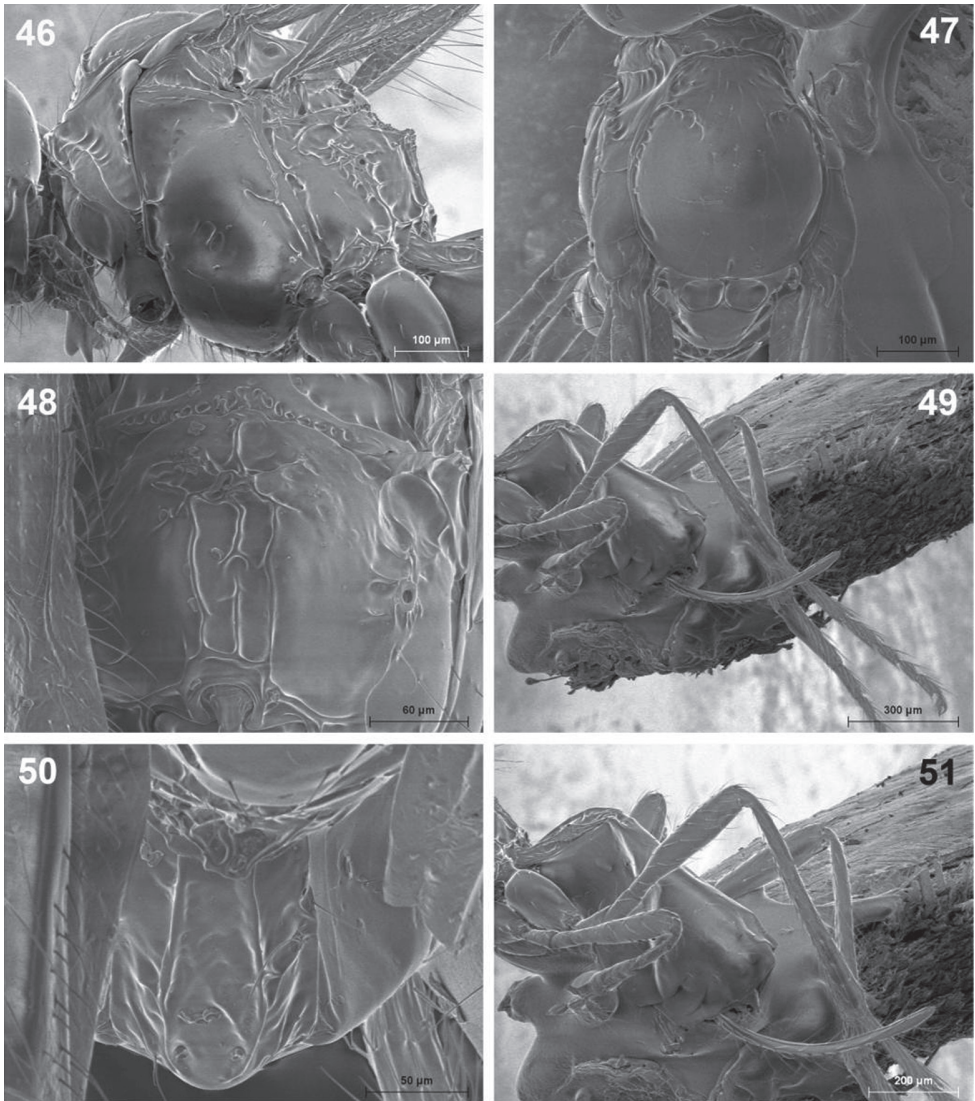
**Figures 40–45.** *Dinotrema valvulatum* sp. n. (female). **40** Habitus, lateral view **41** Head, lateral view **42** Mandible **43** Antenna **44** Basal segments of antenna **45** Head, dorsal view.

wet ground, 07.07.1984; 1 female (ZSSM), “Italy, St. Peter/Ahrntal, Südtirol, 1600 m., Ja/26.08.1967, Haeselbarth”.

**Diagnosis.** This new species resembles *D. alysiae* sp. n.; their differences are given after the description of *D. alysiae*.

**Description.** Holotype, female, Length of body 1.40–1.60 mm, of fore wing 2.20 mm.

*Head.* In dorsal view, 1.60 times as wide as its median length, 1.50 times as wide as mesoscutum, smooth, with rounded temples behind eye. Eye in lateral view 1.55 times



**Figures 46–51.** *Dinotrema valvulatum* sp. n. (female). **46** Mesosoma **47** Mesonotum **48** Propodeum **49** Hind leg **50** First metasomal tergite **51** Metasoma and ovipositor.

as high as wide and 0.90–0.95 times as wide as temple. POL 2.75–2.80 times OD; OOL 3.40–3.45 times OD. Face 1.35 times as wide as high; inner margins of eyes subparallel. Clypeus 3.10 times as wide as high, slightly curved ventrally. Paraclypeal fovea large, its diameter more than half the distance between clypeus and eye. Mandible widened towards apex, 1.60 times as long as its maximum width. Upper tooth weakly shorter than middle tooth and wider than middle and lower tooth. Middle

tooth the longest, widened basally and pointed apically. Lower tooth rounded apically and shorter than upper tooth. Antenna thick, 21-segmented, longer than body. Scape 2.00 times as long as pedicel. First flagellar segment 3.65–3.70 times as long as its apical width, 1.15 times as long as second segment; second segment 2.50 times as long as its maximum width. Third to eighteenth flagellar segments 2.20–2.30 times as long as their width; nineteenth segment 2.00 times as long as its maximum width.

*Mesosoma.* In lateral view, 1.10–1.15 times as long as high. Mesoscutum 1.10–1.15 times as long as maximum width with two rows of single setae. Notauli mainly absent. Mesoscutal pit present and elongated. Prescutellar depression smooth, without lateral carinae. Sternaulus (= precoxal suture) present, not reaching anterior and posterior parts of mesopleuron. Posterior mesopleural furrow smooth. Propodeum with median longitudinal carina running from anterior to posterior its margins, in anterior third with transverse angulated carina, with additional long subparallel carinae laterally to median one; from lateral carinae emerging short carinae not reaching propodeal edges. Propodeal spiracles relatively small.

*Legs.* Hind femur 4.50 times as long as wide. Hind tibia weakly widened to apex, 9.10–9.15 times as long as its maximum subapical width, as long as hind tarsus. First segment of hind tarsus 1.95–2.00 times as long as second segment.

*Wings.* Length of fore wing 2.50–2.60 times its maximum width. Vein r1 present. Radial cell reaching to apex of wing, 4.50 times as long as its maximum width. Nervulus distinctly postfurcal. Brachial cell closed, 3.00 times as long as its maximum width. Hind wing 8.0 times as long as its maximum width.

*Metasoma.* Distinctly compressed. First tergite weakly widened towards apex, 1.90 times as long as its apical width, almost sculptured with fine striae. Ovipositor 2.10 times as long as first tergite, as long as metasoma, 1.60–1.65 times as long as hind femur.

*Colour.* dark brown with a red tone, except propleuron, scapus, pedicellus and anterior half of metasoma infuscate reddish; clypeus and legs yellow (fifth tarsal segment infuscate).

Male unknown.

**Etymology.** The name is due to the large size of the ovipositor valves.

## Acknowledgements

First of all, we wish to thank Dr. Maximilian Fischer for his great help and his kindness during all our studies and Dominique Zimmermann, curator of the Naturhistorisches Museum Wien, for her hospitality and patience during our stays in the museum. Also, we wish to thank Dr. Kees van Achterberg from Naturalis Biodiversity Center, Leiden and Dr. E. Haeselbarth from Zoologische Staatssammlung München, for his help during our studies in Alysiiinae World. Finally, we wish to thank all of those who have offered their support, time and advice.

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