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SPIDERS (ARANEAE) NEW TO THE FAUNA OF TURKEY. 8. NEW RECORDS OF HAHNIIDAE AND DICTYNIDAE

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ABSTRACT

New records are presented for a number of species collected from central and north-western parts of Turkey. Five species and one genus represent new records for Turkey (3 species in Hahniidae and 2 species and one genus in Dictynidae): *Hahnia candida* Simon, 1875, *H. helveola* Simon, 1875, *H. nava* (Blackwall, 1841), *Scotolathys simplex* Simon, 1884 and *Nigma puella* (Simon, 1870). Notes on distribution and habitat preferences of the species are provided and briefly discussed.

Keywords: Dictynidae, Hahniidae, new records, Turkey.

TÜRKİYE ÖRÜMCEK (ARANEAE) FAUNASI İÇİN YENİ KAYITLAR. 8. HAHNIIDAE VE DICTYNIDAE

ÖZ

Bu çalışmada , Türkiye'nin İç ve Kuzeybatı kısmından toplanmış 3 tür Hahniidae, 2 tür ve 1 cins Dictynidae familyasına ait olmak üzere 5 adet yeni kayıt verilmiştir. Bu türler *Hahnia candida* Simon, 1875, *H. helveola* Simon, 1875, *H. nava* (Blackwall, 1841), *Scotolathys simplex* Simon, 1884 ve *Nigma puella* (Simon, 1870).'dir. Ayrıca türlerin dağılımları ve habitat tercihleri verilerek kısaca tartışılmıştır.

Anahtar Kelimeler: Dictynidae, Hahniidae, yeni kayıt, Türkiye.

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INTRODUCTION

The first published record of Dictynidae [*Dictyna arundinacea* (Linnaeus, 1758) and *Dictyna latens* (Fabricius, 1775)] from Turkey was by Kulczyński (1903). The first documented record for Turkish Hahniidae was of *Cryphoeca silvicola* (C.L. Koch, 1834) by Roewer (1959). To date, 8 species of Dictynidae and 6 species of Hahniidae have been recorded from the country (Bayram *et al.,* 2010). During the field surveys for a project on Zodariidae of the Central Anatolian region of Turkey during 15-30 September, 2010, spiders were collected from more than 30 localities in 12 different provinces.

Preliminary sorting revealed that spiders collected during this field trip included more than 200 morphospecies. Detailed study of several species belonging to Dictynidae and Hahniidae identified several species and one genus previously unrecorded from Turkey. This paper reports on these taxa new to the fauna of Turkey and provides new provincial records.

MATERIAL AND METHODS

All specimens were collected from two different localities in Turkey during two joint expeditions in 2009 and 2010 (Figs. 1-2). Each species treated here is supplied with the most appropriate identification references (chiefly well known identification books).

Specimens were photographed using an Olympus Camedia C-5050 camera attached to an Olympus SZX12 stereomicroscope. The images were montaged using "CombineZM" image stacking software. Photographs were taken in dishes of different size with paraffin in the bottom. Different sized holes were made in the bottom to keep the specimens in the required position. The material treated here is deposited in the personal collection of Kadir Boğaç Kunt and the Zoological Museum of Moscow State University.

Figure 1. Collection localities of Hahniidae in Turkey

Figure 2. Collection localities of Dictynidae in Turkey.

Taxonomic survey
Family Hahniidae
Genus *Hahnia* C.L. Koch, 1841

Hahnia is a fairly large globally distributed genus with 98 species (Platnick, 2011). Two species from this genus: *H. montana* (Blackwall, 1841) and *H. ononidum* Simon, 1875, were recently reported from Turkey for the first time (Marusik and Kunt, 2009). During the second joint trip three additional species new to fauna of Turkey were collected.

***Hahnia candida* Simon, 1875**
(Figs. 13-14)
H. c.: Roberts, 1985: 168, f. 74d (♂♀).
H. c.: Heimer & Nentwig, 1991: 370, f. 959 (♂♀).
H. c.: Roberts, 1995: 257, f. (♂♀).
H. c.: Roberts, 1998: 273, f. (♂♀).
H. c.: Levy, 2003: 8, f. 9-15 (♂♀).
Material examined: 1♀ [T-29] Eskişehir Province, Alpu-Mihalıççık road, 20-25 km to Mihalıççık District, 39°50'05"N, 31°11'36"E, 877 m, open ravine in semi-desert with oak and pine, 27.09.2010, leg. Y.M. Marusik.

Comments. This species is distributed in the western Palaearctic and has been recorded from Europe, North Africa and the Middle East. It ranges from the United Kingdom to Poland in the north and from Spain to Israel in the south (Helsdingen, 2010; Platnick, 2011). *H. candida* is unknown in Eastern Europe (the former USSR) (Mikhailov, 1997). The occurrence of this species in Turkey had been predicted by Marusik and Kunt (2009) due to its presence in neighboring countries such as Bulgaria, Greece and the more southern Israel. The record of this species in Eskişehir Province is the second locality for Asia and its westernmost occurrence in Asia. Based on its presence in Israel this species probably occurs in other provinces of Turkey.

Comparison. *H. candida* can be easily distinguished from other congeners occurring in Turkey by its small size (1.3-1.4 mm) and light, uniformly pale colouration. Another small species, *H. montana* is slightly larger (1.5-2 mm), and has a dark coloured dorsum with an indistinct pattern and a light venter. The species can also be distinguished by differences in their copulatory organs.

***Hahnia helveola* Simon, 1875**
(Figs. 11-12)
H. h.: Harm, 1966: 360, f. 41-45 (♂♀, S).
H. h.: Roberts, 1985: 168, f. 74f (♂♀).
H. h.: Heimer & Nentwig, 1991: 370, f. 963 (♂♀).
H. h.: Roberts, 1995: 256, f. (♂♀).
H. h.: Roberts, 1998: 272, f. (♂♀).
H. h.: Almquist, 2005: 274, f. 258a-e (♂♀).

Material examined: 4♀ 1juv. [T-18/01] Bilecik Province, surroundings of Mezit 11 bridge, 39°55'17"N, 29°46'37"E, 731 m, leaf-litter in *Fagus* forest, 23.09.2010, leg. Y.M. Marusik.

Comments. Previously this species was known exclusively from the western half of Europe: from Ireland to southern Sweden and Poland in the north, and from Spain to Moldova in the south (Helsdingen, 2010). This species has not been recorded from neighbouring Greece or Bulgaria, but based on its presence in Western Anatolia its occurrence in these countries is highly likely. This new record from Turkey is the first from Asia and the southeasternmost of its whole range. Its longitude coincides with the easternmost record from Moldova (Mikhailov, 1997; Helsdingen, 2010).
Comparison. This species can be easily distinguished from other congeners reported from Turkey by its large size (2.3-3 mm) and light colouration with a distinct dark pattern (transverse bands). Another relatively large species, *H. ononidum* is somewhat smaller (ca 1.8-2.1 mm), has a dark colouration with a light pattern (transverse bands) or is sometimes uniformly dark in colour. The species can also be distinguished by differences in their copulatory organs.

***Hahnia nava* (Blackwall, 1841)**
(Figs. 6-7)
H. n.: Harm, 1966: 364, f. 51-56 (♂♀).
H. n.: Roberts, 1985: 168, f. 74e (♂♀).
H. n.: Heimer & Nentwig, 1991: 372, f. 965 (♂♀).
H. n.: Roberts, 1995: 254, f. (♂♀).
H. n.: Roberts, 1998: 271, f. (♂♀).
H. n.: Namkung, 2002: 373, f. 26.2a-b (♂♀).
Material examined: 1♀ [T-25/0] Bursa Province, Uludağ, Keles District, near Baraklı Lake, 39°57'59"N, 29°14'24"E, 1122 m, oak stand with pine, 25.09.2010, leg. Y.M. Marusik; 1♀ [T-26] Bursa Province, Uludağ, Keles District, near Baraklı Lake, 40°02'50.8"N, 29°04'11.4"E, 508 m, pine with oak, 25.09.2010, leg. Y.M. Marusik.

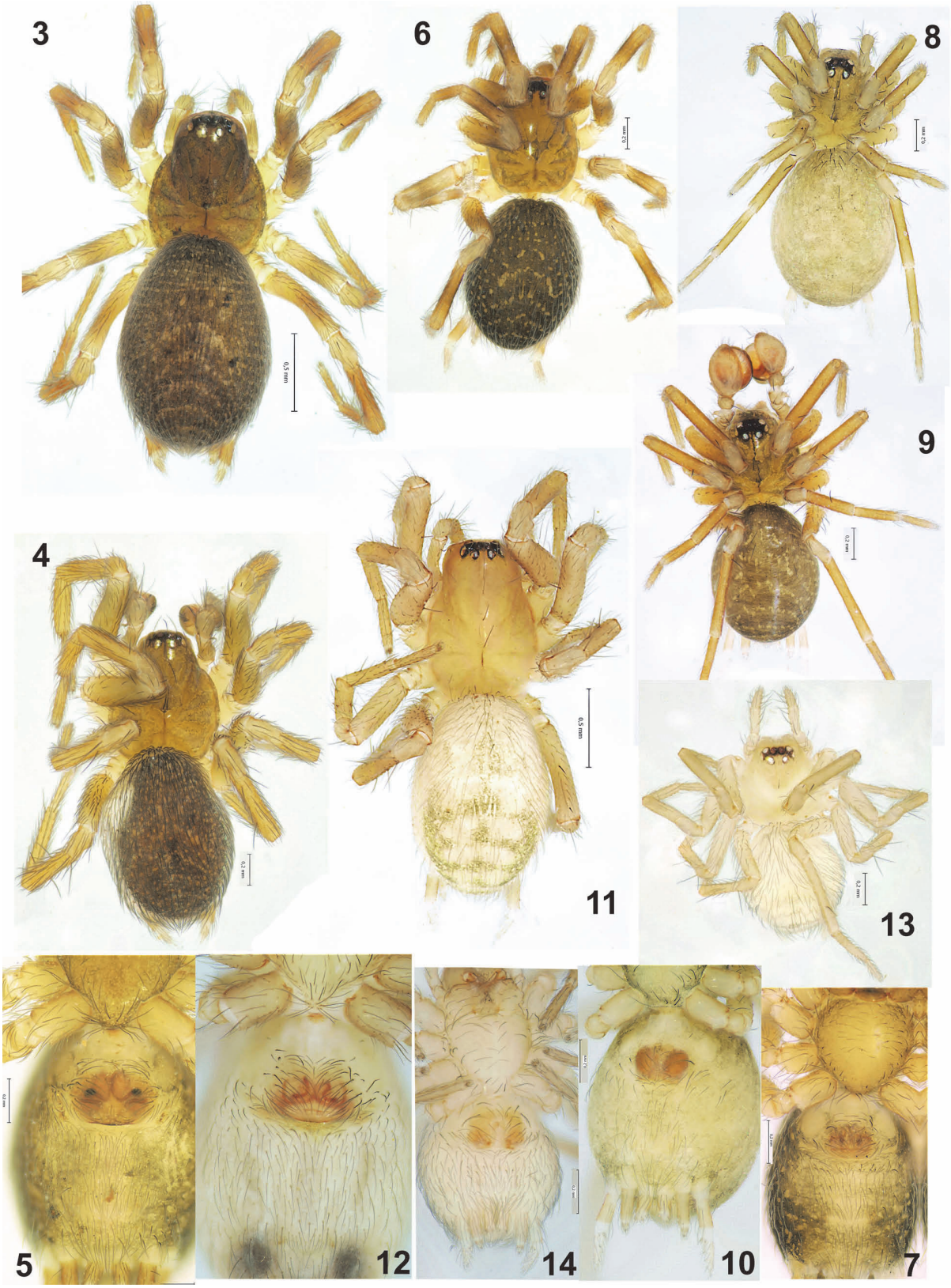
Comments. This species has a trans-Palaearctic range and is known from Spain to Sakhalin (Platnick, 2011; Mikhailov, 1997) and it is surprising that it has not been previously recorded from Turkey. However, we had previously predicted its occurrence in Anatolia (Marusik and Kunt, 2009).
Comparison. Similar in general appearance and pattern to *H. ononidum* and *H. montana* from which it can be distinguished by the characteristic shape of the epigyne, and the oval tegulum (round in *H. montana*) lacking a "brush" (present in *H. ononidum*).

***Hahnia montana* (Blackwall , 1841)**
(Figs. 8-10)
H. m.: Harm, 1966: 354, f. 23-28 (♂♀, S).
H. m.: Roberts, 1985: 168, f. 74c (♂♀).
H. m.: Heimer & Nentwig, 1991: 370, f. 960 (♂♀).
H. m.: Roberts, 1995: 254, f. (♂♀).
H. m.: Roberts, 1998: 270, f. (♂♀).
Material examined (new provincial record only): 18♂♀ [T-16] Eskişehir Province, Sivrihisar District, 39°26'49"N, 31°32'43"E, 1151 m, rocky hillside above city cemetery, 22.09.2010, leg. Y.M. Marusik.

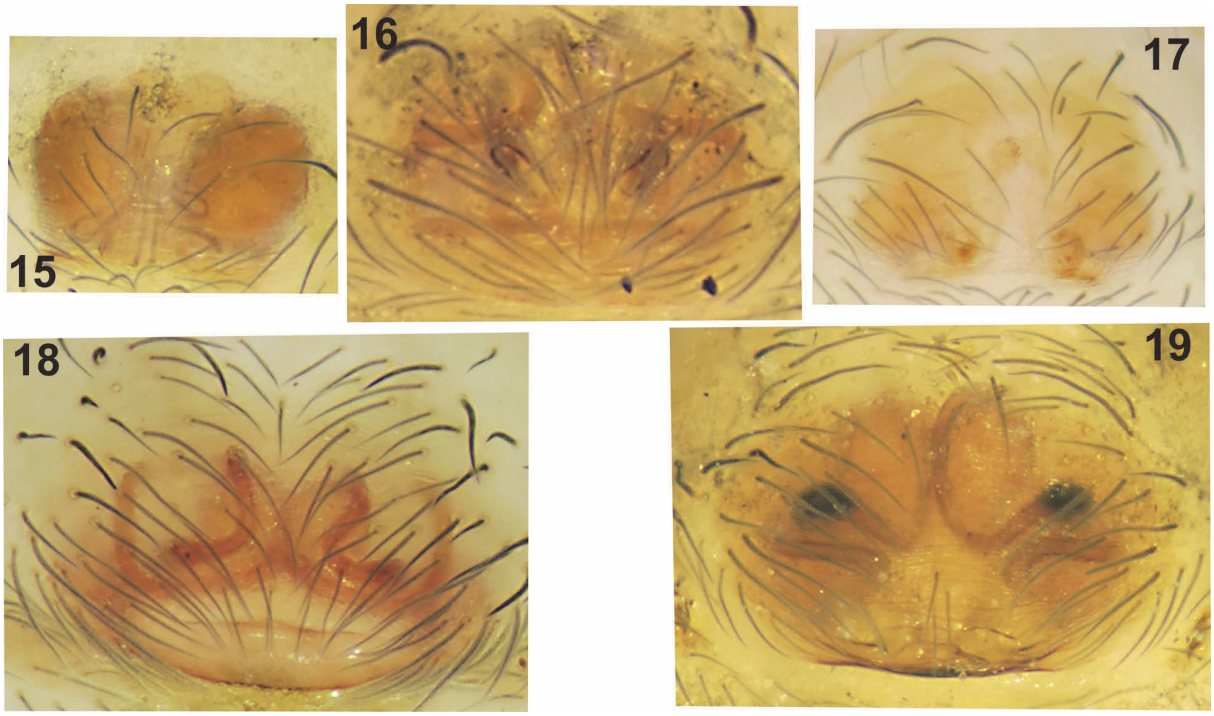
Comments. This species was reported from Turkey (Bolu, Kastamonu and Bursa provinces) for the first time by Marusik and Kunt (2009). It ranges from Spain to western Russia, but does not reach the Ural Mountains or Caucasus. Surprisingly it has not been recorded from Greece or Bulgaria.
Comparison. In general appearance and pattern (dark coloured with indistinct pattern, which is sometimes absent) it is similar to *H. nava* and *H. ononidum*. Males of this species can be easily recognized by having a round tegulum (oval in the other species), and females can be distinguished by the shape of the epigyne, which has large translucent receptacles.

***Hahnia ononidum* Simon, 1875**
(Figs. 3-5)
H. o.: Harm, 1966: 362, f. 46-50 (♂♀, S).
H. o.: Heimer & Nentwig, 1991: 372, f. 964 (♂♀).
H. o.: Roberts, 1998: 272, f. (♂♀).
Material examined (new provincial records only): 1♂ [T-04] Yozgat Province, Yozgat Çamlığı Natural Park, 39°48'18"N, 34°48'45"E, 1552 m, pine stand, under stones, pine litter and among grass, 17.09.2010, leg. Y.M. Marusik; 2♂ 4♀ Bolu Province, Gerede District, Ankara-Gerede Hwy., 40°39'7.16"N, 32°20'44.75"E, 1333 m, in litter, 30.09.2010, leg. K.B.Kunt.

Comments. This species has a circum-Holarctic range and was recently reported from Ankara and Kastamonu Provinces in Turkey (Marusik and Kunt, 2009).
Comparison. In general appearance it is similar to *H. montana* and *H. nava*, from which it can be distinguished by its larger size, the shape of the epigyne, the presence of postepigastric scutula and by having a brush on the tegulum.



Figures 3-14. Habitus and ventral view of female abdomen of *Hahnia ononidum* (3-5), *H. nava* (6-7), *H. montana* (8-10), *H. helveola* (11-12) and *H. candida* (13-14). 3, 6, 8, 11, 13 – female, dorsal; 4, 9 – male, dorsal; 5, 7, 10, 12, 14 – female abdomen, ventral



Figures 15-19. Epigyne, ventral view, of *Hahnia montana* (15), *H. nava* (16), *H. candida* (17), *H. helveola* (18) and *H. ononidum* (19).

List of other Hahniid spiders previously recorded from Turkey

Comments. Although *Cryphoeca* (a member of Cryphoecinae) is considered to belong in Hahniidae, this genus has copulatory organs, spinnerets and the position of the receptacle very different from those in Hahniinae (Marusik and Penney, 2010).

***Antistea elegans* (Blackwall, 1841)**
General distribution: Platnick (2011) lists this species as Palaearctic, although it is unknown between the Yenisei River (Eskov, 1988; Mikhailov, 1997) and Japan (Ono, 2009).
Distribution in Turkey: Batman Province, Oğuz Village; Kilis Province (Kunt *et al.,* 2008).

***Cryphoeca pirini* (Drensky, 1921)**
General distribution: Bulgaria, Turkey (Platnick, 2011).
Distribution in Turkey: Artvin Province, Yalnızçam Pass; Bayburt Province, Soğanlı Pass; Trabzon Province, Zigana Pass (Brignoli, 1978).

***Cryphoeca silvicola* (C.L. Koch, 1834)**
General distribution: Palaearctic (Platnick, 2011).
Distribution in Turkey: Mardin Province (Roewer, 1959).

***Cryphoeca thaleri* Wunderlich, 1995**
General distribution: Turkey (Platnick, 2011).
Distribution in Turkey: Bolu Province, Abant (Wunderlich, 1995).

Family Dictynidae
Genus *Scotolathys* Simon, 1884

This is a monotypic genus known exclusively from the Mediterranean region (Marusik *et al.,* 2009). Previously it was considered as a synonym of *Lathys* Simon, 1884, but was recently removed from synonymy (Marusik *et al.,* 2009)

***Scotolathys simplex* Simon, 1884**
S. s.: Wiehle, 1960: 469, f. 13 (♀).
S. s.: Marusik *et al.*, 2009: 32, f. 1-3, 7-10, 18-20, 25-28, 33-37, 39-42, 48-50, 58-64(♂♀).
S. s.: Bosmans *et al.,* 2009: 32, f. 41-45 (♂♀).
Material examined: 1♀ [T-19/01] Bursa Province, near Oylat Cave, 39°55'59"N, 29°35'20"E, 623 m, *Fagus-Pine*-oak forest, litter, 23.09.2010, leg. Y.M. Marusik; 1♀ [T-26] Bursa Prov., Uludağ, Keles District, near Baraklı Lake, 40°02'50.8"N, 29°04'11.4"E, 508 m, pine with oak, 25.09.2010, leg. Y.M. Marusik.

Comments. This species is known throughout the Mediterranean, from Spain and Algeria to

Crimea (Marusik *et al.,* 2009; Bosmans *et al.,* 2009). It was reported from two areas adjacent to Anatolia, such as Crimea (Marusik *et al.,* 2009) and Lesbos (Bosmans *et al.,* 2009) but had not previously been found in Turkey. For a long time *S. simplex* was known only from the female, with the male being described simultaneously by Marusik *et al.,* (2009) and Bosmans *et al.,* (2009).
Comparison. This species can be easily recognized by having only six eyes and being of uniform yellow colour (i.e., without a pattern).

***Nigma puella* (Simon, 1870)**
N. p.: Roberts, 1985: 52, f. 15a (♂♀).
N. p.: Roberts, 1995: 86, f. (♂♀).
N. p.: Roberts, 1998: 88, f. (♂♀).
Material examined: 1♀ [T-13] İzmir Province, Kemalpaşa District, Vişneli Village, 38º20.777'N 27º25.271'E, 311 m, 5.06.2009, leg. Y.M. Marusik; 1(♂) [T-19/01] Bursa Province, near Oylat Cave, 39°55'59"N, 29°35'20"E, 623 m, *Fagus-Pinus*-oak forest, litter, 23.09.2010, leg. Y.M. Marusik.

Comments. This species was previously known from the Azores Islands to Greece (Helsdingen, 2010). It has not been recorded from adjacent Bulgaria, while it reaches England in the north. Bursa and İzmir are easternmost localities for this species and first records from Asia.
Comparison. From another species occurring in adjacent Europe it can be easily separated by having a red spot on the abdomen in females and juveniles. The adult male has a red carapace and abdomen (cf. Roberts, 1995: pl. 2, f. 1a-b).

List of other Dictynid spiders previously recorded from Turkey

***Cicurina cicur* (Fabricius, 1793)**
General distribution: Europe to Central Asia
General distribution: Europe to Kazakhstan (Mikhailov, 1997; Helsdingen, 2010).
Distribution in Turkey: Van Province (Bayram *et al.,* 1999).

***Cicurina paphlagoniae* Brignoli, 1978**
General distribution: Turkey (Platnick, 2011).
Distribution in Turkey: Kastamonu Province, Ballıdağ; Sinop, Dranaz Pass (Brignoli, 1978).

***Dictyna arundinacea* (Linnaeus, 1758)**
General distribution: Holarctic (Platnick, 2011).
Distribution in Turkey: Eskişehir Province (Kulczyński, 1903).

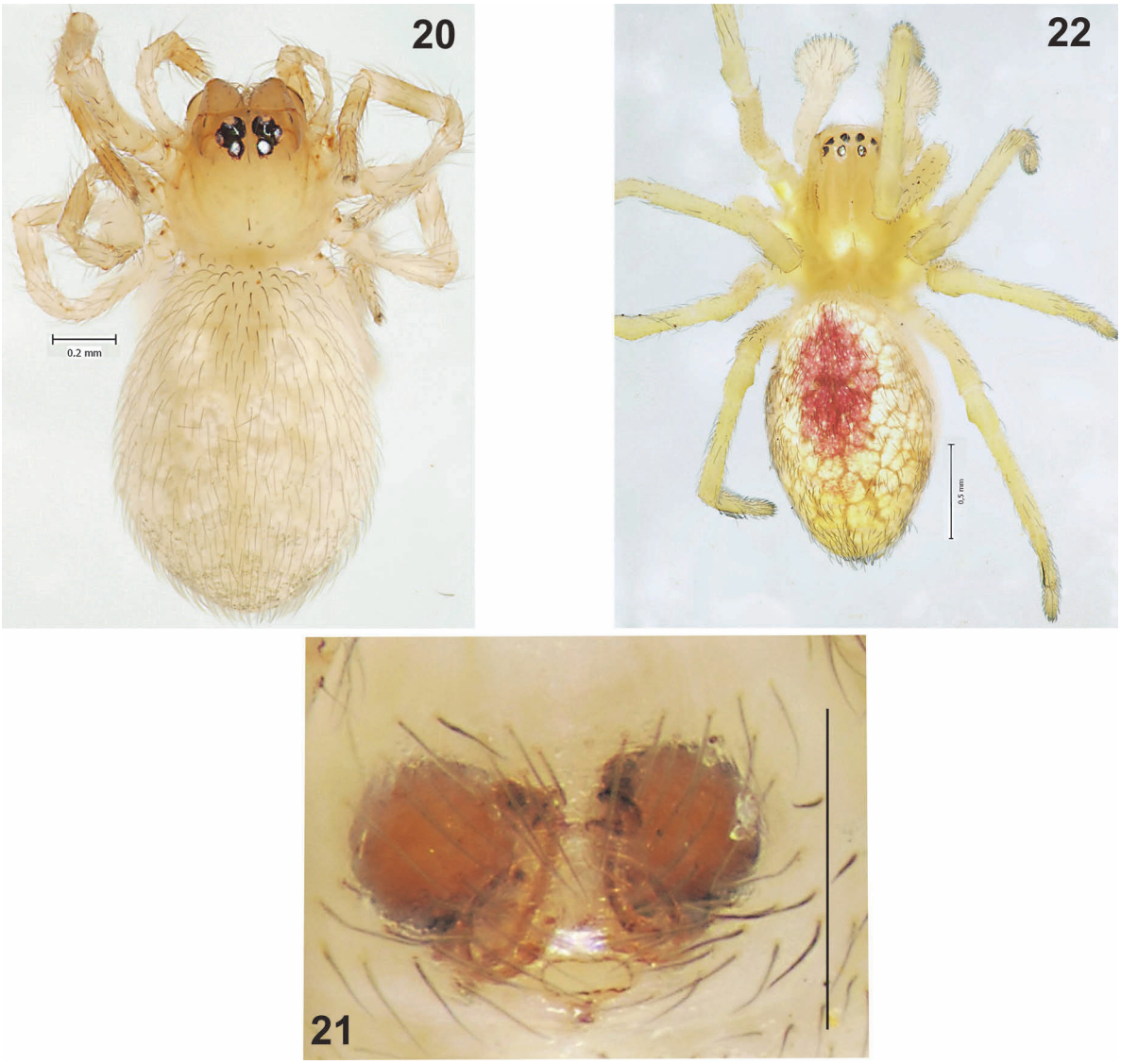
***Dictyna civica* (Lucas, 1850)**
General distribution: West Palaearctic (excluding Russia) and Nearctic (Helsdingen, 2010; Platnick, 2011).
Distribution in Turkey: East and South East Anatolia (Bayram, 2002).
Additional record: 4♀ [T-21/01] Artvin Province, Arhavi District, 41º21'09"N 41º18'33"E, 173 m, 13.06.2009, leg. Y.M. Marusik.

***Dictyna latens* (Fabricius, 1775)**
General distribution: Europe to Central Asia (Platnick, 2011).
Distribution in Turkey: Bursa Province, Akçaalan (Kulczyński, 1903); Konya Province, Karapınar District (Nosek, 1905); Kırıkkale Province (Bayram *et al.,* 2005); Bursa Province (Kaya and Uğurtaş, 2007).

***Dictyna pusilla* Thorell, 1856**
General distribution: Palearctic (Platnick, 2011).
Distribution in Turkey: Niğde Province (Topçu *et al.,* 2005).

***Emblyna annulipes* (Blackwall, 1846)**
General distribution: Holarctic (Platnick, 2011).
Distribution in Turkey: Van Province (Bayram, 1996); Kırıkkale Province (Bayram *et al.*, 2005).

***Nigma walckenaeri* (Roewer, 1951)**
General distribution: Europe to Azerbaijan (Mikhailov, 1997; Helsdingen, 2010).
Distribution in Turkey: Adana Province (Topçu *et al.,* 2005).



Figures 20-22. Female of *Scotolathys simplex* (20-21) and subadult male of *Nigma puella* (22). 20, 22 – habitus, dorsal; 21 – epigyne, ventral

Discussion

So far, 10 species of Dictynidae (including the new records) have been recorded from Turkey, but our record of the genus *Scotolathys* represents the first for the country. The family Hahniidae was represented by six species until now. Here, we presented three new records for this family: *Hahnia candida*, *H. helveola*, and *H. nava*. Although *Cryphoeca brignolii* Thaler, 1980 (Hahniidae) was given in the checklist of the spiders of Turkey by Topçu *et al,*. (2005), according to Wunderlich (1995) this species does not occur in Turkey. *C. brignolii* was originally described from a number of samples collected from Italy and a male specimen from Turkey (Thaler, 1980). However, following examination of the type specimens of *C. brignolii*, Wunderlich (1995) recognized that the male specimen collected from Turkey (Abant, Bolu province) actually belonged to an undescribed species, *C. thaleri* Wunderlich, 1995. Therefore, we excluded *C. brignolii* from the list of Hahniidae recorded from Turkey. Moreover, general distribution of *C. brignolii* was given by Platnick (2011) as only Italy and Switzerland.

Dictyna civica was reported from Turkey by Bayram (2002), but he did not provide any locality data. We collected this species from Artvin province, thus we present the first published record for this species from the Turkish spider fauna.

The comparative diversity of the Turkish Dictynidae and Hahniidae to that of neighboring countries, such as Azerbaijan (16 species in Dictynidae, 1 in Hahniidae), Bulgaria (17 species in Dictynidae, 9 in Hahniidae) and Greece (21 species in Dictynidae, 6 in Hahniidae) (Otto and Dietzold, 2006; Helsdingen, 2010), leads us to conclude that the actual diversity of these families in Turkey can be expected to be higher than that currently observed. Therefore, we expect that more new Turkish records will be found in the future for both families.

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