

***Doddiella* Kieffer: a Peculiar Genus of Platygastroidea (Hymenoptera), New to the Iranian Fauna**

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Abstract. *Doddiella kiefferi* Priesner, 1951 (Hymenoptera, Platygastroidea) is here redescribed and illustrated to facilitate its identification. This is the first record of the peculiar genus *Doddiella* Kieffer, 1913 from Iran. The specimens were collected by Malaise traps from Fars province in southern Iran during 2012 and 2013. Iran is the north–eastern limit in the distribution of this species.

Key Words: parasitoids, scelionid wasps, Malaise trap, Iran

INTRODUCTION

Platygastroidea in Iran is very poorly known. The majority of reports of the Scelionidae in Iran are related to the genus *Trissolcus* Ashmead (e.g. Radjabi & Amir Nazari, 1989; Radjabi, 2001; Hashemi Rad et al., 2002; Iranipour & Johnson, 2010) that are the best–known egg parasitoids of some pests on agricultural crops in Iran. No comprehensive study has been done on these beneficial insects in this region so far.

More than a century ago Kieffer (1913) established the genus *Doddiella* in honor of the reputable entomologist A. P. Dodd. This genus was created as monotypic for its type species *D. nigriceps* Kieffer, 1913, collected from Ghana, Côte d'Or, Aburi. In the diagnosis, Kieffer compared his new genus with *Mantibaria* because both genera have an extremely reduced fore wing venation. The main character used by him to separate these two genera was the shape of metasoma, fusiform and pedunculated in *Doddiella*. In the monograph of Kieffer (1926) *Doddiella* is still monotypic.

Dodd (1927) described *Aratala* from Australia, a monotypic genus for *Aratala globiceps* Dodd. He considered his genus as close to *Doddiella* Kieffer, *Mallateleia* Dodd and *Aneuroscelio* Kieffer because of the obsolete venation of the forewing. Forty–nine years later Masner (1976) revised and keyed the world genera of Scelionidae. He considered that not enough differences exist between *Aratala* and *Doddiella* and treated *Aratala* as a junior synonym of *Doddiella*. In the same paper Masner raised the question on the validity of *Aneuroscelio*. He takes into account the possibility that *Aneuroscelio* and *Doddiella* are also synonyms, though he did not synonymize them because the type of *Aneuroscelio* was unavailable for study. Risbec (1950) described a new species of *Doddiella*, *D. aegyptiaca*, but assigned it to the wrong genus and family, among the species of *Aneuropria* (Diapriidae). Later, Masner (1976) transferred this species in *Doddiella*. Priesner (1951) described two new species, *D. kiefferi* and *D. similis*, from Egypt. Risbec (1955) published another new species of *Doddiella* from Africa, *D. maindroni*, also placed in a wrong genus – *Macroteleia*. Later, Masner (1976) transferred this species in *Doddiella*. In the Oriental Region, Kozlov & Lê

(1986) described a new species of *Doddiella* from Vietnam. Additionally, Mukerjee (1993) described two new species, *D. indica* and *D. nigricephala*, from India.

Currently the genus consists of nine worldwide described species: *D. aegyptiaca* (Risbec), *D. dolabella* Kozlov & Lê, *D. globiceps* (Dodd), *D. indica* Mukerjee, *D. kiefferi* Priesner, *D. maindroni* (Risbec), *D. nigricephala* Mukerjee, *D. nigriceps* Kieffer and *D. similis* Priesner. All these species were listed in the catalog of Johnson (1992), except the two species described by Mukerjee in 1993.

The genus *Doddiella* is widely distributed. In the Palaearctic region it has hitherto been known only from Egypt and Israel (Masner, 1976, Kononova & Kozlov, 2008). Hereby we redescribe and illustrate *Doddiella kiefferi* Priesner, 1951 collected from the Fars province in southern Iran.

The genus *Doddiella* is reported here for the first time from Iran.

MATERIAL AND METHODS

Within the hymenopteran material that was recently collected using Malaise traps in different locations in Fars province of southern Iran, some scelionid specimens were found. These specimens were stored in 80% alcohol, dried using hexamethyldisilazane (HMDS) as described by Brown (1993) then mounted on card points. Digital images were taken with a Leica DFC-500 camera mounted on a Leica M205A stereomicroscope. Terminology of the morphological characters followed Masner (1979) and Mikó et al. (2007), and that for sculpture Al Khatib et al. (2014) and Gibson & Fusu (2016). The voucher specimens are deposited in O. A. Popovici personal collection, University 'Al. I. Cuza' Iasi, Romania (1♂ and 1♀) and in Department of Entomology, Jahrom Branch, Islamic Azad University, Jahrom, Iran 3 (2♀♀, 1♂).

Abbreviations: HE: height of compound eye; LA1–LA12: length of antennal segments 1–12; LOL: lateral ocellar line; LE: length of compound eye, OOL: ocular ocellar line; POL: posterior ocellar line; T1–T6: metasomal tergites 1 to 6; WA1–WA12: width of antennal segments 1–12.

RESULTS

Doddiella kiefferi Priesner, 1951

(Figs 1, 2)

Examined material: 1♀: Iran, Fars Province, Khonj, 10.III.2012, 27°53'31"N, 53°26'42"E, leg. M. Atbaei; 1♂ and 1♀: 6.IV.2013, same data; 1♀ and 1♂: 20.VI.2013, same data.

Description of the female (Figs. 1, 2 B–E)

Head light brown dorsally, with white conspicuous setae (Fig. 2 D); posterior margins of temple and gena with a conspicuous whitish cushion of densely packed setae (Figs. 1 A, B, 2 D, E); compound eyes black (Figs. 1 A, B, 2 D, E); antenna yellow, except the brown clava (Figs. 1 A, B, 2 E). Mesosoma uniformly yellowish except slightly darker mesoscutellum. Legs with uniform yellow colour (the same colour as scapus) (Fig. 1 A). Forewing with alternating brown and white bands (Figs. 1 A, B, C, 2 B, C); pterostigma dark–brown. In the darkened areas of the fore wing, both membrane and setae are brown. In the hyaline area, the membrane is colourless and setae white. Gaster yellowish, with T1–T3 lighter than T4–T6.

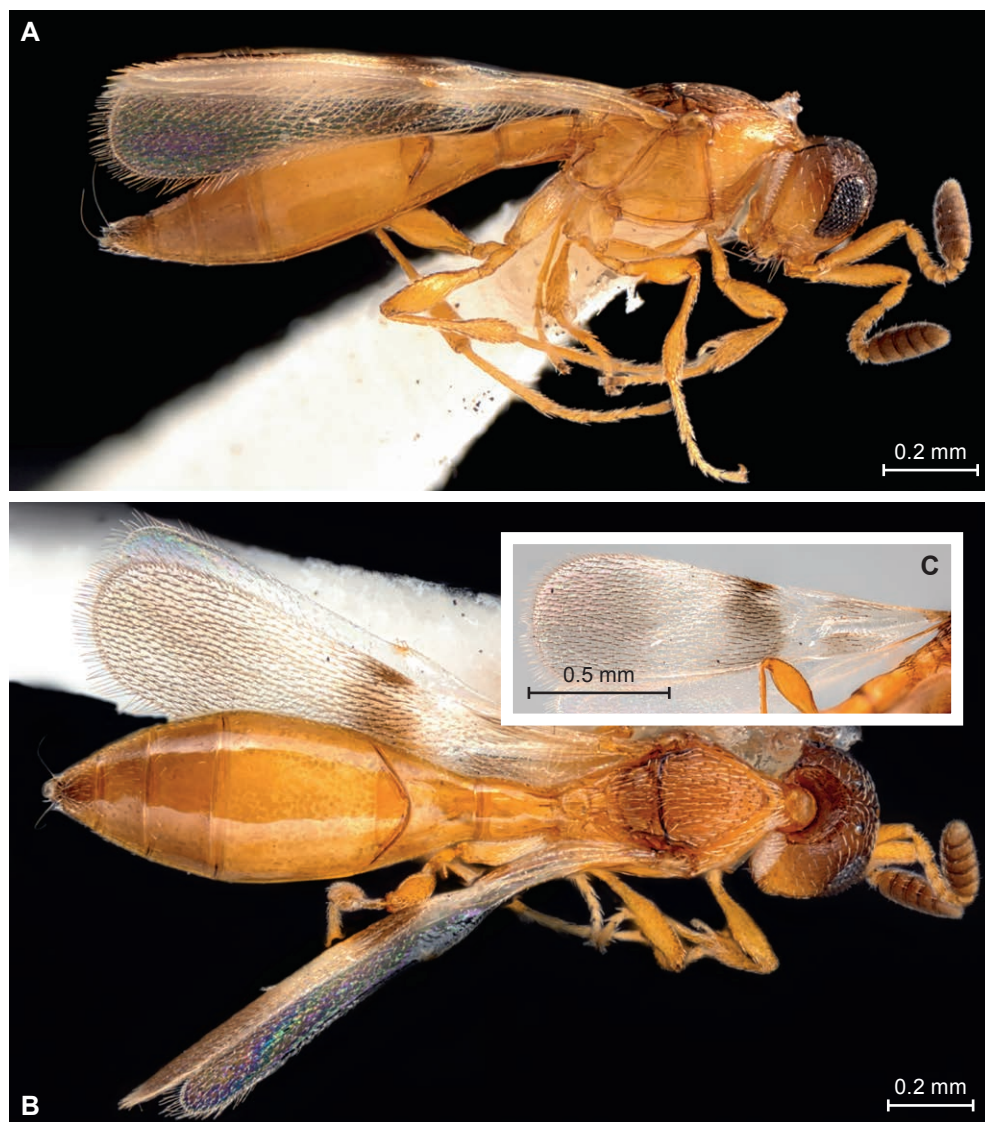


Fig. 1 – *Doddieella kiefferi*, female: A, habitus, lateral view; B, habitus, dorsal view; C, fore wing.

Head with well visible hyperoccipital carina, $1.7\times$ as wide as long (Fig. 2 D). Compound eye large, glabrous, LE $1.2\times$ Lt, HE $1.6\times$ LE, and $2.1\times$ as long as cheek (Fig. 2 E). OOL $1.5\times$ the length of maximum diameter of posterior ocellus, POL $1.5\times$ LOL. Distance between compound eyes (measured at level of anterior ocellus) $2.1\times$ POL. Sculpture of head alutaceous (Fig. 2 D).

Antenna 12-segmented, with abruptly delimited 5-segmented clava (Figs. 1 A, B, 2 E). LA1 $4.2\times$ WA1 and $3.0\times$ LA2. LA2 $2.0\times$ WA2 and $1.7\times$ LA3. LA3 $1.4\times$

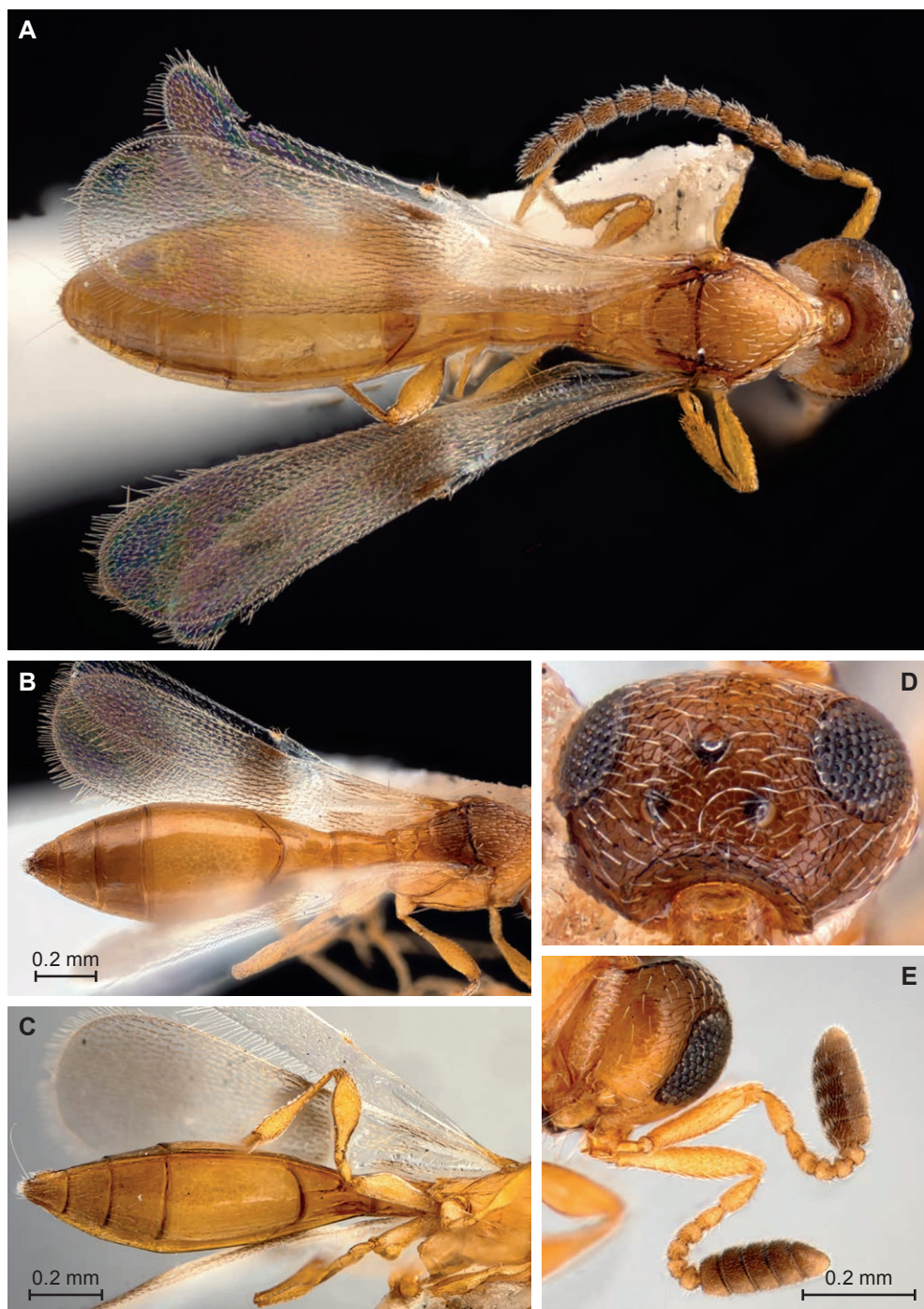


Fig. 2 – *Doddia kiefferi*: A, male, habitus, dorsal view; B, female, metasoma, dorsal view; C, female, metasoma, ventral view; D, female, head, dorsal view; E, female, head and antenna, lateral view.

WA3 and $1.5 \times$ LA4. LA4 $0.82 \times$ WA4 and $1.1 \times$ LA5. WA4 $1.1 \times$ WA5, LA5 $0.8 \times$ WA5 and $1.2 \times$ LA6. LA6 $0.9 \times$ LA7 and $0.6 \times$ WA6. LA12 $0.9 \times$ WA12 and $1.4 \times$ LA11.

Skaphion and notauli absent. Mesoscutum about as wide as long. Mesoscutellum $0.52 \times$ as long as mesoscutum and $1.4 \times$ as wide as long (Fig. 1 B). Propleuron, mesopleuron and metapleuron all relatively smooth and shiny, without carinae, depressions or pits (Fig. 1 A). Pronotum and lateral pronotal area developed more than is usual in Scelioninae (Figs. 1 A, B). Netrion absent. Mesepimeral area well visible. Mesepimeral sulcus not crenulated (Fig. 1 A). Metascutellum produced backwards into a semitransparent projection fitting into the metasomal depression, between the two lateral propodeal carinae.

Forewing $3.7 \times$ as long as wide and $1.1 \times$ as long as hind wing. Hind wing $5.5 \times$ as long as wide, with 3 hamuli and without veins. Marginal fringe well developed, width of hind wings $2.3 \times$ the length of marginal fringe.

Hind coxa well developed, longer than T1 (Figs. 1 A, 2 C).

Metasoma distinctly elongate, fusiform, entirely smooth and strongly shining, suture between T2 and T3 arched upwards, T3 the largest (Figs. 1 B, 2 B). Laterotergites well developed, narrow (Fig. 2 C). Metasoma $3.0 \times$ as long as wide. T1 $1.2 \times$ as long as width and $1.2 \times$ as long as T2. T3 $1.1 \times$ as wide as T3, $2.8 \times$ as long as T2 and $2.4 \times$ as long as T4.

Description of the male (Fig. 2 A)

Similar to the female in body shape and colour, differing in the structure of the antenna.

The variability of some measurements species and the differences females/males can be found in the table 1.

D. kiefferi is a new record for the Iranian fauna.

DISCUSSIONS

Our specimens of *Doddiella* fetch well in the description of Priesner (1951). Also, our specimens were compared with the images of female holotype at http://osuc.biosci.ohio-state.edu/hymDB/eol_scelionidae.taxon_image?img_id=83005. The differences between our material and the type material can be resumed to the hyperoccipital carina more evident in our specimens. Priesner (1951) mentioned nothing about this structure and in the pictures of the holotype this carina is not well visible (the visibility of this carina depends on the viewing angle).

All studied specimens were collected in a *Citrus* spp. (Rutaceae) garden, located on the southern border of Khonj town in southern Iran. The site has an altitude of about 527 m a.s.l. The climate of the collection area is hot and dry. Because the specimens were collected using Malaise traps their biology and host(s) remain unknown. No data about the biology of the genus *Doddiella* are available, but Masner (1976) and Galloway & Austin (1984) observed that members of this genus are often collected on the ground.

The biogeographic location of Iran in Palaearctic is unique, at the crossroads of the Afrotropical and Oriental ecozones, the Caucasus and Central Asia. Due to the large area of the country and the peculiar geographical position, Iran should have a larger specific diversity of Platygastroidea than currently known. Although the presence of *Doddiella* in Iran was not totally unexpected (it is not very far from Egypt or Israel), at the moment Iran is the most eastern point in the distribution of

Table 1

Selected measurements for *Doddiella. kiefferi* (values are in mm)

Measurements	Female 1	Female 2	Female 3	Male 1	Male 2
LA1	0.257	0.280	0.261	0.256	–
LA2	0.080	0.080	0.071	0.067	–
LA3	0.050	0.049	0.046	0.098	–
LA4	0.032	0.032	0.034	0.071	–
LA5	0.026	0.024	0.028	0.091	–
LA6	0.025	0.020	0.029	0.084	–
LA7	0.024	0.025	0.022	0.079	–
LA8	0.035	0.039	0.035	0.084	–
LA9	0.045	0.041	0.038	0.090	–
LA10	0.046	0.045	0.041	0.088	–
LA11	0.045	0.048	0.039	0.087	–
LA12	0.065	0.060	0.078	0.126	–
WA1	0.057	0.064	0.057	0.077	–
WA2	0.038	0.040	0.039	0.066	–
WA3	0.032	0.031	0.032	0.077	–
WA4	0.039	0.037	0.040	0.092	–
WA5	0.038	0.040	0.041	0.067	–
WA6	0.038	0.039	0.043	0.060	–
WA7	0.044	0.043	0.045	0.063	–
WA8	0.075	0.078	0.077	0.058	–
WA9	0.089	0.096	0.087	0.074	–
WA10	0.093	0.100	0.088	0.062	–
WA11	0.086	0.096	0.085	0.062	–
WA12	0.071	0.079	0.069	0.061	–
POL	0.088	0.917	0.935	0.092	0.089
LOL	0.065	0.071	0.071	0.073	0.057
OOL	0.068	0.067	0.061	0.074	0.068
Mesoscutum length	0.291	0.287	0.295	0.287	0.243
Mesoscutum width	0.267	0.298	0.285	0.281	0.249
Mesoscutellum length	0.126	0.143	0.145	0.138	0.135
Mesoscutellum width	0.196	0.222	0.211	0.208	0.213
LT1	0.191	0.211	0.223	0.221	0.219
LT2	0.175	0.181	0.198	0.199	0.185
LT3	0.461	0.489	0.494	0.467	0.421
LT4	0.185	0.207	0.221	0.184	0.170
LT5	0.112	0.124	0.136	0.126	0.119
LT6	0.086	0.092	0.106	0.101	0.098

D. kiefferi. Further studies related to the presence of other scelionid species and their biology is needed.

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