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To cite this article: Bahattin Kovanci & Savaş Canbulat (2007) A new species of the genus *Nothochrysa* McLachlan 1868 from northwestern Turkey (Neuroptera: Chrysopidae) with a key to western Palaearctic species, *Annales de la Société Entomologique de France*, 43:2, 165-168, DOI: [10.1080/00379271.2007.10697507](https://doi.org/10.1080/00379271.2007.10697507)

To link to this article: <https://doi.org/10.1080/00379271.2007.10697507>



Published online: 31 May 2013.



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# A new species of the genus *Nothochrysa* McLachlan 1868 from northwestern Turkey (Neuroptera: Chrysopidae) with a key to western Palaearctic species

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**Abstract.** A new species of *Nothochrysa* McLachlan, *N. turcicus* n. sp. is described from Turkey and a key to west Palaearctic species is given for the adults of the three recognized species. Adults of this species were collected from *Quercus cerris* L. in Bursa province of northwestern Turkey.

**Résumé.** Une nouvelle espèce du genre *Nothochrysa* McLachlan 1868 (Neuroptera : Chrysopidae) du nord-ouest de la Turquie, avec une clé des espèces ouest-paléarctiques. Une nouvelle espèce de *Nothochrysa* McLachlan, *N. turcicus* n. sp. est décrite de Turquie et une clé des espèces ouest-paléarctiques est donnée pour les adultes des 3 espèces reconnues actuellement. Les adultes de cette espèce ont été collectés sur *Quercus cerris* L. dans la province de Bursa au nord-ouest de la Turquie.

**Keywords:** Chrysopidae, *Nothochrysa*, new species, Bursa, Turkey.

Chrysopidae, the family of green lacewings, is one of the largest and most complex families of the order Neuroptera occurring throughout the world (Canard *et al.* 1984). This family contains three subfamilies: Apochrysininae, Nothochrysininae and the widespread Chrysopinae. The subfamily Nothochrysininae McLachlan can be distinguished from other subfamilies by the presence of pseudomedia continuing with inner row of gradates in forewing, the absence of tympanal organ and a well developed jugal lobe (Brooks & Barnard 1990).

*Nothochrysa* is one of the most advanced genera of Nothochrysininae, which is the most primitive group of Chrysopidae (Adams 1967). This genus is a small group, which comprises only two species from western Palaearctic, *N. capitata* (Fabricius 1793) and *N. fulviceps* (Stephens 1836), and a Nearctic species, *N. californica* Banks 1892. *Nothochrysa* is currently defined by certain characters of the male and female genitalia. These characters include male *Nothochrysa* with tignum, gonapsis and median plate absent; entoprocessus minute, triangular; gonarcus arcuate; arcessus short, triangular; pseudopenis absent; gonosetae short, in small lateral groups; and hypandrium large while female *Nothochrysa* has subgenital bilobed apically with broad, basal extension and a long, broad spermatheca (Brooks and Barnard 1990). Other distinguishing characteristics

of *Nothochrysa* were as follows: intermedian cell narrow, quadrangular, first anal vein forked in forewing; large species, forewing > 14 mm.

Turkish Chrysopidae fauna is currently composed of 48 species (Aspöck *et al.* 2001; Canbulat 2002; Canbulat & Kiyak 2003, 2004, 2005). Only one of these species, *N. fulviceps*, belongs to *Nothochrysa* (Canbulat & Kiyak 2004). In this study, we describe a new species of *Nothochrysa* from Turkey and provide a key to the adults of the western Palaearctic *Nothochrysa*. With this new addition, the number of chrysopid species from Turkey totaled 49.

## Material and Methods

Specimens were collected with a sweep net from *Quercus cerris* L. in Orhaneli and Büyükorhan towns of Bursa Province during 2004–2005. Living specimens were brought back to laboratory alive and killed with ethyl acetate (Neuenschwander 1984). All the chrysopid specimens were pinned with their wings spread, then dried and preserved in Plant Protection Department collection of Faculty of Agriculture at Uludag University. The fore- and hindwing length of specimens were measured using a triocular stereo zoom microscope attached with a ocular micrometer (Olympus SZ6045, Japan). The preparation of male genitalia was made according to Aspöck (1971). The terminology used by Aspöck *et al.* (1980), Barnard (1984) and Brooks & Barnard (1990) for wing venation and genitalia was adopted. Following the publication of this new species, six paratypes (3♂♂ and 3♀♀) will be sent to Prof. Dr. Niyazi Lodos Museum of the Plant Protection Department of Agricultural Faculty at Ege University, Turkey.

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Accepté le 4 mai 2006

## Results

### *Nothochrysa turcicus* n. sp. (figs 1–9)

**Type material-Holotype male:** Turkey, Bursa Province, Orhaneli town, 1 km southwestern of Sadağı köyü (39.880° N, 028.914° E), 450 m elevation, 20.VIII.2004, on *Quercus cerris* L., leg. B. Kovanci; **Allotype female :** same locality and date of holotype on *Q. cerris*, leg. B.Kovanci; **Paratypes:** Turkey, Bursa Province, Orhaneli town, same locality and date of holotype, 5 ♀♀; 500 m southeastern of Kadı köyü (39.805° N, 028.996° E), 880 m, 20.VIII.2004, 1 ♂, 3 ♀♀; 300 m northeastern of Büyükorhan town (39.779°N, 028.892° E), 800 m, 20.VIII.2004, 10 ♂♂, 8 ♀♀; Orhaneli town,

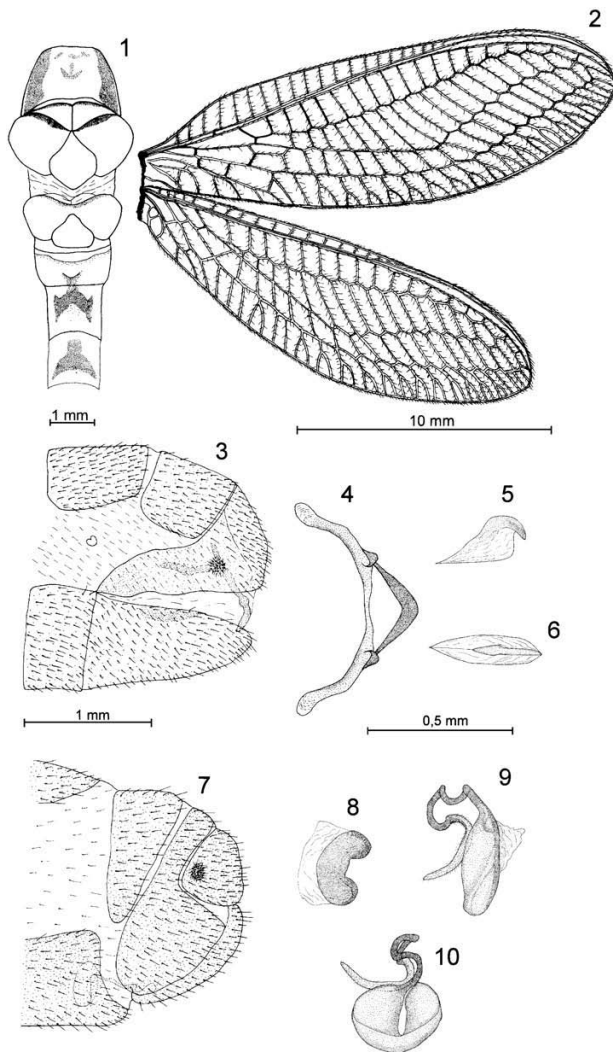
1 km eastern of Kadı köyü (39.807° N, 028.998° E), 910 m, 23.VIII.2005, 4 ♂♂, 2 ♀♀; 2 km western of Celepler köyü (39.787° N, 028.953° E), 720 m, 23.VIII.2005, 4 ♀♀; 300 m northeastern of Büyükorhan town (39.779°N, 028.892° E), 800 m, 23.VIII.2005, 7 ♂♂, 10 ♀♀; Büyükorhan dam vicinity (39.793°N, 028.913°E), 700 m, 23.VIII.2005, 1♀; 300 m northeastern of Büyükorhan town (39.779° N,028.892° E) 800 m, 8.IX.2005, 1 ♂. All the paratypes were found on *Q. cerris* and collected by B. Kovanci.

### Description

**Holotype.** General coloration pale brown.

**Head.** Base coloration yellow, two reddish stripes on gena and one brownish stripe on lateral part of clypeus. Maxillary and labial palpi pale yellow and brownish towards the tip. A fine reddish line not well distinct on interantennal zone. Vertex domed, orange without spot. Antennae shorter than forewing, from base to pterostigma; scape yellow with a dorsolateral reddish brown suffused spot; pedicel barely constricted medially, pale yellow; flagellum pale yellow with dark setae.

**Thorax** (fig. 1). Pronotum wider than length; base coloration yellow with broad reddish brown lateral stripes; a small, three branches brown spot just in the middle; dorsal setae absent, lateral setae pale and sparse. Mesonotum with a broad double crescentic dark brown spots on the anterior margin and also a transversal reverse bow shaped reddish brown spot from anterior margins of forewing to the middle; meso- and metanota yellow without lateral stripes; metanotum also with this bow shaped spot but not well marked. **Wings** (fig. 2). Forewing length 18.80 mm, hindwing length 16.49 mm in the holotype (23 paratypes ♂♂: average length 18.53±1.08 mm for forewing in the range of 16.12-20.60 mm and 16.43±1.09 mm for hindwing in the range of 13.88–18.65 mm). Forewing membrane transparent without markings. Costal area narrow at base; costal setae short, inclined; pterostigma not well marked, yellow/brown suffused; subcosta (Sc) and radius (R) widely separated; radial sector (Rs) sinuate; gradates in two parallel series; intramedian cell rectangular narrow; pseudomedia (Psm) continuous with inner row of gradates; first cubital cell shorter than second, distal cubital cell open at margin; first anal vein forked; longitudinal veins pale yellow except the basal part of Rs which is brown; basal costal crossvein entirely pale, the others with one or two tips or certain parts brown; basal subcostal crossvein dark brown; basal radial crossveins brown, the other with two tips brown except a few distal crossveins which are entirely brown; basal crossveins between media anterior and cubitus anterior (CuA) dark brown; first crossvein between intermedian cell and Rs brown; basal crossveins between Rs and Psm entirely brown, the other with one or two tips brown; crossveins between Psm and pseudocubitus and posterior median crossveins pale or one or two tips brown; gradate veins brown, crossveins between CuA and cubitus posterior (CuP) and distal parts of the first and second anal veins brown, the third one entirely brown. All the longitudinal veins and crossveins with dark brown short setae. **Hindwing.** All longitudinal veins and crossveins pale yellow except costal crossveins tips connecting to Sc and radial crossveins tips connecting to radius. **Legs.** Coxa yellow with sparse hairs; femur, tibia yellow with dark brown short setae; tarsi reddish brown with dark brown short setae; claws brown with basal dilatation.



**Figures 1–10**

*Nothochrysa turcicus* n. sp. 1, thorax and anterior part of abdomen (Holotype); 2, right wings (Holotype); 3, apex of male abdomen, lateral; 4, male genitalia, gonarcus with arcessus, dorsal; 5, hypandrium internum, lateral; 6, *idem* dorsal; lateral; 7, apex of female abdomen, lateral; 8, female subgenitale, ventral; 9, female spermatheca, lateral; 10, ditto, dorsal.

**Abdomen.** Ground colour yellow with variable reddish brown spots dorsally. The spots on the second and third tergites are very distinct and reverse V shaped (fig. 1). Yellow ventrally. Setae pale. Apex of abdomen is shown in fig 3. Ectoproct fused with tergite 9, convex apically; callus cerci rounded; sternites 8+9 fused; gonarcus and arcessus as in fig 4, gonarcus U-shaped in dorsal view, expanded towards the tip; arcessus triangular in dorsal view; hypandrium internum large, and finger-like projection outwards from tip (figs 5–6).

**Female.** Male alike. Forewing length 19.55 mm, hindwing length 17.16 mm in the allotype (33 other ♀♀ paratypes, average length  $19.13 \pm 1.28$  for forewing in the range of 18.82–21.19 mm and  $16.91 \pm 1.36$  in the range of 13.73–18.65 mm for hindwing). Apex of abdomen is presented in fig. 7. Callus cerci rounded; subgenitale strongly sclerotized, bilobed apically (fig 8); spermatheca wide; ventral impression deep (figs 9–10); the spermathecal duct strongly sclerotized; vela not sclerotized and triangular.

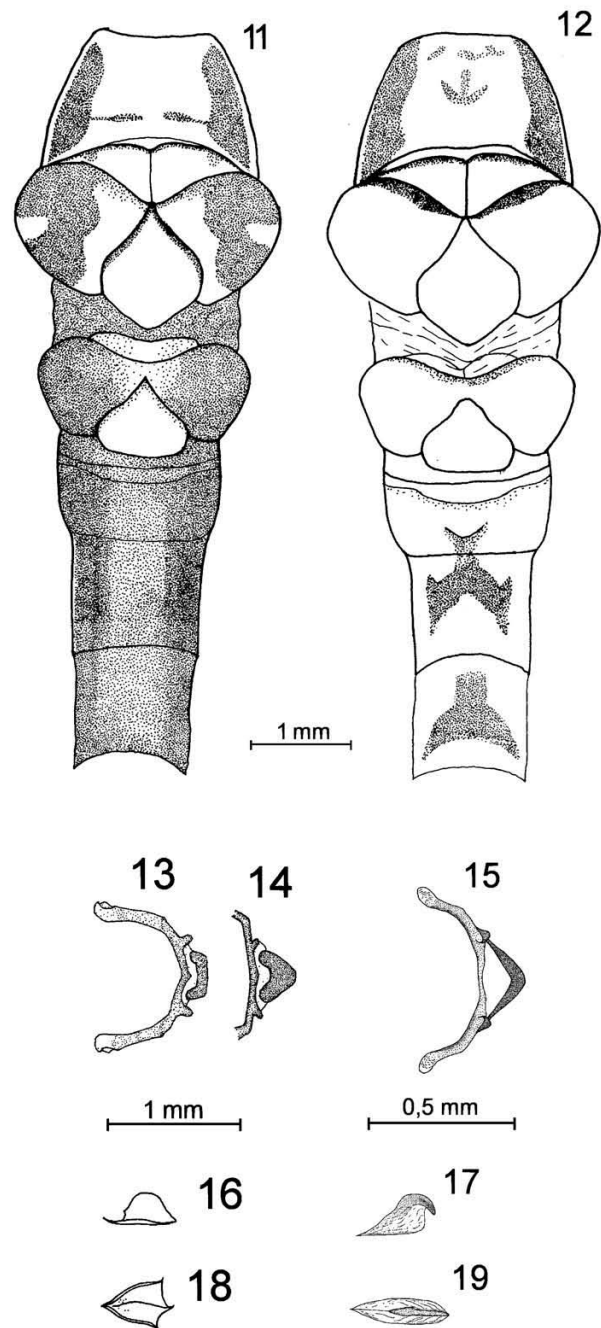
**Diagnosis.** Pronotum yellow, marked laterally with reddish brown strips; meso- and metanota without lateral strips (fig. 1); longitudinal veins pale yellow except the basal part of Rs which is brown (fig. 2). Gonarcus and arcessus as given in fig 4, gonarcus U-shaped in dorsal view, expanded towards the tip; arcessus triangular in dorsal view.

**Relationships.** Superficially, this species is similar to *N. fulviceps* and *Italochrysa italica* (Rossi 1790). *N. fulviceps* can be separated from *N. turcicus* by its dark flagellum of antennae, dark brown pro-, meso- and metanotal lateral strips, abdomen brown or dark brown especially dorso-laterally (fig. 11–12), dark wing venation (forewing with Rs, media, Psm and all crossveins dark brown, hindwing with CuA, second half of CuP, costal crossveins and other few crossveins dark brown, dark brown abdominal setae. However, the remarkable features of this newly described species include the U-shaped gonarcus which expands towards the tip in dorsal view and finger-like projection in hypandrium internum outwards from tip (figs 13–19). *I. italica* can be distinguished by longer forewing length (up to 27 mm), reddish spots on vertex, dark brown flagellar segments on the first half of antennae, broad reddish brown lateral strips on pro-, meso and metanota, the inner gradates meeting Psm, the shape of gonarcus, arcessus and especially by the presence of the parameres.

**Etymology.** The new species is named in reference to Turkey.

### Key to the species of western Palaearctic *Nothochrysa* adults

1. Pronotum yellow, marked laterally; claw with basal dilatation ..... (2)
- Pronotum entirely reddish brown; claws without basal dilatation ..... *capitata* (Fabricius)
2. Lateral stripes of pronotum dark brown; meso- and metanota also with lateral dark brown stripes. Abdomen brown or dark brown especially dorso-laterally (fig. 11). Gonarcus U-shaped but not expanded towards the



**Figures 11–19**  
Relationships between *Nothochrysa fulviceps* and *Nothochrysa turcicus* n. sp. **11**, *N. fulviceps* thorax and anterior part of abdomen; **12**, *N. turcicus* thorax and anterior part of abdomen; **13**, **14**, *N. fulviceps* gonarcus with arcessus, dorsal and caudal; **15**, *N. turcicus* gonarcus with arcessus, dorsal; **16**, *N. fulviceps* hypandrium internum, lateral; **17**, *N. turcicus* hypandrium internum, lateral; **18**, *N. fulviceps* hypandrium internum, dorsal; **19**, *N. turcicus* hypandrium internum, dorsal. (Male genitalia illustrations of *N. fulviceps* adapted from Aspöck *et al.* 1980).

tip in dorsal view, hypandrium without a finger-like projection (figs 13, 14, 16, 18) ..... *fulviceps* (Stephens)  
 - Lateral stripes of pronotum reddish brown; meso- and metanota lacking lateral stripes. Abdomen with variable reddish or reddish brown spots dorsally and yellow ventrally (fig. 12). Gonarcus U-shaped and distinctly expanded towards the tip in dorsal view, hypandrium internum with a finger-like projection (figs 15, 17, 19)

..... *turcicus* n.sp.

**Acknowledgements.** We thank the Scientific and Technical Research Council of Turkey (TUBITAK) for support of this work under grant # TUBITAK/TOGTAG-2045.

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