

The bees of the genus *Hylaeus* FABRICIUS, 1793 of Turkey, with keys to the subgenera and species (Hymenoptera: Anthophila, Colletidae)

With 17 figures

HIKMET ÖZBEK¹ and HOLGER H. DATHE²

¹ Atatürk University, Agricultural Faculty, Plant Protection Department, TR–25240 Erzurum, Turkey. – hozbek@atauni.edu.tr

² Senckenberg Deutsches Entomologisches Institut, Eberswalder Straße 90, 15374 Müncheberg, Germany.

– holger.dathe@senckenberg.de

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Abstract

The paper presents data of around 4000 previously unpublished specimens, collected in various parts of the country during the last decades. With literature sources, a total of 86 species of the genus *Hylaeus* FABRICIUS, 1793 from 10 subgenera are compiled for Turkey. New for Turkey are 11 species: *Hylaeus* (*Dentigera*) *kahri* FÖRSTER, 1871, *H.* (*Dentigera*) *pallidicornis* MORAWITZ, 1876, *H.* (*Hylaeus*) *deceptorius* (BENOIST, 1959), *H.* (*Hylaeus*) *gracilicornis* (MORAWITZ, 1867), *H.* (*Hylaeus*) *paulus* BRIDWELL, 1919, *H.* (*Hylaeus*) *tresignatus* MORAWITZ, 1876, *H.* (*Nesoprosopis*) *pectoralis* FÖRSTER, 1871, *H.* (*Prosopis*) *incongruus* FÖRSTER, 1871, *H.* (*Prosopis*) *trinotatus* (PÉREZ, 1896), *H.* (*Prosopis*) *variolaris* MORAWITZ, 1876 and *H.* (*Spatulariella*) *sulphuripes* (GRIBODO, 1894). No new specimens could be found of 13 species which had been detected formerly. Our knowledge on the distribution of numerous species is greatly expanded. The characteristics of distribution are defined for the individual species. For example, *H. meridionalis* is the most widespread with records from 46 provinces covering all geographical regions of the country, while many other species are only known from one province, sometimes from a single record. The eastern part of Turkey, in particular the province of Hakkâri, proved to be an important centre of diversity for *Hylaeus* species. For a number of species the valid names had to be revised. Distribution maps are presented for the newly recorded and rare species. Frequently visited plant species are mentioned. Keys to the subgenera and species of Turkish *Hylaeus* are provided.

Nomenclatural acts

All species described by WARNCKE in 1981 and 1992 from Turkey in the genus *Prosopis* F. have not yet been revised and formally combined with the valid genus name *Hylaeus* F. There are however a number of online checklists, which have already registered most of these names under *Hylaeus*. Representatives of these checklists were checked here: *The World Bee Checklist*, integrated into the ITIS database (ITIS 2020) and *Discover Life* (ASCHER & PICKERING 2019). As new combinations, only the missing names are added here.

Hylaeus (*Dentigera*) *giresunus* (WARNCKE, 1992) – comb. et stat. nov.

Hylaeus (*Hylaeus*) *trochilus* (WARNCKE, 1992) – comb. et stat. nov.

Hylaeus (*Paraprosopis*) *decaocto* (WARNCKE, 1992) – comb. nov.

Hylaeus (*Paraprosopis*) *socheri* DATHE, 2010 = *H.* (*Paraprosopis*) *decaocto* (WARNCKE, 1992) – syn. nov.

Prosopis styriaca crecca WARNCKE, 1992 = *Hylaeus* (*Paraprosopis*) *styriacus* FÖRSTER, 1871 – stat. nov.

Hylaeus (Prosopis) rubosus (WARNCKE, 1981) – comb. nov.
Hylaeus (Spatulariella) planulus (WARNCKE, 1981) – comb. nov.
Hylaeus (Spatulariella) tauricus WARNCKE, 1981 – comb. nov.

Key words

Apoidea, taxonomy, distribution data, flower visits, nomenclature, stat. nov., comb. nov.

Zusammenfassung

Daten von rund 4000 bisher unveröffentlichten Aufsammlungen der letzten Jahrzehnte aus 40 türkischen Provinzen wurden ausgewertet. Einschließlich der Literaturquellen werden für die Türkei insgesamt 86 Arten der Gattung *Hylaeus* FABRICIUS, 1793 aus 10 Untergattungen zusammengestellt. Neu für die Türkei sind 11 Arten: *Hylaeus (Dentigera) kahri* FÖRSTER, 1871, *H. (Dentigera) pallidicornis* MORAWITZ, 1876, *H. (Hylaeus) deceptorius* (BENOIST, 1959), *H. (Hylaeus) gracilicornis* (MORAWITZ, 1867), *H. (Hylaeus) paulus* BRIDWELL, 1919, *H. (Hylaeus) trisignatus* MORAWITZ, 1876, *H. (Nesoprosopis) pectoralis* FÖRSTER, 1871, *H. (Prosopis) incongruus* FÖRSTER, 1871, *H. (Prosopis) trinotatus* (PÉREZ, 1896), *H. (Prosopis) variolaris* MORAWITZ, 1876 und *H. (Spatulariella) sulphuripes* (GRIBODO, 1894). Für 13 Arten, die schon früher nachgewiesen waren, konnten keine neuen Belege gefunden werden. Unser Kenntnisstand über die Verbreitung zahlreicher Arten wird erheblich erweitert. Für die einzelnen Arten wird eine Verbreitungscharakteristik definiert. Zum Beispiel ist *H. meridionalis* die am weitesten verbreitete Art mit Nachweisen aus 46 Provinzen, die alle geografischen Regionen des Landes abdecken. Andere Arten sind nur aus einer Provinz bekannt, manchmal mit einem einzigen Datensatz. Der östliche Teil der Türkei, insbesondere die Provinz Hakkâri, erweist sich als ein wichtiges Diversitäts-Zentrum für *Hylaeus*-Arten. Für eine Anzahl von Arten mussten die gültigen Namen revidiert werden. Für die neu festgestellten und die seltenen Arten wurden Verbreitungskarten erstellt. Häufig besuchte Pflanzenarten sind erwähnt. Außerdem werden Bestimmungstabellen für die Untergattungen und die Arten der Türkei gegeben.

Introduction

The bee family Colletidae has a worldwide distribution. Nearly all members of the family are characterized by glossal features not found in the other bee families: the glossa is short, commonly broader than long, truncated. Although Colletidae are morphologically diverse bees in the Palearctic region there are only two common genera, *Colletes* LATREILLE, 1802 and *Hylaeus* FABRICIUS, 1793 (MICHENER 2007). The genus *Hylaeus* is widespread globally and makes up a smaller but not negligible share of the total bee fauna. In the Holarctic region, it is easily recognized by the combination of the following characters: size minute to small, body slender (hylaeiform), often almost hairless, black or rarely partly red, usually with limited yellow or white integument markings on the head and mesosoma. In most of the males, the paraocular areas, the clypeus and the supraclypeal area are entirely pale (white or yellow) (MICHENER 2007; PROSHCHALYKIN & DATHE 2016).

Estimates of the number of species in the genus are still highly divergent. MICHENER (2007) identified about 630 known species from the literature, while the list of ASCHER & PICKERING (2019) gives 768 names. These are assigned to 54 subgenera. In the Palearctic region more than 200 species occur, with centres of diversity in the Mediterranean area and in Central Asia (MICHENER 2007; DATHE 2015; PROSHCHALYKIN & DATHE 2017).

Many species of *Hylaeus* nest in dead stems, making rows of cells out of cellophane-like material. Some species, however, make their cells alternatively or regu-

larly in various small cavities. Due to the lack of a scopa, pollen is normally carried in the crop along with liquid, presumably nectar. This is not a primitive but a derived characteristic, as has only been recognised in recent years. The issue is discussed in detail by Michener (2007: 88–92). The provision in cells is often liquid, and the egg floats on the surface of the provisions (MICHENER 2007). In-depth studies on the bionomy of individual species can be found in JANVIER (2012), a current compilation is provided by WESTRICH (2018).

Turkey has a special zoogeographical importance as it forms a continental bridge between Africa, Asia and Europe. It comprises diverse climatic and zoogeographical zones and considerable gradients of elevation, narrow valleys with various subalpine, temperate and Mediterranean habitats. As a result of this geographical and ecological diversity, the country constitutes an important biodiversity hotspot for bees and many other organisms. Moreover, the Turkish insect fauna is an important link in zoogeographical regard between the eastern Mediterranean region and Central Asia. Turkey thus provides a natural route for the spread of species in both an east–west and a south–north direction. The presentation of these interrelationships using concrete examples is a main purpose of this paper.

So far, no study has dealt specifically with the species of the genus *Hylaeus* in Turkey. ÖZBEK (1977) studied the Colletidae of Erzurum Province and listed 13 *Hylaeus* species and one subspecies of this genus occurring there.

Additionally, ÇALMAŞUR & ÖZBEK (1999) and ÖZBEK (2008a, 2008b, 2011) highlighted the importance of bees in the pollination of various cultivated plants, such as alfalfa, sainfoin, sunflower, and various fruit trees and noted certain *Hylaeus* species visiting these plant species. ALFKEN (1931) described a single species, *Prosopis effasciata*, from Mersin. WARNCKE (1972, 1981, 1992) mentioned in his studies on the West Palearctic region more than 40 species which are supposed to occur in Turkey. In WARNCKE (1981) the following eight taxa were described as new (as *Prosopis*): *P. araxana* from Iğdır, *P. armeniaca* from Erzurum, *P. nigrita kotschisa* from Ankara, *P. kurda* and *P. planula* from Hakkâri and *P. rubosa*, *P. sidensis*, and *P. taurica* from Şanlıurfa, Antalya and Mersin provinces respectively. In a later contribution (WARNCKE 1992) he described a further nine new species or subspecies: *Prosopis chukar*, *P. decaocta*, *P. funerea*, *P. glacialis giresuna* and *P. tephronota* from Hakkâri Province, *P. cervina* from Erzurum, *P. torquata* from Mardin, *P. trochila* from Niğde, and *P. monedula* from Bitlis provinces. In addition, DATHE (2000) described *Hylaeus tetrus* from Isparta. None of these species have been critically revised by examining their types. Moreover, only a few illustrations of them have been published, and an identification key did not exist at all.

Material and Methods

This study is based on extensive material; over 4000 *Hylaeus* specimens have been collected throughout the country including Thrace. Although samples from the 1910s and 1950s are also available, most of the specimens have been collected since the 1970s. A major part of the data are provided by H.H. DATHE from his database. It lists the names of over 3400 specimens that he had determined for numerous European collectors. In the last 30 years they have been collected at about 1400 locations. The other part was collected by H. ÖZBEK and his colleagues.

The specimens were mostly caught with insect nets, less frequently using aspirators and Malaise traps. Additionally, if possible, the plants visited by the bees were recorded and vouchers retained for verification. All bee samples and collected plants were properly prepared for long-term preservation in scientific collections. Distribution maps were prepared for new records from Turkey and rare species (known from 1 or 2 provinces). Species are listed alphabetically by subgenus. For some species we did not get specimens for study; data on these were taken from published sources to complete the list.

The allocation of the species to the 81 provinces of the country has proved to be effective in the investigation of Turkish fauna (LJUBOMIROV & YILDRIM 2008). They are smaller geographical units than the various ecological regions and provide finer resolution for the evaluation of the record data. In addition, the provinces are grouped into seven regions according to their location and

specifics: Marmara, Aegean Sea, Mediterranean Sea and Black Sea Regions, as well as Central, Eastern and South-Eastern Anatolia. The provinces are listed in alphabetical order, their names in bold.

Collection data include collection site, date, altitude in meters above sea level and, if available, decimal latitude/longitude coordinates, number of male and female specimens, and the collector. Notes refer to distribution and biological data (habitat, flight season, flowers visited, if available), as well as taxonomic remarks. All material examined here, unless otherwise stated, has remained with the European collectors; duplicates are deposited in the SDEI collection. The material collected by H. ÖZBEK and his colleagues is deposited in the Entomology Museum Erzurum (EMET), Turkey.

Full synonymy is given for each species when taxonomic and nomenclatural decisions have to be justified. Otherwise, synonyms are only provided as links to the names used in the relevant literature. Further detailed information about our view of the species, including illustrations, can be found in DATHE (2010, 2014, 2015), DATHE & PROSHCHALYKIN (2016, 2017) and PROSHCHALYKIN & DATHE (2012, 2016).

Distributions of species are evaluated according to the number of provinces in which they were collected: 1–2 *rarely recorded*, 3–7 *sparsely recorded*, 8–17 *moderately recorded*, 18–above *frequently recorded*, based on present and previous records.

Our morphological terminology basically follows MICHENER (2007). However, some terms are specifically in use for the genus *Hylaeus*. They are applied also in our earlier papers partly in a different way; the main terms and abbreviations used here are defined as follows:

Head

antenna – scape, pedicellus, flagellum with segments
1–10 (11 in males)

antennal socket – scapus base

mask – facial maculation, consisting of bright (white or yellow) coloration of supraclypeal area, clypeus and paraocular areas; this “complete mask“ is characteristic for males; in females the bright spots are mostly limited to the paraocular areas (lateral or side spots).

paraocular area – face sides

preoccipital ridge – occiput posteriorly with marginal ledge

Mesosoma

pronotum – pronotum

mesonotum – scutum, mesoscutum

scutellum – mesoscutellum

axillae – paired sclerites of the mesothorax, appear in dorsal view as “anterolateral corners” of the scutellum, but clearly separated from it by the axillary suture (MICHENER 2007: 48)

postscutellum – metanotum

mesopleuron – praepisternum + mesepisternum
 anterior edge of mesopleuron – omaulus, actually: angle
 between anterior and lateral surfaces of mesopleuron;
 rounded, carinate, lamellate (MICHENER 2007: 48)
 legs – pre- (I), meso- (II), meta- (III); e.g. metabasitarsus
 = basitarsus III
 propodeum – basal(= medial)~, lateral~, terminal area

Metasoma

T1, T2, ... – metasomal terga 1, 2, ...
 S1, S3, ... S7, S8 – metasomal sterna 1, 3, 7, 8
 male terminalia – copulatory apparatus: S7 + S8 + genital
 capsule
 genital capsule – gonobasis + gonoforcipes + penis valve
 (parts, dorsally visible)
 gonoforceps – gonocoxit + gonostylus (distinguishable
 only in exceptional cases of *Hylaeus* males)

Punctuation

Strength and density of the puncturing and their
 respective combinations are essential characteristics

for the differentiation of the species. The gradation
 follows DATHE (2014: 6).

strength – minute, fine, moderate, strong, coarse, very
 coarse

density relative to puncture diameter (d) – contiguous
 (0), subcontiguous (0.25), dense (0.3–0.7), close (0.7–
 1.5), sparse (2–3), scattered (ca. 3–6).

Identification keys to the *Hylaeus* species in Turkey

The best way to get reliable keys is to use a template
 that has been tested in practical work and is constantly
 being improved. In this sense, this chapter is an invita-
 tion to cooperate. The better this cooperation works, the
 more new taxonomic, zoogeographical, ecological and
 bionomic knowledge will emerge, it in turn will lead to
 changes and make this work obsolete. We would very
 much welcome this.

Keys to the Subgenera of *Hylaeus*

Males

For the reliable determination of the subgenera (and many species) preparation of the copulatory apparatus (genital capsule plus S7 and S8) is usually unavoidable. When specimens are fresh, it is not difficult to pull the capsule out of the anal cavity using a fine pin (micro pin with hook) and fix it outside.

- 1 Face entirely black, frons broadly concave and shiny, only the conically swollen scape white; middle basitarsus dilated at base; genital capsule characteristic: short and broad, gonostylus truncate with long, stiff bristles on lateral part of transverse margin nearly as long as gonoforceps *H. (Abrupta) cornutus* CURTIS
- Face with white or yellow areas (“mask”), or, if exceptionally black, then frons convex and densely punctate; middle basitarsus normal; genital capsule with gonostylus apically rounded or pointed, its bristles shorter than gonoforceps 2
- 2 Gonoforceps conspicuously elongated, slender, distal third projects beyond penis valves; apical process of S8 long, hairless, apically with spoon-shaped membrane, usually exposed at anal slit *H. (Spatulariella)*
- Gonoforceps of normal length and thickness, about as long as penis valves; apical process of S8 not formed as spoon-like membrane, usually concealed in metasoma 3
- 3 Inner margin of penis valve with raised keel, laterally with flat, rectangular membrane, basal edge of membrane acutely angulate; gonostylus and gonocoxite marked by weak constriction; apical lobes of S7 consist of two pairs of large thin membranes without hairs; apical process of S8 elongated, bilobate, with short bristles; body robust, with coarse punctuation *H. (Koptogaster)*
- Penis valves and gonostylus/gonocoxite variable, but not as above 4
- 4 Outline of the two penis valves together cuneiform to spindle-shaped; inner carinae of penis valves in dorsal view are parallel and in close contact up to their apices, or, if separated, then only narrowly so, the ventral structures thus hidden from above 5
- Outline of the two penis valves strongly curved, heart-shaped or circular; inner carinae of penis valves in dorsal view in contact basally but clearly diverging towards the middle, often abruptly bent laterally, inner ventral structures clearly visible from above between penis valves 7
- 5 Apical lobes of S7 simple with smooth margins, bristles absent or sparse and at most confined to lateral part of proximal lobe; scape usually slender; labrum and mandible frequently with yellow spots *H. (Paraprosopis)*

- Apical lobes of S7 pectinate; scape commonly conically dilated or flattened, but *if* slender, then sternal callosity or lateral fringe of T1 absent; labrum and mandible black 6
- 6 Gonoforceps apically with clearly separated short and pointed appendix, this often pale; gonobase relatively long and conical; S8 apical lobes four-part, the proximal pair with comb teeth, the distal one with smooth rim; scape widened and curved, hollowed out underneath *H. (Patagiata)*
- Gonoforceps without narrow pale appendix; gonobase short, convex; genital capsule usually smaller and more dainty; apical lobes two-part, with smooth rim or with bristles; scape various *H. (Hylaeus s. str.)*
- 7 Scape conspicuously broadened, shield-like, hollowed out from behind; paraocular area without transverse flat impression; S8 with prolonged basal part and apical process, the latter with short hairs or hairless and hooked downward; the hook usually projecting from a V-shaped incision in S6 *H. (Lambdopsis)*
- Scape slender or conically enlarged, or, *if* scutiform, then face with flat transverse impressions on paraocular area and below antennal sockets; S8 more or less rhombiform, with short basal and apical parts, or apical process, *if* elongated, with hairs and not hooked; S6 rounded or emarginate 8
- 8 Penis valves in dorsal view gently bent, between them a pair of acute spines visible, being ventral projections of penis valves; S7 with reduced apical lobes, triangular, with or without sparse fine hairs; S8 strongly reduced, rhombiform, hairless, apical process rarely somewhat elongate and filiform *H. (Dentigera)*
- Penis valves in dorsal view largely proximate, no spines thus visible from above between penis valves, ventral projections usually short and broad, not spine-like 9
- 9 Mesosoma, particularly mesepisterna, strikingly coarsely and strongly punctate; S8 with elongated, curved, slender apical process, its apex with pair of hair tufts; S7 with apical lobes reduced, slender, pointed, with sparse hairs; S6 emarginate in middle *H. (Nesoprosopis) pectoralis* FÖRSTER
- Mesosoma only in relatively few species with noticeably strong punctation, usually finely punctate; S8 rhombic, with short, rounded or truncate, hairless apical process; S7 with reduced apical lobes, compact, with hairs that may be short and sparse; S6 not emarginate *H. (Prosopis)*

Females

- 1 Clypeus with broad, transverse, saddle-like depression, at all four corners a triangular, pointed projection; face entirely black *H. (Abrupta) cornutus* CURTIS
- Clypeus slightly convex, without projections or teeth; supraclypeal projection absent; face usually with white or yellow mark on paraocular area 2
- 2 Mandible tridentate, upper tooth sometimes short and indistinctly visible 3
- Mandible with two teeth or apex bilobate 4
- 3 Paraocular spots often elongated, contiguous with inner orbits, or, *if* face entirely black, then T1 integument (under the punctation) transversely obsolete reticulated; T1 with lateral fringes, partly indistinct *H. (Dentigera) (brevicornis group)*
- Paraocular spots usually rounded, contiguous with clypeal margin, or, *if* face entirely black, then T1 integument smooth under the punctation; T1 without lateral fringes *H. (Lambdopsis)* (in part)
- 4 Vertex swollen, in frontal view surpassing upper ocular margins by ocular width; head in frontal view nearly circular; inner margins of eyes not or only slightly convergent below; genal area broad, or, *if* head conspicuously rectangular and gena narrow, then thorax red. *H. (Dentigera) (brachycephalus group and H. rubicola SAUNDERS)*
- Vertex convex (as usual); head in frontal view rounded or trapezoidal, never rectangular; inner margins of eyes markedly convergent below; genal area narrow; thorax black, with red marks in only a few larger species 5
- 5 Omaulus carinate or lamellate; malar area at least as long as basal flagellar diameter; thorax and clypeus mostly strongly punctate; propodeal triangle with coarse wrinkles *H. (Spatulariella)*
- Omaulus rounded or merely angular; malar area shorter than basal flagellar diameter, rarely longer, in which case another character given above does not agree 6

- 6 Head distinctly longer than broad in frontal view; pronotum thickened, dorsolateral angle square-truncate; mesonotum coarsely and strongly wrinkled-punctate; propodeum with horizontal part of basal area very short, distally with sharp edge *H. (Koptogaster)*
- Head usually shorter, circular or trapezoidal in frontal view; pronotum short, dorsolateral angle rounded or pointed; if mesonotum coarsely punctate, then head always short; propodeum with horizontal part of the basal area of normal length, distally often curved and with or without edge 7
- 7 Facial foveae elongated, somewhat surpassing upper ocular margin, converging strongly toward ocelli, terminating closer to ocelli than to compound eye; dorsolateral sides of pronotum angled protruded . *H. (Paraprosopis)*
- Facial foveae short and straight, barely reaching upper ocular margin and terminating closer to compound eye than to ocelli; dorsolateral sides of pronotum rounded 8
- 8 Mesopleura with strikingly coarse and strong but regular pit-like punctures; T1 without lateral fringe, T1 and T2 polished *H. (Nesoprosopis) pectoralis* FÖRSTER
- Mesopleura with fine punctures, or, *if* coarse and strong, then not regular and metasomal terga densely punctate; T1 often with lateral fringe, T1 and T2 often shagreen 9
- 9 Genae laterally on occiput with sharp ridge; pronotum bulging expanded; propodeum surrounded by sharp edge; basal terga smooth and shiny, without punctation, T1 to T4 with white cilia fringes (note the combination of all the attributes) *H. (Patagiata)*
- Genae laterally rounded; when partly with sharp ridge see *Prosopis*; pronotum usually not enlarged; propodeum sharply edged or angular; basal terga usually with distinct punctation, T1 to T4 without white end fringes 10
- 10 Larger species, total length 5–9 mm, usually with short head; facial foveae usually with upper end well separated from eye; propodeum short, at least lateral and posterior surfaces mostly rounded, not delimited by carinae, with fine sculpture and covered with white felt-like hairs; T1 often with lateral fringe of white hairs, but *if* fringe absent, then metasomal base sometimes red *H. (Prosopis)*
- Smaller species, total length 3.5–7.0 mm (*H. nigrinus* up to 8 mm), with elongated head; facial foveae shorter, upper end close to eye margin; propodeum usually sharp-edged or with carina around posterior surface; metasoma black, usually without lateral fringe on T1, but *if* T1 has fringe, then mesopleura with dense fine punctation and propodeum rounded, with fine sculpture *H. (Hylaeus s. str.)*

Identification keys to *Hylaeus* species

The following identification keys were compiled after examination of material which is as authentic as possible, with regard to Turkey, and in particular on the basis of types. Even for better-known species, specimens of Turkish origin were preferred. As a result, only a limited amount of material from a relatively few sites was available, which certainly does not reflect the variability of the species within the country. The females in particular are often difficult to distinguish, so that attention

should always be paid to males flying with them. The best way to prepare reliable keys is to continually test a draft during practical identification work, which will lead to its constant improvement. In this sense, this chapter is an invitation to cooperate. The better this cooperation works, the more new taxonomic, zoogeographical, ecological and bionomic knowledge will emerge, which in turn will lead to changes and make this work obsolete. We would very much welcome this.

Subgenus *Dentigera*

H. (Dentigera) acer DATHE, 1980
H. (Dentigera) brevicornis NYLANDER, 1852
H. (Dentigera) chukar (WARNCKE, 1992)
H. (Dentigera) giresunus (WARNCKE, 1992)
H. (Dentigera) glacialis MORAWITZ, 1872
H. (Dentigera) gredleri FÖRSTER, 1871

H. (Dentigera) imparilis FÖRSTER, 1871
H. (Dentigera) intermedius FÖRSTER, 1871
H. (Dentigera) kahri FÖRSTER, 1871
H. (Dentigera) pallidicornis MORAWITZ, 1876
H. (Dentigera) punctus (FÖRSTER, 1871)
H. (Dentigera) rubicola SAUNDERS, 1850

Males

- 1 Forewing stigma bright, yellowish; head outline in frontal view trapezoidal, almost as high as wide, head length: head width ca. 0.91; scape slim, cone-shaped. *pallidicornis* MORAWITZ
- Forewing stigma medium to dark brown; head outline in frontal view often elliptic, wider than high; scape slim to strongly thickened, of different shape. 2
- 2 Head in frontal view transversely elliptic, markedly wider than long (head length : head width ca. 0.8, Fig. 2f); upper half of supraclypeal area widened almost circularly, about as wide as lower base; scapes slender conical, with white spot at tip. *chukar* (WARNCKE) Fig. 2
- Head outline diverse, less wide in relation; upper part of the supraclypeal area not expanded, narrower than the base; scapes diverse, often thickened. 3
- 3 Head in frontal view long-elliptic; labrum and mandibles white; scape elongated and dilated; terminal area of propodeum smooth and shiny, often brownish. *rubicola* SAUNDERS
- Head in frontal view trapezoidal; labrum and mandibles black; scape slender or dilated, not elongated; terminal area of propodeum shagreen, rather dull, black. 4
- 4 Scape extremely thickened, about as wide as long, mostly extensively pale coloured; S3 with angular hump, this often impressed in the middle; lateral areas of the propodeum rounded posteriorly. 5
- Scape slender to distinctly thickened, entirely black or only with small pale spots; S3 with two tubercles or paired calluses; lateral areas of propodeum posteriorly sharp-edged. 9
- 5 Mask white, also the clypeus completely white coloured; frons usually with smooth surfaces and less densely punctate; T1 with strong dense punctation, silky shiny. 6
- Mask yellow, the clypeus often only in the middle with a light stripe; frons up to the supraclypeal area continuously punctate, without smooth surfaces; basal terga with strong subcontiguous punctation, dull. *punctus* FÖRSTER
- 6 Clypeus evenly and gently domed; pronotum with white stripe; mesosoma on underside with scattered white pubescence. 7
- Clypeus basally flattened, apically strongly bulging; pronotum black; mesosoma on underside with dense and long white hairs. 8
- 7 Basal area of propodeum reticulately wrinkled; S3 with strongly curved, often two-part hump. *kahri* FÖRSTER
- Basal area of the propodeum striped, with irregular longitudinal ridges; S3 with triangular pointed cusp. *acer* DATHE
- 8 The small glossy front surfaces are sparsely punctate up to the supraclypeal area tip; punctation of T1 more shallow and somewhat finer. *glacialis* MORAWITZ
- The small glossy front surfaces are impunctate in the lower part; punctation of T1 clearer and somewhat coarser (females should be compared for safe differentiation). *giresunus* (WARNCKE) Fig. 3
- 9 Scape slender, its lateral edges more or less straight. 10
- Scape conically enlarged, its lateral edges convex. 11
- 10 Outline of the penis valves in dorsal view almost circular; mask variable, but with extensive white areas; scape mostly with apical spots. *imparilis* FÖRSTER
- Outline of the penis valves in dorsal view long-oval; clypeus often with black anterior margin, mask thus with shield-like outline; scape usually with triangular fleck. *intermedius* FÖRSTER
- 11 Frons in the middle with scattered punctation, partly striped, but clearly shiny; scape mostly brightly striped along the side. *brevicornis* NYLANDER
- Frons with dense and strong punctation, only slightly shiny, or matt; scape with wide pale fleck or with small round apical spot. *gredleri* FÖRSTER

Females

- 1 Wing veins strikingly pale, also stigma and subcosta are yellowish; face usually completely black, occasionally with yellow stripes on the lower orbits. *pallidicornis* MORAWITZ
- Wing veins medium to dark brown; sides of face pale coloured. 2
- 2 Head outline in frontal view nearly rectangular; body partly or totally brownish; punctation on metasoma indistinct. *rubicola* SAUNDERS
- Head outline in frontal view rounded or trapezoidal; body black; terga with distinct punctation. 3
- 3 Whole clypeus with distinct punctation, evenly curved in profile, only the distal margin impressed. 5
- Basal part of the clypeus shagreen without distinct punctation, its surface depressed, distally with bulge or bent up. 4
- 4 Clypeus end margin bent up in the middle and protruding like a lamella; labrum widened in the middle, with long narrow hump. *giresunus* (WARNCKE) Fig. 3
- Clypeus end margin normal, narrowly impressed; labrum narrow, parallel-sided, in the middle with circular hump. *glacialis* MORAWITZ
- 5 Mask yellow, often also clypeus, supraclypeal area, pronotum band, calli and tegulae with yellow marks; sculpture rough and matt, with contiguous punctation on the mesonotum in front and at the end margin of T1 in the middle. *punctus* FÖRSTER
- Mask white, usually with less bright marks; sculpture mostly with finer punctation, silky shiny. 6
- 6 Basal area of propodeum striped, with irregular longitudinal ridges; terga depressions broadly horn-coloured translucent; paraorbital area with nearly rectangular spots. *acer* DATHE
- Basal area of propodeum reticulately wrinkled; terga depressions black or only very narrowly paler; patches of the paraorbital area various. 7
- 7 Upper part of supraclypeal area conspicuously broad, almost circular; head outline transverse elliptic, with short clypeus; lateral spots short; T1 only finely and shallowly punctate, smooth and shiny; very small species (total length 4 mm). *chukar* (WARNCKE) Fig. 2
- Supraclypeal area narrow, upper part longer than broad; head mostly trapezoidal; lateral spots larger; T1 distinctly punctate, silky-shiny or dull; usually larger species. 8
- 8 Propodeum rounded, side and median areas behind without sharp edges; lateral areas on the horizontal part with the same fine sculpture as on the terminal area. 9
- Terminal area of the propodeum with sharp surrounding edge or lateral areas at least with distinct step; if edge indistinct, the lateral areas on the horizontal part have a coarser sculpture than on the terminal area 11
- 9 Lateral spots short and narrow, sometimes absent; clypeus and usually also pronotum black; frons above the supraclypeal area with sparse punctation, shiny. *brevicornis* NYLANDER
- Lateral spots long, linear on the orbits, or filling the facial sides; clypeus and pronotum often broadly bright; frons above the supraclypeal area with close punctation, silky or dull. 10
- 10 Head slightly longer; colouration of head and thorax broadly pale, lateral spots often filling the paraocular areas, and clypeus spotted; front margin of clypeus only narrowly impressed. *kahri* FÖRSTER
- Head broader; lateral spots often elongated rectangularly to the orbits; clypeus not spotted, front margin with conspicuously broad impression. *intermedius* FÖRSTER
- 11 Lateral spots long linear, adjacent to the orbits; frons above the supraclypeal area with dense punctation, dull; mesonotum coarsely sculptured, shiny. *gredleri* FÖRSTER
- Lateral spots large, fill the paraorbital field, or are at least expanded inward; frons above the supraclypeal area with more scattered punctation, shiny; mesonotum in front finely sculptured, matt. *imparilis* FÖRSTER

Subgenus *Hylaeus* s. str.

<i>H. (Hylaeus) angustatus</i> (SCHENCK, 1861)	<i>H. (Hylaeus) monedulus</i> (WARNCKE, 1992)
<i>H. (Hylaeus) araxanus</i> (WARNCKE, 1981)	<i>H. (Hylaeus) moricei</i> (FRIESE, 1898)
<i>H. (Hylaeus) communis</i> NYLANDER, 1852	<i>H. (Hylaeus) nigritus</i> (FABRICIUS, 1798)
<i>H. (Hylaeus) crispulus</i> DATHE, 1980	<i>H. (Hylaeus) orientalicus</i> (WARNCKE, 1981)
<i>H. (Hylaeus) deceptorius</i> (BENOIST, 1959)	<i>H. (Hylaeus) paulus</i> BRIDWELL, 1919
<i>H. (Hylaeus) dolichocephalus</i> MORAWITZ, 1876	<i>H. (Hylaeus) scutellaris</i> MORAWITZ, 1874
<i>H. (Hylaeus) funereus</i> (WARNCKE, 1992)	<i>H. (Hylaeus) sidensis</i> (WARNCKE, 1981)
<i>H. (Hylaeus) gracilicornis</i> (MORAWITZ, 1867)	<i>H. (Hylaeus) tardus</i> (WARNCKE, 1981)
<i>H. (Hylaeus) implicatus</i> DATHE, 1980	<i>H. (Hylaeus) torquatus</i> (WARNCKE, 1992)
<i>H. (Hylaeus) jantaris</i> DATHE, 1980	<i>H. (Hylaeus) trifidus</i> (ALFKEN, 1936)
<i>H. (Hylaeus) kotschisus</i> (WARNCKE, 1981)	<i>H. (Hylaeus) trisignatus</i> MORAWITZ, 1876
<i>H. (Hylaeus) kurdus</i> (WARNCKE, 1981)	<i>H. (Hylaeus) trochilus</i> (WARNCKE, 1992)
<i>H. (Hylaeus) leptoccephalus</i> (MORAWITZ, 1871)	<i>H. (Hylaeus) tyrolensis</i> FÖRSTER, 1871

Males

1 Mask yellow	2
– Mask white or ivory	5
2 Scutellum yellow-marked, femora almost all yellow, mesopleura with very coarse contiguous punctation	<i>scutellaris</i> MORAWITZ
– Scutellum black, femora broadly black, mesopleura with less coarse punctation	3
3 Very small species, total length 4–5 mm; propodeum at least with the lateral areas rounded; mask light yellow, dull	<i>paulus</i> BRIDWELL
– Larger species, total length >5 mm; propodeum sharply rimmed around margin; mask strongly yellow, silky shiny	4
4 Scape longer and wider, markedly wider than the flagellum at its widest site; apical lobus of S8 only spatula-like dilated, without bristles; T1 polished, with fine scattered punctation	<i>communis</i> NYLANDER
– Scape shorter and slimmer, only slightly wider than the flagellum; apical lobus of S8 with paired roof-like parts with fine bristles at margin; T1 polished, with moderate sparse punctation	<i>deceptorius</i> (BENOIST)
5 Paraocular area deeply gutter-like impressed, the furrows converging downwards; clypeus shorter than supraclypeal area; mask characteristic: with white clypeus and long side stripes at the orbits, otherwise nearly completely black (Fig. 7a); scape enlarged, about as wide as long, outer half white; very small species	<i>orientalicus</i> (WARNCKE)
– Larger species with different formation of the face	6
6 Scape completely black, at most sometimes with a minute white apical spot	7
– Scape with broad pale marking	21
7 Face below the antenna bases with strong arched transverse impression, the clypeus bulging up	8
– Face evenly bulged, the clypeus included in this profile	10
8 Upper part of the mask button-like, lateral spots at the top separated from the orbits by a narrow black surface; scape slender, without apical impression	9
– Mask not button-like constricted above, the lateral spots tapering towards antennal sockets above; scape expanded, apical with flat impression	<i>kurdus</i> (WARNCKE) Fig. 5
9 Clypeus only flat arched; mask longitudinally striped, matt; mesopleura in front edged	<i>angustatus</i> (SCHENCK)
– Clypeus strongly domed; mask smooth and glossy; mesopleura in front rounded	<i>crispulus</i> DATHE
10 Larger (total length >5 mm) often robust species, propodeum coarsely net wrinkled but rounded; with transverse callosity or hump on S3	11
– Smaller and more dainty species; propodeum with terminal area often sharply rimmed, and/or sterna without callosity or hump	13

- 11 Clypeus evenly convex, integument silk-matt, punctation close, appearing as transverse wrinkle stripes; lateral white spots end dorsolaterally separated from the orbits by a black pit; scape slim *jantaris* DATHE
 – Clypeus with shallow longitudinal impression, integument smooth and shiny, punctation scattered, indistinct; lateral white spots dorsally adjacent to the orbits; scape expanded 12
- 12 Supraclypeal area trapezoidal, below 0.8 times as wide as the distance to the orbits; scape expanded, about 1.9 times longer than wide, black *nigritus* (FABRICIUS, 1798)
 – Supraclypeal area rectangular, only about half as wide as the distance to the orbits; scape somewhat less expanded, 1.7 times longer than wide, with a minute white spot at tip *kotschisus* (WARNCKE, 1981)
- 13 Frons broadly impressed, the surface with a striking special formation 14
 – Frons not broadly impressed, punctate, without special formation 15
- 14 Frons impression with wrinkled stripes and covered with short silvery hairs, matt *moricei* (FRIESE)
 – Frons impression flat, built as semicircle enclosing the anterior ocellus, longitudinally streaked, without punctation; scape slim, often with elongate triangular apical spot *araxanus* (WARNCKE)
- 15 Mesopleura with strong close punctation, intervals highly glossy 16
 – Mesopleura with denser punctation, intervals silky shiny or matt 17
- 16 Mask glossy; lateral spots end above at orbits; clypeus below only with narrow black seam; scape narrow, blackish brown lightened; legs predominantly white, tibiae only with dark spot *tardus* (WARNCKE)
 – Mask silky shiny; lateral spots end above separated from orbits; clypeus below with black margin; scape slightly expanded, black; tibiae II and III apically with black ring spot *monedulus* (WARNCKE) Fig. 6
- 17 T1 shiny, with minute or fine sparse to scattered punctation 18
 – T1 matt, with strong dense to subcontiguous punctation 19
- 18 Mask yellowish-white, supraclypeal area black; above the lateral spots only with narrow shiny line; basal area of the propodeum delimited by marginal ridge; T1 smooth and glossy, with minute scattered punctation *gracilicornis* (MORAWITZ)
 – Mask pure white, supraclypeal area white up to scape bases; next to and above the lateral spots at the eye margin with broad shiny furrow; basal area of the propodeum without border ridges; T1 finely grooved on the end margin, with fine sparse punctation *funereus* (WARNCKE) Fig. 4
- 19 Gonoforcipes apically rounded, not expanded, bristles normal; frons only at the lower end next to the supraclypeal area-tip without punctation; pronotum white spotted *tyrolensis* FÖRSTER
 – Gonoforcipes apically expanded, with long bristles; frons in the middle with shiny surface without punctation; pronotum black 20
- 20 Gonoforcipes apically strongly expanded to circular discs; with long feathered bristles; frons with silky shiny areas in the middle; mandibles black; head and mesosoma normal short haired *sidensis* (WARNCKE) Fig. 8
 – Gonoforcipes apically rounded; with conspicuously long simple bristles; frons with larger shiny areas in the middle; mandibles white; head and mesosoma densely short-haired *torquatus* (WARNCKE) Fig. 9
- 21 Tergal depression apically with white felt fringes or band; face clearly extended; malar space long, about as long as flagellum diameter *dolichocephalus* MORAWITZ
 – Depression of the terga apically without felt fringes; face shorter; malar space narrower 22
- 22 Face below the antenna bases with strong arched transverse impression, the clypeus bulged up *trochilus* (WARNCKE) Fig. 10
 – Face evenly curved in profile, the clypeus included into this profile 23
- 23 Scape short, not expanded, apical with small triangular spot; paraocular area next to the antenna bases with shiny black surface at the orbits reducing the lateral spots to a narrow tip *trifidus* (ALFKEN)
 – Scape of normal length, mostly expanded and amply white; paraocular area without lateral shiny black areas, lateral patches sprawling 24

- 24 Mesopleura with conspicuously coarse punctation, distinctly coarser than on the mesonotum; T1 with moderate close punctation *leptocephalus* (MORAWITZ)
- Mesopleura with moderate to strong punctation, about as strong as the mesonotum; T1 with fine sparse punctation 25
- 25 Head wider than long; mask shiny, hardly punctate; lateral spots extending over the antennal sockets into a smooth area; mesosoma densely hairy; T1 almost impunctate, smooth and shiny *tresignatus* MORAWITZ
- Head elongate trapezoidal; mask shagreen and shallowly punctate, silky shiny; lateral spots truncate above; mesosoma only slightly hairy; T1 with fine sparse punctation *implicatus* DATHE

Females

- 1 Paraocular areas with yellow lateral spots 2
- Paraocular areas with white or ivory lateral spots or without spots 4
- 2 Scutellum yellow-spotted, femora almost all yellow; mesopleura with very coarse contiguous punctation; mesopleura frontally sharp-edged *scutellaris* MORAWITZ
- Scutellum black, at least femora broadly black; mesopleura with moderate to strong dense punctation; mesopleura in front angular 3
- 3 T1 smooth, with very scattered fine punctation; pronotum mostly black *communis* NYLANDER
- T1 smooth, with moderate sparse punctation; pronotum yellow *deceptorius* (BENOIST)
- 4 Face with bright spots 5
- Face completely black 20
- 5 Head extremely extended, strongly narrowed downwards; T1–T4 with felt fringes; malar space as long as wide; metabasitarses white *dolichocephalus* MORAWITZ
- Head outline different, often about as long as wide; terga without dense felt fringes; malar space short or narrow; metabasitarses black or white 6
- 6 Clypeus with broad longitudinal impression; lateral spots fill the paraocular area up to the scape bases; integument smooth and shiny 7
- Clypeus without broad longitudinal impression, evenly arched; lateral spots and integument sculpture various 8
- 7 Mesonotum with moderate sparse punctation; depressions of T2 and following terga only slightly pale horn-coloured; larger species, total length 7–8 mm *nigritus* (FABRICIUS)
- Mesonotum with somewhat denser (close) punctation; depressions of T2 and following terga brightly horn-coloured; smaller species, total length 6–7 mm *kotschisus* (WARNCKE)
- 8 Propodeum with sharp ledges around, the ridge is clearly visible even in rough sculptures behind the basal area and the lateral areas as a cross-ledge 9
- Propodeum rounded or edged, behind the lateral areas no distinct ledge visible 14
- 9 Mesopleura with coarse close punctation, pits significantly coarser than on the mesonotum 10
- Mesopleura with moderate or strong punctation, punctation of the mesonotum resembles that of the mesopleura 11
- 10 Somewhat larger species (total length 5–6 mm) with long trapezoidal head contour; metabasitarses black *leptocephalus* MORAWITZ
- Small species (total length 4.5 mm) with transverse rounded trapezoidal outline of the head; metabasitarses white *tardus* (WARNCKE)
- 11 Head distinctly longer than broad; lateral spots filling the paraocular area, reaching above beyond the scape base; pronotum with white band or long stripes; metabasitarses black *implicatus* DATHE

- Head wider than long; lateral spots reduced, upper part if filling truncated, or as spots; pronotum with short white stripes; metabasitarses white 12
- 12 Basal area of propodeum basally with a row of short longitudinal ridges only; mesosoma compact; terminal part of T1 with fine sparse punctation; slightly larger species, total length 5 mm. *monedulus* (WARNCKE) Fig. 6
- Basal area of propodeum irregularly reticulated wrinkly; mesosoma slender; terminal part of T1 with minute scattered punctation; very small species of 4 mm total length 13
- 13 Clypeus usually with white spot, sometimes also supraclypeal area spotted; mask amply white *trifidus* (ALFKEN)
- Clypeus and supraclypeal area black; mask often reduced to two spots..... *araxanus* (WARNCKE)
- 14 Propodeum rounded, with fine shagreen sculpture, basal area only at the base with short, tapering ridges 15
- Propodeum rounded or edged, with extended wrinkled sculpture, at least basal area with net wrinkles 16
- 15 Head transversely oval; clypeus excised in front, with indistinctly outlined bell-shaped central spot; lateral spots are attached to the sutures of supraclypeal area and clypeus; T1 with very scattered minute punctation *tresignatus* MORAWITZ
- Head long trapezoidal; clypeus only shallowly excised, black; lateral spots very small, being in the lower part of the paraocular area; T1 with sparse fine punctation *kurdus* (WARNCKE) Fig. 5
- 16 T1 with moderate dense punctation, margin in the middle narrow pointless; pronotum and metabasitarses white spotted *crispulus* DATHE
- T1 with fine or minute sparse or scattered punctation, margin in the middle wide pointless; pronotum and metabasitarses black 17
- 17 Terminal area of the propodeum separated from basal area and lateral areas by irregular fine ridges; head outline longer 18
- Terminal area of the propodeum not delimited by fine ridges all around; head outline short, roundish 19
- 18 Mesopleura in front angular and often slightly bent up, so that the anterior surface appears flat; T1 with fine sparse punctation *angustatus* (SCHENCK)
- Mesopleura in front rounded, anterior surface convex; T1 with minute scattered punctation *moricei* (FRIESE)
- 19 Medial furrow of the terminal area flat and relatively broad, tapering above into ridges bordering the basal area laterally; lateral spots of the face below, small, sometimes absent *gracilicornis* (MORAWITZ)
- Medial furrow of the terminal area deepened, also impressed at the top, but not tapering into ridges, border of the basal area laterally indicated only by altered shagreen; lateral spots of the face as short lines, sometimes absent *paulus* BRIDWELL
- 20 Propodeum rounded and finely shagreen, silky shiny; only base of basal area with merging meshes and longitudinal ridges; completely black except underside of flagella, tegulae and tibial bases *funereus* (WARNCKE) Fig. 4
- Propodeum edged or rounded, with rough sculpture and shiny meshes; base of basal area mostly net wrinkled; white coloration more extended or even completely black 21
- 21 T1 and mesonotum with the same strong dense punctation, dull; flagella very short, underside yellow; pale coloration otherwise only at the edge of the calli, at the tibial bases, tegulae with spot *sidensis* (WARNCKE) Fig. 8
- T1 with substantially weaker punctation than mesonotum, glossy; flagellae longer; pale colouring often more extended 22
- 22 Larger species, total length 5–6 mm; T1 smooth and glossy, with moderate sparse punctation; metabasitarses white spotted; terga with broad horn-coloured brightened depressions *jantaris* DATHE
- Smaller species, total length 4–5 mm; T1 finely shagreen, glossy, with minute to fine scattered punctation; metabasitarses black; terga apical with at most narrow and indistinctly brightened depressions 23
- 23 Frons strongly punctate to the tip of the supraclypeal area; T1 very fine striped, punctation obsolete and very scattered *orientalicus* (WARNCKE) Fig. 7

Males

The male of *H. tephronotus* (WARNCKE) is not known.

- 1 Front edge of the mesopleura sharply extended and curved up; mesosoma conspicuously smooth and shiny
..... *crassanus* (WARNCKE)
- Mesopleura rounded at front; mesosoma silky shiny or matt 2
- 2 Mandibles black; sterna flat, without elevations *euryscapus* FÖRSTER
- Mandibles broadly marked white; sterna with calluses or humps..... 3
- 3 Scape strongly widened, almost twice as wide as long; only few white spots on the mesosoma: small stripes on the pronotum, the calli and tegulae; S3 and S4 with flat transverse calluses *dilatatus* (KIRBY)
- Scape less expanded, only slightly wider than long; mesosoma with richly light-yellow marks: pronotum band, frontolateral mesonotum corners, calli, tegulae, axillae, scutellum and postscutellum; S3 to S5 with humps
..... *scutellatus* (SPINOLA)

Females

- 1 Front edge of the mesopleura sharply extended and curved up; mesosoma conspicuously smooth and shiny
..... *crassanus* (WARNCKE)
- Mesopleura rounded at front; mesosoma silky shiny or matt 2
- 2 T1 glossy, polished at least on the domed base, without punctation; mesosoma and clypeus black 3
- T1 matt, throughout with close strong punctation; mesosoma mostly with light yellow spots: pronotum band, calli, tegulae, axillae, scutellum, clypeus; the latter sometimes completely yellow *scutellatus* (SPINOLA)
- 3 Outline of head rounded-trapezoidal; face with white spots beside the clypeus base; pronotum drawn white; front of clypeus without long bristles; larger species of approx. 6 mm total length..... 4
- Outline of head nearly circular, slightly wider than long; face and pronotum black; clypeus in front with a row of strikingly long bristles; dainty species of approx. 4.5 mm total length *tephronotus* (WARNCKE) Fig. 11
- 4 T1 and T2 with the same fine punctation, slightly denser on T2; integument less shiny *dilatatus* (KIRBY)
- T1 with distinctly coarser punctation than T2, punctation on T2 denser; integument as a whole strongly glossy ..
..... *euryscapus* FÖRSTER

Subgenus *Paraprosopis*

H. (Paraprosopis) clypearis (SCHENCK, 1853)
H. (Paraprosopis) decaocto (WARNCKE, 1992)
H. (Paraprosopis) lineolatus (SCHENCK, 1861)
H. (Paraprosopis) pictipes NYLANDER, 1852

H. (Paraprosopis) sinuatus (SCHENCK, 1853)
H. (Paraprosopis) soror (PÉREZ, 1903)
H. (Paraprosopis) styriacus FÖRSTER, 1871
H. (Paraprosopis) taeniolatus FÖRSTER, 1871

Males

- 1 Clypeus wholly or partly black, in particular apical; anterolateral pronotum sides acute; lateral fringes absent on T1 2
- Clypeus entirely white or yellow, occasionally darkly lined at front margin; anterolateral pronotum sides edged or rounded; lateral fringes present on T1, but often indistinct 3
- 2 Clypeus entirely black; face with two lateral, high set yellow-white stripes at the orbits; S3 and S4 with transverse bulge; gonoforcipes apically widened and flattened, considerably longer than the penis valves
..... *lineolatus* (SCHENCK)

- Clypeus with only lower half black, mask otherwise complete; gonoforcipes conventional; metasoma below flat; penis valves relatively longer *clypearis* (SCHENCK)
- 3 Head outline transverse trapezoidal, with rich yellow mask; lateral spots long and broad, covering most of the frons and reaching the vertex *decaocto* (WARNCKE) Fig. 12
- Head outline rounded or elongated, with mask white or light yellow; lateral spots smaller, do not reach vertex 4
- 4 Gonoforceps apically narrowly pointed; T1 polished, moderately punctate *pictipes* NYLANDER
- Gonoforceps apically rounded or with broad tip; T1 shagreen or densely punctate 5
- 5 T1 densely shagreen and punctate; free part of gonoforcipes significantly shorter than their fused base *styriacus* FÖRSTER
- T1 smooth or only indistinctly grooved, deeply punctate; free part of gonoforcipes clearly longer than their fused base 6
- 6 Scape slender, almost three times as long as wide; legs entirely light yellow from femur tip *taeniolatus* FÖRSTER
- Scape widened, about twice as long as broad; tibiae and tarsi with black spots 7
- 7 Lateral spots above antennal sockets expanding inward; scape with white edge strip; head in outline wider than long *sinuatus* (SCHENCK)
- Lateral spots above antennal sockets straight, not expanding inward; scape predominantly white; head in outline about as long as wide *soror* (PÉREZ)

Females

- 1 Scutellum, axillae and postscutellum yellow; mask yellow: paraocular areas completely, clypeus and supraclypeal area with round spot; scape with yellow apical spot *decaocto* (WARNCKE) Fig. 12
- Mesosoma upper side black; scape black; less richly coloured, pale areas light yellow or white 2
- 2 Head long, trapezoidal; facial lateral spots linear, adjoining orbits along their length *lineolatus* (SCHENCK)
- Head transverse or roundish; lateral spots punctiform to triangular, sometimes filling the paraocular areas 3
- 3 Pronotum corners pointed; mandibles three-toothed; T1 with moderately close punctation, without lateral fringes; paraocular areas completely yellow *clypearis* (SCHENCK)
- Pronotum corners rounded; mandibles bidentate; T1 shagreen or with shallow scattered punctation; narrow side fringes present; lateral spots various 4
- 4 Terga densely shagreen, punctation nearly indistinguishable in the background sculpture; lateral spots white, large and triangular; clypeus with small yellow spot *styriacus* FÖRSTER
- Terga not or only shallowly shagreen; punctation distinct, also on T2; lateral spots frequently reduced 5
- 5 Mesopleura with shallow fine sparse punctation on fine shagreen-coated surface; silky shiny 6
- Mesopleura with moderately close punctation; glossy 7
- 6 Richly marked with light yellow: lateral spots usually filling the paraocular areas, clypeus often with spot, pronotum band present; T1 with fine sparse punctation *taeniolatus* FÖRSTER
- Less richly pale-marked, lateral spots often abbreviated above and below, pronotum with two short stripes or black; T1 with fine close punctation *pictipes* NYLANDER
- 7 Head shorter, wider than long; lateral spots truncated at top and bottom; clypeus without spot; T1 with fine sparse punctation *sinuatus* (SCHENCK)
- Head longer, hardly wider than long; lateral spots filling the paraocular areas; clypeus with spot; T1 with minute scattered punctation *soror* (PÉREZ)

Subgenus *Patagiata*

H. (Patagiata) cervinus (WARNCKE, 1992)

H. (Patagiata) difformis (EVERSMANN, 1852)

1	Males	2
–	Females	3
2	Occiput posteriorly with sharp ridge; upper suture line of clypeus almost as wide as its distance to the orbits; gonoforcipes apically with pale appendix	<i>difformis</i> (EVERSMANN)
–	Occiput posteriorly without ridge, rounded; upper suture line of clypeus wider than its distance to orbits; gonoforcipes apically narrowly constricted, appendix of same colour	<i>cervinus</i> (WARNCKE)
3	Occiput surrounded by sharp ridge; T1 without punctation, polished and very shiny; lateral spots limited to the area below the scape bases	<i>difformis</i> (EVERSMANN)
–	Occiput posteriorly without ridge, rounded; T1 polished, but with close strong punctation; lateral spots extended along orbits to beyond scape bases	<i>cervinus</i> (WARNCKE)

Subgenus *Prosopis*

H. (Prosopis) confusus NYLANDER, 1852

H. (Prosopis) damascenus (MAGRETTI, 1890)

H. (Prosopis) duckei (ALFKEN, 1905)

H. (Prosopis) excelsus (ALFKEN, 1935)

H. (Prosopis) gibbus SAUNDERS, 1850

H. (Prosopis) incongruus FÖRSTER, 1871

H. (Prosopis) maculatus (ALFKEN, 1904)

H. (Prosopis) meridionalis FÖRSTER, 1871

H. (Prosopis) pictus (SMITH, 1853)

H. (Prosopis) rubosus (WARNCKE, 1981)

H. (Prosopis) rugicollis MORAWITZ, 1874

H. (Prosopis) signatus (PANZER, 1798)

H. (Prosopis) stellatus (WARNCKE, 1992)

H. (Prosopis) trinotatus (PÉREZ, 1896)

H. (Prosopis) variegatus (FABRICIUS, 1798)

H. (Prosopis) variolaris MORAWITZ, 1876

Males

1	Scape slim, in frontal view twice to three times as long as wide, often completely black	2
–	Scape expanded, triangular or shield-like, with white or yellow marks	10
2	S3 and S4 with raised semicircular callus	3
–	Metasoma underside without conspicuous callosity	4
3	T1 with strong dense to subcontiguous punctation on shagreen surface, weakly shiny; mask white, silky shiny; scape with narrow longitudinal yellow stripe	<i>signatus</i> (PANZER)
–	T1 with only minute very scattered punctation on glossy surface; mask yellow, matt; scape black	<i>trinotatus</i> (PÉREZ)
4	Scape all black, about twice as long as wide; mesopleura glossy; T1 with dense strong punctation	5
–	Scape with white or yellow marks, only exceptionally all black, about three times as long as wide; mesopleura weakly shiny, T1 with fine to moderate scattered punctation (<i>gibbus</i> group)	6
5	Punctation of mesopleura distinctly stronger than on the mesonotum; occiput rounded in the middle	<i>duckei</i> (ALFKEN)
–	Punctation of mesopleura about as on the mesonotum; occiput sharp-edged in the middle	<i>stellatus</i> (WARNCKE) Fig. 14
6	Mask white; scutellum and postscutellum always black, mostly also labrum and pronotum; lateral spots abbreviated above	8

- Mask yellow; scutellum and postscutellum often yellow, as well as labrum and pronotum; lateral spots extend far beyond the antennal sockets at the top 7
- 7 Metasoma dorsally very finely shagreen, silky shiny; with ciliary bands on the depressions *pictus* SMITH
- Metasoma dorsally smooth, very shiny; without ciliary bands at the end margins *damascenus* (MAGRETTI)
- 8 Frons with supraantennal impunctate areas large, distinctly longer and wider than antennal sockets; mask yellow-white; lateral spots do not reach beyond the upper edge of the antennal sockets; preoccipital ridge present, but sometimes indistinct *incongruus* FÖRSTER
- Frons with supraantennal impunctate areas smaller, approximately the size of the antennal sockets; preoccipital ridge various, present or absent 9
- 9 Head shorter, without preoccipital ridge, rounded; T1 only with very scattered shallow punctation *confusus* NYLANDER
- Head longer, with distinct sharp preoccipital ridge; T1 with distinct fine punctation *gibbus* SAUNDERS
- 10 Face sides with strong oblique impressions converging downward; supraclypeal area widened, ventral part bulged; scape shield-like expanded 14
- Face sides without converging impressions; supraclypeal area normal, its ventral part impressed; scape widened, distinctly longer than broad (*variegatus* group) 11
- 11 Mesopleura coarsely wrinkled with pit-like subcontiguous punctation; mesonotum with coarse punctation, intervals glossy; mask and the rich pale flecks on the mesosoma yellow; metasomal terga reddish yellow, T3–T6 with dark end margins; T1 polished with strong sparse punctation *excelsus* (ALFKEN)
- Mesopleura even, smooth, with dense punctation; mesonotum much more finely and densely punctate, little shiny; mask and flecks of mesosoma white; metasoma black or only the basal terga reddish-yellow; T1 with very dense to subcontiguous punctation 12
- 12 Metasomal base reddish-yellow; axillae white, scutellum with two white spots; hind tibia entirely white, only with indistinct brown spot *maculatus* (ALFKEN)
- Metasoma usually all black, occasionally (locally) with T1 yellow-red; axillae white, but scutellum black without spots; hind tibia with broad black apical ring 13
- 13 Face impressed only in the middle, especially the supraclypeal area; paraocular areas finely striped and with close punctation up to the clypeus margins; scape at most half white, flagellum dark brown to black *variegatus* (FABRICIUS)
- Face strongly impressed throughout the middle face, including the paraocular areas and the clypeus base; paraocular areas smooth and only with scattered punctation; scape white except for narrow stripe on the edge; flagellum red, rarely brown *meridionalis* FÖRSTER
- 14 Integument rust-brown throughout; with rich ivory-white coloration: labrum and mandibles, scapes completely, pronotum band, spots on mesosoma above and behind calli, axillae, scutellum with two spots, postscutellum, legs from femur tip *rubosus* (WARNCKE) Fig. 13
- Integument predominantly black; metasoma base black or red 15
- 15 Scape much wider than long; metasoma base rust-red, the terga with dense strong punctation, T2 and following terga with transparent depressions; axillae and two spots on the posterior scutellum margin white, the metanotum also may be white-striped *rugicollis* MORAWITZ
- Scape scarcely wider than long; metasoma base black, terga with sparse moderate punctation, their depressions only slightly pale; axillae, scutellum and metanotum completely black *variolaris* MORAWITZ

Females

1	Metasoma base marked with red	2
–	Metasoma base black	8
2	Face white- or yellow-spotted; axillae white, only exceptionally black	3
–	Face black, sometimes lower parts brownish; axillae white or black <i>variolaris</i> MORAWITZ	
3	Integument entirely rust-brown; with rich ivory-white coloration on clypeus, pronotum, calli, axillae, scutellum, postscutellum, legs distally from femur tip	<i>rubosus</i> (WARNCKE) Fig. 13
–	Integument of mesosoma mostly black, metasoma base black or rust-red	4
4	Mesopleura coarsely wrinkled with very coarse subcontiguous punctation; anterior edge of mesopleura bent up, sharp-edged; metanotum white	5
–	Mesopleura evenly smooth, densely punctate; anterior edge of mesopleura rounded; metanotum black	6
5	Bright coloration ivory white; T1 and T2 rust-red; scape black with tip spot	<i>rugicollis</i> MORAWITZ
–	Bright coloration lemon yellow; T1–T3 reddish yellow; scape yellow with dark side stripe	<i>excelsus</i> (ALFKEN)
6	Scutellum black	7
–	Scutellum with paired white spot	<i>maculatus</i> (ALFKEN)
7	Mesopleura smooth, with subcontiguous strong punctation, interspaces silky shiny; clypeus usually black	<i>variegatus</i> (FABRICIUS)
–	Mesopleura wrinkled, matt, punctation coarse, interspaces often not recognizable; altogether more richly pale coloured, white marks more extensive, clypeus usually with white spot or median stripe	<i>meridionalis</i> FÖRSTER
8	Front edge of mesopleura below angular and slightly bent up; basal area of the propodeum with sharp net wrinkles	<i>signatus</i> (PANZER)
–	Mesopleura rounded in front, not bent up; basal area of the propodeum with sculpture tending to longitudinal ridges	9
9	Clypeus black, sometimes with pale spot, silky shiny	11
–	Clypeus yellow or extensively rust-brown, matt	10
10	Clypeus almost entirely light yellow, at most laterally narrowly brown; genae narrow; scutellum and metanotum black; T1 polished without punctation	<i>trinotatus</i> (PÉREZ)
–	Clypeus rust-brown, middle with wide, long yellow stripe; genae nearly half as long as wide; scutellum and metanotum yellow spotted; T1 minutely shagreen with fine punctation	<i>damascenus</i> (MAGRETTI)
11	T1 surface distinctly shagreen, with dense fine punctation, silky shining; head wider than long	12
–	T1 surface only very fine shagreen, with scattered minute punctation, shiny; head as wide as long or longer (gibbus group)	13
12	Punctation of mesopleura irregular, distinctly stronger than on the mesonotum; occiput edge rounded in the middle	<i>duckei</i> (ALFKEN)
–	Punctation of mesopleura about as on the mesonotum, regular; occiput in the middle sharp-edged	<i>stellatus</i> (WARNCKE)
13	T1 with distinct dense punctation; terga apically becoming paler, with dense ciliary bands; mostly richly yellow-marked are: clypeus, scutellum, pronotum and calli (there are also darker forms with black scutellum)	<i>pictus</i> SMITH
–	T1 with fine scattered punctation, or impunctate; terga at the end brown, ciliary banding indistinct; clypeus usually black; pronotum with two bright stripes or black; scutellum black	14
14	Supraantennal impunctate areas larger, about as long or longer than antennal socket; clypeus apically with shallow but distinct punctation	<i>incongruus</i> FÖRSTER
–	Supraantennal impunctate areas smaller, not longer than antennal socket; clypeus apically with scattered shallow punctation	15

- 10 Scape with white dorsal spot; terminal area of the propodeum surrounded by a ledge; S8 Fig. 1f *armeniacus* (WARNCKE)
 – Scape with white longitudinal stripe on the outer margin; terminal area of the propodeum rounded, without ledges to the lateral areas; S8 Fig. 1c *adspersus* (ALFKEN)
- 11 Head longer than broad, trapezoidal; lateral spots long, extending beyond the antennal sockets; scape white-spotted; S8 Fig. 1l *iranicus* DATHE
 – Head clearly broader than long, transversely elliptic; lateral spots truncated at top, do not extend beyond antennal sockets; scape bulbous, black; S8 Fig. 1e *irritans* DATHE

Females

- 1 T1 red; tibiae completely yellow, also clypeus richly yellow-spotted *sulphuripes* (GRIBODO)
 – Terga, tibiae (partially) and clypeus black; the latter sometimes with small yellow spot 2
- 2 Mesopleura with very coarse subcontiguous punctation, the punctures pitlike, their bottom visible; terminal area surrounded by sharp edge 3
 – Mesopleura with strong subcontiguous or dense punctation, the punctures not pitlike; terminal area various 5
- 3 Malar space longer, slightly longer than the largest diameter of the flagellum 4
 – Malar space shorter than the largest diameter of the flagellum *cypricola* (WARNCKE)
- 4 Lateral spots usually reduced, point-like; punctation of the mesosoma coarser, matt *punctatus* (BRULLÉ)
 – Lateral spots filling the paraocular area, reaching above the antennal sockets; clypeus often with spot; punctation of the mesosoma fine, silky shiny *longimacula* (ALFKEN)
- 5 Supraclypeal area rhombic, elevated above the frons and converging up into the frons 6
 – Supraclypeal area with parallel sides, clearly flattened and merging fluently into the frons *planulus* (WARNCKE) Fig. 15
- 6 Mesopleura anterior edge in upper part sharp-edged; malar space long, nearly as long as wide, clearly longer than the largest diameter of the flagellum 7
 – Mesopleura anterior edge rounded in upper part; malar space shorter, at most half as long as wide, no longer than the largest diameter of the flagellum 9
- 7 Undersides of terminal segments of the flagellum black; mesonotum with moderate dense punctation, matt *alpinus* (MORAWITZ)
 – Undersides of terminal segments of the flagellum yellow; mesonotum with strong dense punctation 8
- 8 Mesopleura shagreen, matt; malar space shorter, about three quarters as long as wide *hyalinatus* SMITH
 – Mesopleura polished, glossy; malar space longer, as long as wide *tauricus* (WARNCKE)
- 9 Supraclypeal area widened, upper part nearly circular; head transverse oval; malar space narrow, as long as the flagellum diameter; mesopleura anterior edge ventrally rounded *irritans* DATHE
 – Supraclypeal area upper part narrow; head trapezoidal; malar space longer; mesopleura anterior edge ventrally edged 10
- 10 Clypeus shagreen, punctation barely visible amongst sculpture, dull; T1 with distinct fine punctation; lateral spots small, placed low in paraocular area, or absent *adspersus* (ALFKEN)
 – Clypeus glossy, punctation clearly visible; T1 impunctate or with minute punctation; lateral spots filling the paraocular areas, or slightly reduced 11
- 11 Lateral spots filling the paraocular area; T2 with very fine dense punctation *iranicus* DATHE
 – Lateral spots reduced below, adjacent to orbits; T2 only with obsolete minute punctation *armeniacus* (WARNCKE)

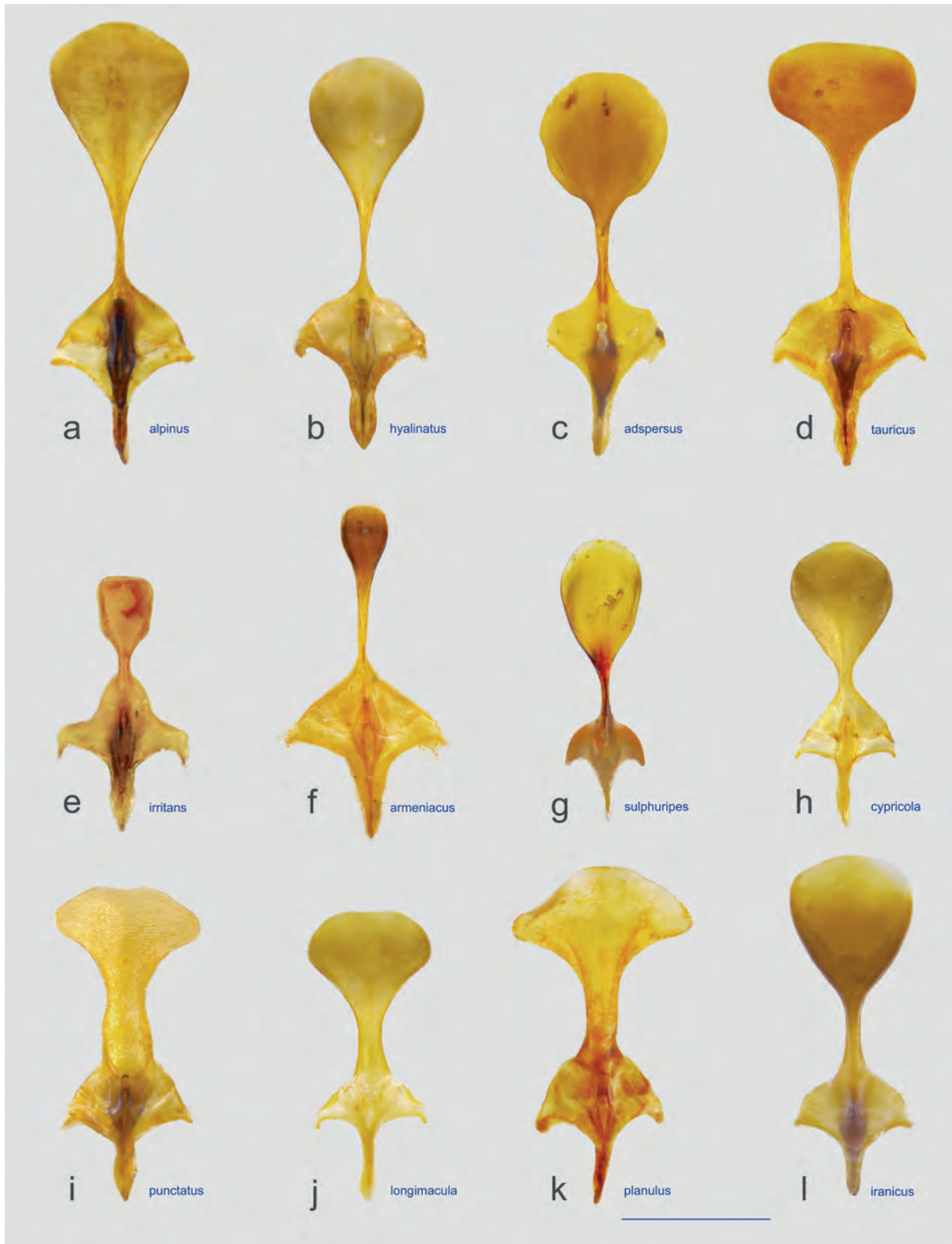


Fig. 1: Male Sternum 8 of the species of subgenus *Spatulariella*: a–*H. alpinus* (MORAWITZ, 1867) (GR Florina); b–*H. hyalinatus* SMITH, 1842 (GR Ioannina); c–*H. adspersus* (ALFKEN, 1935); d–*H. tauricus* (WARNCKE, 1981); e–*H. irritans* DATHE, 1980; f–*H. armeniacus* (WARNCKE, 1981); g–*H. sulphuripes* (GRIBODO, 1894); h–*H. cypricola* (WARNCKE, 1972) (CY Girne); i–*H. punctatus* (BRULLÉ, 1832) (TR Konya); j–*H. longimacula* (ALFKEN, 1936) (TR Yüksekova); k–*H. planulus* (WARNCKE, 1981); l–*H. iranicus* DATHE, 1980. – Scale bar 0.5 mm.

Records

Subgenus *Abrupta* MÉHELY, 1935

Hylaeus (Abrupta) cornutus CURTIS, 1831

Hylaeus cornutus CURTIS, 1831: pl. 373, ♂. England: Suffolk.
Prosopis (Abrupta) cornuta (SMITH, 1842) – MÉHELY 1935: 138.
 WARNCKE 1972: 751.
Hylaeus (Abrupta) cornutus CURTIS, 1831 – ALIEV 1986: 269.

Material examined: **Adana:** Aladağ, 780 m, 02.07.1995, 2 ♀♀; leg. Y. Barbier (on *Hippomarathrum microcarpum*); Hacıhasanlı, NW Sevinçli, 120 m, 07.07.1995, 2 ♂♂, 3 ♀♀, leg. Y. Barbier (on *Ammi visna*). **Adıyaman:** Nemrut dağı, National park, Karadut, 02.07.1993, ♀, leg. M. Halada (coll. Schwarz/Ansfielden). **Ağrı:** 39°44N 43°03, 27.06.1993, 8 ♂♂, 2 ♀♀, leg. Jirousek/Halada (coll. Schwarz/Ansfielden). **Aksaray:** 25 km SE Ihlara, 38°14N 34°18E, 18.07.1998, 3 ♀♀, Esmakaya, 38°13N 33°22E, 16.07.1998, ♂, leg. C. Schmid-Egger. **Antalya:** Alanya, 50 m, 28.07.1985, ♂, ♀, R. Hensen; 10 km W Alanya, 36°58N 31°89E, 01.08.2009, 10 ♀♀, leg. C. Schmid-Egger (shrubland); Arapsuyu, Azmak, 10 m, 24.09.2004, ♂, ♀, leg. H. Özbek (on *Mentha longifolia*); Gazipaşa, 30 m, 03.07.1986, 2 ♂♂, leg. P. van Ooijen. **Balıkesir:** Ören, 39°33N 27°02E, 04.08.1987, 4 ♀♀, H. Dollfuss. **Bitlis:** Ahlat, 1750 m, 15.08.1985, 2 ♀♀; Tatvan, 1750 m, 16.08.1985, ♀, leg. R. Hensen. **Bolu:** lake env, 40°44N, 31°37E, 21.06.1993, ♂, leg. M. Halada. **Denizli:** Pamukkale, 37°56N 29°08E, 14.07.1998, ♂ leg. C. Schmid-Egger. **Diyarbakır:** Dicle University Campus, 700 m, 01.06.2002, 2 ♀♀, leg. H. Özbek. **Edirne:** Keşan, Mecidiye, 50 m, 22.07.2017, 2 ♂♂, leg. Ö. Çalmaşur. **Erzurum:** Atatürk University Campus, 1900 m, 09.06.2005, 2 ♀♀, leg. H. Özbek (on *Melilotus officinalis*); Palandöken, 2200–2400 m, 28.07.1986, ♀, leg. A.W. Ebmer; İspir yolu, 2 km S of Dallıkavak Geçidi, 2300 m, 30.07.2010, 2 ♀♀, leg. J.S. Ascher, H. Özbek (coll. AMNH); Horasan 18 km E Delibaba, 40°02N 42°09E, 25.06.1993, ♀, leg. Halada; Narman, Tahtakale, 1350 m, 17.08.2004, 2 ♀♀, leg. S. Çoruh; Oltu, Çamlıbel, 1600 m, 26.07.2000, 2 ♀♀, leg. H. Özbek (on *Melilotus alba*); Uzundere, Gölbaşı, Öşvank yolu, 1200 m, 25.07.2002, 2 ♂♂, leg. Ö. Çalmaşur (on *Daucus carota*). **Hakkâri:** 1750 m, 09.07.1987, ♂, leg. R. Hensen; Varegöz, 37°25N 44°13E, 1650. 02.08.1986, ♂, leg. S.M. Blank. **İğdır:** Bayraktutan, 900 m, 17.08.2005, 8 ♀♀, leg. H. Özbek (on *Centaurea solstitialis*); Köy Hizmetleri Araştırma Enstitüsü, 900, 31.07.2002, 6 ♀♀, leg. M. Kesdek (on *M. alba*); Melekli, 925 m, 16.08.2005, 2 ♀♀, leg. H. Özbek. **İzmir:** Selçuk, Efes, 18.05.1992, ♀, leg. W.H. Liebig. **Kahramanmaraş:** Göksün, 1400 m, 26.06.1988, 3 ♀♀, leg. R. Hensen. **Kars:** 25 km E Sarıkamış, 2100 m, 06.07.1985, ♂, leg. C.J. Zwakhals; Karakurt, 20 km W, 40°10N 42°22E, 1600 m, 04.07.1985, 2 ♂♂, ♀, leg. M. Schwarz (coll. Schwarz/Ansfielden); Kağızman, Değirmendere, 1350 m, 04.06.2004, ♂, M. Kesdek (on *Eryngium campestre*). **Konya:** 60 km W, Eflatun Pınarı,

37°51N 31°37, 15.07.1998, 2 ♂♂, leg. C. Schmid-Egger; Kızılören Dağı, 36°39N 32°00E, 1300, 31.05.1998, ♂, leg. S.M. Blank. **Kütahya:** Sobran, Porsuk Barajı, 39°40N 30°10E, 08.07.1993, 2 ♀♀, leg. Jirousek (coll. Schwarz/Ansfielden). **Mersin:** Silifke, Kargıcan, 200 m, 04.08.1985, ♀, leg. R. Hensen. **Muğla:** Bodrum, Salmakis, 37°02N 27°25E, 14.07.2001, ♀, F. Burger (*Polygonum* sp.); Milas SSE, Camköy, 37°07'70N 27°53'30E, 22.06.1998, ♂, leg. C. Niehuis. **Neşehir:** 2 km S, 1250 m, 04.07.1984, ♀, leg. A.W. Ebmer; Acıgöl, Çardak, 38°33N 34°47E, 07.07.1993, 3 ♂♂, M. Halada; Göreme, 38°39N 34°52E, 17.07.1998, ♂, leg. Jirousek; Topuzdağı Pass W, 1300 m, 17.07.1984, ♀, leg. A.W. Ebmer; Avanos, Zelve, 1050 m, 18.07.1984, ♂, 04.07.1984, ♀, leg. A.W. Ebmer; Ürgüp, 1100 m, 11.08.1985, 3 ♂♂, leg. P. van Ooijen. **Niğde:** Karakışlakçı, 1240, 07.07.1995, ♂, ♀, Y. Barbier (on *Euphorbia altissima*). **Şanlıurfa:** Halfeti, 400 m, 28.06.1987, 2 ♂♂, 2 ♀♀, leg. R. Hensen. **Van:** 38°30N 43°24E, 28.06.1993, ♂, leg. Jirousek (coll. Schwarz/Ansfielden); 1800 m, 13.07.1987, ♂, leg. R. Hensen. **Yalova:** 4 km E Çiftlik köyü, 50 m, 31.07.1986, ♀, leg. P. van Ooijen.

Remarks: *H. cornutus* is widely distributed in Turkey and not rare. Data from the following provinces had hitherto been registered: Amasya, Ankara, Bursa, Çanakkale, Denizli, Hatay, İstanbul, İzmir, Kırıkkale, Kütahya, Mersin, Osmaniye, Tekirdağ, Yalova (WARNCKE 1972), Erzurum and Kars (ÖZBEK 1977). With our new data from 20 provinces, the species has so far been confirmed from 36 provinces of Turkey. *H. cornutus* lives from the lowlands in dry-warm habitats up to cool environments at 2400 m altitude. The flight period is quite long, it extends from May to September with a peak in July, so that more than one generation is conceivable. Flower visits to the following plants have been registered: *Hippomarathrum microcarpum*, *Ammi visnaga*, *Centaurea solstitialis*, *Daucus carota*, *Euphorbia altissima*, *Melilotus alba*, *Melilotus officinalis*, *Mentha longifolia*, *Polygonum* sp.

Distribution: Nearly circum-mediterranean, from Spain in the west to Turkmenistan in the east; north to Denmark, south to Israel (DATHE et al. 2016; DATHE & PROSHCHALYKIN 2018).

Subgenus *Dentigera* POPOV, 1939

Hylaeus (Dentigera) acer DATHE, 1980

Hylaeus (Dentigera) acer DATHE, 1980: 80–81, ♂♀. Iran: Elburs, Damawand area, 2200 m.
Prosopis (Nesoprosopis) acra (DATHE, 1980) – WARNCKE 1992: 771.

Material examined: **Hakkâri:** Beytüşşebap, Habur Deresi, 37°32N 43°12E, 1100 m, 10.08.1983, ♂, ♀, leg. W. Schacht (coll. Schwarz/Ansfielden); Varagöz, 37°25E 44°13N, 1650 m, 02.08.1986, ♂, leg. S.M. Blank; Varagöz,

Sat Dağı, 37°25E 44°13N, 1700 m, 04.08.1983, 3 ♀ ♀, leg. W. Schacht (coll. Schwarz/Ansfielden); Yüksekova, 30 km W, 1850 m, 19.07.1986, 2 ♀ ♀, leg. A.W. Ebmer. **Tunceli:** Ovacık 30 km W, 1250 m, 19.08.1985, 2 ♀ ♀, leg. R. Hensen.

Remarks: The male is richly marked with pale, the scape strongly thickened, sternum 3 with narrow, pointed spine. The propodeum medial area is longitudinally striped in females and males. The species is only known from the mountains of Eastern Anatolia and Northern Iran, where it was found at altitudes between 1100 and 3000 m. It has been collected in Turkey only sparsely (3 provinces); the record in Tunceli is new.

Distribution: Turkey: Hakkâri, Siirt (WARNCKE 1992), Tunceli; Iran: Elburs (DATHE 1980).

Hylaeus (Dentigera) brevicornis NYLANDER, 1852

Hylaeus brevicornis NYLANDER, 1852: 95, ♀ ♂. Sweden.

Prosopis (Nesoprosopis) brevicornis seducta (FÖRSTER, 1871) – WARNCKE 1972: 765.

Hylaeus (Dentigera) brevicornis NYLANDER, 1852 – ALIEV 1986: 264.

Material examined: **Ardahan:** Gölebert, 2000 m, 10.08.1976, ♀, ♂, leg. H. Özbek (*Carduus nutans*). **Artvin:** Genya Mt, 1860, 28.07.2004, ♂, leg. C. Güçlü; Murgul, 01.07.1997, 2 ♂ ♂, leg. Prudek, Riha. **Balıkesir:** Erdek, Halbinsel, 40°24N 27°47E, 03.08.1986, ♂, leg. Madl (coll. Schwarz/Ansfielden). **Bingöl:** Genç, 1000 m, 12.08.1985, ♂, leg. R. Hensen. **Bolu:** 40°44N, 31°37E, 21.06.1993, ♀, leg. M. Halada (coll. Schwarz/Ansfielden). **Denizli:** Pamukkale, 07.08.1986, ♀, leg. Kadlec/Vorisek. **Erzincan:** Rafahiye, 8 km N, 1700 m, 15.07.1984, ♂, leg. A.W. Ebmer. **Erzurum:** Oltu, Başaklı, 1700 m, 13.08.1976, ?, leg. H. Özbek. **Kayseri:** Develi, Bakırdağı, 1700 m, 06.07.1984, ♂, leg. A.W. Ebmer. **Muş:** Buğlan Pass, 40 km W Muş, 1640 m, 08.07.1985, ♂, leg. A.W. Ebmer. **Nevşehir:** Ürgüp, Topuz Dağı Geçidi W, 1300 m, 17.07.1984, 2 ♂ ♂, 4 ♀ ♀, leg. A.W. Ebmer; Avanos, Zelve, 1050 m, 04.07.1984, ♀, leg. A.W. Ebmer. **Sivas:** Gürün, Suğul, 1700 m, 31.07.1986, ♂, leg. A.W. Ebmer; Yıldızeli, Çamlıbel Pass, 1600–1700 m, 16.07.1984, ♂, leg. A.W. Ebmer. **Van:** 1800 m, 13.07.1987, ♂, leg. R. Hensen; Başkale, Güzeldere Pass, 2600–2800 m, 19.07.1986, ♀, leg. A.W. Ebmer.

Remarks: The taxonomy of the *Hylaeus brevicornis* group is still difficult and not finally clarified. However, Warncke's concept of a single polymorphic species has been refuted by recent molecular genetic findings. We treat here the taxa *H. acer*, *H. brevicornis*, *H. gredleri*, *H. imparilis*, *H. intermedius*, *H. kahri* and *H. punctus* on the basis of morphological characters as independent species.

The species is widespread throughout the country (31 provinces) and very common. The flight season runs from the end of June to almost the end of August.

Distribution: Palaearctic: North Africa (Morocco), Europe, South Siberia, Kazakhstan. In Turkey: Adana, Amasya, Ankara, Antalya, Bursa, Denizli, Hatay, İstanbul, İzmir, Kastamonu, Kayseri, Konya, Kütahya, Mersin, Muğla, Nevşehir, Şanlıurfa, Tekirdağ, Trabzon (WARNCKE 1972); Erzurum (ÖZBEK 1977). The records from the following 12 provinces are new: Ardahan, Artvin, Balıkesir, Bingöl, Bolu, Denizli, Erzincan, Kayseri, Muş, Nevşehir, Sivas, Van.

Hylaeus (Dentigera) chukar (WARNCKE, 1992)

Fig. 2

Prosopis (Nesoprosopis) chukar WARNCKE, 1992: 771–772, 799, ♀ ♂. Turkey: Hakkâri.

Hylaeus (Dentigera) chukar (WARNCKE, 1992) – ITIS (2020).

Remarks: The assignment of the species to the subgenus *Dentigera* is problematic. Despite some similarity, the species does not belong to the *brevicornis*-group at all; the terminalia of the male also resemble some species of the subgenus *Prosopis*; it remains enigmatic in this respect. WARNCKE (1992: 767) placed it between *H. acer* and *H. duckei*, representatives of subgenera *Dentigera* and *Prosopis* in our sense.

A special character of both sexes is the widened supraclypeal area; its apical part is as broad as long, in the male even broader; it merges evenly and broadly into the frons. ♀: scape black, flagellum short; facial side spots small; tergum 1 smooth and glossy, without cross-ripple. ♂ scape slender with bright apical spot; the mask white; apical lobes of sternum 7 at the outer edge with long fine bristles (no teeth); sternum 8 short, in front with V-incision (artefact?); the penis valves are only slightly curved, the space in between narrow as in *H. acer*.

The species name “chukar” is arbitrarily and unrelatedly conveyed from the name of the chukar partridge (*Alectoris chukar*), a Eurasian upland gamebird in the family Phasianidae, which got its name after its sound. According to the application of Warncke we understand the epithet as an apposition of the noun in the nominative.

The species is rarely recorded from Turkey (1 province). Despite intensive collections throughout the country, no additional samples have been taken. Since *H. chukar* is a high mountain species (1800–3000 m), further collections at higher altitudes (over 2000 m), especially in Eastern Anatolia, should be carried out throughout the season.

Distribution: Turkey: Hakkâri (WARNCKE 1992: 772).

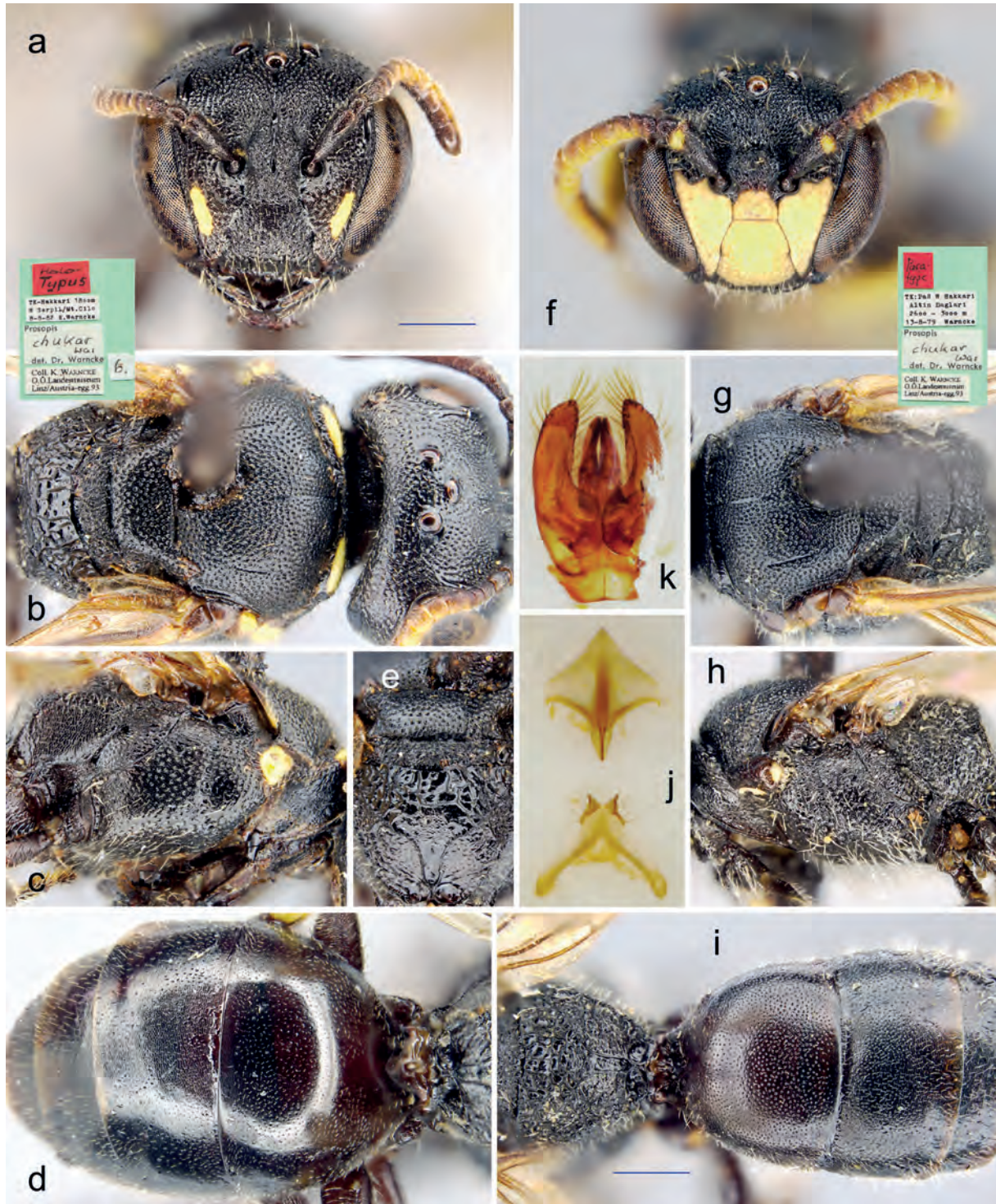


Fig. 2: *H. (Dentigera) chukar* (WARNCKE, 1992). Holotype female: a–face, b–mesonotum, c–mesopleuron, d–propodeum, e–metasoma. Paratype male: f–face, g–mesonotum, h–mesopleuron, i–propodeum and metasoma, j–S7 and S8, k–genital capsule. – Scale bar 0.5 mm.

Hylaeus (Dentigera) giresunus (WARNCKE, 1992)

Fig. 3

Prosopis (Nesoprosopis) glacialis giresuna WARNCKE, 1992: 770–771, ♀♂. Turkey: Hakkâri.

Hylaeus (Dentigera) giresunus (WARNCKE, 1992) – comb. et stat. nov.

Remarks: The female of *H. giresunus* (holotype) differs from *H. glacialis* by the clypeus almost completely concave throughout its length, while in the latter only the clypeus front edge is transversely impressed. Additionally, in the female the front margin of the clypeus has an arcuate tip. The outline of the head is sub-quadratic (*H. glacialis*: trapezoidal) and the genae are thickened

(normal in *H. glacialis*). The habitus of *H. giresunus* is much more slender, especially the tergum 1, which is strongly shiny; the sculpture of the propodeum is less pronounced. The males are very similar, also in the terminalia, but the proximal extended apical lobes of sternum 7 may be important. *H. giresunus* is certainly a geographical parallel to the European *H. glacialis*, but the female appears to be discrete from it.

H. giresunus is a montane (at 1700–2400 m), sparsely recorded species (3 provinces).

Distribution: Turkey: Hakkâri, Giresun, Erzurum (WARNCKE 1992: 771).

Hylaeus (Dentigera) glacialis MORAWITZ, 1872

Hylaeus glacialis MORAWITZ, 1872: 379, ♂. South Tyrol: Trafoi.
Hylaeus (Dentigera) glacialis MORAWITZ, 1872 – DATHE et al. 2016: 15, 45.

Material examined: Erzurum: Oltu, Başaklı, Karadağ Mt, 2100 m, 24.07.2005, ♂, leg. H. Özbek (on *Eryngium billardieri*); Çamlıbel Karakolu, 1900 m, 01.07.2000, ♂, leg. H. Özbek; Tortum/Narman Kireçli Dağı Geçidi W, 2100 m, 14.07.1984, ♂, A.W. Ebmer. Hakkâri: Varagöz, 37°25N 44°13E, 1650 m, 02.08.1986, ♀, leg. S. M. Blank; Oramar, 10 km NE, 1700 m, 29.06.1985, ♀, leg. M. Schwarz.

Remarks: It is remarkable that both taxa *H. giresunus* and *H. glacialis* are said to occur side by side in two provinces (Erzurum, Hakkâri). Errors in older determinations cannot be completely ruled out here. To answer this question, females will have to be compared.

Distribution: Has a disjunctive range in high mountain locations (1500–2100 m) of the Pyrenees, Alps, the Balkans and Asia Minor. Turkey: Erzurum, Hakkâri (Fig. 17.II).

Hylaeus (Dentigera) gredleri FÖRSTER, 1871

Hylaeus gredleri FÖRSTER, 1871: 944–946, ♀♂. Austria: Telfs/Tirol.
Hylaeus (Dentigera) gredleri FÖRSTER, 1871. – ALIEV 1986: 264. DATHE et al. 2016: 17, 45.

Material examined: Ağrı: 10 km S, 1650 m, 26.07.2003, 6 ♀♀, leg. H. Özbek; Cumaçay 1930 m, 23.07.1996, ♀, leg. P. Rasmont (on *Cirsium arvense vestitum*); Hamur, 26.07.2003, 2 ♀♀, leg. H. Özbek. Erzurum: 5 km SW, 27.07.2010, ♂, leg. J. Ascher, H. Özbek; Atatürk University Campus, 2000 m, 11.07.2007, ♂, leg. leg. Ros. Asch Özb, 18.08.1970, ♂, leg. H. Özbek; Oltu, Başaklı, 1500 m, 20 km WSW of Oltu, 29°14N 41°48E, 03.07.2001, ♂, 4 ♀♀, leg. J.G. Rozen &

H. Özbek (coll. AMNH); Başaklı, Karadağ, 2100 m, 24.07.2005, 2 ♀♀, H. Özbek (on *Eryngium creticum*); Çamlıbel, 1750 m, 40.28.22N 41.46.35E, 11.07.2004, 3 ♂♂, leg. H. Özbek; Pasinler, 5 km W of Pasinler, 10.07.2007, ♂, leg. Ros. Asch Özbek (coll. AMNH). Hakkâri: Yüksekova, Esendere, 21.07.1998, ♀, leg. C. Schmid-Egger. İzmir: Efes, 18.05.1992, 3 ♂♂, 3 ♀♀, leg. W.H. Liebig. Kars: Sarıkamış, Akkurt çeşmesi, 1550 m, 19.06.2004, ♂, ♀, leg. H. Özbek; Karakurt, 1501 m, 40°08N 42°21E, 05.08.2002, 3 ♀♀, leg. H. Özbek (on *Achillea millefolium* L.). Kırşehir: Kulpak, 38°27N 34°14E, ♀, 28.05.2001, ♀, 02.06.2002, leg. W.H. Liebig. Konya: 25 km N, 11.06.1966, 2 ♀♀, leg. HHF Hamann; Beyşehir, 13.06.1966, ♂; Dedegöl Dağı, 1400–1700 m, 15.06.1966, ♂, leg. HHF Hamann. Kahramanmaraş: Göksun, 1400 m, 26.06.1987, 4 ♂♂, leg. R. Hensen. Mersin: Mut 10 km S, 08.06.1966, ♀, leg. HHF Hamann. Nevşehir: Avanos, 38°46N 34°54E, 25.05.2001, ♀, leg. W.H. Liebig; Göreme, 1000 m, 09.07.1988, 3 ♀♀, ♀, leg. C. Schmid-Egger. Niğde: Yeniköy, 1370 m, 07.07.1995, ♂, leg. Y. Barbier (on *Euphorbia altissima*); Karakışlakçı, 1240 m, 07.07.1995, 5 ♂♂, 10 ♀♀, leg. D. Flagothier, Y. Barbier (on *Astrodaucus orientalis*, *Tortilis uranica*).

Remarks: The available records suggest that *H. gredleri* occurs mainly in Eastern and Central Anatolia. It preferentially inhabits steppes, open shrubby habitats and forest margins from sea level to altitudes of 2000 m. The flight season extends from the end of May to the end of August, with a peak in June. Flowers visited: *Achillea millefolium*, *Astrodaucus orientalis*, *Euphorbia altissima*, *Eryngium creticum*, *Tortilis uranica*. The species is moderately recorded in Turkey (11 provinces).

Distribution: All Europe south to Sicily, up to 1500 m, Russia, and from western Morocco, Lebanon and Azerbaijan to Kazakhstan. Turkey: 11 provinces; older data are not usable as the species was previously mixed with *H. brevicornis*.

Hylaeus (Dentigera) imparilis FÖRSTER, 1871

Hylaeus imparilis FÖRSTER, 1871: 1033–1035, ♂. Southern France.
Hylaeus (Dentigera) imparilis FÖRSTER, 1871 – ALIEV 1986: 264. DATHE et al. 2016: 17, 44.

Material examined: Ağrı: 39°44N 43°03E, 27.06.1993, ♂, 2 ♀♀, leg. Jirousek/Halada (coll. Schwarz/Ansfelden). Aksaray: Ihlara, 38°14N 34°18E, 18.07.1998, ♂, leg. C. Schmid-Egger. Ankara: 09–16.06.1934, ♂, ♀, H. Noack (Museum Senckenberg). Antalya: 33 km NW, 37.02N 30.23E, 23.07.1998, 2 ♂♂, leg. C. Schmid-Egger; Alanya, 50 m, 28.07.1985, 4 ♂♂, 6 ♀♀, leg. R. Hensen; Demirtaş, 100 m, 29.07.1985, ♂, 4 ♀♀, leg. R. Hensen; Seki, 10.09.1951, ♀, leg. H.A. Guenin; İncekum, 20 m,

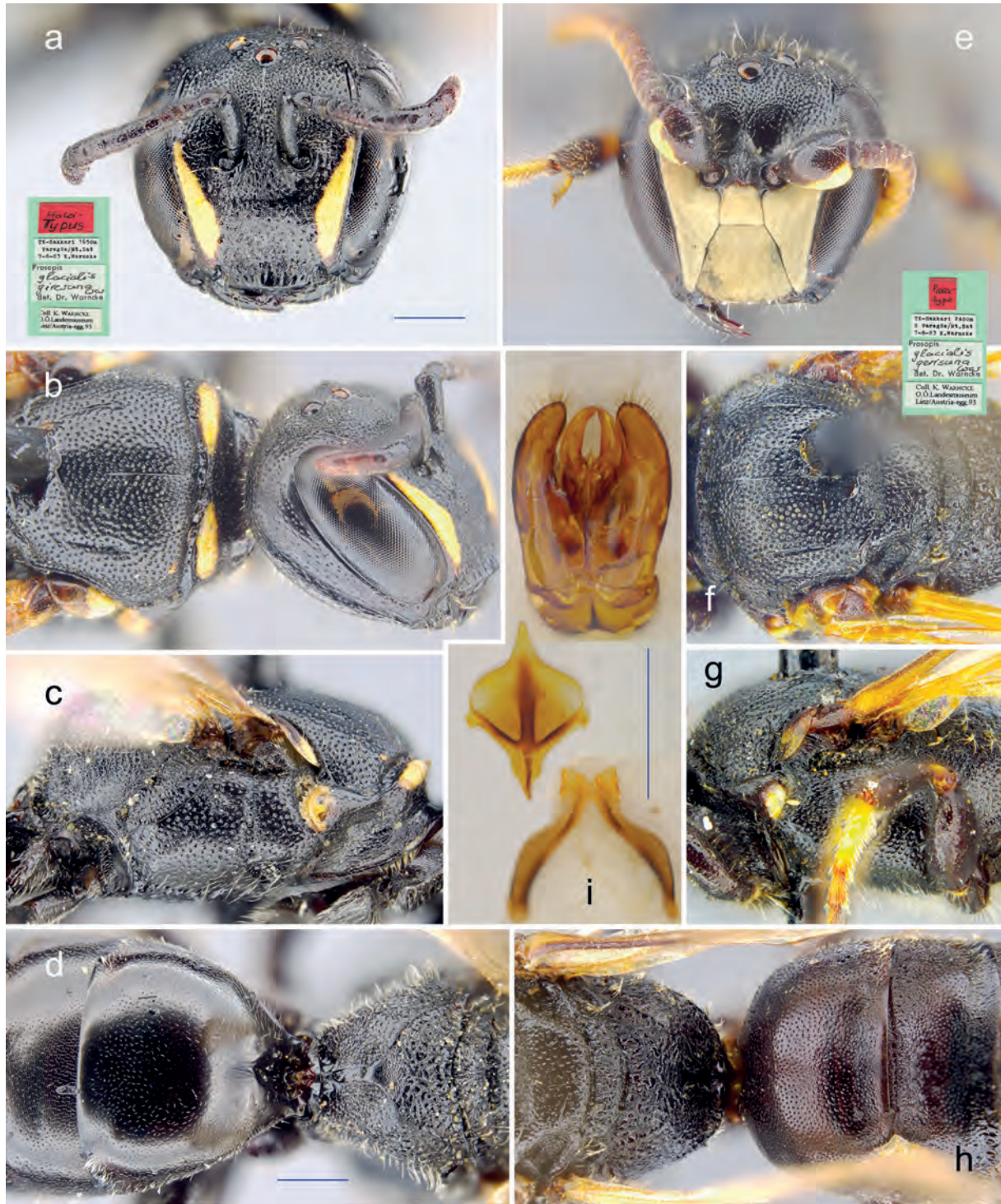


Fig. 3: *H. (Dentigera) giresunus* (WARNCKE, 1992). Holotype female: a–face, b–mesonotum, c–mesopleuron, d–propodeum and metasoma. Paratype male: e–face, f–mesonotum, g–mesopleuron, h–propodeum and metasoma, i–terminalia. – Scale bar 0.5 mm.

07.08.1985, 4 ♂♂, leg. P. van Ooijen; Konaklı, 36°58N 31°89E, 01.08.2009, 4 ♂♂, 4 ♀♀, leg. C. Schmid-Egger (woodland, coll. Schmid-Egger); Akseki, 1200 m, 09.08.1985, 3 ♀♀, leg. P. van Ooijen; Anamur, 36°02N 32°79E, 21.07.1998, ♀, leg. C. Schmid-Egger; Elmalı, 24 km S, 1500–1600 m, 04.07.1990, ♀, A.W. Ebmer; Çiğlik, 317 m, 02.06.2009, 12 ♂♂, 4 ♀♀, leg. J.S. Ascher, H. Özbek; Kargin, 02.06.2009, 2 ♂♂, leg. J.S. Ascher,

H. Özbek ((coll. AMNH); İbradi, 6 km SE, 450 m, 37°07N 31°65E, 31.07.2009, 3 ♂♂, ♀, leg. C. Schmid-Egger; Koyalı Beach, 2 m, 29.05.2009, 7 ♂♂, leg. J.S. Ascher, H. Özbek, J.G. Rozen (coll. AMNH); Kumluca, Arikanda, 36°28N 30°07E, 11.07.1998, ♂, ♀, leg. C. Schmid-Egger; Side, 06–20.06.1985, 2 ♀♀, leg. N. Mohr; Manavgat, 50 m, 31.07.1985, ♂, leg. R. Hensen; Termessos, 2 ♀♀, 07.07.1998, leg. C. Schmid-Egger; Güllük Dağı

(Termessos), 950 m, 36°59N 30°27E, ♂, leg. S.M. Blank; Kaş, Kalkan, 13.09.1951, 2 ♀♀, leg. H.A. Guenin; Kemer, 08.09.1951, ♀, leg. H.A. Guenin. **Artvin:** Borçka, Ferhatlı, 21.05.2002, 7 ♂♂, 3 ♀♀, leg. J.G. Rozen and H. Özbek (coll. AMNH); Yusufeli, Demirkent, Salekör, 1600 m, 01.09.1995, ♀ leg. M. Kraus. **Aydın:** Çamlık, 37°53N 27°26E, 17.05.1981, ♂, leg. Rausch/Ressler, (coll. Mus. Linz) Çine, 20–23.09.1951, ♀, leg. H.A. Guenin. **Balıkesir:** Ayvalık, Arkent, 28.06.1993, ♀, leg. P. Tyrner. **Bingöl:** Genç, 1000 m, 12.08.1985, ♂, leg. R. Hensen; Genç 15 km S, 1400 m, 13.08.1985, 3 ♂♂, leg. R. Hensen. **Bitlis:** Ahlat, 1750, 18.08.1990, ♂, leg. R. Hensen. **Burdur:** Çeltikçi, 02.09.1983, 2 ♂♂, 2 ♀♀, leg. P v Ooijen, J. Timmer. **Bursa:** 250 m, 24.08.1985, 8 ♂♂, 2 ♀♀, leg. R. Hensen; Mudanya: 25 m, 25.08.1985, 2 ♂♂, ♀, leg. R. Hensen. **Denizli:** Pamukkale 18 km N, 37°56N 29°08E, 14.07.1998, ♀, leg. C. Schmid-Egger. **Diýarbakır:** Çınar, 650 m, 09.08.1985, 2 ♂♂, leg. R. Hensen. **Erzincan:** Muti köprüsü, 1300 m, 26.09.1979, ♀, leg. H. Özbek (on *Eryngium campestre*); Topdağı, 1400 m, 04.08.2003, ♂, leg. S. Çoruh. **Erzurum:** Atatürk University research field 6 nolu kuyu, 2000 m, 05.09.1966, ♂, leg. H. Özbek (on *Melilotus officinalis*); Olur, Yeşilbağlar, 1200 m, 25.06.2001, 2 ♀♀, leg. H. Özbek, J.G. Rozen; Oltu, Basaklı, 18 km WSW of Oltu, 1500 m, 29°14N 41°48E, 27.06.2001, 2 ♀♀, leg. J.G. Rozen and H. Özbek (coll. AMNH); Subatık, 1300 m, 30.08.2003, 2 ♂♂, leg. H. Özbek (on *Daucus carota*); 20 km SE of Tortum, 2131 m, 40°21N 41°40E, 21.07.2010, 2 ♀♀, leg. J.S. Ascher, H. Özbek, J.G. Rozen (coll. AMNH). **Eskişehir:** Sakarılıca, 06.07.1997, ♂, ♀, leg. Prudek/Riha. **Hakkâri:** Varagöz, 1750 m, 37°25N 44°13E, 06.08.1986, ♂, S.M. Blank; Şemdinli, 1700, 20.07.1988, ♂, leg. C. Schmid-Egger; Yüksekova, 37°25N 44°13E, 1700 m, 04–8.08.1983, 13 ♂♂ 12 ♀♀, leg. W. Schacht (coll. Schwarz/Ansfelden) **Hatay:** Belen, 28.08.1983, ♀, leg. J. Timmer. **Iğdır:** 900 m, 18.08.1983, 2 ♂♂, leg. J. Timmer. **Isparta:** Eğirdir, 15–25.05.1988, 2 ♀♀, leg. N. Mohr; 37°53N 30°55E, 15.07.1998, ♀, leg. C. Schmid-Egger (coll. Mus.Linz); 37°48N 31°07E, 13.06.1985, ♂, leg. H. Rausch; Yalvaç, Sultandağı, 38°18N 31°09E, ♂, leg. Jirousek (coll. Schwarz/Ansfelden). **İzmir:** Efes, 9 m, 18.05.1992, ♀, W.H. Liebig; Selçuk, Çamlık, 37°53N 27°26E, 17.05.1981, ♂, leg. Rausch/Ressler. **Kayseri:** Develi, Kakırdağı geçidi, 1700 m, 06.07.1984, ♂, leg. A.W. Ebmer; Pınarbaşı, 1500 m, 25.06.1987, 2 ♂♂, ♀, leg. R. Hensen. **Karaman:** Sertavul geçidi, 1550 m, 08.07.1990, ♂, leg. A.W. Ebmer. **Konya:** Güneysınır, Güragaç, 1020 m, 06.08.2000, 4 ♀♀, leg. M. Kesdek; Doğanşehir, Reşadiye geçidi, 1500 m, 12.07.1990, 2 ♂♂, leg. A.W. Ebmer; Beyşehir, Efla-tun Pınarı, 37°51N 31°37E, 15.07.1998, 2 ♂♂, ♀, leg. C. Schmid-Egger; Beyşehir, 1150 m, 18.06.1987, leg. R. Hensen. **Kütahya:** Porsuk barajı, Sobran, 39°40N 30°10E, 08.07.1993, 2 ♂♂, 3 ♀♀, leg. Jirousek/Halada (coll. Schwarz/Ansfelden). **Mardin:** 1000 m, 02.07.1987, ♂, R. Hensen. **Mersin:** 26.07.1997, ♂, leg. J. Timmer; Gülnar, 1000 m, 31.07.1988, ♂, leg. C. Schmid-Egger; Silifke, Uzuncaburç, 400 m, 02.08.1985, 2 ♀♀, leg. R. Hensen; Kargıcak, 200 m, 14.08.1985, 4 ♂♂, 5 ♀♀,

R. Hensen; Mut, 11.07.1996, ♀, leg. Brechtel/Ehrmann. **Muğla:** Fethiye, Ölüdeniz, 50 m, 25.07.1986, 4 ♀♀, leg. P. van Ooijen; Marmaris, 20 km W, ♂, 3 ♀♀, leg. A. Link; Marmaris 56 km NNW, 15 km E Milas, 37°18N 27°57E, 13.07.1998, ♂, ♀, leg. C. Schmid-Egger. **Nevşehir:** Acıgöl, Çardak, 38°33N 34°47E, 07.07.1993, 6 ♂♂, 3 ♀♀, leg. Jirousek (coll. Schwarz/Ansfelden); Avanos, 07.07.1983, ♂, leg. J. Hladil; Göreme, 38°39N 34°52E, 17.07.1998, 3 ♂♂, leg. C. Schmid-Egger; 900 m, 09.08.1988, ♂, leg. C. Schmid-Egger; 38°40N 34°50E, 23.06.1993, 3 ♂♂, leg. M. Halada (coll. Schwarz/Ansfelden); Ürgüp, Topuzdağı geçidi, 1300 m, 17.07.1984, ♂, leg. A.W. Ebmer; Ürgüp E 10 km, Aksalur W, 1350 m, 38.40N 034.59E, 27.05.1998, ♂, leg. S.M. Blank. **Niğde:** Yassıkaya, Elek gölü, 1510 m, 08.07.1995, ♂, leg. Y. Barbier (on *Eryngium billardieri*). **Osmaniye:** 6 km W of Hassa, 850 m, 36°49N 36°29E, 13.05.2002, 5 ♂♂, leg. J.G. Rozen and H. Özbek (coll. AMNH); **Sivas:** Gürün, NW, 1400 m, 13.07.1990, ♂♂, leg. A.W. Ebmer; Koyulhisar, 40°18N 37°50E, 19.05.2007, ♂, W.H. Liebig. **Şanlıurfa:** Suruç, 400 m, 29.06.1987, 4 ♂♂, ♀, leg. R. Hensen; Haffeti, 450 m, 07.08.1985, 16 ♂♂, 8 ♀♀, leg. R. Hensen. **Van:** 1800 m, 13.07.1987, ♀, leg. R. Hensen; Gevaş, 38°43N 43°19E, 29.06.1993, ♀, leg. R. Hensen (coll. Schwarz/Ansfelden). **Yalova:** Çiftlik köyü, 50 m, 31.07.1986, 5 ♂♂, 16 ♀♀, leg. P. van Ooijen; Termal, 300 m, 28.08.1985, ♂, leg. R. Hensen.

Remarks: According to our compilation, 21 provinces can be added to the distribution area of *H. imparilis* in Turkey. It is one of the most widespread and abundant species in the country, occurring in 40 provinces, or almost 50 % of all provinces of Turkey. It is found country-wide from sea level up to altitudes of 2000 m, in different types of habitats.

Eryngium billardieri, *Eryngium campestre*, *Melilotus officinalis* and *Daucus carota* are recorded as flowers visited. Adults have quite a long flight period, from mid-May to early September with a peak in July and early August. Probably it has more than one generation a year. The species is frequently recorded in Turkey.

Distribution: Western Palaearctic, common in the Mediterranean basin, Crete, Cyprus, Iran. Turkey: Adana, Amasya, Ankara, Antalya, Bursa, Denizli, Hatay, İstanbul, İzmir, Kastamonu, Kayseri, Konya, Kütahya, Mersin, Nevşehir, Şanlıurfa, Tekirdağ, Trabzon (WARNCHE 1972, as *Prosopis brevicornis seducta* (FÖRSTER 1871)).

Hylaeus (Dentigera) intermedius FÖRSTER, 1871

Hylaeus intermedius FÖRSTER, 1871: 943–944, ♂. Poland: Ratibor. *Hylaeus (Dentigera) intermedius* FÖRSTER, 1871 – DATHE et al. 2016: 16, 44.

Material examined: **Ankara:** Kalecik, 23.05.1990, ♂, leg. S. Risch. **Antalya:** Arapsuyu, 5 m, 15.10.2003, ♂, 2 ♀♀, leg. H. Özbek; 5 m, 16.07.2002, ♂, leg. H. Özbek;

5 m, 20.06.2002, 3 ♂♂, ♀; 5 m, 30.06.2002, 3 ♂♂, ♀, leg. H. Özbek; 10 m, 24.09.2004, ♂, ♀, leg. H. Özbek (on *Mentha longifolia*). **Artvin:** Yusufeli, Sarıgöl, 900 m, 16.07.1995, ♂, leg. Gelbrecht/Schwabe. **Bingöl:** Karlıova, Soğukçeşme, 2000 m, 10.08.2004, ♂, leg. S. Çoruh (on *Centaurea solstitialis*). **Erzincan:** Kemaliye, Avcı, 1250 m, 04.08.2003, ♂, leg. S. Çoruh. **Erzurum:** Oltu, Başaklı, Karadağ Mt, 2100 m, 24.07.2005, ♂, leg. H. Özbek (on *Eryngium creticum*). **Kars:** Sarıkamış, Karakurt, TCK çeşmesi, 1500 m, 40°08N 42°21E, 19.08.2003, ♂, H. Özbek. **Konya:** Beyşehir, 700 m, 24.05.1990, ♂, leg. S. Risch. **Muğla:** Bodrum, Salmakis, 37°02N 27°25E, 14–25.07.2001, 44 ♂♂, 45 ♀♀, leg. F. Burger.

Remarks: This species has recently been resurrected as an independent taxon (DATHE et al. 2016). A more recent report for Turkey (without further details) can be found in SCHMIDT et al. (2015), where DNA barcoding confirms the status of *H. intermedius* as a species; see also SCHODER (2018). ASCHER & PICKERING (2019) treat *H. intermedius* still as a synonym of *H. gredleri*.

This species is documented hitherto from nine provinces, with its distribution appearing sporadic. It occurs from sea level up to 2100 m. The flight period is from May to October. Some specimens were collected on the flowers of *Centaurea solstitialis*, *Eryngium creticum* and *Mentha longifolia*.

Distribution: Mediterranean and Black Sea countries, Central Europe, Turkey (9 provinces).

Hylaeus (Dentigera) kahri FÖRSTER, 1871

Hylaeus kahri FÖRSTER, 1871: 954–956, ♂. Austria.

Hylaeus (Dentigera) kahri FÖRSTER, 1871 – ALIEV 1986: 263.

DATHE et al. 2016: 16, 45.

Material examined: **Adıyaman:** 20 km E Gölbaşı, 600 m, 37°44N 37°37, 12.05.2002, ♂, 2 ♀♀, leg. J.G. Rozen and H. Özbek (coll. AMNH); Karadut, Nemrut Dağı, 37°56N 38°47E, 02.07.1993, ♂, ♀, leg. Halada. **Ağrı:** 39°44N 43°03E, 27.06.1993, 27 ♂♂, 21 ♀♀, leg. Jirousek/Halada; Eleşkirt 30 km W, 2200 m, 14.07.1987, ♂, ♀, leg. R. Hensen. **Antalya:** Konyaaltı, 3 m, 21.05.2009, 2 ♀♀, leg. J.G. Rozen, J.S. Ascher, H. Özbek; Konyaaltı, 5 m, 21.05.2009, ♀, leg. H. Özbek; Konyaaltı Beach, 21.05.2009, ♀, leg. Ascher, Rozen & Özbek (coll. AMNH); Alanya, Demirtaş, 100 m, 29.07.1985, ♀, leg. R. Hensen; Korkuteli, Kızılcaadağ, 1500 m, 03.07.1990, ♂, leg. A.W. Ebmer. **Artvin:** Yusufeli, Kaçkar Mts, Yaylalar, 2200 m, 17.07.1995, 2 ♂♂, leg. Gelbrecht/Schwartz. **Bingöl:** Kuruca Geçidi, 08.07.1984, 1800 m, ♂, leg. A.W. Ebmer; Genç, 15 km S, 1400 m, 13.08.1985, ♀, leg. R. Hensen. **Bitlis:** Tatvan, 1750 m, 16.08.1985, 2 ♂♂, 3 ♀♀, leg. R. Hensen; Tatvan, 38°29N 42°17E, 30.06.1983, 2 ♂♂, ♀, leg. Jirousek/Halada. **Burdur:** Çeltikçi, 02.09.1983, 5 ♂♂, leg. J. Timmer. **Bursa:** 300 m, 20.07.1987, ♀, leg. R. Hensen; Armutlu, 30 m,

20.08.1985, ♀, leg. P. van Ooijen. **Erzurum:** Atatürk University Campus, 1900 m, 13.07.2004, 2 ♂♂; 09.08.2004, ♂, leg. H. Özbek (on *Melilotus officinalis*); Abdurrahman-gazi, 2200 m, 14.07.2000, 2 ♀♀, leg. C. Güçlü; Çat Yolu, Gölet, 2100 m, 39°47N 41°09E, 09.07.2004, 4 ♂♂, leg. J.G. Rozen & H. Özbek; Pasinler, 5 km W of Pasinler, Agricultural Research Station, 1900 m, 01–10.07.2007, 4 ♂♂, 2 ♀♀, leg. J.G. Rozen, J.S. Ascher & H. Özbek (coll. AMNH). **Eskişehir:** Mihalgazi, Sakırlıca, 06.07.1997, ♀, leg. Prudek & Ríha. **Gümüşhane:** Torul, 40°34N 39°17E, 1000 m, 12.07.1985, 9 ♀♀, leg. M. Schwarz (coll. Schwarz/Ansfelden); SE of Torul, 39°22E 40°31N, 06.09.1970, ♂, leg. Fraser-Jenkins. **Hakkâri:** Oramar, 10 km NE, 1700 m, 29.08.1985, 9 ♂♂, ♀, leg. M. Schwarz (coll. Schwarz/Ansfelden); Yüksekova, 1800 m, 22.7.1988, 8 ♂♂, 13 ♀♀, leg. CSchEg; Yüksekova, 15 km E, 2100 m, 20.07.1986, 2 ♂♂, ♀, leg. A.W. Ebmer; 20 km E, 2200 m, 23.07.1986, ♀, leg. A.W. Ebmer; 30 km W, 1850 m, 19.07.1986, 5 ♂♂, 2 ♀♀, leg. A.W. Ebmer; Varagöz, Sat Dağı, 1700 m, 37°25N 44°13E, 04.08.1983, 2 ♂♂, 3 ♀♀, leg. W. Schacht (coll. Schwarz/Ansfelden); Betüşşebap, Süvarihalil Geçidi, 2300 m, 37°30N 43°20E, 11.08.1982, 4 ♂♂, ♀, leg. W. Schacht (coll. Schwarz/Ansfelden); Süvarihalil Geçidi, 2500 m, 27.06.1985, ♂, 2 ♀♀, leg. M. Schwarz (coll. Schwarz/Ansfelden); Zap Vadisi, Kaval, 1200 m, 22.07.1986, ♀, A.W. Ebmer. **Hatay:** Samandağı, 06.07.1996, ♂, leg. Brechtel; 24.07.1998, ♂, leg. T. Osten. **Dörtüyoğ, Nur Dağları,** 06.07.1996, ♂, leg. Brechtel/Ehrmann. **İzmir:** Bergama, 300 m, 22.07.1985, 2 ♀♀, leg. R. Hensen. **Kahramanmaraş:** Göksun, 1400 m, 26.06.1987, ♀, leg. R. Hensen; Salyan, Ahmetcik, 1700–1800 m, 10.07.1990, ♂, leg. A.W. Ebmer; Pürin Geçidi, 1550–1650 m, 10.07.1990, ♀, leg. A.W. Ebmer. **Kars:** Sarıkamış 20 km W, 40°10N 42°22E, 2150 m, 04.07.1985, ♂, M. Schwarz; Karakurt, 20 km W, 1600 m, 40°10N 42°22E, 14.07.1985, ♂, 3 ♀♀, leg. M. Schwarz (coll. Schwarz/Ansfelden). **Kayseri:** Develi, Erciyes, 1800 m, 15.07.1990, ♀, leg. A.W. Ebmer; Develi, Bakırdağ, Gezbeli Geçidi, 1750–1900 m, 06.07.1984, 3 ♂♂, ♀, leg. A.W. Ebmer; 1700 m, 06.07.1984, ♂, leg. A.W. Ebmer. **Konya:** Güneysınır, Güragaç, 1020 m, 06.08.2002, 4 ♀♀, leg. M. Kesdek; Akşehir, Sultan dağları, 1800 m, 07.07.1990, ♀, leg. A.W. Ebmer. **Kütahya:** Sobran, 39°40N 30°10E, 05–08.07.1993, 2 ♂♂, 3 ♀♀, leg. Jirousek (coll. Schwarz/Ansfelden). **Mersin:** Silifke, Kızkalesi, 09.05.1988, ♂, leg. N. Mohr; 35 km NNW, Kargıcan, 200 m, 04.08.1985, ♀, leg. R. Hensen; Mut, Sertavul Geçidi, 1550 m, 07.07.1990, 2 ♂♂, ♀, leg. A.W. Ebmer. **Neşehir:** Kaymaklı, 1200 m, 23.06.1987, 4 ♀♀, leg. R. Hensen; Avanos, Zelve, 1000 m, 22.06.1987, ♂, 2 ♀♀, leg. R. Hensen; Zelve, 1050 m, 17.07.1984, 2 ♀♀, leg. A.W. Ebmer; Ürgüp, Topuzdağı Geçidi, 1300, 13.07.1984, ♂, leg. A.W. Ebmer. **Sivas:** Gürün, Şuğul Vadisi, 1400 m, 13.07.1990, 4 ♂♂, ♀, leg. A.W. Ebmer; İmranlı, 40 km E, 1700 m, 15.07.1984, 2 ♀♀, leg. A.W. Ebmer. **Van:** 1800 m, 13.07.1987, ♂, leg. R. Hensen; town, 38°30N 43°24E, 28.06.1993, 8 ♂♂, leg. Halada/Jirousek (coll. Schwarz/Ansfelden); Başkale, 30 km N, 2700 m, 11.07.1984, 4 ♀♀, leg. R. Hensen;

Güzeldere Geçidi, 2500–2600 m, 09.07.1984, ♂, 2 ♀ ♀, leg. A.W. Ebmer; Achdamar, 1720 m, 17.07.1988, ♂, leg. C. Schmid-Egger; Gevaş, Göllü, 38°43N 43°19E, 29.06.1993, 23 ♂ ♂, 19 ♀ ♀, leg. M. Halada (coll. Schwarz/Ansfelden).

Remarks: This is a widespread species found in all regions of the country from sea level to 2700 m altitude in various habitats. The flight season is from the beginning of May to the end of August. It is frequently recorded from Turkey (23 provinces, Fig. 16.1).

Distribution: Countries bordering the Mediterranean Sea and the Black Sea, from Portugal to Iran. **New for Turkey.**

Hylaeus (Dentigera) pallidicornis MORAWITZ, 1876

Hylaeus pallidicornis MORAWITZ, 1876: 290, ♀ ♂. Uzbekistan: Shakhimardan.

Hylaeus (Dentigera) pallidicornis MORAWITZ, 1876 – DATHE & PROSHCHALYKIN 2017: 31; 2018: 24.

Material examined: **Ağrı:** 1650 m, 39°44N 43°03E, 27.06.1993, ♂, 8 ♀ ♀, leg. Halada/Jirousek (coll. Schwarz/Ansfelden); Eleşkirt, 30 km W, 2200 m, 14.07.1987, ♀, leg. R. Hensen. **Mardin:** Midyat, 1100 m, 37°25N 41°22E, 25.05.1983, 2 ♀ ♀, leg. W. Schacht (coll. Schwarz/Ansfelden). **Nevşehir:** Avanos, Zelve, 1000 m, 22.06.1987, ♀, leg. R. Hensen; Kaymaklı, 1200 m, 23.06.1987, ♀, leg. R. Hensen; Ürgüp, 1100 m, 11.08.1985, ♀, leg. P. v. Ooijen. **Şanlıurfa:** Halfeti, 400 m, 28.06.1987, ♀, leg. R. Hensen. **Van:** 1800 m, 13.07.1987, ♀, leg. R. Hensen.

Remarks: This Asian species is new to Turkey. Its distribution is focussed mainly on Eastern and South-Eastern Anatolia, but it has also been recorded from Central Anatolia (Nevşehir). Currently, Nevşehir is next to the Ukraine the westernmost point of its total distribution. *H. pallidicornis* might be considered as a bee species preferring a continental climate at 400–2200 m altitude. The flight period is from the end of May to the middle of August. It is collected only sparsely in Turkey (5 provinces, Fig. 16.2).

Distribution: Central Asia (Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan), Mongolia, China, Russia (North Caucasus), Ukraine (DATHE & PROSHCHALYKIN 2018). **New to the Turkish fauna.**

Hylaeus (Dentigera) punctus (FÖRSTER, 1871)

Hylaeus punctus FÖRSTER, 1871: 940–942, ♂ ♀. Croatia: Dalmatia.

Prosopis puncta (FÖRSTER, 1871) – WARNCKE 1972.

Hylaeus (Dentigera) punctus (FÖRSTER, 1871) – DATHE 1980: 234.

Material examined: **Adana:** Pozantı, 06.07.1983, ♀, leg. J. Hladil. **Antalya:** Alanya, 10 m, 30.08.1983, ♀, leg. P. van Ooijen; Kemer W 7 km, Kesme, 130 m, 36°39N 030°29E, 05.06.1998, ♂, leg. S.M. Blank (on *Paliurus spina-christ*). **Burdur:** Çeltikçi, 900 m, 02.09.1983, ♂, leg. J. Timmer. **Eskişehir:** Sakari, Ilıca, Gümele, 06.07.1997, ♀, leg. Prudek/Ríha. **Hatay:** Samandağ 10 km E, Asi Nehri, 100 m, 05.07.1998, ♀, leg. T. Osten; 30 km N, Nur dağları, 06.07.1996, 2 ♀ ♀; İskenderun, 30 km S, Güzelyayla, 06.07.1996, 2 ♂ ♂, ♀, leg. Brechtel/Ehrmann; Belen, 28.08.1983, ♂, ♀, leg. J. Timmer. **Mersin:** Silifke, Uzuncaburç, 400 m, 02.08.1985, 2 ♂ ♂, leg. R. Hensen. **Muğla:** Ölüdeniz, 50 m, 25.07.1986, ♀, leg. P. van Ooijen. **Nevşehir:** Avanoz, 07.07.1983, ♂, leg. J. Hladil. **Osmaniye:** Yarpuz, 700–1050 m, 12.06.1986, ♂, leg. M. Bologna. **Yalova:** Termal, 300 m, 28.08.1985, ♀, leg. R. Hensen. **Yozgat:** Salmanlı 40 km W, 39°51N 34°15E, 23.05.2007, ♂, leg. W.H. Liebig.

Remarks: The provinces Antalya, Burdur, Eskişehir, Mersin, Muğla, Nevşehir, Osmaniye, Yalova and Yozgat have to be added to the hitherto known distribution area. In general, the species is focussed on the Mediterranean and Central Anatolian regions. It can be considered a thermophilic lowland species that occurs mainly below about 1000 m altitude. The flight period is from the beginning of May to beginning of September. It is collected moderately in Turkey (12 provinces).

Distribution: South-eastern Europe and Middle East including Iran. Turkey: Adana, Bursa, Hatay (WARNCKE 1972).

Hylaeus (Dentigera) rubicola SAUNDERS, 1850

Hylaeus rubicola SAUNDERS, 1850: 58, ♀ ♂. Greece: Epirus.

Prosopis (Nesoprosopis) rubicola (SAUNDERS, 1850) – WARNCKE 1972: 765.

Hylaeus (Dentigera) rubicola SAUNDERS, 1850 – DATHE 1980: 241.

Material examined: **Antalya:** Manavgat 10 km W, 31.07.1981, 2 ♀ ♀, ♂, leg. R. Hensen. **Bursa:** Mudanya, 25 m, 25.08.1985, ♀, leg. R. Hensen.

Remarks: *H. rubicola* was previously known from İzmir and Konya. With the present study, Antalya and Bursa are added to the occurrence area. The distribution shows that it is a thermophilic species of the lowlands, which occurs mainly in the coastal area, but also in Konya (approx. 1000 m). It is a less common species with a sporadic occurrence. In Turkey it is collected only sparsely (4 provinces).

Distribution: Eastern Mediterranean, mainly on the Aegean islands. Turkey: İzmir, Konya (WARNCKE 1972).

Subgenus *Hylaeus* FABRICIUS, 1793

Hylaeus (Hylaeus) angustatus (SCHENCK, 1861)

Prosopis angustata SCHENCK, 1861: 321, ♂. Germany: Nassau.
Prosopis (Prosopis) angustata angustata SCHENCK, 1859[!] –
 WARNCKE 1972: 752.
Hylaeus (Hylaeus) angustatus (SCHENCK, 1861) – ALIEV
 1986: 266.

Material examined: **Antalya:** Akseki, Teke Pass N, 1500 m, 06.07.1990, ♀, leg. A.W. Ebmer Beydağları, 20 km S Elmalı, 1600–1700 m, 04.07.1990, 3 ♀ ♀, leg. A.W. Ebmer. **Artvin:** Yusueli, Kaçkar, 1000 m, 16.07.1995, ♂, leg. Gelbrecht/Schwarz. **Bingöl:** Karlıova, Soğukçeşme, 1415 m, 10.08.2004, ♂, leg. S. Çoruh. **Erzincan:** Refahiye, 1700 m, 15.07.1984, ♀, leg. A.W. Ebmer. **Erzurum:** Köprüköy, Örentaş, 04.07.2004, 2 ♂ ♂, leg. H. Özbek (on *Cephalaria pro-cera*); Ağzıaçık, 2000 m, 07.07.2004, ♂, J.R. Rozen, H. Özbek (coll. AMNH); Oltu, Tutmaç- Başaklı border, 1900 m, 01.07.2000, 3 ♂ ♂, leg. Ö. Çalmaşur; Çamlıbel, 40°28'22"N 41°46'35"E, 1750 m, 11.07.2004, ♂, leg. H. Özbek. **Hakkâri:** SW Yüksekova, Varagöz, 37°25'N 44°13'E, 1700 m, 04.08.1983, ♂, leg. W. Schacht (coll. Schwarz/Ansfelden). İstanbul: Boğaz (Bosporus), ♂, no other data (coll. RM Stockholm); Karacaköy, 41°09'N 29°46'E, 30.07.1988, ♂, 2 ♀ ♀, leg. Madl; Yeniköy, 41°07'N 29°04'E, 28.07.1988, ♂, leg. Madl (coll. Schwarz/Ansfelden). **Kahramanmaraş:** Göksun, Prin Pass S site, 1550–1650 m, 10.07.1990, ♀, leg. A.W. Ebmer. **Mersin:** Mut, Sertavul Pass, 1550 m, 08.07.1990, ♂, leg. A.W. Ebmer. **Nevşehir:** 2 km S, 1250 m, 04.07.1984, 2 ♂ ♂, leg. A.W. Ebmer; Göreme, 38°39'N 34°52'E, 17.08.1984, 2 ♂ ♂, leg. Schmid-Egger; Göreme, 38°40'N 34°50'E, 23.06.1993, ♂, leg. M. Halada (coll. Schwarz/Ansfelden); Avanos, 07.07.1983, ♂, ♀, leg. J. Hladil. **Sivas:** Yıldızeli, Çamlıbel Pass, 1600–1700 m, 16.07.1984, 2 ♀ ♀, leg. A.W. Ebmer.

Remarks: For the first time we can add here distribution data from the East Anatolian region, while new data from the Aegean region are missing. *H. angustatus* occurs in both warmer and cooler regions, from sea level (İstanbul) to 2000 m (Erzurum) in various habitats. The flight period is from the end of June to the beginning of August. It is collected moderately in Turkey (14 provinces).

Distribution: Palaearctic. In Turkey previously known from Ankara, İstanbul, Kastamonu, Konya, Kütahya, Mersin (WARNCKE 1972). Now another eight provinces can be added: Antalya, Artvin, Erzincan, Erzurum, Hakkâri, Kahramanmaraş, Nevşehir and Sivas.

Hylaeus (Hylaeus) araxanus (WARNCKE, 1981)

Prosopis araxana WARNCKE, 1981: 171, ♀ ♂. Turkey: Tuzluca, Aras valley; Iran.
Hylaeus (Hylaeus) araxanus (WARNCKE, 1981) – DATHE &
 PROSHCHALYKIN 2018: 28.

Remarks: Holotype of this species is a male from outermost eastern Turkey (Iğdır), but apart from the this, no other Turkish specimens are known. However, WARNCKE (1981: 192) mentioned 146 specimens of both sexes as paratypes from Iran. Our knowledge about the range of this species was recently extended by DATHE & PROSHCHALYKIN (2018) with evidence from five Central Asian countries. While *H. araxanus* is widespread and usually has been captured in numbers, it must be classified as rare in Turkey (Fig. 17.2).

This is amazing, because the species is small, but easy to recognize. The wrinkly-striped forehead region of the males is reminiscent of *H. moricei*, but in *H. araxanus* the head is wider than long, the punctation, especially of the mesopleura, coarser, and the sculpture smooth and shiny.

Distribution: Turkey, Iran, Central Asia: Kazakhstan, Uzbekistan, Kyrgyzstan, Turkmenistan, Tajikistan.

Hylaeus (Hylaeus) communis NYLANDER, 1852

Hylaeus communis NYLANDER, 1852: 234, ♀ ♂. France.
Prosopis (Prosopis) communis communis (NYLANDER, 1852) –
 WARNCKE 1972: 753.
Hylaeus (Hylaeus) communis NYLANDER, 1852 – ALIEV 1986:
 266; PROSHCHALYKIN & DATHE 2012: 12.

Material examined: **Ankara:** Kızılcahamam, 29.07.1987, ♀, leg. J. Wimmer. **Antalya:** Gündoğmuş, Pembelik, 6 km NE, 36°83'N 32°05'E, 1090 m, 02.08.2009, ♂, leg. Schmid-Egger. **Artvin:** Yusufeli, Altıparmak, 1200–1700 m, 28.08.1995, ♂, P. Hartmann; Sarıgöl, Kaçkar dağı, 1000 m, 16.07.1995, ♂, det. Gelbrecht/Schwarz; Demirkent, Salekör, 1600 m, 02.09.1995, ♀, P. Hartmann. **Aydın:** Nazilli, Beydağ, 250 m, 38°01'N 28°18'E, 24.05.1981, 2 ♂ ♂, leg. Aspöck/Rau./Res (coll. Mus. Linz). **Bitlis:** Ahlat, 1750 m, ?, 2 ♂ ♂, leg. R. Hensen; Tatvan, 38°29'N 42°17'E, 30.06.1993, 3 ♀ ♀, leg. Jirousek/Halada (coll. Schwarz/Ansfelden). **Bolu:** 18 km W, 18.08.1970, ♀, leg. Fraser/Jenkins; göl kenarı, 40°44'N 31°37'E, 21.06.1993, ♂, leg. M. Halada (coll. Schwarz/Ansfelden). **Bursa:** 225 m, 20.07.1997, 6 ♂ ♂, 2 ♀ ♀, leg. R. Hensen; Armutlu 15 km NE, 50 m, 27–29.07.1986, 2 ♂ ♂, 4 ♀ ♀, leg. P. van Ooijen. **Erzincan:** Kolçekmezdağı geçidi, 2070 m, 17.07.1996, ♂, leg. P. Rasmont (on *Euphorbia* sp.). **Erzurum:** Tortum, Bağbaşı, 20.09.1977, female, leg. H. Özbek (on *Trifolium pratense* L.); Pasinler, 5 km W of Pasinler, Agricultural Research Station, 10.07.2007, ♀, leg. J.S. Ascher,

H. Özbek, J.G. Rozen (coll. AMNH); Atatürk University Campus, 1900 m, 39°53N 41°14E, 03.07.2007, 2 ♂♂, leg. J.S. Ascher, H. Özbek, J.G. Rozen (coll. AMNH); Uzundere, Karadağ, 2250 m, 02.09.1995, ♀, leg. M. Kraus (on *Euphorbia* sp.). **Hakkâri:** Beytüşşebap, 1400 m, 06.07.1987, ♀, R. Hensen. **Kars:** Kağızman 14 km E, 1700 m, 24.07.1986, ♂, leg. A.W. Ebmer. **Konya:** Alaaddin Hill, 1050 m, 20.06.1987, 2 ♀♀, leg. R. Hensen; Beyşehir, 1150 m, 18.06.1987, ♀, leg. R. Hensen. **Manisa:** Akçakertik beli, 39°07N 28°42E, 800 m, 17.05.1983, ♀, Rausch/Ressl (coll. Mus. Linz). **Nevşehir:** 2 km S, 1250 m, 04.07.1984, ♀, leg. A.W. Ebmer. **Niğde:** Çiftelhan, Bolkar dağları, 1700–1800 m, 17.07.1990, ♂, leg. A.W. Ebmer. **Rize:** 40 km N of İspir, ca 40°50N 40°40E, 1400 m, 11.07.1985, ♀, leg. M. Schwarz (coll. Schwarz/Ansfelden). **Van:** 1800 m, 13.07.1987, 2 ♂♂, 7 ♀♀, leg. R. Hensen. **Yalova:** Termal, 300 m, 28.08.1985, ♂, ♀, leg. R. Hensen.

Remarks: *H. communis* is the most common species in the genus, at least in Europe, but also with a wide distribution beyond that. It has even been introduced to the American continent. As a result of the wide distribution, various morphological variants have been described, but these have not yet been studied in detail throughout the entire range.

The flight period is June to the end of September. *H. communis* was collected in all regions of the country, with the exception of south-east Anatolia. Our compilation adds 15 provinces to the distribution data. It is frequently recorded in Turkey (25 provinces).

Distribution: Throughout Europa, North Africa, Central and Northern Asia (DATHE & PROSHCHALYKIN 2018); Turkey: Amasya, Ankara, Bolu, Bursa, İzmir, Kocaeli, Kütahya, Mersin, Sinop (WARNCKE 1972); Erzurum (ÖZBEK 1977); Antalya, Artvin, Aydın, Bitlis, Erzincan, Erzurum, Hakkâri, Kars, Konya, Manisa, Nevşehir, Niğde, Rize, Van, Yalova.

Hylaeus (Hylaeus) crispulus DATHE, 1980

Hylaeus (Hylaeus) crispulus DATHE, 1980: 82, 84–85, 87, ♂♀. Iran: Elburs.

Prosopis hermona WARNCKE, 1981: 181–182, ♀♂. Israel: Mt. Hermon.

Prosopis hermona anatolica WARNCKE, 1981: 182, ♂♀. Turkey: Gürün.

Prosopis (Prosopis) crispula hermona WARNCKE, 1981 – WARNCKE 1992: 792.

Prosopis (Prosopis) crispula anatolica WARNCKE, 1981 – WARNCKE 1992: 792.

Material examined: **Adıyaman:** Kâhta, Nemrut Mt, 2100 m, 11.07.1990, ♀, leg. A.W. Ebmer. **Konya:** Akşehir, Sultan Dağları, NE, 1800 m, 18.07.1990, ♀, leg. A.W. Ebmer. **Malatya:** Darende, 7 km W, 1400 m,

13.07.1990, ♂, leg. A.W. Ebmer. **Sivas:** Gürün, NW Şuğul, 1400 m, 13.07.1990, ♂, 31.07.1986, ♂, ♀, leg. A.W. Ebmer.

Remarks: The species is well characterized in the male by a strong transverse impression in the mask directly below the antenna bases; besides these there is a shiny black pit on the orbit margin, so that the side spots appear constricted. The antennae are slender; the general body habit is rather robust and compact, with mostly distinct hairiness. The copulatory apparatus of the holotype is missing due to inappropriate preparation by Warncke.

The taxon is known from northern Iran (Elburs), Israel and Turkey. WARNCKE (1992: 792) himself synonymized the forms he described as *Prosopis hermona* and *P. hermona anatolica* from Israel and Turkey respectively. In our opinion the geographical differences do not justify a subspecies status. It is moderately recorded from Turkey (11 provinces).

Distribution: Israel, Iran. Turkey: Sivas, Hakkâri (2600–3000 m) (WARNCKE 1981, as *Prosopis hermona anatolica*), Bitlis, Erzincan, Gümüşhane, Hakkâri, Karaman, Kars, Konya, Niğde (WARNCKE 1992, as *P. crispula anatolica*); Adıyaman, Malatya and Sivas provinces are added here.

Hylaeus (Hylaeus) deceptorius (BENOIST, 1959)

Prosopis deceptoria BENOIST, 1959: 77, 86, ♀♂. France: Corsica.

Prosopis communis deceptoria BENOIST, 1959 – WARNCKE 1972: 754.

Hylaeus (Hylaeus) deceptorius (BENOIST, 1959) – DATHE 2000: 166.

Material examined. **Ardahan:** Göle, Karınca Düzü, 2160 m, 25.07.2005, 2 ♂♂ leg. C. Güçlü (on *Eryngium* sp.). **Bingöl:** Karlıova, Çobançantası, 1455 m, 10.08.2004, ♂, leg. S. Çoruh; Soğukçeşme, 1455 m, 10.08.2004, 2 ♂♂, 5 ♀♀, leg. S. Çoruh (on *Centaurea solstitialis*). **Erzurum:** Narman, Kireçli Dağı, 2000 m, 17.08.2004, 2 ♂♂ leg. S. Çoruh; Oltu, Subatık, 1300 m, 13.08.2004, 2 ♀♀ leg. H. Özbek (on *Melilotus alba*); Tortum, Derekapı, 1000 m, 20.09.2000, 2 ♀♀, leg. H. Özbek; Tortum, Kazandere, 1200 m, 03.08.2004, 2 ♂♂, 2 ♀♀, leg. S. Çoruh; 20 km SE of Tortum, 2100 m, 21.07.2010, ♂, leg. J.S. Ascher, H. Özbek, J.G. Rozen. **Konya:** Güneysınır, Güragaç, 1150 m, 16.07.2000, ♂, ♀ leg. M. Kesdek.

Remarks: *H. deceptorius* is originally described as a West Palaearctic species with occurrences on the large Mediterranean islands of Corsica, Sardinia, Sicily and Crete, as well as in Morocco and Greece. The new reports of this species from Turkey with a focus on the East Anatolian region – where Ardahan is the easternmost point – are not unproblematic. Also their occurrence at higher alti-

tudes of 1000–2200 m does not fit well to the general behaviour of the species. Further investigations would be very welcome.

DATHE (2013) noted *H. deceptorius* as a threatened species, whereas in eastern Anatolia it is quite numerous. Plant association: *Centaurea solstitialis*, *Eryngium* sp., *Melilotus alba*. It is a sparsely recorded species in Turkey (4 provinces, Fig. 16.3).

Distribution: Corsica, Crete, Greece, Sardinia, Sicily, Morocco (ASCHER & PICKERING 2019). **New to Turkey:** Ardahan, Bingöl, Erzurum, Konya.

Hylaeus (Hylaeus) dolichocephalus MORAWITZ, 1876

Hylaeus dolichocephalus MORAWITZ, 1876: 271–272, ♀ ♂. Turkestan: Ferghana.

Prosopis heliaca WARNCKE, 1992: 791, ♀ ♂. Turkey: Bitlis.

Prosopis (Prosopis) dolichocephala (MORAWITZ, 1876) – WARNCKE 1992.

Hylaeus (Hylaeus) dolichocephalus MORAWITZ, 1876 – DATHE & PROSHCHALYKIN 2017: 17–18.

Material examined: **Kayseri:** Erciyes Mt, 1850, 05.07.1984, ♂, leg. A.W. Ebmer. **Sivas:** Gürün, Ziyaret Pass, 2000 m, 15.07.1986, ♂, ♀, leg. A.W. Ebmer. **Van:** Central, 1725 m, 38°30N 43°24E, 28.06.1993, ♂, leg. Jirousek (coll. Schwarz/Ansfelden).

Remarks: *H. dolichocephalus* is a characteristic species of Asian mountains, occurring at 1400–3000 m altitude. It can hardly be misidentified, because of its elongated head shape. Sivas is added to the distribution records; the record from the province Kayseri is the westernmost detected point of distribution. It is moderately collected in Turkey (8 provinces).

Distribution: Central Asia, Afghanistan, Mongolia, Russia, China and Turkey (DATHE & PROSHCHALYKIN 2018). In Turkey: Bitlis, Erzincan, Erzurum, Hakkâri, Kars, Kayseri, Van (WARNCKE 1992, as *Prosopis heliacus*); Sivas.

Hylaeus (Hylaeus) funereus (WARNCKE, 1992)

Fig. 4

Prosopis (Nesoprosopis) funerea WARNCKE, 1992: 785–786, ♀ ♂. Turkey: Hakkâri.

Hylaeus (Hylaeus) funereus (WARNCKE, 1992) – ITIS (2020).

Remarks: A small, dainty species, reminiscent of *H. trifidus* in the shape of the mask: the tip of the lateral marks is at the level of the antenna bases; in the upper part they are separated from the compound eye margin by an impressed shiny surface. In *H. trifidus* this surface is oval and clearly defined, in *H. funereus*

there is a blurred furrow extended upward along the orbits. The apical process of sternum 8 is conoid with lateral bristles, in *H. trifidus* with expanded lobus with V-shaped notch; in this structure *H. funereus* resembles more *H. sidensis*. The propodeum is rounded and without ringlets.

H. funereus was described from Hakkâri and Adıyaman (1200–2500 m). Unfortunately no additional material has been collected since then. The available data show that *H. funereus* is restricted to the south-eastern part of the country. It is rarely recorded from Turkey (2 provinces, Fig. 17.VII).

Distribution: Turkey: Hakkâri, Adıyaman.

Hylaeus (Hylaeus) gracilicornis (MORAWITZ, 1867)

Prosopis gracilicornis MORAWITZ, 1867: 56–58, ♀ ♂. Switzerland: St. Moritz.

Hylaeus (Hylaeus) gracilicornis (MORAWITZ, 1867) – PROSHCHALYKIN & DATHE 2012: 14.

Material examined: **Hakkâri:** Yüksekova, Varagöz, 1650 m, 37°25N 44°13E, 26.06.1985, ♂, 2 ♀ ♀, leg. C.J. Zwakhals.

Remarks: Although *H. gracilicornis* is a widespread species in Europe and Asia, in Turkey it is currently only recorded from Hakkâri. It is rarely found in Turkey (1 province, Figs 16.4, 17.3). **New to Turkey.**

Distribution: Transpalaeartic species, from France to Russian Far East. In Turkey: Hakkâri.

Hylaeus (Hylaeus) implicatus DATHE, 1980

Hylaeus (Hylaeus) implicatus DATHE, 1980: 88, 91–92 ♂. Iran: Zoshk near Mandiz.

Prosopis (Prosopis) communis implicata (DATHE, 1980) – WARNCKE 1992: 791.

Material examined: **Aksaray:** Ihlara, 1100 m, 38°14N 34°18E, 18.07.1998, ♂, leg. C. Schmid-Egger. **Hakkâri:** Yüksekova, Varagöz, Sat Dağı, 1700 m, 37°25N 44°13E, 04–08, 1983, 13 ♂ ♂, 10 ♀ ♀, leg. W. Schacht (coll. Schwarz/Ansfelden). **Nevşehir:** Göreme, 1150 m, 38°39N 34°52E, 07.07.1998, 2 ♂ ♂, leg. C. Schmid-Egger.

Remarks: *H. implicatus* was originally described from Iran, later by WARNCKE (1992) from Hakkâri. Here the provinces Aksaray and Nevşehir are added to the distribution data. The species is found only sparsely in Turkey (3 provinces).

Distribution: Iran; Turkey: Aksaray, Nevşehir, Hakkâri.



Fig. 4: *H. (Hylaeus) funereus* (WARNCKE, 1992). Holotype male: a–face, b–mesonotum, c–mesopleuron, d–propodeum and metasoma, e–terminalia. Paratype female: f–face, g–mesonotum, h–mesopleuron, i–propodeum and metasoma. – Scale bar 0.5 mm.

Hylaeus (Hylaeus) jantaris DATHE, 1980

Hylaeus (Hylaeus) jantaris DATHE, 1980: 87, 89–90, ♂ ♀. Iran: Elburs.

Prosopis (Prosopis) querquedula WARNCKE, 1981: 178–180, ♂ ♀. Turkey: Hakkâri.

Prosopis (Prosopis) jantaris (DATHE, 1980) – WARNCKE 1992: 769.

Material examined: Hakkâri: Yüksekova 15 km E, 2100–2200 m, 20.07.1986, 5 ♂ ♂, 4 ♀ ♀, leg. A.W. Ebmer; Yüksekova 20 km E, 2200 m, 23.07.1986, 2 ♂ ♂, 2 ♀ ♀, leg. A.W. Ebmer. Van: Başkale 30 km N, 2700 m, 11.7.1987, ♂, ♀, leg. R. Hensen; Hoşap, Güzeldere Geçidi, 2500–2600 m, 09.07.1984, ♂, leg. A.W. Ebmer; 2600–2800 m, 18.07.1986, ♂, leg. A.W. Ebmer.

Remarks: The province Van has been added to the distribution list of *H. jantaris*. The available data show that the occurrence of this species is limited to the eastern part of eastern Anatolia. It is a high mountain species living at an altitude of 2100–3000 m. It was rarely collected in Turkey (2 provinces, Fig. 17.III). In order to specify the distribution data of this species exactly, further investigations should be carried out, especially on the high mountains of the country.

Distribution: Iran, Turkey. In Turkey: Hakkâri (WARNCKE 1981, as *P. querquedula*), Van.

Hylaeus (Hylaeus) kotschisus (WARNCKE, 1981)

Prosopis nigrita kotschisa WARNCKE, 1981: 174, ♀♂. Turkey: Şereflikoçhisar.

Prosopis (Prosopis) nigrita kotschisa WARNCKE, 1981 – WARNCKE 1992: 763.

Hylaeus (Hylaeus) kotschisus (WARNCKE, 1981) – DATHE 1980: 92.

Material examined: Adıyaman: Kahda, Nemrut Dağı, 2100 m, 11.07.1990, 3 ♂♂, leg. A.W. Ebmer. **Ağrı:** Hamur, 1650 m, 26.07.2003, 2 ♂♂, ♀, leg. H. Özbek. **Artvin:** Yusufeli, 850 m, 27.07.2004, 3 ♂♂, leg. S. Çoruh; Demirkent, Salekör, 1650 m, 01.09.1995, ♀, leg. M. Kraus; **Aksaray:** İhlara, 38.14N 34.18E, 18.07.1998, ♂, leg. C. Schmid-Egger. **Bitlis:** Ahlat, 1750 m, 15.08.1985, 3 ♂♂, leg. R. Hensen. **Erzurum:** İlica, Eşkinkaya, 20.07.2003, ♀, leg. H. Özbek; Tortum, Derekapı, 20.09.2000, ♀, leg. H. Özbek (on *Melilotus alba*); Uzundere, Denizbaşı, 4 ♀♀, leg. H. Özbek (on *Daucus carota*); **Hakkâri:** 1750 m, 09.07.1987, 3 ♂♂, 2 ♀♀, leg. R. Hensen; Yüksekova, 30 km W, 1850 m, 19.07.1986, ♂, leg. A.W. Ebmer; Varagöz, 37°25N 44°13E, 1650 m, 02.08.1986, 2 ♂♂, 2 ♀♀, leg. S.M. Blank; Sat Dağı, 1700 m, 37°25N 44°13E, 04.08.1983, ♂, leg. M. Schwarz (coll. Schwarz/Ansfelden). **Kars:** Sarıkamış, Karakurt, TCK Çeşmesi, 1501 m, 40°08N 42°21E, 14.08.2007, 6 ♂♂, leg. H. Özbek (on *Eryngium camp-estri*). **Kayseri:** Pınarbaşı, 1500 m, 25.06.1987, ♂, leg. R. Hensen. **Mersin:** Silifke, Köseleli, 36°33N 33°27E, 19.07.1988, ♂, leg. C. Schmid-Egger. **Nevşehir:** 2 km S, 1250 m, 04.07.1984, ♀, leg. A.W. Ebmer; Avanos, Zelve, 1050 m, 18.07.1984, ♂, leg. A.W. Ebmer. **Ürgüp:** 1200 m, 24.06.1987, leg. R. Hensen; 1100, 11.08.1987, 2 ♂♂, leg. P. van Ojen. **Niğde:** Çiftehan, Bolcardağları, 1700–1800 m, 17.07.1990, 2 ♀♀, leg. A.W. Ebmer. **Sivas:** Gürün, Şuğul Vadisi, 1400 m, 31.07.1987, ♂, 2 ♀♀, leg. A.W. Ebmer. **Tunceli:** Ovacık 17 km W, 1250 m, 18.08.1985, 2 ♂♂, 4 ♀♀, leg. R. Hensen. **Van:** Adilcevaz, 1800 m, 11.07.1984, ♂, leg. A.W. Ebmer. Başkale, Güzeldere Geçidi, 2100 m, 12.07.1984, ♀, leg. A.W. Ebmer.

Remarks: The provinces Adıyaman, Ağrı, Artvin, Aksaray, Bitlis, Kayseri, Nevşehir, Niğde, Sivas, Tunceli and Van are to be added to the distribution list of *H. kotschisus*. The species has also been reported from Ankara, but it is mainly found in the eastern parts of Turkey. Ankara is currently the most western distribution point of this species. It can be considered as an inhabitant of warm, dry, steppe-like areas as well as a mountain species. *H. kotschisus* is frequently recorded in Turkey (18 provinces).

Distribution: Eastern Mediterranean species (Lebanon, Iran, Israel, Turkey). In Turkey: Ankara, Erzurum, Hakkâri, Kars, Kırıkkale, Konya, Tokat (WARNCKE 1981); Adıyaman, Ağrı, Artvin, Aksaray, Bitlis, Kayseri, Nevşehir, Niğde, Sivas, Tunceli, Van.

Hylaeus (Hylaeus) kurdus (WARNCKE, 1981)

Fig. 5

Prosopis kurda WARNCKE, 1981: 182–183, ♂♀. Turkey: Hakkâri.

Prosopis (Prosopis) kurda WARNCKE, 1981 – WARNCKE 1992: 769, 792.

Hylaeus (Hylaeus) kurdus (WARNCKE, 1981) – ITIS (2020).

Material examined: Van: Gürpınar, Hoşap, Güzeldere Geçidi, 2500–2600 m, 09–12.07.1984, 4 ♂♂, 2 ♀♀, leg. A.W. Ebmer.

Remarks: In the males of this species, the mask is transversely impressed in a bow below the antennal bases. The scapes are black, basally curved and distinctly enlarged over half of their length; apically they are flattened. The lateral marks run along the orbits, are rounded at the top and narrowly edged; at this point there are also smooth surfaces. These characters clearly distinguish this species from the similar *H. trochilus* (see there). The characteristic “rounded versus edged posterior margin of the vertex” (WARNCKE 1992: 792) is incomprehensible as a difference between *H. kurdus* and *H. crispulus*.

H. kurdus was described from Hakkâri. Later it was also recorded in Bitlis and various additional localities in Hakkâri. Here, Van is added. Current and previous records show that it is a high mountain species, occurring up to 3100 m, mainly restricted to the eastern Anatolian region. It is only sparsely collected in Turkey (3 provinces).

Distribution: *H. kurdus* is according to present knowledge a purely Turkish species. Provinces: Hakkâri (type locality, 2600–3000 m), Bitlis (2500–3100 m) (WARNCKE 1992); Van (2500–2600 m).

Hylaeus (Hylaeus) leptocephalus (MORAWITZ, 1871)

Prosopis leptocephala MORAWITZ 1871: 324–325, ♀♂. Russia: Saratov.

Hylaeus bisinuatus FÖRSTER, 1871: 1048–1050, ♂. South France.

Prosopis (Prosopis) bisinuata (FÖRSTER, 1871) – WARNCKE 1972: 753; 1981: 191.

Hylaeus (Hylaeus) bisinuatus FÖRSTER, 1871 – ALIEV 1986: 266.

Prosopis (Prosopis) leptocephala MORAWITZ 1870[!] – WARNCKE 1992: 769.

Hylaeus (Hylaeus) leptocephalus (MORAWITZ, 1871) – PROSHCHALYKIN & DATHE 2012: 14; 2017: 61.

Material examined: **Ağrı:** Patnos, 22.08.1983, ♀, leg. Ooijen. **Aksaray:** Koçaş, 20 km NE, 900 m, 03.07.1984, ♂, ♀, leg. A.W. Ebmer; Yeşilova 15 W, 900 m, 03.07.1984, ♂, ♀, leg. A.W. Ebmer. **Antalya:** Alanya, İncekum, 20 m, 07.08.1985, ♂, leg. P. van Ooijen; Termessos, 1150 m, 16.07.1985, ♂, leg. O. Niehuis. **Aydın:** Kuşadası, 08.05.1992, 2 ♂♂, leg. W.H. Liebig. **Balıkesir:** Burhaniye, Üren, 10 m, 18.07.1985, ♂, leg. P. van Ooijen. **Bayburt:** Kop Dağı Geçidi, 2400 m, 25.07.2010, ♂, leg. J.S. Ascher, H. Özbek, J.G. Rozen. **Bingöl:** Karlıova, Soğukçeşme, 1040 m, 16.08.2005, 3 ♂♂, 2 ♀♀, leg. H. Özbek (on *Centaurea solstitialis*). **Bitlis:** Ahlat, 1750 m, 15.08.1985, 2 ♂♂, ♀, R. Hensen; Asağı Kolbaşı, 1700 m, 22.07.2003, 2 ♂♂, leg. H. Özbek. **Burdur:** Çeltikçi, 02.09.1984, ♂, leg. J. Timmer. **Bursa:** 225 m, 24.08.1985, 7 ♂♂, ♀, leg. R. Hensen; Mudanya, 25 m, 25.08.1985, ♂, R. Hensen. **Diyarbakır:** 18.07.1977, 2 ♀♀, leg. J. Timmer; 660 m, 14.07.1986, ♂, ♀, leg. P. van Ooijen; 650 m, 14.07.1986, 09.08.1985, 10 ♂♂, ♀, leg. R. Hensen. **Erzincan:** 07.07.2001, 2 ♂♂, leg. J.G. Rozen. **Erzurum:** Atatürk University Campus, 2000 m, 09.08.2004, ♂, ♀; 17.08.2003, 3 ♀♀, leg. H. Özbek (on *Melilotus alba*); İspir, 1400 m, 29.08.2003, 2 ♂♂, leg. H. Özbek; 14 km ENE of Pasinler, 04.07.2007, ♀, leg. J.S. Ascher, H. Özbek, J.G. Rozen (coll. AMNH); Oltu, 4 km WSW, 09.07.2007, 2 ♂♂, leg. J. Rozen, J.S. Ascher, H. Özbek (coll. AMNH); Başaklı, 1600 m, 29°14N 41°48E, 03.07.2001, 5 ♀♀, leg. J.G. Rozen, H. Özbek (coll. AMNH); Çamlıbel, 22 km SW Oltu, 03–08.07.2004, 7 ♂♂, 4 ♀♀, leg. J. Rozen, H. Özbek (coll. AMNH); Hınıs, Akören, 19.07.2003, ♂, leg. J. Rozen, H. Özbek (coll. AMNH). **Iğdır:** 19.8.1983, 5 ♂♂, leg. J. Timmer; Aralık, 900 m, 27.07.2000, ♀, C. Güçlü (on *Daucus carota* L.); Gaziler, 1040 m, 16.08.2005, 2 ♀♀, leg. H. Özbek (on *Melilotus alba*). **Kahramanmaraş:** Göksun, 1400 m, 26.06.1987, ♂, leg. R. Hensen. **Kars:** Sarıkamış, Karakurt, TCK Çesmesi, 1500 m, 40°08N 42°21 E, 19.08.2003, ♂, ♀, leg. S. Çoruh. **Kayseri:** Pınarbaşı, 1500 m, 25.06.1987, ♂, leg. R. Hensen. **Konya:** Alaaddin tepesi, 1050 m, 20.06.1987, ♂, leg. R. Hensen; Beyşehir, 1150 m, 18.06.1987, 6 ♂♂, leg. R. Hensen; Çumra, 1017 m, 13.08.2000, 2 ♂♂, leg. M. Kesdek (*Daucus carota*). **Mersin:** Mut 10 km S, 08.06.1966, ♂, leg. HHF. Hamann; Dereköy, 02.09.1987, ♂, leg. H. Özbek (on *Vitex agnus-castus*); Silifke, Korikos, 10 m, 03.08.1985, ♀, leg. R. Hensen (on *Polygonum*). **Muğla:** Bodrum, Salkamış, 13–24.07.2001, 37°02N

27°25E, 3 ♂♂, leg. F. Burger. **Nevşehir:** 2 km S, 1250 m, 09.07.1984, ♂, leg. A.W. Ebmer; Göreme, 38°40N 34°50E, 23.06.1993, ♀, leg. M. Halada (coll. Schwarz/Ansfelden); Ürgüp, 1100 m, 11.08.1985, 2 ♂♂, ♀, leg. P. v. Ooijen. **Şanlıurfa:** Birecik, 400 m, 06.08.1985, ♂, leg. R. Hensen; Halfeti, 425 m, 07.08.1985, 11 ♂♂, ♀, leg. R. Hensen; 400 m, 28.06.1987, 3 ♂♂, R. Hensen; Suruç, 400 m, 29.06.1987, ♂, 3 ♀♀, leg. R. Hensen. **Tunçeli:** Ovacık, 17 km W, 1250 m, 19.08.1985, 2 ♂♂, leg. R. Hensen. **Van:** 1800 m, 13.07.1987, ♂, leg. R. Hensen; Erciş, 1750 m, 38°43N 43°19E, ♀, leg. W. Schacht (coll. Schwarz/Ansfelden). **Yalova:** Çiftlik Köyü, 50 m, 31.07.1986, 2 ♂♂, leg. P. van Ooijen.

Remarks: Twenty one provinces are added here to the range of *H. leptocephalus*. Earlier and current records show that this species occurs in various biotopes throughout Turkey, from sea level up to 2400 m altitude. It is found especially in open areas. Interestingly, it has not been recorded in Hakkâri. Flowers visited: *Centaurea solstitialis*, *Daucus carota*, *Melilotus alba*, *Vitex agnus-castus*. The flight season is quite long, from early May to early September, with a peak in July; possibly the species has more than one generation per year. It is frequently recorded in Turkey (31 provinces).

Distribution: Throughout Europe, Russia to Far East, Central Asia, Armenia, Azerbaijan, Iran; introduced to North America. Turkey: provinces Adana, Ankara, Aydın, Bursa, Denizli, Kırıkkale, Konya, Kütahya, Sakarya (WARNCKE 1972); Erzurum (ÖZBEK 1977) (all as *H. bisinuatus* FÖRSTER, 1871); Ağrı, Aksaray, Antalya, Balıkesir, Bayburt, Bingöl, Bitlis, Burdur, Diyarbakır, Erzincan, Iğdır, Kahramanmaraş, Kars, Kayseri, Mersin, Muğla, Nevşehir, Şanlıurfa, Tunçeli, Van, Yalova.

Hylaeus (Hylaeus) monedulus (WARNCKE, 1992)

Fig. 6

Prosopis (Prosopis) monedula WARNCKE, 1992: 790, 801, ♀♂. Turkey: Nemrut Dag.

Hylaeus (Hylaeus) monedulus (WARNCKE, 1992) – ITIS (2020).

Remarks: It is a small, hardly known species. Its sculpture is generally smooth with strong punctation. *H. fedtschenkoi* resembles it most of all, but is less shiny. Furthermore, the male's scape is shorter, the mask with distinct and deep punctation. In both sexes the antennae are short, the outline of the head is broadly trapezoidal. The species is not comparable with *H. communis*, at most with *H. piotris* DATHE & PROSHCHALYKIN, 2018, which appears slimmer in habitus, face and scapes.

Distribution: *H. monedulus* was described from Bitlis (Nemrut Mt, 2000 m) as indigenous in Turkey, represented by only two specimens (♂ and ♀, Fig. 17.4). No new material was available for the present study.

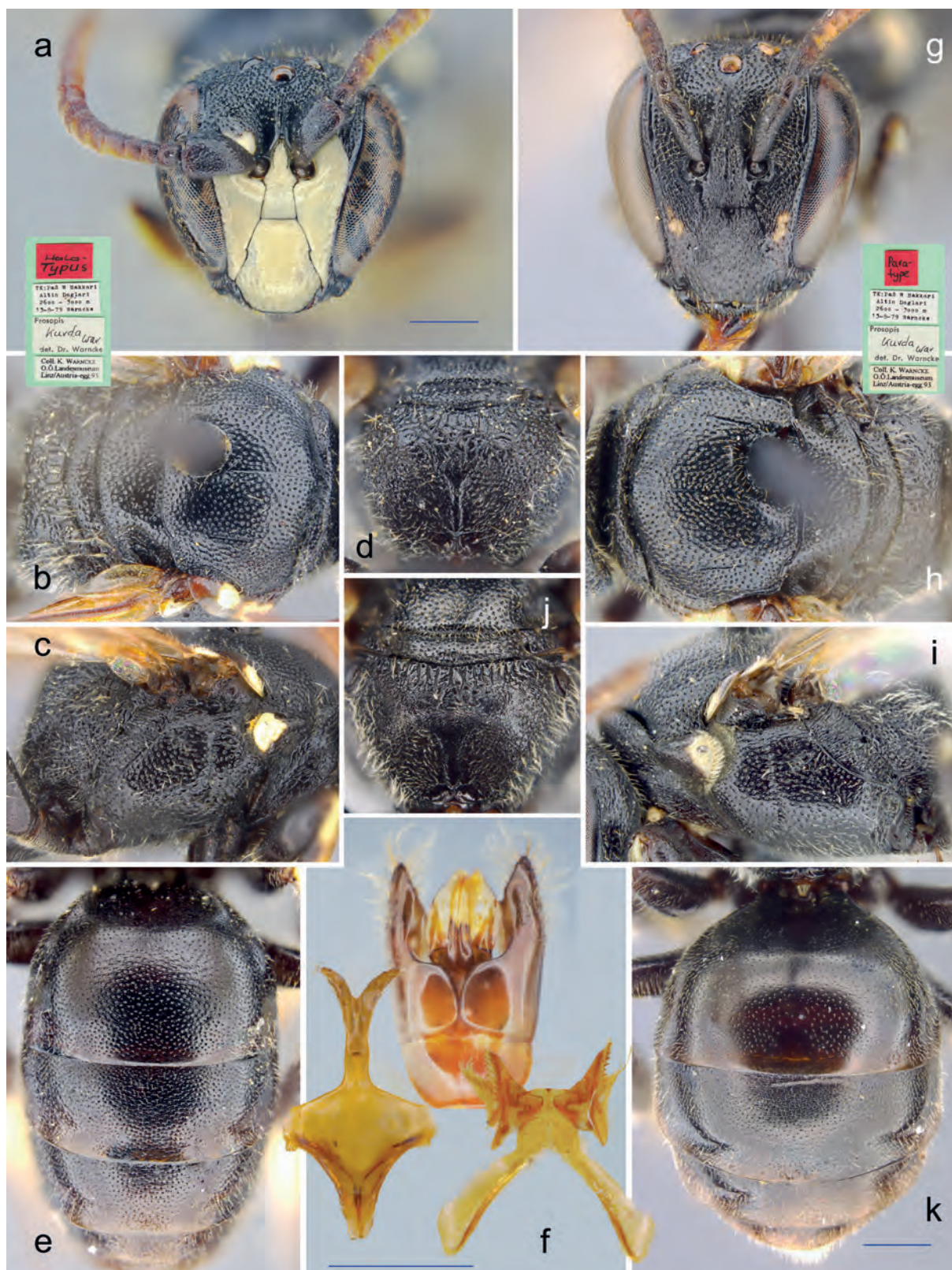


Fig. 5: *H. (Hylaeus) kurdus* (WARNCKE, 1981). Holotype male: a–face, b–mesonotum, c–mesopleuron, d–propodeum, e–metasoma, f–terminalia. Paratype female: g–face, h–mesonotum, i–mesopleuron, j–propodeum, k–metasoma. – Scale bar 0.5 mm.



Fig. 6: *H. (Hylaeus) monedulus* (WARNCKE, 1992). Holotype female: a–face, b–mesonotum, c–mesopleuron, d–propodeum and metasoma. Paratype male: e–face, f–mesonotum, g–mesopleuron, h–propodeum and metasoma, i–terminalia. – Scale bar 0.5 mm.

Hylaeus (Hylaeus) moricei (FRIESE, 1898)

Prosopis moricei FRIESE, 1898: 310, ♀ ♂. Egypt: Suez.

Hylaeus (Hylaeus) moricei (FRIESE, 1898) – ALIEV 1986: 267; DATHE & PROSHCHALYKIN 2018: 46.

Prosopis (Prosopis) nigrifacies (BRAMSON, 1879) [nomen dubium] – WARNCKE 1972: 755; 1992: 769.

Material examined: **Aksaray:** Esmekaya, 38°16'N 33°22'E, 16.07.1998, ♂, leg. C. Schmid-Egger. **Ankara:** Topçu, 39°35'N 35°00'E, 29.05.2001, ♀, leg. W.H. Liebig. **Antalya:** Konyaaltı, Azmak, 5 m, 30.05.2009, ♂, ♀, leg. H. Özbek (on *Mentha longifolia*); Konyaaltı pilajı, 29.05.2009, 2 ♂ ♂, ♀, leg. J.S. Ascher, H. Özbek, J.G. Rozen (coll. AMNH); Korkuteli, Kızılcadağ, 1500 m, 03.07.1990, 2 ♀ ♀, leg. A.W. Ebmer. **Bingöl:** Genç 15 km S, 1400 m, 13.08.1985, 2 ♂ ♂, ♀, leg. R. Hensen. **Bursa:** 225 m, 24.08.1985, ♂, leg. R. Hensen; Gemlik, Kurşunlu, 15.07.1997, ♀, leg. Prudek/Riha; Mudanya, 25 m, 20.08.1985, ♂, ♀, R. Hensen. **Diyarbakır:** 650 m, 09.08.1985, ♂, 2 ♀ ♀, leg. R. Hensen; 18.07.1977, ♂, leg. J. Timmer. **Erzincan:** Horticultural Research Station, 1300 m, 07.07.2001, 2 ♂ ♂, leg. J.G. Rozen, H. Özbek (coll. AMNH). **Erzurum:** Atatürk University, 1900 m, 03.07.2007, ♂, 11.07.2007, 2 ♂ ♂, ♀, leg. H. Özbek, J.G. Rozen, J.S. Ascher (coll. AMNH); 13.08.2000, 2 ♂ ♂ 2 ♀ ♀, leg. S. Pekel (on *Melilotus alba*); Oltu, Çamlıbel, 22 km WSW of Oltu, 1700 m, 07.07.2007, 2 ♂ ♂, leg. J.S. Ascher, H. Özbek, J.G. Rozen (coll. AMNH); Pasinler, Agricultural Research Station, 10.07.2007, ♂, 2 ♀ ♀, leg. J.S. Ascher, H. Özbek & J.G. Rozen (coll. AMNH); Tortum, 1700 m, 16.07.1987, ♂, leg. R. Hensen; Kazandere, 1190 m, 03.08.2004, 2 ♂ ♂, ♀, leg. S. Çoruh (*Eryngium blardieri*). Gümüşhane: Torul, 1000 m, 40°34'N 39°17'E, 12.07.1985, ♂, leg. M. Schwarz (coll. Schwarz/Ansfelden); **Hakkâri:** 1750 m, 09.07.1987, ♂, leg. R. Hensen; Oramar 10 km E, 1700 m, 29.06.1985, ♀, leg. M. Schwarz (coll. Schwarz/Ansfelden); Yüksekova, Varagöz, Sat Dağı 1700 m, 37°25'N 44°13'E, 04.07.1983, ♂, leg. W. Schacht (coll. Schwarz/Ansfelden). **Iğdır:** 19.08.1983, ♀, leg. J. Timmer. **Kars:** Sarıkamış, Karakurt, 1600 m, 40°10'N 42°22'E, 04.07.1985, 2 ♂ ♂, ♀, leg. M. Schwarz (coll. Schwarz/Ansfelden); 40°08'N 42°21'E, 1501 m, 05.08.2002, 2 ♂ ♂, leg. H. Özbek (on *Achillea millefolium*). **Kayseri:** İncesu W 5 km, 1100 m, 38°38'N 035°09'E, 27.05.1998, 2 ♂ ♂, ♀, leg. S.M. Blank. **Konya:** Alaattin Tepesi, 1050 m, 20.06.1987, ♂, ♀, leg. R. Hensen; Beyşehir, 1150 m, 18.06.1987, 2 ♀ ♀, leg. R. Hensen. **Nevşehir:** 2 km S, 1250 m, 04.07.1984, ♀, leg. A.W. Ebmer; Göreme, 38°39'N 34°52'E, 17.08.1984, ♂, leg. C. Schmid-Egger; Ürgüp, 1100 m, 11.08.1985, ♀, leg. P. van Ooijen. **Şanlıurfa:** Birecik, 400 m, 06.08.1985, ♂, Halfeti, 27.05.1987, ♂, leg. Madl; 400 m, 28.06.1987, ♂, leg. R. Hensen; 7 km N Suruç, 400 m, 29.06.1987, 2 ♂ ♂, leg. R. Hensen. **Van:** 1800 m, 13.07.1987, ♂, ♀, leg. R. Hensen; Gevaş, Göllü, 38°43'N 43°19'E, 29.06.1993, ♂, leg. M. Halada (coll. Schwarz/Ansfelden).

Remarks: *H. moricei* was known from the four provinces Bursa, Iğdır, Kars and Nevşehir. This study includes records from Aksaray, Ankara, Antalya, Bingöl, Diyarbakır, Erzincan, Erzurum, Gümüşhane, Hakkâri, Kayseri, Konya, Şanlıurfa and Van. The collecting sites are at altitudes between sea level (Antalya) and 2000 m (Erzurum), the flight period extends from the end of May to the end of August with a peak in June and the beginning of July. With the exception of the Aegean region, from which no samples are available, the species can be treated as a common species in Turkey (17 provinces).

Distribution: From Spain in the west to Iran and Central Asia in the east, South to Egypt (DATHE & PROSHCHALYKIN 2018). In Turkey: Bursa, Iğdır, Kars, Nevşehir (WARNCKE 1972, as *Prosopis nigrifacies* BRAMSON, 1879); Erzurum (ÖZBEK 1977, as *H. nigrifacies* (BRAMSON)); Aksaray, Ankara, Antalya, Bingöl, Diyarbakır, Erzincan, Gümüşhane, Hakkâri, Kayseri, Konya, Şanlıurfa and Van.

Hylaeus (Hylaeus) nigrinus (FABRICIUS, 1798)

Mellinus nigrinus FABRICIUS, 1798: 267, ♀. South Europe.

Prosopis nigrita (FABRICIUS, 1798) – WARNCKE 1972: 755.

Hylaeus (Hylaeus) nigrinus (FABRICIUS, 1798) – ALIEV 1986: 267; DATHE & PROSHCHALYKIN 2018: 18–20, 50.

Material examined: **Erzurum:** Palandöken, 2200–2400 m, 27.07.1986, 4 ♀ ♀, leg. A.W. Ebmer; Umudum Yaylası, 2100 m, 40°04'N 41°15'E, 20.07.2010, ♀, leg. G. Rozen, J. Ascher, H. Özbek (coll. AMNH). **Gümüşhane:** Torul, 1000 m, 40°34'N 39°17'E, 12.07.1985, ♂, leg. M. Schwarz (coll. Schwarz/Ansfelden). **Hakkâri:** Güzeldere Geçidi, 2700–2800 m, 18.07.1986, ♂, 2 ♀ ♀, leg. A.W. Ebmer. **Nevşehir:** Avanos, 920 m, 07.07.1983, ♀, leg. J. Hladil. **Van:** Başkale 30 km N, 2700 m, 11.07.1997, ♂, ♀, leg. R. Hensen.

Remarks: This study confirms *H. nigrinus* from the provinces Erzurum, Gümüşhane, Hakkâri, Nevşehir and Van. Interestingly, all samples were collected in July. The species appears to be sporadically distributed in Turkey. Here it occurs between 900–2800 m altitude, but is mainly found above 2000 m, and therefore be considered to be a montane species. In Central Europe it is found from the plain to higher altitudes of the low mountains, in the Alps up to 1600 m (WESTRICH 2018). DATHE & PROSHCHALYKIN (2018) report it from 4000 m altitude in Kyrgyzstan and 2700 m in Tajikistan. This species is only sparsely collected in Turkey (5 provinces).

Distribution: West Palaearctic: Europe from the Iberian Peninsula to Caucasus and Ural, up to 62° north; Morocco, Asia Minor, Iran, Central Asia (DATHE & PROSHCHALYKIN 2018). In Turkey: Erzurum (ÖZBEK 1977); Gümüşhane, Hakkâri, Nevşehir, Van.

Hylaeus (Hylaeus) orientalicus (WARNCKE, 1981)

Fig. 7

Prosopis (Prosopis) orientalis WARNCKE, 1981: 176–178, ♀ ♂.

Turkey: Kilis. – WARNCKE 1992: 769.

Hylaeus (Hylaeus) orientalicus (WARNCKE, 1981) – ITIS (2020).

Material examined: **Antalya:** Manavgat 5 km W, 10 m, 17.06.1987, 2 ♀ ♀, leg. R. Hensen. **Mersin:** Erdemli 25 km NW, Toros dağları, 900 m, 06.06.1991, ♂, leg. S. Kadlec.

Remarks: *H. orientalicus* is very conspicuous by the oblique impressions in the face of the male, so that the findings of such animals hardly remain hidden. It was described from the provinces Kilis, Adana and Şanlıurfa, as well as from Israel. This study adds specimens from Antalya and Mersin. Accordingly, the species is spread in the eastern Mediterranean and south-eastern Anatolia. Our data suggest that *H. orientalicus* is a thermophilic species mainly from the lowlands, but collected up to 900 m above sea level. It is sparsely collected in Turkey (5 provinces).

Distribution: This taxon shows a confined distribution range between Israel and Turkey. In Turkey: Adana, Kilis (type locality), Şanlıurfa (WARNCKE 1981); Antalya, Mersin.

Hylaeus (Hylaeus) paulus BRIDWELL, 1919*Hylaeus paulus* BRIDWELL, 1919: 154, ♀. Japan: Honshu.*Hylaeus (Hylaeus) lepidulus* COCKERELL, 1924: 282–283, ♂.

Russia: Siberia. – DATHE et al. 1996: 157–163.

Hylaeus (Hylaeus) paulus BRIDWELL, 1919 – PROSHCHALYKIN &

DATHE 2012: 16. DATHE & PROSHCHALYKIN 2016: 370–371.

Material examined: **Antalya:** Alanya, 50 m, 28.07.1985, 2 ♂ ♂, 4 ♀ ♀, leg. R. Hensen; 100 m, 30.07.1985, ♂, leg. R. Hensen; 30.08.1983, ♀, leg. P. v. Ooijen; Alanya, İncekum 20 km W of Alanya, 20 m, 07.08.1985, ♂, leg. P. v. Ooijen; Gazipaşa, 30 m, 03.07.1986, 5 ♂ ♂, leg. P. v. Ooijen. **Balıkesir:** Edremit, Ören, 27°02'E 39°33'N, 04.08.1987, ♀, leg. Dollfuss. **Bursa:** 225 m, 24.08.1985, 2 ♂ ♂, ♀, leg. R. Hensen; Armutlu 15 km NE, 50 m, 27.07.1986, 12 ♂ ♂, leg. P. v. Ooijen; 20 km E Armutlu, 30 m, 20.08.1985, ♀, leg. P. v. Ooijen; Mudanya, 25 m, 25.08.1985, ♂, ♀, leg. R. Hensen. **Denizli:** Pamukkale, 20 km NE, 1000 m, 01.07.1986, ♀, leg. P. v. Ooijen. **Erzurum:** Atatürk University Campus, 2000 m, 39°53'N 41°14'E, 30.06.2007, ♂, ♀, leg. J.S. Ascher, H. Özbek J.G. Rozen (coll. AMNH). **Hakkâri:** 1750 m, 09.07.1987, ♀, leg. R. Hensen; N 2000 m, 21.07.1986, ♀, leg. A.W. Ebmer. **Hatay:** İskenderun, Belen, 28.08.1983, 3 ♂ ♂, ♀, leg. J. Timmer. **İzmir:** Efes, 18.05.1992, 2 ♀ ♀, leg. W.H. Liebig. **Mersin:** Balandız, 36°20'N 33°46'E, 1000 m, 06.06.1985, ♀, leg. Aspöck/Rausch; 35 km

NNW Kargıcan, 200 m, 04.08.1985, ♀, leg. R. Hensen. **Muğla:** Fethiye, Ölüdeniz, 25.07.1986, 2 ♂ ♂, ♀, 30.07.1985, 3 ♀ ♀, leg. P. v. Ooijen; Marmaris 20 km W, 17.08.1983, 2 ♂ ♂, leg. A. Link. **Trabzon:** Çavuşlu, Eynesil, 13.08.1983, ♀, leg. P. v. Ooijen. **Yalova:** 12 km SW, Termal, 30 m, 25.08.1985, ♂, ♀, leg. R. Hensen.

Remarks: *H. paulus* is recorded from all geographical regions of the country except Central Anatolia. It apparently has a sporadic distribution. The collection sites show that the samples were mostly collected in open areas at altitudes between 20 and 2000 m and are mainly concentrated in coastal areas. The flight period is quite long, from May to the end of August; possibly more than one generation a year. It is collected moderately in Turkey (12 provinces, Fig. 16.5).

Distribution: Euro-Siberian species found from Central Europe via the Asian part of Russia to Mongolia, China and Japan (DATHE & PROSHCHALYKIN 2018). **New for the Turkish fauna,** Antalya, Balıkesir, Bursa, Denizli, Erzurum, Hakkâri, Hatay, İzmir, Mersin, Muğla, Trabzon, Yalova

Hylaeus (Hylaeus) scutellaris MORAWITZ, 1874*Hylaeus scutellaris* MORAWITZ, 1874: 176, ♀. Azerbaijan: Baku.*Prosopis (Prosopis) scutellaris* (MORAWITZ, 1874) – WARNCKE 1972: 754.*Hylaeus (Hylaeus) scutellaris* MORAWITZ, 1874 – Aliev 1986: 267; DATHE & PROSHCHALYKIN 2018: 64.

Material examined: **Antalya:** Konyaaltı Beach, 2 m, 36°51'54"N 30°38'39"E, 29.05.2009, ♂, leg. J.S. Ascher, H. Özbek, J.G. Rozen; Döşemealtı, Çıglık, 317 m, 02.06.2009, ♂, leg. J.S. Ascher, H. Özbek.

Remarks: *H. scutellaris* was only known from the Eastern Anatolian region (İğdir and Kars), but according to the present study, interestingly Antalya has to be added to the distribution list. The species shows a sporadic distribution. It is collected only sparsely (3 provinces) in Turkey.

Distribution: South-eastern Europe, Russia, Turkey, Armenia, Azerbaijan, Afghanistan, Iran, Pakistan, Central Asia (DATHE & PROSHCHALYKIN 2018). In Turkey: İğdir, Kars (WARNCKE 1972), Antalya.

Hylaeus (Hylaeus) sidensis (WARNCKE, 1981)

Fig. 8

Prosopis (Prosopis) sidensis WARNCKE, 1981: 175–176, ♀ ♂.

Turkey: Side. – WARNCKE 1992: 769.

Hylaeus (Hylaeus) sidensis (WARNCKE, 1981) – ITIS (2020).

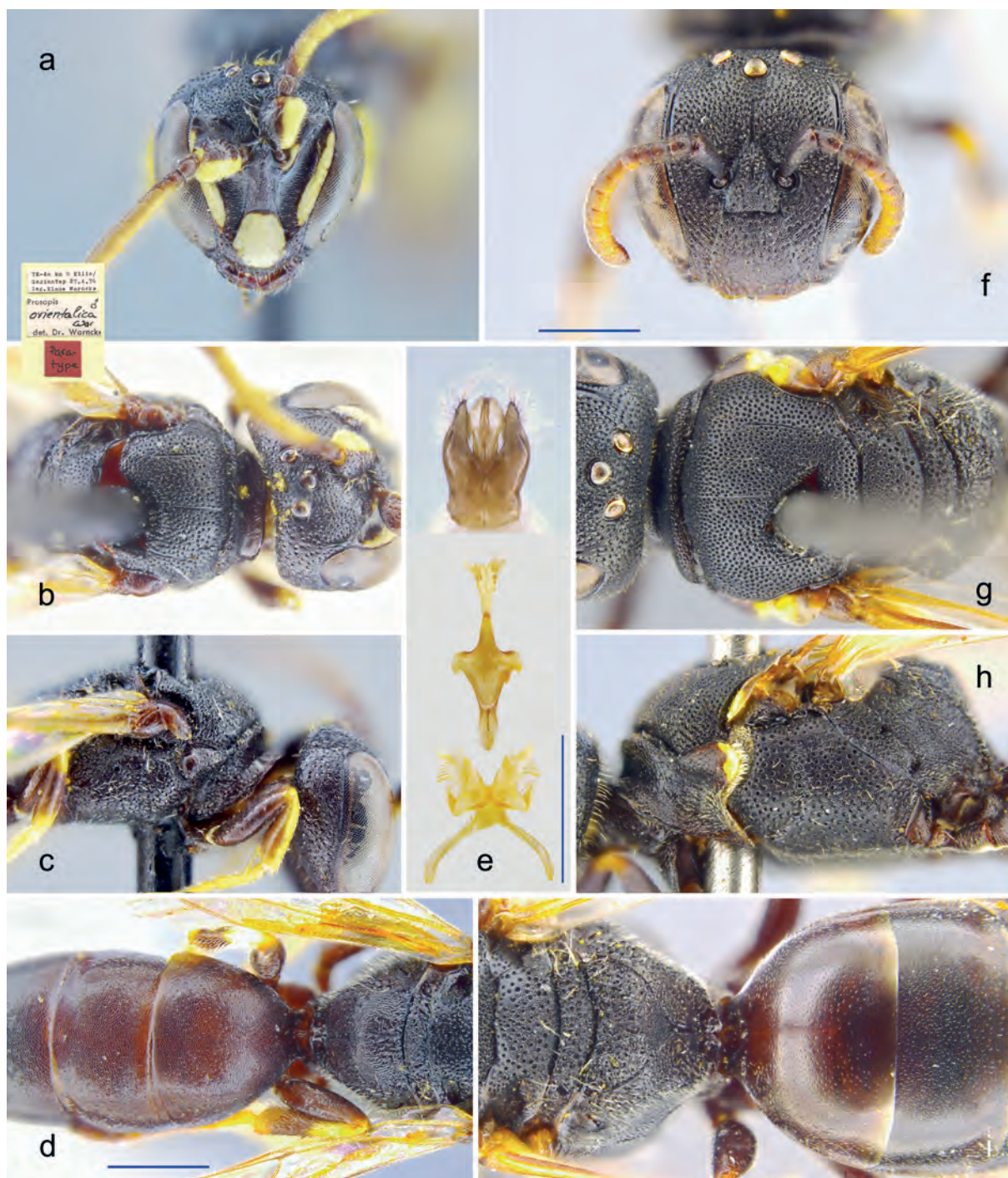


Fig. 7: *H. (Hylaeus) orientalicus* (WARNCKE, 1981). Paratype male (Kilis): a–face, b–mesonotum, c–mesopleuron, d–propodeum and metasoma, e–terminalia. Female (Antalya): f–face, g–mesonotum, h–mesopleuron, i–propodeum and metasoma. – Scale bar 0.5 mm.

Material examined: Adana: Pozanti, 37°25N 34°52E 06.07.1983, 2 ♀♀, leg. J. Hladil (coll. Kocourek). Hatay: Payas, 10.04.2002, 3 ♂♂, 2 ♀♀, leg. P. Bogusch (coll. P. Bogusch); Samandağı 30 km N, Nur dağları, 06.07.1996, ♀, leg. Brechtel/Ehrmann.

Remarks: *H. sidensis* was described from Antalya, Adana, Kilis, İzmir and Mersin as well as from Israel and Lebanon (WARNCKE 1981). The present study

adds the province Hatay. The localities from which the evidence comes show that it is a thermophilic species of plains, mainly at altitudes below 1000 m, frequently found in the Mediterranean coastal region. It is an early-flying bee, from the beginning of April to July. This small and dainty species with the striking formation of the male gonoforcipes is only sparsely collected in Turkey (6 provinces).

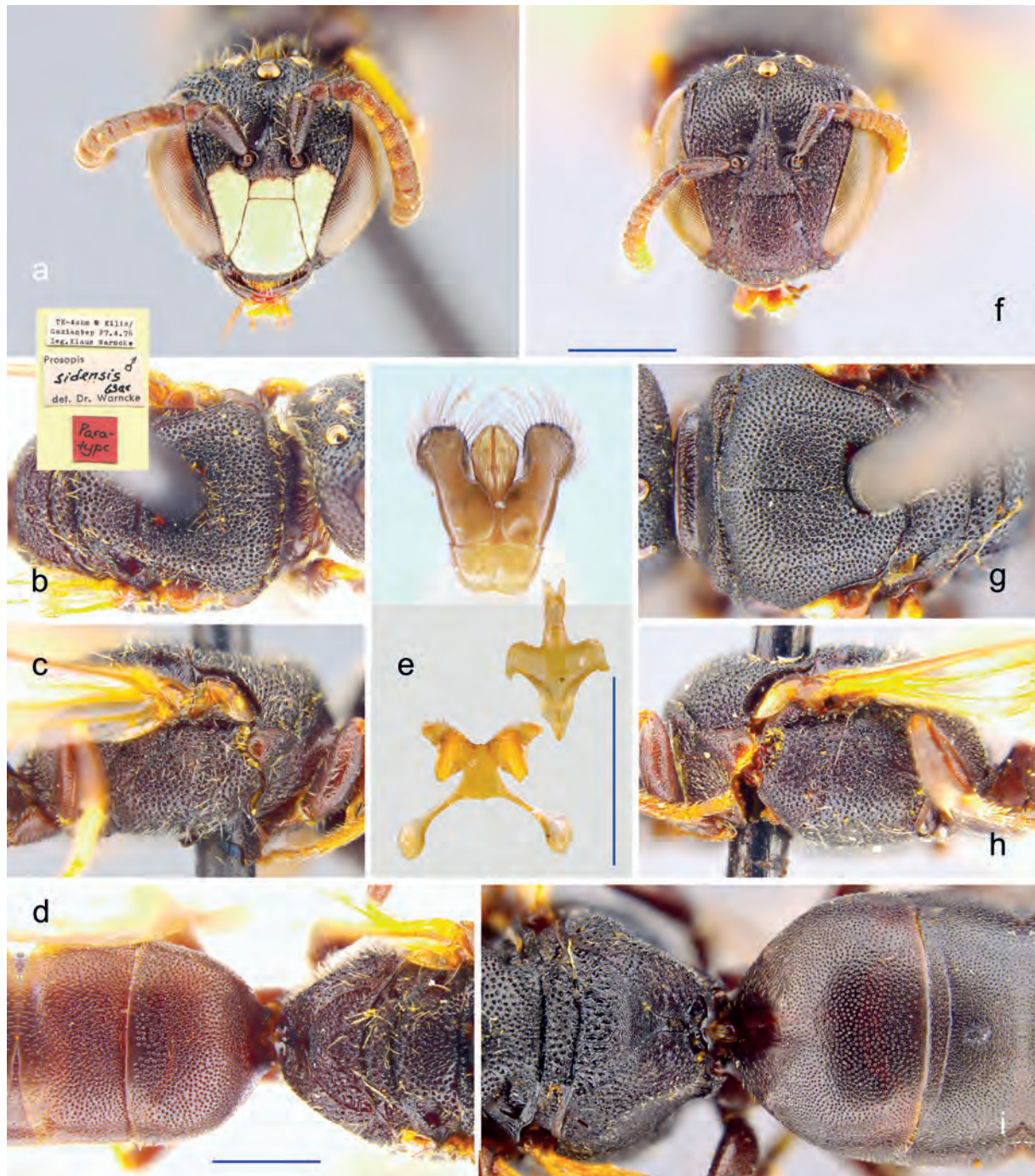


Fig. 8: *H. (Hylaeus) sidensis* (WARNCKE, 1981). Paratype male (Kilis): a–face, b–mesonotum, c–mesopleuron, d–propodeum and metasoma, e–terminalia. Female (Amanus): f–face, g–mesonotum, h–mesopleuron, i–propodeum and metasoma. – Scale bar 0.5 mm.

Distribution: Eastern Mediterranean (Greece, Turkey, Lebanon, Israel, Syria). In Turkey: Adana, Antalya (type locality), Kilis, İzmir, Mersin (WARNCKE 1981), Hatay.

Hylaeus (Hylaeus) tardus (WARNCKE, 1981)

Prosopis (Prosopis) tarda WARNCKE, 1981: 173–174, ♀♂. Iran: Isfahan.

Hylaeus (Hylaeus) tardus (WARNCKE, 1981) – ITIS (2020).

Material examined: **Adıyaman:** Nemrut Mt. National Park, Karadut, 2000 m, 37°56N 38°47E, 02.07.1993, 5 ♂♂, 18 ♀♀, leg. Halada/Jirousek (coll. Schwarz/Ansfelden). **Ağrı:** 1640 m, 39°44N 43°03E, 27.06.1993, ♂, leg. M. Halada (coll. Schwarz/Ansfelden). **Balıkesir:** Edremit, Öran 27°02E 39°33N, 04–15.08.1987, ♂, ♀, leg. Dollfuss. **Diyarbakır:** 650 m, 09.08.1985, ♂, leg.

R. Hensen. **Mardin:** 1000 m, 02.07.1987, 3 ♂♂, leg. R. Hensen. **Sivas:** Gürün, Suğul, 1400 m, 31.07.1986, ♂, 2 ♀♀, leg. A.W. Ebmer. **Şanlıurfa:** Birecik, 400 m, 06.08.1985, 11 ♂♂, 9 ♀♀, leg. R. Hensen; Halfeti, 425 m, 07.08.1985, 17 ♂♂, ♀, leg. R. Hensen; 400 m, 28.06.1987, 4 ♂♂, ♂, leg. R. Hensen; Suruç, 400 m, 29.06.1987, ♂, ♀, leg. R. Hansen. **Van:** Başkale, 2200 m, 10.07.1987, ♂, leg. R. Hensen.

Remarks: *H. tardus* was described from Iran (WARNCKE 1981). According to “Discover Life” (ASCHER & PICKERING 2019), the species also occurs in Turkey and Azerbaijan, but we could not find out more about the exact localities. The available records show that this species is widespread in south-eastern Anatolia, near to the border with Iran. Thus it could be considered as an inhabitant of warm and dry places, but it also occurs in cool and mountainous locations (Van, 2200 m). Balıkesir is the most western recorded locality of this species. It is moderately collected in Turkey (8 provinces).

Distribution: Iran (type locality), Azerbaijan, Turkey: Adıyaman, Ağrı, Balıkesir, Diyarbakır, Mardin, Sivas, Şanlıurfa, Van.

Hylaeus (Hylaeus) torquatus (WARNCKE, 1992)

Fig. 9

Prosopis (Prosopis) torquata WARNCKE, 1992: 784–785, ♀♂. Turkey: Midyat (Mardin).

Hylaeus (Hylaeus) torquatus (WARNCKE, 1992) – ITIS (2020).

Remarks: In the original description, WARNCKE (1992: 769) classifies the species in the subgenus “*Prosopis*” (= *Hylaeus* s. str.) between *H. tyrolensis* and *H. funereus*. According to our understanding, these species belong to different subgenera. In fact, *H. torquatus* has special characteristics sui generis, which call both classifications into question. We recognize a closer comparability only with *H. sidensis*, with which it shares the following characters: the short, apically broadened gonoforcipes of the males, in both sexes the dense strong punctation of the head and mesosoma, so that the sculpture appears matt; the lateral area of the propodeum are arched without posterior ridge; the white mask is dorsally transversally truncated. The face of the female is completely black.

WARNCKE (1992) described *H. torquatus* from Mardin and recorded it simultaneously from Hakkâri and Siirt as well as from Syria. Since then the species has not been found again. It is only sparsely collected in Turkey (3 provinces).

Distribution: Syria; Turkey: Hakkâri, Siirt, Mardin.

Hylaeus (Hylaeus) trifidus (ALFKEN, 1936)

Prosopis trifida ALFKEN, 1936: 52–53, ♀♂. Lebanon: Said Neil.

Prosopis (Prosopis) trifida ALFKEN, 1936 – WARNCKE 1981: 191–192.

Hylaeus (Hylaeus) trifidus (ALFKEN, 1936) – DATHE 2015: 225–227.

Material examined: **Adıyaman:** Nemrut Mt National Park, Karadut, 2000 m, 37°56N 38°47E, 02.07.1993, ♂, leg. M. Halada (coll. Schwarz/Ansfelden). **Balıkesir:** Ayvalık, Arkent 28.06.1993, ♂, leg. P. Tyrner. **Burdur:** Çeltikçi, 02.09.1983, 6 ♂♂, leg. J. Timmer. **Eskişehir:** Mihalgazi, Sakarılıca, 06.07.1997, ♂, ♀, leg. Prudek/Riha. **Hakkâri:** Beytüşşebap, Habur Deresi, 37°32N 43°12E, 1100 m, 01.08.1983, ♂, leg. W. Schacht (coll. Schwarz/Ansfelden); **Konya:** Güneysınır, Güragaç, 1020 m, 06.08.2002, ♀, leg. M. Kesdek. **Mardin:** 1000 m, 02.07.1987, 5 ♂♂, 3 ♀♀, R. Hensen. **Mersin:** Silifke, Uzuncaburç, 400 m, 02.08.1985, 2 ♂♂, leg. R. Hensen; Kargıcan, 200 m, 04.08.1985, 6 ♀♀, leg. R. Hensen. **Muğla:** Bodrum, Salkamış, 13–25.07.2001, 37°02N 27°25E, 46 ♂♂, 20 ♀♀, leg. F. Burger (on *Polygonum* sp.); Milas, Yatağan, 37°17N 27°56E, 500 m, 05.06.1984, ♂, leg. Vogtenhuber (coll. Schwarz/Ansfelden). **Nevşehir:** Avanos, 07.07.1983, ♂, leg. J. Hladil; Göreme, 38°39N 34°52E, 17.07.1998, ♂, leg. C. Schmid-Egger; Hacibektaş, Mucur, 1100 m, 20.07.1984, ♂, leg. A.W. Ebmer; Zelve, 1050, 04–18.07.1984, 4 ♀♀, leg. A.W. Ebmer; Zelve, 1000 m, 22.06.1987, ♀, leg. R. Hensen.

Remarks: *H. trifidus* can be regarded as an inhabitant of the lowlands, but it also occurs in mountainous locations (Adıyaman, 2000 m). It prefers warm and dry habitats, mainly in steppes and open areas. It is moderately collected in Turkey (12 provinces).

Distribution: Greece (Lesvos, Chio), Israel, Egypt (Sinai) (DATHE 2015); Iran has to be deleted (WARNCKE 1981: 192). Turkey: Ankara, Konya, Mersin (WARNCKE 1972, 1981), Adıyaman, Balıkesir, Burdur, Eskişehir, Hakkâri, Konya, Mardin, Muğla, Nevşehir.

Hylaeus (Hylaeus) trisignatus MORAWITZ, 1876

Hylaeus trisignatus MORAWITZ, 1876: 279–280, ♀♂. Tajikistan: Iskander.

Prosopis trisignatus (MORAWITZ, 1876) – WARNCKE 1981: 151–152.

Hylaeus (Hylaeus) trisignatus MORAWITZ, 1876 – DATHE & PROSHCHALYKIN 2018: 65.

Material examined: **Hakkâri:** Varagöz, Sat Dağı, 1700 m, 37°25N 44°13E, 04–08.08.1983, ♀, leg. W. Schacht.

Remarks: The occurrence of *H. trisignatus* has so far been considered limited to Central Asia. It is remarkable



Fig. 9: *H. (Hylaeus) torquatus* (WARNCKE, 1992). Holotype male: a–face, b–mesonotum, c–mesopleuron, d–propodeum and metasoma, e–terminalia. Paratype female: f–face, g–mesonotum, h– mesopleuron, i– propodeum and metasoma. – Scale bar 0.5 mm.

that this species is now documented as **new for Turkey** by a sample from Hakkâri. Hakkâri is the westernmost distribution point of this species. It is rarely recorded from Turkey (1 province, Figs 16.6, 17.5).

Distribution: Tajikistan, Kyrgyzstan (PROSHCHALYKIN & DATHE 2018); Turkey: Hakkâri.

Hylaeus (Hylaeus) trochilus (WARNCKE, 1992)

Fig. 10

Prosopis (Prosopis) kurda trochila WARNCKE, 1992: 792–793, ♂ ♀. Turkey: Nigde.

Hylaeus (Hylaeus) trochilus (WARNCKE, 1992) – ITIS (2020).



Fig. 10: *H. (Hylaeus) trochilus* (WARNCKE, 1992). Holotype male: a–face, b–mesonotum, c–mesopleuron, d–propodeum, e–metasoma, f–terminalia. Paratype female: g–face, h–mesonotum, i–mesopleuron, j–propodeum, k–metasoma. – Scale bar 0.5 mm.

Remarks: In the males of *H. trochilus*, the face is impressed transversely in a bow below the antenna bases, similar to *H. kurdsu*. In contrast to *H. kurdsu*, however, the scape of males is richly marked with white, its outline basally less curved and expanded, with width less than half the length of the scape, apically not flattened. The side spots run along the orbits, they are

rounded at the top, not emarginate; there are also no smooth surfaces on the frons. Inappropriate preparation of the terminalia by Warncke caused the loss of sternum 7, and sternum 8 is a fragment.

Apart from the specimens of the type series from Niğde at 3000 m altitude (2 ♂♂, ♀), no other samples were collected. We assume that it is a species especially of the

high mountain regions, that has to be searched for at suitable places. It is rarely recorded from Turkey (1 province, Fig. 17.6).

Distribution: Turkey: Niğde.

Hylaeus (Hylaeus) tyrolensis FÖRSTER, 1871

Hylaeus tyrolensis FÖRSTER, 1871: 980–981, ♀. Austria: Tyrol.
Prosopis (Prosopis) tyrolensis (FÖRSTER, 1871) – WARNCKE 1972: 756; 1992: 768.
Hylaeus (Hylaeus) tyrolensis FÖRSTER, 1871 – DATHE et al. 2016: 26, 41.

Material examined: **Adıyaman:** 20 km E Gölbaşı, 600 m, 37°44N 37°55E, 12.05.2002, ♂, 4 ♀ ♀, leg. J.G. Rozen, H. Özbek (coll. AMNH). **Antalya:** Çiğlik, 317 m, 02.06.2009, ♀, leg. J.S. Ascher, H. Özbek; Termassos, 500 m, 37°02N 30°28E, 24.05.2009, 6 ♂ ♂, leg. J.S. Ascher, H. Özbek (coll. AMNH). **Bursa:** Çağlayan, 10.07.1997, 2 ♀ ♀, leg. Prudek/Riha; Kurşunlu, 15.07.1997, ♂ ♀, leg. Prudek/Riha. **Erzurum:** 5 km NE of Pasinler, 1700 m, 10.07.2007, ♂, leg. J.S. Ascher, J.G. Rozen, H. Özbek (coll. AMNH). **Osmaniye:** Hassa, 6 km W. Hassa, 850 m, 36°49N 36°29E, 13.05.2002, 3 ♂ ♂ 5 ♀ ♀, leg. J.G. Rozen, H. Özbek (coll. AMNH).

Remarks: The available records show that *H. tyrolensis* has a rather sporadic distribution, centred on the Mediterranean. Erzurum is the most eastern point of distribution of this species. It occurs from sea level (Bursa) up to about 1700 m in both warmer and cooler regions, but preferring warmer ones. The flight period lasts from May to August. It is collected moderately in Turkey (8 provinces).

Distribution: West Palaearctic, Alps to Asia minor. In Turkey: Çanakkale, Mersin, Hakkâri (WARNCKE 1972, 1992), Adıyaman, Antalya, Bursa, Erzurum and Osmaniye.

Subgenus *Koptogaster* ALFKEN, 1912

Hylaeus (Koptogaster) bifasciatus (JURINE, 1807)

Prosopis bifasciata JURINE, 1807: 220, pl. 11, ♀. South Europe.
Prosopis (Koptogaster) bifasciata JURINE, 1807 – WARNCKE 1972: 752; 1981: 190; 1992: 769.
Hylaeus (Koptogaster) bifasciatus (JURINE, 1807) – ALIEV 1986: 268.

Material examined: **Konya:** Çumra, 1016 m, 17.07.2000, ♂, Güneysınır, Gurağaç, 06.07.2000, ♀, leg. M. Kesdek. **Sinop:** Ayancık, 23.07.1977, ♀, leg. H. Özbek (*Onopordum* sp.).

Remarks: The provinces Konya and Sinop are to be added to the distribution area of *H. bifasciatus*. It has a sporadic distribution, and is sparsely collected in Turkey (6 provinces).

Distribution: Southern Europe, Ukraine, Georgia, Israel, Malaysia (ASCHER & PICKERING 2019). In Turkey: Ankara, Manisa, Mersin, Şanlıurfa (WARNCKE 1972), Konya, Sinop.

Hylaeus (Koptogaster) punctulatissimus SMITH, 1842

Hylaeus punctulatissimus SMITH, 1842: 58, ♀ ♂. England: Coombe.
Prosopis (Koptogaster) punctulatissima (SMITH, 1842) – WARNCKE 1972: 752; 1981: 191; 1992: 769.
Hylaeus (Koptogaster) punctulatissimus SMITH, 1842 – ALIEV 1986: 269.

Material examined: **Ağrı:** 1700 m, 39°44N 43°03E, 27.06.1993, ♂, leg. Jirousek (coll. Schwarz/Ansfelden). **Antalya:** WNW 25 km, Güllük Dağı (Bey Dağları), 36.59N 030.27E, 950 m, 04.06.1998, 2 ♂ ♂, leg. S.M. Blank; Beydağları, 28 km S Elmalı, 1650–1750 m, 04.07.1990, 2 ♂ ♂, ♀, leg. A.W. Ebmer; 7 km S of Kargın, 24.05.2009, ♂, leg. J. Ascher; 02.06.2009, 5 ♂ ♂, 4 ♀ ♀, leg. J.S. Ascher, H. Özbek (coll. AMNH). **Kars:** Sarıkamış, Karakurt, TCK Çeşmesi 1500 m, 40°08N 42°21E, 08.06.2005, ♂, leg. H. Özbek. **Kayseri:** Develi, Bakırdağ, Gezbeli Geçidi, 1750–1900 m, 06.07.1984, ♀, leg. A.W. Ebmer. **Nevşehir:** Ürgüp, 1200 m, 24.06.1987, ♂, leg. R. Hensen. **Niğde:** Karakışlakçı 2 km S, 1200 m, 07.07.1995, ♀, leg. Y. Barbier (on *Allium* sp.). **Van:** Gevaş, Göllü, 1800 m, 38°43N 43°19E, 29.06.1993, ♂, leg. M. Halada (coll. Schwarz/Ansfelden).

Remarks: *H. punctulatissimus* was previously known only from Konya. With the present study six further provinces are added to its known distribution. It is recorded for the first time from the regions East Anatolia and Mediterranean. In Turkey the distribution of this taxon is mainly limited to eastern and central Anatolia. It is a species of open land and mountains that is recorded above 900 m and occurs more frequently at about 1200 m altitude. Interestingly, it has not been found in Erzurum since the 1970s, despite intensive collection work. Another remarkable thing: The abundance is very low, except for Antalya, each province is only represented by one sample. The flight period lasts from the end of May to July, with a peak in June. It is moderately collected in Turkey (8 provinces).

Distribution: Western Palaearctic. In Turkey: Konya (WARNCKE 1972), Ağrı, Antalya, Kars, Kayseri, Nevşehir, Niğde, Van.

Hylaeus (Koptogaster) tetrus DATHE, 2000

Hylaeus (Koptogaster) tetrus DATHE, 2000: 171–172, ♂ ♀.
Turkey: Isparta.

Remarks: *H. tetrus* was described from Isparta and Kayseri, represented by two specimens only (♂, ♀) (DATHE 2000). No additional material has been collected since the time of the description. Currently it appears to be endemic in Turkey, but there are no data to assess the threat situation. It is rarely registered in Turkey (2 provinces, Fig. 17.V).

Distribution: Turkey: Isparta, Kayseri.

Subgenus *Lambdopsis* POPOV, 1939

Hylaeus (Lambdopsis) crassanus (WARNCKE, 1972)

Hylaeus politus FÖRSTER, 1871: 1050–1051, ♀. Switzerland: Chur.

Hylaeus (Lambdopsis) crassanus FÖRSTER, 1871. – DATHE 1980: 272.

Prosopis (Lambdopsis) crassana WARNCKE, 1972: 767 (nom. nov). – WARNCKE 1992: 763.

Remarks: *H. crassanus* is a species previously known mainly from European mountain regions. WARNCKE (1972) only took it up about 50 years ago from İstanbul (Şile, Fig. 17.7). Despite intensive collecting in the whole country, no additional sample was found; possibly it is extinct in Turkey.

Distribution: Europe from Iberia to the Balkans. Turkey: İstanbul (WARNCKE 1972).

Hylaeus (Lambdopsis) dilatatus (KIRBY, 1802)

Melitta dilatata KIRBY, 1802: 38–39, ♂. England: Suffolk, Barham.

Prosopis (Lambdopsis) annularis (KIRBY, 1802) – WARNCKE 1972: 767.

Prosopis (Lambdopsis) annularis elbursa WARNCKE, 1981: 170–171, (from Hakkâri). – WARNCKE 1992: 763.

Hylaeus annularis auctorum nec KIRBY, 1802 – ALIEV 1986: 268.

Hylaeus (Lambdopsis) dilatatus (KIRBY, 1802) – NOTTON & DATHE 2008: 1863–1865.

Material examined. **Ağrı:** 20 km N 2000 m, 24.07.1986, ♀, leg. A.W. Ebmer; Cumaçay, 2300 m, 23.07.1996, 2 ♀ ♀, leg. P. Rasmont (on *Cirsium arvense*). **Artvin:** Yusufeli, Kaçkardağları, Yaylalar, 1800 m, 17–19.07.1995, ♂, leg. Gelbrecht/Schwabe (on *Anchusa* sp.). **Bursa:** Kurşunlu, 15.07.1997, ♀, leg. Prudek/Richa. **Erzurum:** Palandöken, 2200–2400 m, 27.07.1986, ♂, 2 ♀ ♀, leg. A.W. Ebmer; Oltu, Başaklı, Karadağ Mt., 2100 m,

24.07.2005, 2 ♂ ♂, leg. H. Özbek (on *Achillea millefolium*); Çamlıbel, 22 km WSW of Oltu, 08.07.2007, 2 ♂ ♂, leg. J.S. Ascher, H. Özbek, J.G. Rozen (coll. AMNH); Pazaryolu, 27.06.2008, 2 ♀ ♀, leg. J.G. Rozen, H. Özbek (coll. AMNH). **Erzincan:** Muti köprüsü, 1200 m, 26.09.1979, ♀ leg. H. Özbek (on *Heliotropium europaeum*). **Hakkâri:** Yüksekova 15 km E, 2100–2200 m, 20.07.1986, 2 ♂ ♂, 2 ♀ ♀, leg. A.W. Ebmer; Varegöz, 37°25N 44°13E, 1750 m, 06.08.1986, ♀, leg. SM. Blank (coll. Schwarz/Ansfielden); Kaval, Süvarihalil Geçidi, 2200–2400, 22.07.1986, ♂, leg. A.W. Ebmer. **Muğla:** Köyceğiz, 13.06.1987, ♂, P.H. Doesburg. **Sinop:** 100 m, 25.07.1977, ♂, leg. H. Özbek (on *Onopordum* sp.).

Remarks: NOTTON & DATHE (2008) recognized during a revision of the Kirby collection that the previously widely-used name *Hylaeus annularis* had to be replaced by *Hylaeus dilatatus*. The type locality of *Prosopis annularis elbursa* WARNCKE, 1981 (a synonym of *H. dilatatus* (KIRBY) according to our understanding), is not the Elburs mountains in Iran, but the province Hakkâri (2600–3000 m) in Turkey. Here seven provinces are newly added to the recorded distribution. The species shows a sporadic distribution, recorded from sea level (Muğla) up to a main occurrence at high altitudes (2000–3000 m). *Achillea millefolium*, *Cirsium arvense*, *Heliotropium europaeum* and *Onopordum* sp. are noted as visited plants. *H. dilatatus* is collected moderately in Turkey (10 provinces).

Distribution: Palaearctic (Russia, Europe, North Africa, Azerbaijan, Turkey, Kazakhstan (DATHE & PROSHCHALYKIN 2018). In Turkey: Bolu, Hatay (WARNCKE 1972) as *Prosopis annularis* (KIRBY, 1802); Hakkâri as *Prosopis annularis elbursa* WARNCKE (WARNCKE 1981); Ağrı, Artvin, Bursa, Erzincan, Erzurum, Muğla and Sinop.

Hylaeus (Lambdopsis) euryscapus FÖRSTER, 1871

Hylaeus euryscapus FÖRSTER, 1871: 909–910, ♂. Hungary.

Prosopis (Lambdopsis) euryscapa (FÖRSTER, 1871) – WARNCKE 1972: 767; 1992: 768.

Hylaeus (Lambdopsis) euryscapus FÖRSTER, 1871 – ALIEV 1986: 268.

Material examined: **Ardahan:** Posof, Aşıkzülali, 1100 m, 25.07.2005, 2 ♀ ♀, leg. C. Güçlü (on *Eryngium creticum*). **Aksaray:** Esmekaya, 38°16N 33°22E, 16.07.1998, ♀, leg. C. Schmid-Egger; Ihlara, 27 km NE, 38°14N 34°18E, 18.07.1998, 2 ♂ ♂, leg. C. Schmid-Egger. **Artvin:** Yusufeli, Demirkent, 1600 m, 01.09.1995, ♀, leg. M. Kraus. **Çorum:** Mecitözü, 750 m, 05.06.2002, ♀, leg. W.H. Liebig. **Erzurum:** Atatürk University Campus, 2000 m, 09.08.1970, ♀, leg. H. Özbek (on *Melilotus officinalis*); 03.09.1987, ♂, leg. R. Hayat; 11.07.2007, ♂, ♀, leg. J.S. Ascher, H. Özbek, J.G. Rozen (coll. AMNH);

16.07.2003, 2 ♀♀, leg. J.G. Rozen and H. Özbek; 41 km W of Erzurum, Aşkale civarı, 02.07.2007, 2 ♂♂, leg. J.S. Ascher, H. Özbek, J.G. Rozen (coll. AMNH); Pasinler, 26.07.1997, ♀, leg. H. Özbek. **Hakkâri:** Yüksekova, 15 km E, 2100–2200 m, 20.07.1986, ♂, ♀, leg. A.W. Ebmer. **Kayseri:** Develi, Bakırdağı, 1700 m, 06.07.1984, ♀, leg. A.W. Ebmer; 38°22'N 35°29'E, 1400 m, 02.05.1985, ♂, leg. Aspöck/Rausch. **Konya:** Güneysınır, Güragaç, 1020 m, 06.07.2000, 2 ♂♂, leg. M. Kesdek; Bozkır, Sarıoğlan, 1000 m, 25.07.2003, 2 ♂♂, leg. M. Kesdek; Eflatun pınarı, 37°51'N 31°37'E, 15.07.1998, 3 ♂♂, leg. C. Schmid-Egger. **Muğla:** Köyceyiz, 14.06.1987, ♂, leg. P.H. van Doesburg. **Nevşehir:** Avanos, Zelve, 1060 m, 17.07.1984, ♀, leg. A.W. Ebmer. **Niğde:** 2 km S, 1250, 04.08.1984, ♀, leg. A.W. Ebmer; Maden, Çiftahan, 1700–1800 m, 17.07.1990, ♂, leg. A.W. Ebmer; Göreme, 38°39'N 34°53'E, 17.07.1998, ♂, leg. C. Schmid-Egger. **Şanlıurfa:** Halfeti, 08.06.1983, ♂, leg. J. Schmidt.

Remarks: Ten provinces can be added here to the range of *H. euryscapus*. The species occurs in all geographical regions, from sea level to 2200 m altitude. The flight period extends from the beginning of May to August with a peak in July. It is moderately recorded in Turkey (16 provinces).

Distribution: Western Palaearctic. In Turkey: Balıkesir, Denizli, Konya, İstanbul, Tekirdağ (WARNCKE 1972); Erzurum (ÖZBEK 1977); Ardahan, Aksaray, Artvin, Çorum, Hakkâri, Kayseri, Muğla, Nevşehir, Niğde, Şanlıurfa.

Hylaeus (Lambdopsis) scutellatus (SPINOLA, 1838)

Prosopis scutellata SPINOLA, 1838: 506–507, ♀, Egypt.

Prosopis (Lambdopsis) scutellata SPINOLA, 1838 – WARNCKE 1972: 768; 1992: 764.

Hylaeus (Lambdopsis) scutellatus (SPINOLA, 1838) – ALIEV 1986: 268.

Material examined: **Adıyaman:** 20 km SE, 680 m, 10.05.2002, 2 ♂♂, leg. H. Özbek; Gölbaşı, Celigözü, 900 m, 21.06.1985, ♀, leg. W. Schacht. **Antalya:** Alanya, 50 m, 28.07.1985, ♂, leg. R. Hensen; Konaklı 10 km W, 36°58'N 31°89'E, 01.08.2009, 3 ♂♂, 4 ♀♀, leg. C. Schmid-Egger (coll. S.-E.); Arapsuyu, Azmak, 10 m, 20.06.2002, ♂, ♀, 30.06.2002, ♂, ♀, 04.07.2002, 3 ♂♂, 16.07.2002, ♂, 15.10.2003, ♂, leg. H. Özbek (*Mentha longifolia*); Çiğlik, 02.06.2009, ♂, leg. J.S. Ascher, H. Özbek (coll. AMNH); Demirtaş, 100 m, 29.07.1985, ♀, leg. R. Hensen; Gündoğmuş, Glasandra, 1500 m, 36°83'N 32°05'E, 02.08.2009, ♂, ♀, leg. C. Schmid-Egger (coll. S.-E.); Konyaaltı Beach, 2 m, 29.05.2009, ♂, leg. J.S. Ascher, H. Özbek, J.G. Rozen (coll. AMNH); Manavgat, Lyrbe (Seleukeia), 07.06.1997, ♂, leg. H. Mühle. **Edirne:** Keşan, Mecidiye, 50 m, 29.07.2003, ♂, ♀, Ö. Çalmaşur

(on *Daucus carota*). **Erzurum:** Atatürk University Campus, 2000 m, 06.08.1999, ♀, leg. R. Hayat (on *Melilotus officinalis*); Tortum, Derekapı, 20.09.2000, ♀, leg. H. Özbek (on *Eryngium* sp.). **Hakkâri:** Beytüşşebap, Habur Deresi, ♀, 26.06.1985, leg. W. Schacht. **Iğdır:** Bayraktutan.

Material examined. **Ardahan:** Posof, Aşıkzülali, 1100 m, 25.07.2005, 2 ♀♀, leg. C. Güçlü (on *Eryngium creticum*). **Aksaray:** Esmekaya, 38°16'N 33°22'E, 16.07.1998, ♀, leg. C. Schmid-Egger; Ihlara, 27 km NE, 38°14'N 34°18'E, 18.07.1998, 2 ♂♂, leg. C. Schmid-Egger. **Artvin:** Yusufeli, Demirkent, 1600 m, 01.09.1995, ♀, leg. M. Kraus. **Çorum:** Mecitözü, 750 m, 05.06.2002, ♀, leg. W.H. Liebig. **Erzurum:** Atatürk University Campus, 2000 m, 09.08.1970, ♀, leg. H. Özbek (on *Melilotus officinalis*); 03.09.1987, ♂, leg. R. Hayat; 11.07.2007, ♂, ♀, leg. J.S. Ascher, H. Özbek, J.G. Rozen (coll. AMNH); 16.07.2003, 2 ♀♀, leg. J.G. Rozen and H. Özbek; 41 km W of Erzurum, Aşkale civarı, 02.07.2007, 2 ♂♂, leg. J.S. Ascher, H. Özbek, J.G. Rozen (coll. AMNH); Pasinler, 26.07.1997, ♀, leg. H. Özbek. **Hakkâri:** Yüksekova, 15 km E, 2100–2200 m, 20.07.1986, ♂, ♀, leg. A.W. Ebmer. **Kayseri:** Develi, Bakırdağı, 1700 m, 06.07.1984, ♀, leg. A.W. Ebmer; 38°22'N 35°29'E, 1400 m, 02.05.1985, ♂, leg. Aspöck/Rausch. **Konya:** Güneysınır, Güragaç, 1020 m, 06.07.2000, 2 ♂♂, leg. M. Kesdek; Bozkır, Sarıoğlan, 1000 m, 25.07.2003, 2 ♂♂, leg. M. Kesdek; Eflatun pınarı, 37°51'N 31°37'E, 15.07.1998, 3 ♂♂, leg. C. Schmid-Egger. **Muğla:** Köyceyiz, 14.06.1987, ♂, leg. P.H. van Doesburg. **Nevşehir:** Avanos, Zelve, 1060 m, 17.07.1984, ♀, leg. A.W. Ebmer. **Niğde:** 2 km S, 1250, 04.08.1984, ♀, leg. A.W. Ebmer; Maden, Çiftahan, 1700–1800 m, 17.07.1990, ♂, leg. A.W. Ebmer; Göreme, 38°39'N 34°53'E, 17.07.1998, ♂, leg. C. Schmid-Egger. **Şanlıurfa:** Halfeti, 08.06.1983, ♂, leg. J. Schmidt. 890 m, 17.08.2005, ♂ (*M. officinalis*); Melekli, 925 m, 16.08.2005, ♂, leg. H. Özbek. **Isparta:** Eğirdir, 06.06.1986, ♀, leg. Kadlec/Vorisek; Yalvaç, Sultan Dağları, 38°18'N 31°09'E, 05.07.1993, 2 ♀♀, leg. Jirousek (coll. Schwarz/Ansfelden). **İzmir:** Selçuk, 17.06.1968, ♂, leg. Arde. **Konya:** Beyşehir, 13.06.1966, 2 ♂♂, leg. H.H.F. Hamann; Çumra, 1017 m, 13.08.2000, ♀, leg. M. Kesdek. **Mersin:** Silifke, Kızılkalesi, 09.05.1998, ♀, leg. N. Mohr. **Muğla:** Bodrum, Ağais, Salmakıs, 37°02'N 27°25'E, 13–25.07.2001, 7 ♂♂, 2 ♀♀, leg. F. Burger; Köyceğiz, 14.06.1987, ♂, leg. P.H. v Doesburg. **Nevşehir:** 2 km S, 1250 m, 04–19.07.1984, 2 ♂♂, 3 ♀♀, leg. A.W. Ebmer; Avanos 20 km N, 1200 m, 18.07.1984, ♂, leg. A.W. Ebmer; Çardak, Acıgöl, 38°33'N 34°47'E, 07.07.1993, 5 ♀♀, leg. Halada/Jirousek (coll. Schwarz/Ansfelden); Göreme, 38°39'N 34°52'E, 17.07.1998, ♂, ♀, leg. C. Schmid-Egger; Zelve, 1050 m, 17.07.1984, ♂, leg. A.W. Ebmer. **Niğde:** Karakışlakçı, 1240 m, 07.07.1995, ♂, ♀, leg. Y. Barbier (on *Euphorbia altissima*). **Şanlıurfa:** Halfeti, 400 m, 28.06.1987, ♀; 425 m, 07.08.1985, ♂, leg. R. Hensen. **Şırnak:** Beytüşşebap 19 km S, 1200 m, 37°24'N 43°12'E, 26.06.1985, 26.06.1985, ♀, leg. M. Schwarz (coll. Schwarz/Ansfelden).

Remarks: Eleven provinces are to be added to the distribution area of *H. scutellatus*. The species occurs at altitudes between sea level (Antalya, Edirne, İzmir) and 2000 m altitude (Erzurum). In general, it is a common species in both warmer and cooler regions, but more abundant in warmer regions. With the exception of the Black Sea region, it is reported from all geographical regions of Turkey. The flight period extends from May to the mid October. This long period indicates that it may have more than one generation. Flower visits are recorded at *Daucus carota*, *Eryngium* sp., *Euphorbia altissima*, *Melilotus officinalis* and *Mentha longifolia*. It is frequently observed in Turkey (19 provinces).

Distribution: Eastern Mediterranean, Caucasus, Azerbaijan, Syria, Iran. Turkey: Ankara, Denizli, Hatay, İzmir, Konya, Mersin, Osmaniye, Şanlıurfa (WARNCKE 1972); Adıyaman, Antalya, Edirne, Erzurum, Hakkâri, Iğdır, Isparta, Muğla, Nevşehir, Niğde, Şırnak.

Hylaeus (Lambdopsis) tephronotus (WARNCKE, 1992)

Fig. 11

Prosopis (Lambdopsis) tephronota WARNCKE, 1992: 782–783, ♀. Turkey: Hakkâri.

Hylaeus (Lambdopsis) tephronotus (WARNCKE, 1992) – ITIS (2020).

Remarks: *H. tephronotus* is still exclusively known only from the nine females of the original type series; the male is unknown. The epithet is derived from τέφρα (Greek) and means “ash grey back”, as for example are back and wing covers of the Persian Nuthatch (*Sitta tephronota*). The bee species in question is completely black. (Of course, scientific names do not necessarily have to agree with the facts.) *Hylaeus tephronotus* is clearly smaller than *H. dilatatus*, and resembles *H. pfankuchi* not only because of missing side spots. Different appears to be the clear dense fine punctuation of the metasomal terga. A peculiarity is the strikingly long bristles on the lower part of the clypeus. *H. tephronotus* has been recorded as a mountain species from few sites (Hakkâri, 1700–3000 m), flying early in August. It is apparently a species of limited distribution, found only in Turkey. It is rarely recorded in Turkey (1 province, Fig. 17.8).

Distribution: Turkey: Hakkâri.

Subgenus *Nesoprosopis* PERKINS, 1899

Hylaeus (Nesoprosopis) pectoralis FÖRSTER, 1871

Hylaeus pectoralis FÖRSTER, 1871: 972–973, ♀. loc. typ. unknown [Germany or France].

Hylaeus (Nesoprosopis) pectoralis FÖRSTER, 1871 – PROSHCHALYKIN & DATHE, 2012: 23.

Material examined: **Erzurum:** Oltu, Çamlıbel, 22 km WSW of Oltu, 1700 m, 40°28N 41°47E, 23.06.2001, ♂; 02.07.2001, ♀; 30.07.2003, ♀, leg. J.G. Rozen, H. Özbek (coll. AMNH). **Muğla:** Köyceğiz, 10.06.1987, ♂, leg. P. H. v. Doesburg.

Remarks: *H. pectoralis* is recorded in Turkey for the first time. The species is well known as a user of vacated galls of the chloropid fly *Lipara lucens* MEIGEN in reed stems (*Phragmites australis*). It nests in the abandoned galls and is therefore confined to wetlands with stands of reeds. The collecting site in Erzurum is a narrow valley containing pastureland, through which a stream flows, a branch of the river Çoruh, beside which are small *Phragmites* patches.

In agreement with the general situation for this species, *H. pectoralis* shows a limited, disjunctive distribution in Turkey. Hitherto, *H. pectoralis* has been found at four places in Erzurum and Muğla only. It is rarely recorded in Turkey (2 provinces, Figs 16.7, 17.IV).

Distribution: Transpalaeartic from the Pyrenees to Japan, but because of its specific ecological requirements only locally recorded. Turkey: Erzurum and Muğla. **New to the Turkish fauna.**

Subgenus *Paraprosopis* POPOV, 1939

Hylaeus (Paraprosopis) clypearis (SCHENCK, 1853)

Prosopis clypearis SCHENCK, 1853: 217, ♂. Germany: Nassau.

Hylaeus (Paraprosopis) clypearis (SCHENCK, 1853) – ALIEV 1986: 265.

Material examined: **Bursa:** 225 m, 24.08.1985, 2 ♂♂, 3 ♀♀, leg. R. Hensen; Çağlayan, 10–14.07.1997, 2 ♀♀, leg. Prudek/Riha; Mudanya, 25 m, 25.08.1985, ♂, ♀, leg. R. Hensen. **İstanbul:** Boğaz (Bosfor), ?, ♂, leg. Hed. 32 (coll. RM Stockholm); Üsküdar, Anadolukavağı, 30 m, 15.07.1987, 3 ♂♂, ♀, leg. P. van Ooijen. **Yalova:** Çiftlik, 50 m, 31.07.1986, ♂, leg. P. van Ooijen; Termal, 30 m, 28.08.1985, ♀, leg. R. Hensen.

Remarks: According to ASCHER & PICKERING (2019), *H. clypearis* is present in Turkey, but we could not identify the localities. Here we present data only from the Marmara region, to which the occurrence of *H. clypearis* is apparently restricted. The species is particularly abundant throughout the Mediterranean. It is collected only sparsely in Turkey (3 provinces).

Distribution: Western Palaearctic including North Africa. Turkey: Bursa, Yalova and İstanbul.



Fig. 11: *H. (Lambdopsis) tephronotus* (WARNCKE, 1992). Holotype female: a–face, b–mesonotum, c–mesopleuron, d–propodeum and metasoma. – Scale bar 0.5 mm.

Hylaeus (Paraprosopis) decaocto (WARNCKE, 1992)

Fig. 12

Prosopis (Paraprosopis) decaocto WARNCKE, 1992: 780–781, ♀.

Turkey: Hakkâri, Vargös.

Hylaeus (Paraprosopis) socheri DATHE, 2010: 61–63, 78. – syn. nov.

Hylaeus (Paraprosopis) decaocto (WARNCKE, 1992) – comb. nov.

Remarks: In *H. decaocto*, the yellow markings of the head (Fig. 12a,e) are amazingly similar to those of *H. xanthopoda*, but on the mesosoma, also scutellum and postscutellum are yellow. In contrast to *H. xanthopoda*, the integument of *H. decaocto* has distinct and very dense punctation, and the propodeum is rounded and without ridges. DATHE (2010) described the male and two females as *H. (Paraprosopis) socheri* from Iran, Province Yazd, at 2600–2900 m altitude.

The name “decaocta” (Greek δεκαοκτώ = eighteen) was coined without obvious relation to characters of this

species: six yellow spots are present on the head, seven on the thorax, for example. As can be seen from the habitual usage of the author, Warncke explicitly applied this Greek numeral as latinized feminine adjective. According to the Latin grammar, numbers are adjectives which are dependent on the noun in declination and gender, so that Art. 31.2. of the ICZN applies.

H. decaocto was described on the basis of one female each from Hakkâri (1650 m, holotype) and Konya (1800 m). Since these sites are far away from each other, a wider distribution can be assumed, but possibly limited to the high mountain ranges. It is rarely collected in Turkey (2 provinces, Fig. 17.VI).

Distribution: Turkey: Hakkâri, Konya. Iran: Yazd province.

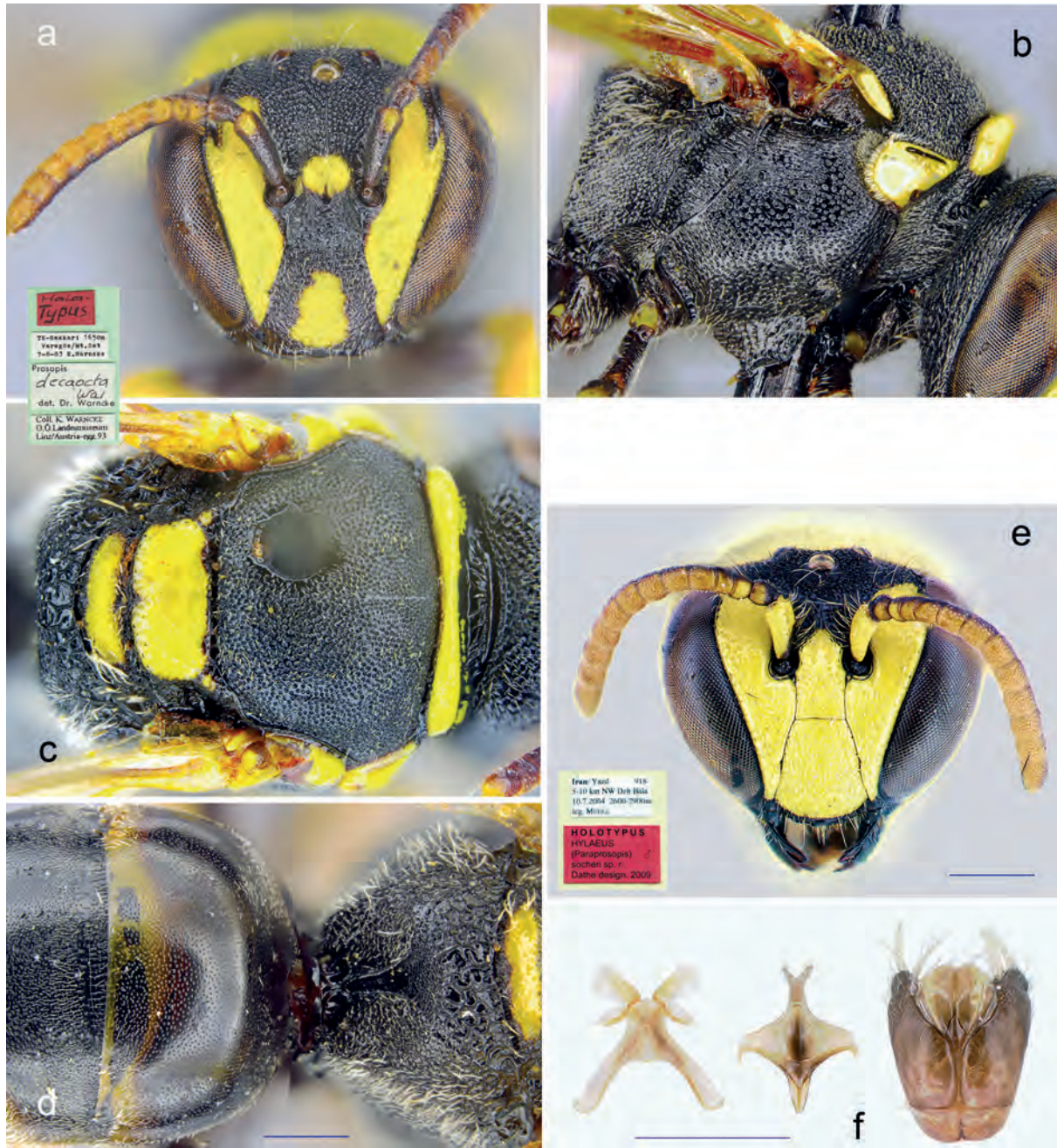


Fig. 12: *H. (Paraprosopis) decaocto* (WARNCKE, 1992). Holotype female: a–face, b–mesopleuron, c–mesonotum, d–propodeum and metasoma. Male (holotype of *H. socheri* Dathe): e–face, f–terminalia. – Scale bar 0.5 mm.

Hylaeus (Paraprosopis) lineolatus (SCHENCK, 1861)

Prosopis lineolata SCHENCK, 1861: 313, 323, ♂. Germany: Nassau.

Prosopis (Paraprosopis) lineolata SCHENCK, 1861 – WARNCKE 1972: 766; 1981: 188; 1992: 758.

Hylaeus (Paraprosopis) lineolatus (SCHENCK, 1861) – ALIEV 1986: 265.

Material examined: Adana: Pozanti, 06.07.1993, 2 ♂♂, ♀, leg. J. Hladil. Aksaray: Kapadokya, Güzelyurt, 38°15N 34°25E, 26.05.2001, ♂, leg. W.H. Liebig. Ankara:

Kızılcahamam, 02.06.1986, ♀, Kadlec/Vorisek. Antalya: 36°53N 30°43E, 01–31.07.1993, ♂, ♀, leg. A. Puchner (coll. Schwarz/Ansfelden); 33 km NW, 37°02N 30°23E, 23.07.1998, 6 ♂♂, 2 ♀♀, leg. C. Schmid-Egger (coll. E-G); 37°02N 30°23E, 23.07.1998, 6 ♂♂, 2 ♀♀, leg. C. Schmid-Egger; Akseki, 1200 m, 09.08.1983, 5 ♂♂, 4 ♀♀, leg. P. van Ooijen; Alanya, 20 km W, 20 m, 07.08.1985, 3 ♂♂, leg. P. van Ooijen; Elmalı, Beydağları, Zedern, 1650–1750 m, 04.07.1990, 2 ♂♂, ♀, leg. A.W. Ebmer; İbadi 6 km SE, 37°07N 31°65E, 450 m, 31.07.2009, 4 ♂♂, ♀, leg. C. Schmid-Egger; Güllük Dağı, 950 m, 36°59N 030°27E, 04.06.1998, ♂, ♀, leg. S.M. Blank; Terme-

24.05.2009, ♂, ♀, leg. J. Ascher, J.R. Rozen, H. Özbek (coll. AMNH); Gündoğmuş, 1090 m, 36°83N 32°05E, 02.08.2009, 3 ♂♂, leg. Schmid-Egger (coll. E-G); Kemer, 01.05.1996, 2 ♂♂, leg. Sieber; Termassos, 24.05.2009, 3 ♂♂, ♀, leg. J.S. Ascher, H. Özbek, J.G. Rozen (on *Vitex agnus-castus*) (coll. AMNH); Akseki, Cevizli, 03.07.1996, ♀, leg. Brechtel/Ehrmann. **Artvin:** Borçka, Ferhatlı, 21.V.2002, ♂, leg. J.G. Rozen, H. Özbek; Yusufeli, 700–900 m, 15–17.07.1995, ♂, 7 ♀♀, leg. Gelbrecht; Sarıgöl, Kaçkar dağları, 1000 m, 17.07.1995, ♂, leg. Gelbrecht/Schwa. **Balıkesir:** Piribeyler, 39°38N 28°47E, 02.08.1988, ♂, leg. Madl (coll. Schwarz/Ansfelden). **Bilecik:** Osmaneli, 27.06.1983, 2 ♂♂, ♀, leg. J. Hladil. **Bingöl:** 5 km E, 30.05.2002, ♀, leg. H. Özbek; Genç, 1000 m, 12.08.1985, ♀, leg. R. Hensen; Karlıova, Çobançantası, 1455 m, 10.08.2004, 2 ♀♀, leg. S. Çoruh. **Bitlis:** Ahlat, 1750 m, 15.08.1985, ♂, 2 ♀♀, R. Hensen; Tatvan, 1750 m, 16.08.1985, ♂, leg. R. Hensen. **Burdur:** 01.08.1998, ♂, ♀, I. Brunk; Çeltikçi, 02.09.1983, ♂, 2 ♀♀, leg. J. Timmer. **Bursa:** 225 m, 24.08.1985, 2 ♂♂, leg. R. Hensen; Armutlu, 50 m, 27.07.1986, ♂, leg. P. van Ooijen; Orhaneli, 39°54N 28°59E, 02.08.1988, ♀, leg. Madl (coll. Schwarz/Ansfelden). **Çorum:** Osmancık, 900 m, 14.07.1985, ♀, leg. R. Hensen. **Diyarbakır:** Karakay 41°46N 36°31E, 21.05.2007, ♀, leg. W.H. Liebig. **Edirne:** Keşan, Mecidiye, 50 m, 22.07.2003, 2 ♀♀, leg. Ö. Çalmaşur. **Erzurum:** Oltu, Başaklı, 1700 m, 03.07.2001, ♀, ♂, leg. J.G. Rozen, H. Özbek; 24 km SW of Oltu, Başaklı, Ahırtap, 1550 m, 09.07.2007, 2 ♀♀, leg. J.S. Ascher, H. Özbek & J.G. Rozen; Subatik, 1300 m, 13.08.2004, 2 ♂♂; 30.08.2003, 7 ♂♂, 6 ♀♀, leg. H. Özbek (on *Melilotus officinalis*); Tortum, Yeşilyurt, 2100 m, 30.08.2003, ♀, leg. H. Özbek (on *Eryngium creticum*). **Eskişehir:** Sakari, Ilıca, Gümele, 06.07.1997, ♂, leg. Prudek/Riha. **Gümüşhane:** Torul, 1000 m, 40°34N 39°17E, 12.07.1985, ♂, ♀, leg. M. Schwarz (coll. Schwarz/Ansfelden). **Hakkâri:** Varagöz, 1750 m, 37°25N 44°13E, 06.08.1986, 2 ♀♀, leg. S.M. Blank. **Hatay:** Samandağı, 06.07.1996, ♂, 5 ♀♀, leg. Brechtel/Ehrmann; Yeditepe, Yayladağı, 35°58N 36°01E, 23.05.1987, ♂, leg. Madl (coll. Schwarz/Ansfelden); İskenderun, Belen, 28.08.1983, ♂, leg. J. Timmer. **Isparta:** Yalvaş, Sultan Dağları, 38°18N 31°09E, 05.07.1993, ♂, 2 ♀♀, leg. Jirousek (coll. Schwarz/Ansfelden). **İzmir:** Ödemiş, 1000 m, 38°22N 27°58E, 14.06.1985, ♂, leg. Rausch. **Kahramanmaraş:** Alikayası Geçidi, 600 m, 09.07.1990, 2 ♂♂, leg. A.W. Ebmer; Göksun, 1400 m, 26.06.1987, ♀, R. Hensen. **Kayseri:** Develi, Baakırdağ, Gezbeli Geçidi, 1700–1900 m, 06.07.1984, ♂, ♀, leg. A.W. Ebmer; **Yeşilhisar:** Araplı Geçidi, 1500 m, 38°15N 35°07E, 03.06.1985, ♂, leg. Aspöck, Rausch. **Konya:** 25 km N, 11.06.1966, ♂, ♀, leg. HHF Hamann; Beyşehir, 1150 m, 18.06.1987, ♂, leg. R. Hensen; Bozkır, Sarioğlan, 1000 m, 25.07.2003,

2 ♀♀, leg. M. Kesdek; Seydişehir, 03.07.1996, ♀, leg. Brechtel/Ehrmann. **Kütahya:** Sobran, Porsuk Barajı, 39°40N 30°10E, 08.07.1993, 4 ♀♀, leg. Jirousek (coll. Schwarz/Ansfelden). **Malatya:** Doğanşehir, Reşadiye Geçidi, 12.07.1990, 1500 m, ♂, leg. A.W. Ebmer. **Mardin:** 1000 m, 02.07.1987, ♂, leg. R. Hensen. **Mersin:** Mut, Sertavul Geçidi, 1550 m, 08.07.1990, 2 ♂♂, leg. A.W. Ebmer; Silifke, Uzuncaburç, 400 m, 02.08.1985, ♂, leg. R. Hensen; Kargıcan, 200 m, 04.08.1985, ♀, leg. R. Hensen. **Muğla:** Bodrum, Salmakız, 37°02N 27°25E, 13–25.07.2001, 4 ♂♂, 4 ♀♀, leg. F. Burger; Köyceğiz, 50 m, 06.05.1998, 2 ♂♂, leg. G. Tozlu; Marmaris, Milas, 37°18N 27°57E, 13.07.1990, 3 ♂♂, leg. C. Schmid-Egger; Fethiye, Ölüdeniz, 50 m, 25.07.1986, 12 ♀♀, leg. P. van Ooijen. **Muş:** Buğlan Geçidi, 1650 m, 08.07.1984, ♀, leg. A.W. Ebmer. **Nevşehir:** Ürgüp, Topuzdağı Geçidi, 1300 m, 17.07.1984, ♂, leg. A.W. Ebmer; Avanos, 38°46N 34°54E, 25.05.2001, ♂, leg. W.H. Liebig. **Niğde:** Karakışlacı, 1240 m, 07.07.1995, ♀, leg. Y. Barbier (on *Euphorbia altissima*). **Sivas:** Gürün, Şuğul Vadisi, 1400 m, 13.07.1990, 2 ♀♀, leg. A.W. Ebmer. **Şanlıurfa:** Halfeti, 400 m, 28.06.1987, ♂, leg. R. Hensen. **Şırnak:** Betüşşebap 20 km S, 1200 m, 37°24N 43°12E, 26.06.1985, ♂, ♀, leg. M. Schwarz (coll. Schwarz/Ansfelden). **Van:** 38°30N 43°24E, 28.06.1993, ♂, leg. M. Halada (coll. Schwarz/Ansfelden). **Yalova:** Termal, 30 m, 28.08.1985, ♂, leg. R. Hensen. **Yozgat:** Boğazlıyan, 39°15N 35°12E, 07.05.2002, ♀, leg. W.H. Liebig.

Remarks: With a further thirty provinces, our knowledge of the distribution area of *H. lineolatus* is significantly enlarged. The available records show that the species is one of the most abundant and widespread in Turkey from sea level to 2100 m altitude; it lives in various biotopes, mostly in open areas. The flight season extends from the beginning of May to the end of August, with a peak in July. *Eryngium creticum*, *Euphorbia altissima*, *Melilotus officinalis* and *Vitex agnus-castus* have been observed as food plants. It is frequently recorded in Turkey (41 provinces).

Distribution: Western Palaearctic. In Turkey: Adana, Ankara, Çanakkale, Denizli, Erzurum, Hatay, İzmir, Konya, Kütahya, Mersin, Osmaniye (WARNCKE 1972); Aksaray, Antalya, Artvin, Balıkesir, Bilecik, Bingöl, Bitlis, Burdur, Bursa, Çorum, Diyarbakır, Edirne, Eskişehir, Gümüşhane, Hakkâri, Isparta, Kahramanmaraş, Kayseri, Malatya, Mardin, Muğla, Muş, Nevşehir, Niğde, Şanlıurfa, Şırnak, Sivas, Van, Yalova, Yozgat.

Hylaeus (Paraprosopis) pictipes NYLANDER, 1852

Hylaeus pictipes NYLANDER, 1852: 95–97, ♀. South Sweden.

Prosopis (Paraprosopis) pictipes pictipes (NYLANDER, 1852) – WARNCKE 1972: 749.

Hylaeus (Paraprosopis) pictipes NYLANDER, 1852.

Material examined: **Erzurum:** Oltu, Başaklı, 1700 m, 12.08.1979, ♂, leg. H. Özbek; 01.08.1977, ♂, leg. H. Özbek; Palandöken, 2300 m, 16.08.1987, ♀, leg. H. Özbek (on *Eryngium* sp.). **Sinop:** 17.07.1979, ♀, leg. H. Özbek (*Onopordum* sp.).

Remarks: The provinces Erzurum and Sinop are added to the distribution lists of *H. pictipes*. All available distribution data, including those listed here, must be further verified. The data of WARNCKE (1972 ff.) mix the actual species *H. pictipes* with a number of different taxa, especially with *H. taeniolatus*. The latter species is widespread and very common throughout the Mediterranean. *H. pictipes* is collected sparsely in Turkey (7 provinces).

Distribution: Northern parts of Europe east to Ukraine. Introduced to North America. In Turkey: Antalya, Bursa, Hatay, Mersin, Tokat (WARNCKE 1972); Erzurum, Sinop.

Hylaeus (Paraprosopis) sinuatus (SCHENCK, 1853)

Prosopis sinuata SCHENCK, 1853: 216, ♂ (nec ♀). Germany: Nassau.

Hylaeus (Paraprosopis) sinuatus (SCHENCK, 1853) – ALIEV 1986: 265.

Material examined: **Aksaray:** Sivrihisar Geçidi, 1800 m, 38°16'N 34°19'E, 03.07.1984, ♀, leg. A.W. Ebmer. **Artvin:** Borçka, Ferhatlı, 800 m, 21.05.2002, ♂, leg. J.G. Rozen, H. Özbek; Murgul, Damar, 01.07.1997, 3 ♂♂, ♀, leg. Brudek/Riha. **Bursa:** Mudanya, 25 m, 25.08.1985, ♂, 4 ♀♀, leg. R. Hensen. **Erzurum:** 1900 m, 13.07.2004, ♂, leg. H. Özbek; Atatürk University research field 6 nolu kuyu, 20.06.1976, ♀, leg. H. Özbek (on *Onobrychis viciifolia*); 12.08.1970, ♂ leg. H. Özbek (on *Melilotus officinalis*); 01.06.1974, ♂, leg. H. Özbek (on *Salix* sp.); Çat yolu, DSI Göleti, 39°47'N 41°09'E, 09.07.2004, ♂, leg. H. Özbek, J.G. Rozen; Oltu, Başaklı, 1600 m, 12.08.1979, ♀, 3 ♂♂, leg. H. Özbek (on *Daucus carota*); Başaklı, 1500 m, 39°14'N 41°48'E, 03.07.2001, 4 ♀♀, 3 ♂♂, leg. H. Özbek, J.G. Rozen; Başaklı, Ahırtap, 09.07.2007, 2 ♂♂, leg. J.S. Ascher, H. Özbek, J.G. Rozen; Pasinler, Demirdöven Barajı, 1800 m, 01.07.2007, ♂, leg. J.S. Ascher, H. Özbek, J.G. Rozen; Tortum, 1700 m, 16.07.1987, 3 ♀♀, leg. R. Hensen. **Hakkâri:** Yüksekova 15 km E, 2100–2200 m, 20.07.1986, 2 ♀♀, leg. A.W. Ebmer. **Mersin:** Mut, Dereköyü, 02.09.1987, 2 ♂♂, leg. H. Özbek (on *D. carota*). **Nevşehir:** Ürgüp, Topuzdağı geçidi, 1300 m, 17.07.1984, ♂, ♀, leg. A.W. Ebmer. **Sivas:** Gürün, 1200 m, 24.07.1986, ♀, leg. S.M. Blank.

Remarks: Six provinces can be added here to the known distribution records of *H. sinuatus*. In determining this species, attention must be paid to possible confusion with *H. soror*. *H. sinuatus* is a common species found both in warmer (Bursa, Mersin) and cooler regions (Erzurum, Hakkâri). The flight period is from May to the end of August. Visits were observed to flowers of *Daucus carota*, *Melilotus officinalis*, *Onobrychis viciifolia* and *Salix* sp. The species is frequently recorded in Turkey (20 provinces).

Distribution: All of Europe, Russia, Azerbaijan, Georgia, Cyprus, Iran. Turkey: Amasya, Ankara, Balıkesir, Bilecik, Bursa, Denizli, Hatay, İstanbul, Konya, Kütahya, Mardin, Nevşehir, Şanlıurfa (WARNCKE 1972); Kars (ÖZBEK 1977); Aksaray, Artvin, Erzurum, Hakkâri, Mersin and Sivas.

Hylaeus (Paraprosopis) soror (PÉREZ, 1903)

Prosopis soror PÉREZ, 1903: 233, ♂. Italy: Sicily.

Prosopis (Paraprosopis) sinuata gribodoi VACHAL, 1895 – WARNCKE 1972: 751.

Hylaeus (Paraprosopis) soror (PÉREZ, 1903).

Material examined: **Adıyaman:** 20 km E Gölbaşı, 600 m, 37°44'N 37°55'E, 12.05.2002, ♂, leg. J.G. Rozen, H. Özbek (coll. AMNH); Nemrut Dağı, Karadut, 37°56'N 38°47'E, 02.07.1993, ♂, leg. M. Halada (coll. Schwarz/Ansfelden). **Ağrı:** 1700 m, 39°44'N 43°03', 27.06.1993, 36 ♂♂, 4 ♀♀, leg. M. Halada (coll. Schwarz/Ansfelden); Eleşkirt, 2200 m, 14.07.1987, ♀, leg. R. Hensen. **Aksaray:** Ihlara, 38°14'N 34°18'E, 18.07.1998, ♂, leg. C. Schmid-Egger. **Ankara:** 10.06.1973, ♂, leg. Warncke/RMS (coll. RM Stockholm). **Antalya:** Gündoğmuş, Gelesandra 1500 m, 36°83'N 32°05'E, 02.08.2009, ♀, leg. C. Schmid-Egger; Akseki, 1200 m, 09.08.1985, 4 ♂♂, leg. P. van Ooijen. **Bingöl:** Genç, 1500 m, 12.08.1985, 3 ♂♂, leg. R. Hensen; Genç 15 km S, 1400 m, 13.08.1985, ♂ ♀, leg. R. Hensen. **Burdur:** Çeltikçi, 02.09.1983, 4 ♂♂, leg. J. Timmer. **Bursa:** 225 m, 24.08.1985, 2 ♂♂, leg. R. Hensen; Kurşunlu, 15.07.1997, ♂, leg. Prudek/Riha. **Diyarbakır:** Çınar, 850 m, 10.08.1985, 10 ♂♂, leg. R. Hensen. **Erzurum:** Horasan, Aras Vadisi, 1650 m, 16.06.1973, ♂, ♀, leg. Warncke/RMS (coll. RM Stockholm); Oltu, Başaklı, 18 km WSW of Oltu, 1500 m, 29°14'N 41°48'E, 27.06.2001, ♀, leg. J.G. Rozen, H. Özbek (coll. AMNH); Çamlıbel, 1600 m, 26.07.2000, ♂; İnanmış, 1700 m, 26.07.2000, ♂ (on *Marrubium parviflorum*); Subatik, 1300 m, 13.08.2004, ♂, leg. H. Özbek. **Hakkâri:** Yüksekova 15 km E, 2100–2200 m, 20.07.1986, ♂, 2 ♀♀, 20 km E, 23.07.1986, ♂, 4 ♀♀, leg. A.W. Ebmer. **Kahramanmaraş:** Göksun, Salyan-Ahmetçik arası, 10.07.1990, ♂, leg. A.W. Ebmer; Göksun, 1400 m, 26.06.1987, 4 ♂♂, leg. R. Hensen. **Kars:** Sarıkamış, Karakurt, TCK Çeşmesi, 1501 m, 40°08'N 42°21' E, 09.07.2003, ♀, leg. H. Özbek; Akkurt, Çeşme Üzeri, 1550 m, 19.06.2004, 2 ♀♀, leg. H. Özbek. **Kayseri:** Develi, Bakırdağı, 1700 m, 06.07.1984, 2 ♂♂, leg. A.W. Ebmer. **Kırşehir:** Kulpak, 38°27'N 34°14'E, 28.05.2001, ♂, leg. W.H. Liebig. **Konya:** Bozkır, Sarıoğlan, 1000 m, 25.07.2003, 5 ♀♀, leg. M. Kesdek; Güneysınır, Karagüney, 03.09.2000, ♂, leg. Kesdek. **Kütahya:** Sobran, Porsuk Barajı, 39°40'N 30°10'E, 08.07.1993, 7 ♂♂, 2 ♀♀, leg. Jirousek (coll. Schwarz/Ansfelden). **Malatya:** Karahan Geçidi, 1800 m, 07.07.1984, ♀, leg. A.W. Ebmer. **Mardin:** 1000 m, 02.07.1987, 2 ♀♀, leg. Hensen; Midyat 1000 m, 03.07.1987, ♂, 4 ♀♀, leg. Hensen; 37°25'N 41°22'E, 25.05.1983, 3 ♀♀, leg. W. Schacht (coll. Schwarz/

Ansfelden). **Mersin:** Haspınarı, 1640 m, 04.07.1995, ♂, leg. Y. Barbier (on *Euphorbia kotschyana*). **Muğla:** Bodrum, Salmakis, 37°02'N 27°25'E, 21–25.07.2001, ♂, leg. F. Burger (on *Polygonum* sp.); Karaova E, 25.07.2002, 2 ♂♂, leg. E. Kwast; **Nevşehir:** Acıgöl, Çardak, 38°33'N 34°47'E, 07.07.1993, 3 ♂♂, M. Halada; **Avanos,** Zilve, 1050 m, 18.08.1984, ♀, leg. A.W. Ebmer; 1000 m, 22.06.1987, ♂, leg. Hensen; **Kaymaklı,** 1200 m, 23.06.1987, 2 ♂♂, leg. Hensen; **Ürgüp,** 1100 m, 11.08.1985, 2 ♂♂, leg. P. van Ooijen. **Niğde:** Karakışlakçı, 1240 m, 07.07.1995, ♀, leg. Y. Barbier (on *Euphorbia altissima*). **Şırnak:** Betüşşebap 20 km S, 1200 m, 37°24'N 43°12'E, 26.06.1985, ♂, ♀, leg. M. Schwarz. **Tunceli:** 960 m, 13.06.1973, ♀, leg. Warncke/RMS (coll. RM Stockholm). **Uşak:** Sivaslı, 830 m, 38°37'N 29°35'E, 21.05.1983, ♂, ♀, leg. H. Hüttinger. **Van:** 10 km S, 2200 m, 18.07.1986, ♀, A.W. Ebmer; **Merkez,** 38°30'N 43°24'E, 26.06.1993, ♀, leg. M. Halada. **Yalova:** Çiftlik, 50 m, 31.07.1986, 2 ♂♂, ♀, leg. J. Ooijen.

Remarks: *H. soror* is recorded almost throughout the country, preferring areas with a continental climate at altitudes from 600 m to 2200 m (Hakkâri). It can be considered as an inhabitant of warm and dry habitat types living in steppes and open areas, sometimes even in cool and mountainous environments. The flight season extends from late May to early September with a peak in July. Flower visits were observed at *Euphorbia altissima*, *Marrubium parviflorum* and *Polygonum* sp. It is frequently collected in Turkey (28 provinces).

Distribution: Western Palaearctic. Turkey: Adıyaman, Ağrı, Aksaray, Ankara, Antalya, Bingöl, Burdur, Bursa, Diyarbakır, Erzurum, Hakkâri, Kahramanmaraş, Kars, Kayseri, Kırşehir, Konya, Kütahya, Malatya, Mardin, Mersin, Muğla, Nevşehir, Niğde, Şırnak, Tunceli, Uşak, Van, Yalova.

The papers by WARNCKE (1972 ff.) provide no information, because he treated this species as a synonym of *H. sinuatus*.

Hylaeus (Paraprosopis) styriacus FÖRSTER, 1871

Hylaeus styriacus FÖRSTER, 1871: 1062–1064 ♂. Austria: Steiermark.

Prosopis (Nesoprosopis) styriaca (FÖRSTER, 1871) – WARNCKE 1972: 765.

Hylaeus (Paraprosopis) styriacus FÖRSTER, 1871 – ALIEV 1986: 265.

Prosopis (Paraprosopis) styriaca crecca WARNCKE, 1992: 776–777, ♀♂. Turkey – syn. nov.

Material examined: **Ağrı:** 1700 m, 39°44'N 43°03'E, 27.06.1993, ♂, leg. Jirousek (coll. Schwarz/Ansfelden); Eleşkirt, 30 km W, 2200 m, 14.07.1987, ♂, leg. R. Hensen. **Antalya:** Altıkaya, Köprülü Milli Parrkı, 954 m, 37°13'N 31°07'E, 13.06.2002, ♂, leg. G. Degen (coll. S.-E.); Güllük Dağı, WNW 25 km Antalya, 950 m, 36°59'N 030°27'E,

04.06.1998, ♂, leg. S.M. Blank. **Hakkâri:** Varagöz, 37°25'N 44°13'E, 1650 m, 02.08.1986, ♂, leg. S.M. Blank. **Mersin:** Erdemli 20 km NW, 900 m, 05.07.1996, ♀, leg. Tyrner/Vorisek. **Nevşehir:** Ürgüp, Topuzdağı geçidi, 1300 m, 17.07.1984, ♂, leg. A.W. Ebmer.

Remarks: Three provinces are added to the recorded distribution of *H. styriacus*. The region of Eastern Anatolia is newly added. The species is sporadically distributed. It lives in the Mediterranean area at 900–2200 m altitude and can be considered to be a mountain species. The flight period is from June to August. It is collected only sparsely in Turkey (6 provinces).

Distribution: Europe, concentrated in the eastern area; western Asia including Armenia, Azerbaijan, Lebanon and Iran. In Turkey: Kastamonu, Mersin (WARNCKE 1972); Antalya, Mersin (as *Prosopis styriaca crecca* WARNCKE, 1992); Ağrı, Hakkâri, Nevşehir.

Hylaeus (Paraprosopis) taeniolatus FÖRSTER, 1871

Hylaeus taeniolatus FÖRSTER, 1871: 1068–1069, ♀. Italy: Sicily.

Prosopis (Paraprosopis) pictipes pictipes (NYLANDER, 1852) – WARNCKE 1972: 749; 1992: 756.

Hylaeus (Paraprosopis) diplonymus (SCHULZ, 1906) – DATHE 1980: 248.

Hylaeus (Paraprosopis) taeniolatus FÖRSTER, 1871.

Material examined: **Adana:** Aladağ, 780 m, 02.07.1995, ♀, leg. Y. Barbier (on *Hippomarathrum microcarpum*) (coll. Schwarz/Ansfelden). **Antalya:** WNW 25 km, Güllük Dağı, 950 m, 36°59'N 030°27'E, 04.06.1998, 2 ♂♂, ♀, leg. S.M. Blank; Arapsuyu, Azmak, 5 m, 20.06.2002, 2 ♂♂, 3 ♀♀; 5 m, 30.06.2002, ♂, ♀, 10 m, 24.09.2004, ♂, ♀, leg. H. Özbek (*Mentha longifolia*); Kemer, 7 km W, Ovacık Köyü, Kesme Boğazı, 130 m, 36°36'N 030°29'E, 05.06.1998, 15 ♀♀, leg. C. Kutzscher; 05.06.1998, 18 ♂♂, 2 ♀♀, leg. S.M. Blank (on *Paliurus spina christi*); 36°36'N 030°29'E, ♂, ♀, leg. Lange/Ziegler; Konyaaltı Beach, 3 m, 29.05.2009, 2 ♂♂, ♀, leg. J.S. Ascher, H. Özbek, J.G. Rozen (coll. AMNH); Termessos, 24.V.2009, 5 ♂♂, leg. J.S. Ascher, H. Özbek (coll. AMNH). **Bitlis:** Nemrut Dağı, 2000 m, 16.08.1998, ♂, leg. M. Halada/ZSSM. **Bursa:** Kurşunlu, 15.07.1997, ♂, ♀, leg. Prudek/Richa. **Hakkâri:** Oramar 10 km E, 1700 m, 29.06.1985, ♀, leg. M. Schwarz (coll. Schwarz/Ansfelden); **Hatay:** Samandağı 30 km N, Nur dağları, 06.07.1996, 4 ♀♀, leg. Brechtel/Ehrmann; 10 km E, Asi Nehri, 05.07.1998, 3 ♀♀, leg. T. Osten. **Mersin:** Silifke, 36°22'N 33°56'E, 04.07.1993, 3 ♂♂, leg. M. Halada (coll. Schwarz/Ansfelden). **Muğla:** Bodrum 15 km SW, 37°02'N 27°25'E, 23.07.2001, ♂, leg. F. Burger; Salmakis, 37°02'N 27°25'E, 16–17.07.2001, 3 ♂♂, leg. F. Burger (coll. Schwarz/Ansfelden).

Remarks: In general, the distribution of *H. taeniolatus* is limited to the coastal area of the Mediterranean

region from Hatay to Muğla. Interestingly it is also reported from the mountains of Bitlis and Hakkâri (up to 2000 m). The flight time is from May to the end of September. Recorded flower visits are at *Hippomarathrum microcarpum*, *Mentha longifolia*, *Paliurus spina christi*. It is collected moderately in Turkey (8 provinces).

Distribution: Western Palaearctic, mainly Mediterranean and Central Europe. In Turkey: Adana, Antalya, Bitlis, Bursa, Hakkâri, Hatay, Mersin, Muğla.

The papers by WARNCKE (1972 ff.) provide no information, because he treated this species as a synonym of *H. pictipes*.

Subgenus *Patagiata* BLÜTHGEN, 1949

Hylaeus (Patagiata) cervinus (WARNCKE, 1992)

Prosopis (Prosopis) cervina WARNCKE, 1992: 794–795, ♀ ♂.
Turkey: Horasan, Aras valley; Iran(?).

Hylaeus (Hylaeus) cervinus (WARNCKE, 1992) – DATHE 2000: 172–173.

Hylaeus (Patagiata) cervinus (WARNCKE, 1992) – ITIS (2020).

Remarks: WARNCKE (1992) described *H. cervinus* from Erzurum (loc. typ.) and Kars. Later DATHE (2000) redescribed this species and added another specimen from Adana. Despite years of intensive collecting, this species unfortunately could not be found again in these provinces, or anywhere else in the country. However, based on the few available data, it cannot be said whether the species is threatened or extinct. From Turkey, it is only sparsely known (3 provinces).

Distribution: Turkey: Adana, Erzurum, Kars (WARNCKE 1992; DATHE 2000: 172). The allocation of a single female from Iran to this taxon is questionable (WARNCKE 1992: 794).

Hylaeus (Patagiata) difformis (EVERSMANN, 1852)

Prosopis difformis EVERSMANN, 1852: 52, ♂ ♀. Russia: Orenburg Province.

Prosopis (Prosopis) difformis difformis EVERSMANN, 1852 – WARNCKE 1972: 756; 1992: 763.

Hylaeus (Hylaeus) difformis (EVERSMANN, 1852) – MICHENER 2007: 208; CHEN & XU 2009: 47.

Hylaeus (Patagiata) difformis (EVERSMANN, 1852) – ALIEV 1986: 267; PROSHCHALYKIN & DATHE 2012: 24.

Material examined: **Antalya:** Beydağları, Sineklibeli geçidi, 1550 m, 05.07.1990, ♀, leg. A.W. Ebmer. **Artvin:** Yusufeli, Kaçkar dağı, 1300 m, 16–19.07.1995, ♀, leg. Gelbrecht/Schwabe. **Erzurum:** Tortum, Kırmalı, 2500 m, 03.08.2004, 2 ♂ ♂, leg. S. Çoruh. **Hakkâri:** Varegöz, Sat

Mt, 37°25N 44°13E, 1700 m, 04–08.08.1985, 5 ♂ ♂, leg. W. Schacht (coll. Schwarz/Ansfielden).

Remarks: Although *H. difformis* has a large distribution area outside Turkey, it was previously only known from the province Mersin. In the present study it is newly recorded from four provinces, which also represent new records for the Black Sea and Eastern Anatolia regions. The species has a sporadic distribution and occurs from 1000 m to 2500 m. In Turkey it is collected only sparsely (5 provinces).

Distribution: Transpalaearctic, from the Iberian Peninsula to the Russian Far East. Turkey: Mersin (WARNCKE 1972); Antalya, Artvin, Erzurum, Hakkâri.

Subgenus *Prosopis* FABRICIUS, 1804

Hylaeus (Prosopis) confusus NYLANDER, 1852

Hylaeus confusus NYLANDER, 1852: 232, ♀ ♂. Europe.

Prosopis (Nesoprosopis) gibba confusa (NYLANDER, 1852) – WARNCKE 1972: 759–760; 1992: 748–750.

Hylaeus (Prosopis) confusus NYLANDER, 1852 – Aliev 1986: 262. STRAKA & BOGUSCH 2011: 52–61; DATHE & PROSHCHALYKIN 2017: 375; 2018: 71.

Material examined: **Ardahan:** Çamlıçatak, 2300 m, 10.08.1976, ♀, ♂, leg. H. Özbek (on *Carduus nutans*); Posof, Aşıkzülali, 1100 m, 25.07.2005, 2 ♂ ♂, ♀, leg. C. Güçlü. **Artvin:** Murgul, Damar, 01.07.1997, ♂, leg. Prudek, Riha. **Bolu:** lake env, 40°44N, 31°37E, 21.06.1993, ♀, leg. M. Halada. **Bursa:** National park, 40°07N 29°11E, 1700 m, 01.08.1988, ♀, leg. Madl. **Erzincan:** Refahiye, 8 km N, 1700 m, 14.07.1984, ♀, leg. A.W. Ebmer. **Erzurum:** Atatürk University research field, 2000 m, 05.09.1966, ♂, leg. H. Özbek (on *Onobrychis viciifolia*); İlica, Ağzıaçık geçidi, 2000 m, 19.07.2003, 2 ♀ ♀, leg. H. Özbek (on *Cephalaria procera*). **Rize:** İkizdere, Ovit Pass, 1500 m, 11.07.1985, ♀, leg. W. Schacht.

Remarks: *H. confusus* is widespread and often common. In the study by STRAKA & BOGUSCH (2011), some closely related species of a “*H. gibbus* group” were better defined, although the complete group was not covered. In Turkey *H. confusus* appears as a lower mountain species collected at 1100–2300 m altitude. Our findings support observations from Southern Europe, where *H. confusus* is to be found mainly in mountain regions. At present it is considered in Turkey to be sparsely collected (6 provinces).

Distribution: Transpalaearctic to Kuril Islands, including Central Asia, Mongolia, China, Japan (PROSHCHALYKIN & DATHE 2017); introduced to America (Costa Rica, Maryland). Turkey: Ardahan, Artvin, Bolu, Bursa, Erzincan, Rize.

Hylaeus (Prosopis) damascenus (MAGRETTI, 1890)

Prosopis damascena MAGRETTI, 1890: 537–538, ♀♂. Syria: Damascus.

Prosopis (Nesoprosopis) gibba damascena MAGRETTI, 1890 – WARNCKE 1972: 760; 1981: 185; 1985: 58; 1992: 750.

Hylaeus (Prosopis) damascenus (MAGRETTI, 1890) – ITIS (2020).

Remarks: *H. damascenus* is known from Syria, Lebanon, Iraq and Iran. The data for Turkey go back to WARNCKE (1981, 1985), who indicates this species for SE Turkey (1981: 185) or “southern border of Turkey” (1985: 59) respectively. More detailed collecting data were not provided. Up to now there have been no further findings, but the occurrence of the species in Turkey is likely.

Distribution: Syria, Lebanon, Iraq, Iran, Turkey.

Hylaeus (Prosopis) duckei (ALFKEN, 1905)

Prosopis duckei ALFKEN, 1904: 119, ♀♂. Italy: Trieste.

Prosopis (Nesoprosopis) duckei ALFKEN, 1904 – WARNCKE 1972: 765; 1992: 750.

Hylaeus (Prosopis) duckei (ALFKEN, 1905) – ALIEV 1986: 262.

Material examined: **Afyonkarahisar:** Şuhut, 1184 m, 23.05.2009, ♂, leg. J.G. Rozen, J.S. Ascher, H. Özbek. **Antalya:** Kocaaliler, Karacaören Barjı, 23.05.2009, ♂, leg. J.S. Ascher, H. Özbek, J.G. Rozen (coll. AMNH); Termassos, 37°02N 30°28E, 500 m, 25.05.1985, 2 ♀♀, leg. Rausch. **Hakkâri:** Yüksekova, Varegöz, Sat Dağı, 1700 m, 37°25N 44°13E, 04–08.08.1983, 3 ♀♀, leg. W. Schacht (coll. Schwarz/Ansfelden). **Mersin:** Balandiz, 36°20N 33°46E, 1000 m, 06.06.1985, ♂, Aspöck/Rausch. **Van:** Gevaş, Göllü, 1700 m, 38°43N 43°19E, 23.06.1993, 5 ♂♂, 5 ♀♀, leg. M. Halada (coll. Schwarz/Ansfelden).

Remarks: *H. duckei* is documented here from four further provinces. The species has a sporadic distribution and is moderately collected in Turkey (8 provinces). – We regard the taxon *Prosopis duckei stellata* WARNCKE, 1992 as a separate species (see below).

Distribution: Southern Europe and Turkey. In Turkey: Niğde (WARNCKE 1972); Afyonkarahisar, Antalya, Mersin, Van.

Hylaeus (Prosopis) excelsus (ALFKEN, 1935)

Prosopis excelsa ALFKEN, 1935: 23–24, ♀. Iran: Asherabad (Elburs).

Prosopis (Nesoprosopis) excelsa ALFKEN, 1931[!] – WARNCKE 1972: 763; 1992: 768.

Material examined: **Bingöl:** Genç, 1000 m, 12.08.1985, ♂, leg. R. Hansen. **Malatya:** Darende, 1000 m, 16.07.1986,

♂, leg. A.W. Ebmer. **Van:** 1800 m, 13.07.1987, ♀, leg. R. Hansen.

Remarks: *H. excelsus* has a small distribution network. From Turkey, three provinces are added to the distribution records. It is a montane species, which occurs at altitudes above 1000 m. The species is currently recorded from regions of Eastern and South-Eastern Anatolia. It is a sparsely collected species in Turkey (5 provinces).

Distribution: Armenia, Jordan, Iran, Syria; Turkey: Şanlıurfa, Hakkâri (WARNCKE 1972; 1981); Bingöl, Malatya, Van.

Hylaeus (Prosopis) gibbus SAUNDERS, 1850

Hylaeus (Prosopis) gibbus SAUNDERS, 1850: 59, ♀. Greece: Epirus.

Prosopis (Nesoprosopis) gibba gibba (SAUNDERS, 1850) – WARNCKE 1972: 759–760; 1992: 748–750.

Hylaeus (Prosopis) gibbus SAUNDERS, 1850 – ALIEV 1986: 261. STRAKA & BOGUSCH 2011: 61–63; DATHE & PROSHCHALYKIN 2018: 71.

Material examined: **Antalya:** Arapsuyu, 5 m, 30.06.2002, 2 ♂♂, 3 ♀♀, 15.10.2003, 2 ♂♂, 3 ♀♀, leg. H. Özbek (on *Mentha longifolia*); Alanya, Konaklı, 36°58N 31°89E, 01.08.2009, 6 ♂♂, 4 ♀♀, leg. C. Schmid-Egger. **Ardahan:** Çamlıçatak, 2200 m, 10.08.1976, ♀, leg. H. Özbek (on *Eryngium* sp.). **Artvin:** Yusufeli, İşhan, 700 m, 29.06.2003, 2 ♀♀, leg. H. Özbek (on *Sinapis arvensis*; Altıparmak, 1200–1700 m, ♂, ♀, leg. P. Hartmann; Kaçkar Dağı, 1700 m, 15.07.1995, 2 ♀♀, leg. Gelbrecht; Sarıgöl, 900 m, 16.07.1995, 2 ♂♂, leg. Gelbrecht; **Erzincan:** Avcılar, 1250 m, 04.08.2003, 4 ♂♂, leg. S. Çoruh (on *Daucus carota*). **Erzurum:** Atatürk University research field, 6 nolu kuyu, 1950 m, 30.07.1976, ♂ leg. Özbek (on *Medicago sativa*); İriağaç, 08.08.2000, 2 ♂♂, leg. H. Özbek; Tortum, Bağbaşı, 1600 m, 11.09.2001, ♂, ♀, leg. S. Çoruh; Uzundere, Balıklı, 1040 m, 29.06.2003, 2 ♀♀, leg. H. Özbek, S. Çoruh; Denizbaşı, 1000 m, 20.09.2000, 2 ♀♀, leg. H. Özbek. **Isparta:** Egirdir, Yukarı Gökdere, 1000 m, 25.05.2004, 2 ♂♂, leg. H. Özbek (on *Melilotus officinalis*). **İstanbul:** ? ♀, leg. Hed (coll. RM Stockholm). **Kars:** Sarıkamış, Karakurt, TCK Çeşmesi, 1501 m, 40°08N 42°21E, 05.08.2002 2 ♀♀, 14.08.2007, ♂, 16.08.2002, 2 ♂♂, 2 ♀♀, 19.08.2003, 2 ♀♀, leg. H. Özbek (on *Centaurea solstitialis*, *Daucus carota*). **Konya:** Çumra, 1016, 13.08.2000, ♂, leg. M. Kesdek. **Mersin:** Mut, Dereköyü, 02.09.1987, ♀, leg. H. Özbek. **Muğla:** Bodrum, 20.07.2002, ♂, leg. E. Kwast. **Nevşehir:** Avanos, 38°46N 34°54E, 25.05.2001, ♀, leg. W.H. Liebig. **Osmaniye:** Kadirli, Karatepe, 500 m, 14.05.2002, 2 ♀♀, leg. H. Özbek.

Remarks: *H. gibbus* is widespread throughout the country. Eight more provinces are added here. STRAKA &

BOGUSCH (2011) describe *H. gibbus* as a thermophilic Mediterranean species that occurs mainly in bushy, grassy, steppe or ruderal biotopes. In the present study, specimens were collected in various biotopes, but mostly in open landscapes, from 5 m to 2200 m altitude. Flowers visited: *Centaurea solstitialis*, *Eryngium* sp., *Medicago sativa*, *Melilotus officinalis*, *Mentha longifolia*, *Sinapis arvensis*. The flight season extends from the beginning of May to mid-October with a peak in July. It is frequently recorded in Turkey (21 provinces).

Distribution: Palaearctic. In Turkey: Adana, Aydın, Bilecik, Bursa, Denizli, Hatay, İstanbul, Konya, Kütahya, Muğla, Mersin, Nevşehir, Şanlıurfa (WARNCKE 1972); Antalya, Ardahan, Artvin, Erzincan, Erzurum, Isparta, Kars, Osmaniye.

Hylaeus (Prosopis) incongruus FÖRSTER, 1871

Hylaeus incongruus FÖRSTER, 1871: 998–999, ♂ ♀. Austria.
Prosopis (Nesoprosopis) gibba confusa (NYLANDER, 1852) – WARNCKE 1972: 759.
Hylaeus (Prosopis) incongruus FÖRSTER, 1871 – STRAKA & BOGUSCH 2011: 63–65; DATHE & PROSHCHALYKIN 2018: 71–72.

Material examined: Erzurum: Olur, Köprübaşı road side, 1000 m, 25.06.2001 ♂, ♀; Yeşilbağlar Central, 1200 m, 25.06.2001, ♀, leg. H. Özbek (on *Taraxacum* sp.); 25.06.2001, ♀, leg. J.G. Rozen (coll. AMNH), Oltu, Çamlıbel, 1600 m, 26.07.2000, ♂, ♀, leg. H. Özbek.

Remarks: STRAKA & BOGUSCH (2011) characterized *H. incongruus* as a thermotolerant species that normally occurs in sandy biotopes, both in dry and wetlands. The present study also confirms their claims, our specimens were taken from wetlands, meadows and pastures in a narrow valley basin between 1000–1600 m altitude. Interestingly, in Turkey this species seems to be confined to this valley located in the north-eastern part of Erzurum Province (Figs 16.8, 17.9). It is rarely recorded (1 province).

Distribution: Throughout Europe to Eastern Siberia (STRAKA & BOGUSCH 2011; PROSHCHALYKIN & DATHE 2012: 27). Turkey: Erzurum. **New to Turkey.**

Hylaeus (Prosopis) maculatus (ALFKEN, 1904)

Prosopis variegata var. *maculata* ALFKEN, 1904: 323, ♀ ♂. Algeria: Oran.
Prosopis (Nesoprosopis) variegata maculata ALFKEN, 1904 – WARNCKE 1972: 762; 1981: 186; 1985: 59; 1992: 752.
Hylaeus (Prosopis) maculatus (ALFKEN, 1904) – ITIS (2020).

Material examined: Gümüşhane: Torul, 1000 m, 12.07.1985, 40°34N 39°17E, 3 ♂ ♂, leg. M. Schwarz (coll. Schwarz/Ansfelden). **Siirt:** 10 km S, 37°51N 41°57E, 23.06.1985, ♀, leg. M. Schwarz (coll. Schwarz/Ansfelden).

Remarks: *H. maculatus* occurs in eastern Turkey in two provinces. The Discover Life database (ASCHER & PICKERING 2019) also lists the species for Turkey without giving any further details. It is rarely found in Turkey (2 provinces, Fig. 17.VIII).

Distribution: Jordan, Iran, Israel, Lebanon, Syria, Turkey, Egypt, Algeria (ASCHER & PICKERING 2019); Turkey: Gümüşhane, Siirt.

Hylaeus (Prosopis) meridionalis FÖRSTER, 1871

Hylaeus meridionalis FÖRSTER, 1871: 890, ♀ ♂. Galicia, Ukraine.
Prosopis effasciata ALFKEN, 1931: 178, ♀. Asia Minor: Tarsus.
Prosopis (Nesoprosopis) variegata meridionalis (FÖRSTER, 1871) – WARNCKE 1972: 762; 1981: 186; 1992: 751.
Hylaeus (Prosopis) meridionalis FÖRSTER, 1871 – ALIEV 1986: 263. DATHE & PROSHCHALYKIN 2018: 72.

Material examined: Adana: Pozantı, 06.07.1983, ♂, leg. J. Hladil. **Ağrı:** Central, 39°44N 43°03E, 27.06.1993, 2 ♂ ♂, leg. Jirousek (coll. Schwarz/Ansfelden); Beyazıt 15 km E, 1600 m, 02.07.1985, ♀, leg. CJ. Zwakhals. **Aksaray:** Yeşilova 15 km E, 900 m, 03.7.1984, ♀, leg. A.W. Ebmer. **Amasya:** 425 m, 27.06.1996, ♂, ♀, leg. Kadlec/Vorisek. **Ankara: Şereflikoçhisar, Hotalı** 850 m, 14.07.1998, 2 ♂ ♂, leg. C. Güçlü. **Antalya:** Arikanda, 36°28N 30°07E, 11.07.1998, ♂, ♀, leg. C. Schmid-Egger (coll. E-G); 6 km SE İbradi, 1260 m, 37°12N 31°55E, 31.07.2009, 2 ♀ ♀, leg. C. Schmid-Egger (shrubland); Alanya, 50–100, 28–30.07.1985, 2 ♀ ♀, leg. R. Hensen; Demirtaş, 100 m, 29.07.1985, ♀, leg. R. Hensen; Konaklı 10 km W, 36°58N 31°89E, 01.08.2009, 2 ♂ ♂, 7 ♀ ♀, leg. C. Schmid-Egger (coll. E-G); Gündoğmuş, Pembelik, 1090 m, 36°83N 32°05E, 02.08.2009, 11 ♂ ♂, 3 ♀ ♀, leg. C. Schmid-Egger; Akseki, 1200 m, 09.08.1985, ♀, leg. P. van Ooijen; **Artvin:** Yusufeli, İshan, 700 m, 15.06.2006, 2 ♀ ♀, leg. H. Özbek (*Sinapis arvensis*; Yusufeli, Demirkent, Salekör, 1600 m, 01.09.1995, ♀, leg. P. Hartmann. **Bingöl:** Genç, 1000 m, 12.08.1985, ♂, ♀, leg. R. Hensen; Genç 15 km, S, 1400 m, 13.08.1985, 2 ♀ ♀, leg. R. Hensen; Solhan, 2122 m, 24.06.2000, 2 ♂ ♂, leg. M. Kesdek. **Bitlis:** Ahlat near Van Lake, 14.07.1996, ♂, leg. Tyrner/Vorisek; Ahlat, 1750 m, 15.08.1985, ♂, leg. R. Hensen; Tatvan, 16.08.1985, 2 ♂ ♂, ♀, leg. R. Hensen (coll. Schwarz/Ansfelden). **Bolu:** Çerkeş, Kurtçimeni, 700 m, 12.07.1995, ♂, leg. Gelbrecht/Schwa. **Burdur:** Çeltikçi, 02.09.1983, 2 ♂ ♂, leg. J. Timmer. **Bursa:** 15 km W of Armutlu, 50 m, 27.07.1987, ♂, leg. P. v. Ooijen. **Çankırı:** Ilgaz, Ilgaz dağları, 900 m, 13.07.1995, ♀, leg. Gelbrecht/

Schwa. **Denizli**: Pamukkale, 1000 m, 26.07.1985, ♀, leg. P. v. Ooijen; Tavas, Kazıkbeli Geçidi, 1180, 03.07.1990, ♂, ♀, leg. A.W. Ebmer. **Edirne**: Keşan, Mecidiye, 50 m, 29.07.2003, 2 ♂♂, leg. Ö. Çalmaşur. **Erzincan**: Refahiye, 1700 m, 15.07.1984, ♂, leg. A.W. Ebmer; Tercan, Topdağı, 1655 m, 04.08.2003, 4 ♂♂, leg. S. Çoruh. **Erzurum**: Atatürk University, 1900 m, 03.07.2007, 2 ♂♂, leg. J. Ascher/ G. Rozen (coll. AMNH); Research field, 06.06.1965, ♂, leg. H. Özbek (on *Onobrychis viciifolia*); 01.09.1971, female, leg. M. Doğanlar (on *Eryngium campestre*); İspir, 2800 m, 13.07.1974, ♂, leg. K. Borkowski; Kan, 20.08.1970, ♀, leg. H. Özbek (on *Daucus carota*); Akören, 39°47N 41°09E, 22.07.2003, ♀, leg. J.G. Rozen, H. Özbek (coll. AMNH); Çat yolu, Devlet Su İşleri, Gölet, 39°47N 41°09E, 09.07.2004, 5 ♂♂, leg. J.G. Rozen, H. Özbek (coll. AMNH); İspir, 40°30N 40°31E, 8.06.2006, 2 ♂♂, leg. J.G. Rozen, H. Özbek (coll. AMNH); Oltu, Çamlıbel, 1600 m, 26.07.2000, 2 ♂♂, leg. H. Özbek; Çamlıbel 22 km, WSW, 1600 m, 07.07.2001, ♂, leg. J. Ascher, H. Özbek, J.G. Rozen (coll. AMNH); Sarısaz, 1450 m, 21.06.2000, 2 ♂♂, leg. Ö. Çalmaşur; Tutmaç-Başaklı border, 1900 m, 01.07.2000, 3 ♂♂, Karakol, 1700 m, 01.07.2000, ♂, leg. Ö. Çalmaşur (*E. campestre*); Tortum, 1700 m, 16.07.1987, ♂, leg. R. Hensen. **Eskişehir**: Sakari, Ilıca, 06.07.1987, ♂, leg. Prudek/Riha. **Hakkâri**: N 2000 m, 21.07.1986, 6 ♂♂, 2 ♀♀, leg. A.W. Ebmer. Varegöz, 37°25E 44°13N, 1650–1750 m, 02–6.08.1986, 2 ♂♂, 2 ♀♀ leg. S.M. Blank; Sat Dağı, 37°25E 44°13N, 1700 m, 04.08.1983, ♂, leg. W. Schacht; Yüksekova, 20 km E, 2200 m, 23.07.1986, 2 ♂♂, ♀, leg. A.W. Ebmer; 30 km W, 1850, 20.07.1986, ♂, leg. A.W. Ebmer. **Isparta**: Eğirdir, Novada Ulusal Park, Yazılı Kanyon, 08.08.1999, ♀, leg. I. Brunk. **İstanbul**: 130 m, Şile, 29.07.1983, ♀, leg. P. van Ooijen. İzmir: Bergama, 300 m, 22.07.1985, ♀, leg. R. Hensen; Ödemiş, Bozdağ, 1000 m, 38°22N 27°58E, 14.06.1985, ♀, leg. H. Rausch. **Kahramanmaraş**: Göksun, Salyan-Ahmetçik arası, 10.07.1990, ♀, leg. A.W. Ebmer. **Karaman**: 10 km S, 37°05N 33°14E, 19.06.1985, 2 ♀♀, leg. M. Schwarz (coll. Schwarz/Ansfelden). **Kars**: Sarıkamış, Karakurt, 40°08N 42°21E, 1500 m, 19.06.2007, 2 ♀♀, leg. H. Özbek. **Kayseri**: Develi, Gezbeli Geçidi, 1750–1900 m, 06.07.1984, ♂, leg. A.W. Ebmer. **Konya**: 25 km N, 11.06.1966, ♂, ♀, leg. H.H.F. Hamman; Akşehir, Sultandağları, 07.07.1990, ♂, leg. A.W. Ebmer; Beyşehir, 13–19.06.1966, 5 ♂♂, H.H.F. Hamman; Bozkır, Sarıoğlan, 1000 m, 25.07.2003, 2 ♂♂, leg. M. Kesdek; Güneysınır, Habiller, 1100 m, 04.08.2002, 2 ♀♀, leg. M. Kesdek. **Malatya**: Doğanşehir, Reşadiye geçidi, 1500 m, 12.07.1990, ♀, leg. A.W. Ebmer. **Mersin**: Silifke, Uzuncaburç, 400 m, 02.08.1985, ♀, leg. R. Hensen; , Kargıcan, 200 m, 04.08.1985, 2 ♂♂, 6 ♀♀, leg. R. Hensen; Mut, 20 km S, 11.07.1996, ♀, leg. Brechtel/Ehrmann; Ilıca, 07.06.1966, ♀, leg. H.H.F. Hamman. **Muğla**: Bodrum, 30 m, 25.07.2002, ♀, leg. E. Kwast. **Nevşehir**: 2 km S, 1250, 04–19.07.1984, ♂, ♀, leg. A.W. Ebmer; Avanos 10 km S, 1000 m, 22.06.1987, ♂, leg. R. Hensen; Göreme, 1000 m, 09.07.1988, ♂, leg. C. Schmid-Egger (coll. AMNH); Kaymaklı, 1200 m, 23.06.1987, ♂, leg. R. Hensen; Ürgüp, 1100 m,

11.08.1985, 2 ♂♂, leg. P. van Ooijen; Topuzdağı Geçidi, 05.07.1984, 2 ♀♀, leg. A.W. Ebmer. **Niğde**: Bokar Dağları, Ulukışla, Çiftehan, 1700–1800 m, 17.07.1990, 2 ♂♂, leg. A.W. Ebmer. **Sivas**: Gürün 15 km E, 1600 m, 07.07.1984, ♂, leg. A.W. Ebmer. **Şanlıurfa**: Birecik, 400 m, 06.08.1985, ♀, leg. R. Hensen. **Tunceli**: Ovacık 17 W, 1200 m, 19.08.1985; 3 ♂♂, 2 ♀♀, leg. R. Hensen. **Van**: Merkez, 38°30N 43°24E, 28.06.1993, ♂, ♀, leg. M. Halada (coll. Schwarz/Ansfelden); Gevaş, Göllü, 38°43N 43°19E, 29.06.1993, ♀, leg. M. Halada (coll. Schwarz/Ansfelden). **Yalova**: Termal, 30 m, 28.08.1985, ♀, leg. R. Hensen.

Remarks: We can add 25 provinces here to the known range of *H. meridionalis*. The available records show that this species is the most widespread and most abundant in the country. It is active from June to the end of August and occurs from warmer (seashores) (Antalya, Muğla, Yalova) to colder regions (Erzurum, 2800 m), mostly in open areas. Known flowers visited: *Daucus carota*, *Eryngium campestre*, *Onobrychis viciifolia* and *Sinapis arvensis*. It is frequently recorded in Turkey (46 provinces).

Distribution: Palaearctic from Morocco to Kazakhstan. In Turkey: Mersin (loc. typ. as *Prosopis effasciata* ALFKEN, 1931); Adana, Amasya, Ankara, Antalya, Artvin, Aydın, Balıkesir, Bursa, Çanakkale, Denizli, Hatay, İstanbul, Kastamonu, Konya, Kütahya, Manisa, Mersin, Nevşehir, Tekirdağ, Tokat (WARNCKE 1972); Ağrı, Aksaray, Bingöl, Bitlis, Bolu, Burdur, Çankırı, Edirne, Erzincan, Erzurum, Eskişehir, Hakkâri, Isparta, İzmir, Kahramanmaraş, Karaman, Kars, Kayseri, Malatya, Muğla, Niğde, Sivas, Şanlıurfa, Tunceli, Yalova.

Hylaeus (Prosopis) pictus (SMITH, 1853)

Prosopis picta SMITH, 1853: 25–26, ♀♂. Spain, Portugal.

Prosopis (Nesoprosopis) gibba picta SMITH, 1853 – WARNCKE 1972: 760; 1992: 750.

Hylaeus (Prosopis) pictus (SMITH, 1853) – ALIEV 1986: 262.

Material examined: **Adana**: Çataalan, 04.04.2002, ♂, leg. P. Bogusch (coll. Petr Bogusch); Yumurtalık, 31.07.1998, ♂, leg. T. Osten. **Antalya**: Akseki, 1200 m, 09.08.1985, ♀, leg. P. v. Ooijen; Alanya, 50 m, 28.07.1985, 3 ♂♂, 3 ♀♀, leg. R. Hensen; İncekum, 20 km W Alanya, 20 m, 07.08.1985, 7 ♂♂, leg. P. v. Ooijen; Kaş, Kalkan, 13.09.1951, 2 ♂♂, leg. H. A. Guenin; Kasaba, 15.09.1951, ♂, leg. H. A. Guenin; Kemer, 08.09.1951, ♂, leg. H.A. Guenin; Manavgat, 50 m, 31.07.1985, ♂, ♀, leg. R. Hensen; 6 km SW Manavgat, 20 m, 05.08.1985, 4 ♂♂, 2 ♀♀, leg. P. v. Ooijen; Demirtaş, 100 m, 29.07.1985, 2 ♂♂, 2 ♀♀, leg. R. Hensen. **Bursa**: 300 m, 20.07.1987, ♂; 225 m, 24.08.1985, 7 ♂♂, 2 ♀♀; Mudanya, 25 m, 25.08.1985, 3 ♂♂, ♀, leg. R. Hensen; Armutlu, 30 m, 20–21.08.1985, 17 ♂♂, 3 ♀♀, leg. P. v. Ooijen; **Hatay**: Dörtöyl, Payas, 10.04.2002, 2 ♀♀, leg. P. Bogusch (coll. Petr Bogusch); İskenderun, Belen S, 28.08.1983, 4 ♂♂,

♀, leg. J. Timmer, Samandağı, 12 km E, 05.07.1998, ♂, leg. T. Osten. **İstanbul:** Sozyez? 30.08.1950, 2 ♀♀, leg. A. Mochia; Karacaköy, 41°09N 29°46E, 30.07.1988, ♀, leg. Madl (coll. Schwarz/Ansfelden). **Mersin:** 26.07.1997, 4 ♀♀, leg. J. Timmer; Erdemli, 100 m, 05.07.1986, ♀, leg. P. van Ooijen; Ovacık, 50–100 m, 14.07.1998, ♀, leg. M. Riha; Silifke, 50 m, 02.08.1985, ♂; 28 km NE Korykos, 03.08.1985, 3 ♂♂, 9 ♀♀, Uzuncaburç, 400 m, 02.08.1985, 2 ♂♂, ♀; Kargıcan, 200 m, 04.08.1985, 2 ♂♂, leg. R. Hensen. **Sivas:** Gürün, Şuğul, 1400 m, 13.07.1990, ♀, A.W. Ebmer. **Şanlıurfa:** Halfeti, 400 m, 28.06.1987, ♂, R. Hensen; 37°15N 37°52E, ♂; 27.05.1987, 25.07.1987, ♂, leg. Madl (coll. Schwarz/Ansfelden); 425 m, 07.08.1985, ♀, leg. R. Hensen. **Yalova:** Termal, 300 m, 28.08.1984, 2 ♂♂, 4 ♀♀, leg. R. Hensen.

Remarks: *H. pictus* was previously known from Adana and Hatay only. Now we can add seven provinces to the records. STRAKA & BOGUSCH (2011) consider the species as thermophilic Mediterranean. Our results confirm this opinion, as the majority of the specimens come from coastal areas and lowlands, mostly of the Mediterranean. The flight season lasts from the beginning of April to the end of August, with a peak in July. It is collected moderately in Turkey (9 provinces).

Distribution: Southern Europe, Cyprus, Iran, Turkey, North Africa. In Turkey: Adana, Hatay (STRAKA & BOGUSCH 2011); Antalya, Bursa, İstanbul, Mersin, Sivas, Şanlıurfa, Yalova.

Hylaeus (Prosopis) rubosus (WARNCKE, 1981)

Fig. 13

Prosopis (Nesoprosopis) rubosa WARNCKE, 1981: 159–160, ♀. Turkey: Birecik. – WARNCKE 1981: 187 as *rugosa* [!]; 1992: 768.

Hylaeus (Prosopis) rubosus (WARNCKE, 1981) – **comb. nov.**

Material examined: **Gaziantep:** Nizip 7 km E, 07.07.1996, ♀, leg. Brechtel/Ehrmann. **Şanlıurfa:** Birecik, 400 m, 27.06.1987, 2 ♂♂, leg. R. Hensen.

Remarks: *H. rubosus* was described from Şanlıurfa by WARNCKE (1981). In the present study, Gaziantep is added to its distribution range, which is concentrated to southeastern Anatolia. The collecting localities suggest that it is a species of lowland, warm and dry habitats, occurring in steppes and open areas. It is rarely recorded from Turkey (2 provinces, Fig. 17.IX).

Due to its size and the striking rust-brown colouring, the species is not to be overlooked. In its characters it appears much closer to *H. variolaris* than to *H. excelsus*.

Distribution: Iran, Turkey: Şanlıurfa (type locality) (WARNCKE 1981); Gaziantep.

Hylaeus (Prosopis) rugicollis MORAWITZ, 1874

Hylaeus rugicollis MORAWITZ, 1874: 177–179, ♀. Russia: Dagestan, Derbent.

Prosopis (Nesoprosopis) rugicollis (MORAWITZ, 1874) – WARNCKE 1972: 763; 1981: 186–187; 1985: 59; 1992: 752–753.

Hylaeus (Prosopis) rugicollis MORAWITZ, 1874 – ALIEV 1986: 263. DATHE & PROSHCHALYKIN 2017: 37; 2018: 73–74.

Material examined: **Ağrı:** 1650 m, 39°44N 43°03E, 25.06.1993, 7 ♂♂, 2 ♀♀, leg. M. Halada (coll. Schwarz/Ansfelden); Doğubeyazıt, 20.08.1983, ♀, leg. P. v. Ooijen. **Bayburt:** Kop Mt. 2300 m, 25.07.2001, ♀, leg. Ö. Çalmaşur. **Bingöl:** 1125 m, 20.06.1986, ♂, leg. Kadlec/Vorisek; Genç 15 km S, 1400 m, 13.08.1995, ♀, leg. Hensen. **Bitlis:** Ahlat, 14.07.1996, ♀, leg. Tyrner/Vorisek; 1750 m, 15.08.1980, 2 ♀♀, leg. Hensen. **Denizli:** 450 m, Pamukkale, 31.05.1966, ♂, leg. H.H.F. Hamann. **Erzurum:** Atatürk University research field, 6 nolu kuy 1900 m, 17.06.1970, ♀, leg. H. Özbek (on *Onobrychis viciifolia*); Atatürk University Campus, 2000 m, 39°53N 41°14E, 03.07.2007, ♂, leg. J.G. Rozen, J.S. Ascher, H. Özbek (coll. AMNH); 10.07.2007, ♀, leg. H. Özbek (on *O. viciifolia*); Hınıs, Köprüköy-Söylemez, 1850 m, 19.07.2001, ♂, leg. S. Çoruh (on *Melilotus officinalis*); Oltu, Subatik, 4 km WSW of Oltu, 1300 m, 09.07.2007, ♀, leg. J.S. Ascher, H. Özbek, J.G. Rozen (coll. AMNH). **Hakkâri:** 1750 m, 09.07.1987, ♀, leg. R. Hensen; Beytüşşebab, 1400 m, 06.07.1987, ♂, ♀, leg. Hensen; Süvarihalil Geçidi, 2500 m, 27.06.1985, ♂, leg. M. Schwarz (coll. Schwarz/Ansfelden); Yüksekova 16 km SE, 1700 m, 37°27N 44°25E, 28.06.1985, ♂, leg. M. Schwarz (coll. Schwarz/Ansfelden); 30 km W, 1850 m, 20.07.1986, ♂, leg. A.W. Ebmer. **Isparta:** Eğirdir, 930 m, 06.06.1986, 3 ♂♂, ♀, leg. Kadlec/Vorisek. **Kars:** Sarıkamış, Karakurt 20 km W, 1600 m, 40°10N 42°22E, 04.07.1985, ♀, leg. M. Schwarz (coll. Schwarz/Ansfelden). **Kayseri:** Develi, Kulpak, 38°27N 15°14E, 28.05.2001, 3 ♂♂, leg. W.H. Liebig. **Mersin:** Mut 11 km S, 11.07.1996, 2 ♀♀, Brechtel/Ehrmann. **Muş:** Muş Ovası, 1520 m, 18.06.1986, ♂, ♀, leg. Kadlec/Vorisek. **Nevşehir:** Avanos, Zelve, 1050 m, 18.07.1984, ♀, leg. A.W. Ebmer; 22.06.1987, 1000 m, ♂, ♀, leg. R. Hensen; Göreme 10 km S, 1000 m, 22.06.1987, ♂, leg. R. Hensen; Gülşehir, 20 km N, 1200 m, 20.07.1984, ♀, leg. A.W. Ebmer; Hacibektaş, Mucur, 1100 m, 20.07.1984, 2 ♀♀, leg. A.W. Ebmer; Ürgüp, Gürüze, 1200–1400 m, 19.06.1986, ♂, leg. M. Bologna. **Şanlıurfa:** 550 m, 30.05.1978, ♀, leg. M. Schwarz.

Remarks: Eleven provinces are newly added to the distribution area of *H. rugicollis*. The specimens were found in various habitats, mostly in open areas at altitudes of 450–2500 m. In general, the distribution of this species is limited to eastern and central Anatolia. The records show that it is more common in mountain areas. WARNCKE (1981) recorded *H. rugicollis* at 3800 m in Iran. The flight time is from May to the end of August. Some of the samples were collected from flowers of *Melilotus officinalis* and

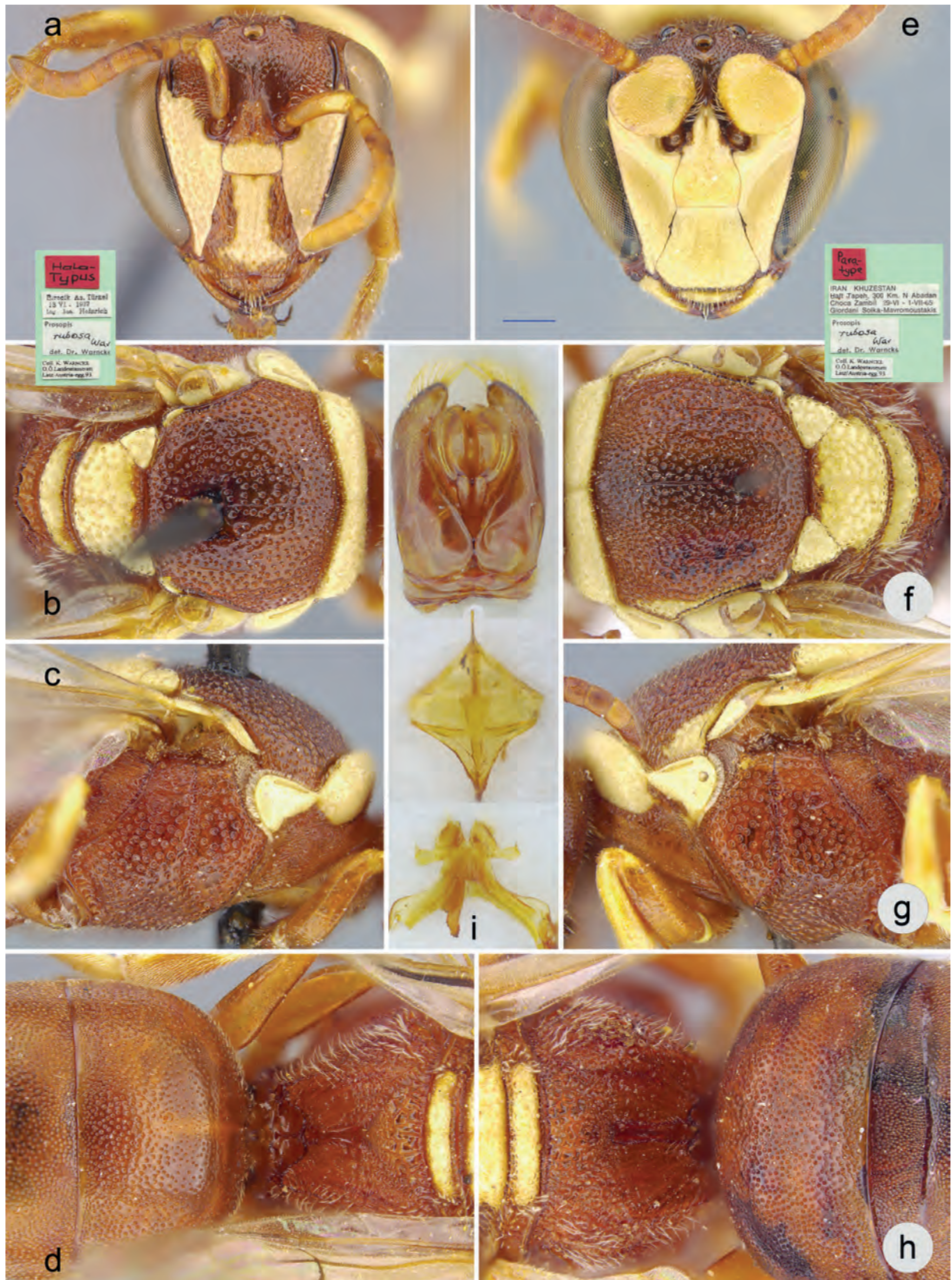


Fig. 13: *H. (Prosopis) rubosus* (WARNCKE, 1992). Holotype female: a–face, b–mesonotum, c–mesopleuron, d–propodeum and metasoma. Paratype male: e–face, f–mesonotum, g–mesopleuron, h–propodeum and metasoma, i–terminalia. – Scale bar 0.5 mm.

Onobrychis viciifolia. ÖZBEK (2011) counted *H. rugicollis* among the pollinating bees of *O. viciifolia* in Erzurum. It is frequently recorded in Turkey (18 provinces).

Distribution: South-eastern Europe, Armenia, Azerbaijan, Iran, Central Asia, Lebanon, Israel, Turkey (DATHE & PROSHCHALYKIN 2018). In Turkey: Amasya, Denizli, Elazığ, Konya, Niğde, Şanlıurfa (WARNCKE 1972); Erzurum (ÖZBEK 1977); Ağrı, Bayburt, Bingöl, Bitlis, Hakkâri, Isparta, Kars, Kayseri, Mersin, Muş, Nevşehir.

Hylaeus (Prosopis) signatus (PANZER, 1798)

Sphex signatus PANZER, 1798: 53, pl. 2, ♀. Germany.

Prosopis (Nesoprosopis) signata signata (PANZER, 1798) – WARNCKE 1972: 760; 1992: 767.

Hylaeus (Prosopis) signatus (PANZER, 1798) – ALIEV 1986: 261. DATHE & PROSHCHALYKIN 2018: 74.

Material examined: **Ağrı:** Doğubeyazıt, Karabulak, 1700 m, 39°40N 44°03E, 26.06.1993, ♀, leg. Jirousek (coll. Schwarz/Ansfielden). **Aksaray:** Sivrihisar Geçidi, 1800 m, 38°16N 34°19E, 03.07.1984, ♂, leg. A.W. Ebmer. **Bitlis:** Adilceviz, 1800 m, 11.07.1984, 7 ♂♂, leg. A.W. Ebmer; Ahlat, 1750 m, 15.08.1987, ♂, leg. R. Hensen; Van Gölü kıyısı, 14.07.1996, 3 ♂♂, ♀, leg. Tyrner/Vorisek. **Erzurum:** Oltu, Başaklı, 1600 m, 11.08.1977, 2 ♀♀, leg. H. Özbek (*Achillea millefolium*); Çamlıbel, 1700 m, 22 km WSW of Oltu, 08.06.2001, ♂, ♀; 1750 m, 04.07.2004, ♂, ♀; 11.07.2004, 2 ♀♀; 15.07.2001, ♂, leg. H. Özbek; 08.07.2007, ♂, ♀, leg. J.S. Ascher, H. Özbek, G. Rozen (coll. AMNH); Pasinler, 5 km NE of Pasinler, 1500 m, 01.07.2007, ♂, ♀, leg. J.S. Ascher, H. Özbek, J.G. Rozen (coll. AMNH). **Gümüşhane:** Torul, 40°34N 39°17E, 1000 m, 12.07.1985, ♂, leg. M. Schwarz (coll. Schwarz/Ansfielden). **Hakkâri:** Beytüşşebab, 1400 m, 06.07.1997, 3 ♂♂, 3 ♀♀, leg. R. Hensen; Oramar 10 km NE, 1700 m, 29.06.1985, 2 ♂♂, leg. M. Schwarz (coll. Schwarz/Ansfielden). **Isparta:** Eğirdir, 15.05.1988, ♂, leg. N. Mohr. **Kahramanmaraş:** Göksun, 1400 m, 26.06.1987, 4 ♂♂, 2 ♂♂, leg. R. Hensen. **Kars:** Sarıkamış, Akkurt, 1400 m, 18.07.2002, ♀, Karakurt, TCK Çeşmesi, 1500 m, 40°08N 42°21E, 08.06.2005, 2 ♀♀, leg. H. Özbek. **Kayseri:** Pınarbaşı, 1500 m, 25.06.1987, 3 ♀♀, leg. R. Hensen. **Konya:** Alaaddin Hill, 1050 m, 20.06.1987, 3 ♂♂, leg. R. Hensen; Beyşehir, 1150 m, 18.06.1987, 15 ♂♂, 5 ♀♀, leg. R. Hensen. **Nevşehir:** Göreme, 38°40N 34°50E, 23.06.1993, ♂, leg. M. Halada (coll. Schwarz/Ansfielden). **Niğde:** Çamardı N, Aladağlar, 1750 m, 16.07.1990, 2 ♀♀, leg. A.W. Ebmer. **Sakarya:** Taraklı, 400 m, 40°26N 30°28E, 20.05.1985, ♂, leg. H. Rausch. **Sivas:** Gürün, Mazıkıran Geçidi, 1650 m, 13.07.1990, ♂, ♀, leg. A.W. Ebmer. **Van:** 1800 m, 13.07.1987, 3 ♂♂ leg. R. Hensen; Başkale, 2200 m, 10.07.1987, 2 ♂♂, leg. R. Hensen. Gürpınar, Güzelsu, Hoşap, 2200 m, 12.07.1984, 2 ♀♀, leg. A.W. Ebmer.

Remarks: Fourteen provinces are added here to the distribution records of *H. signatus*. In general, it was collected in areas with continental climate at altitudes from 1000 m to 2200 m (Van). Accordingly, it was not collected from the Aegean and Mediterranean coastal areas. It is a common species, both in warmer and cooler regions. The available data show that it mainly prefers steppes and open areas. It is active from the end of May to the end of August. The species is often recorded from Turkey (21 provinces).

Distribution: North Africa and almost all of Europe; Asia Minor, Azerbaijan, Central Asia, introduced to Madeira (DATHE & PROSHCHALYKIN 2018). In Turkey: Afyonkarahisar, Bursa, İstanbul, Kırıkkale, Konya, Mersin (WARNCKE 1972); Erzurum (ÖZBEK 1977), Ağrı, Aksaray, Bitlis, Gümüşhane, Hakkâri, Isparta, Kahramanmaraş, Kars, Kayseri, Nevşehir, Niğde, Sakarya, Sivas, Van.

Hylaeus (Prosopis) stellatus (WARNCKE, 1992)

Fig. 14

Prosopis (Nesoprosopis) duckei stellata WARNCKE, 1992: 772, ♀ ♂. Turkey: Hakkâri, Vargös.

Hylaeus (Prosopis) stellatus (WARNCKE, 1992) – DATHE & PROSHCHALYKIN 2018: 74.

Material examined: **Antalya:** 72 km SW, Finike, Arif Köyü, Arıkanda, 36°28N 30°07E, 11.07.1998, 2 ♂♂, leg. C. Schmid-Egger.

Remarks: WARNCKE (1992) described *H. stellatus* as a subspecies of *H. duckei*, *Prosopis duckei stellata*. He correctly recognized that this taxon is different to *H. duckei* s. str., especially in structures of the integument. A number of habitual, colour and sculpture features could be added here, including marked differences in the male terminalia. For the subspecies status, however, no argument is evident. In this study, the species has only been newly found in Antalya, but it is recorded for the first time since the description. In addition, its occurrence in the Mediterranean region is new. DATHE & PROSHCHALYKIN (2018) stated: “This species is by no means isolated and restricted to the southeast of Turkey, as WARNCKE (1972) suspects. It is known from Israel and Kazakhstan.” It has a sporadic distribution in Turkey. This species lives in both cooler (Hakkâri) and warmer (Antalya) regions. It has been collected in Turkey only sparsely (4 provinces).

Distribution: Israel, Kazakhstan, Turkey (DATHE & PROSHCHALYKIN 2018). In Turkey: Hakkâri, Siirt and Şirnak (WARNCKE 1992); Antalya.

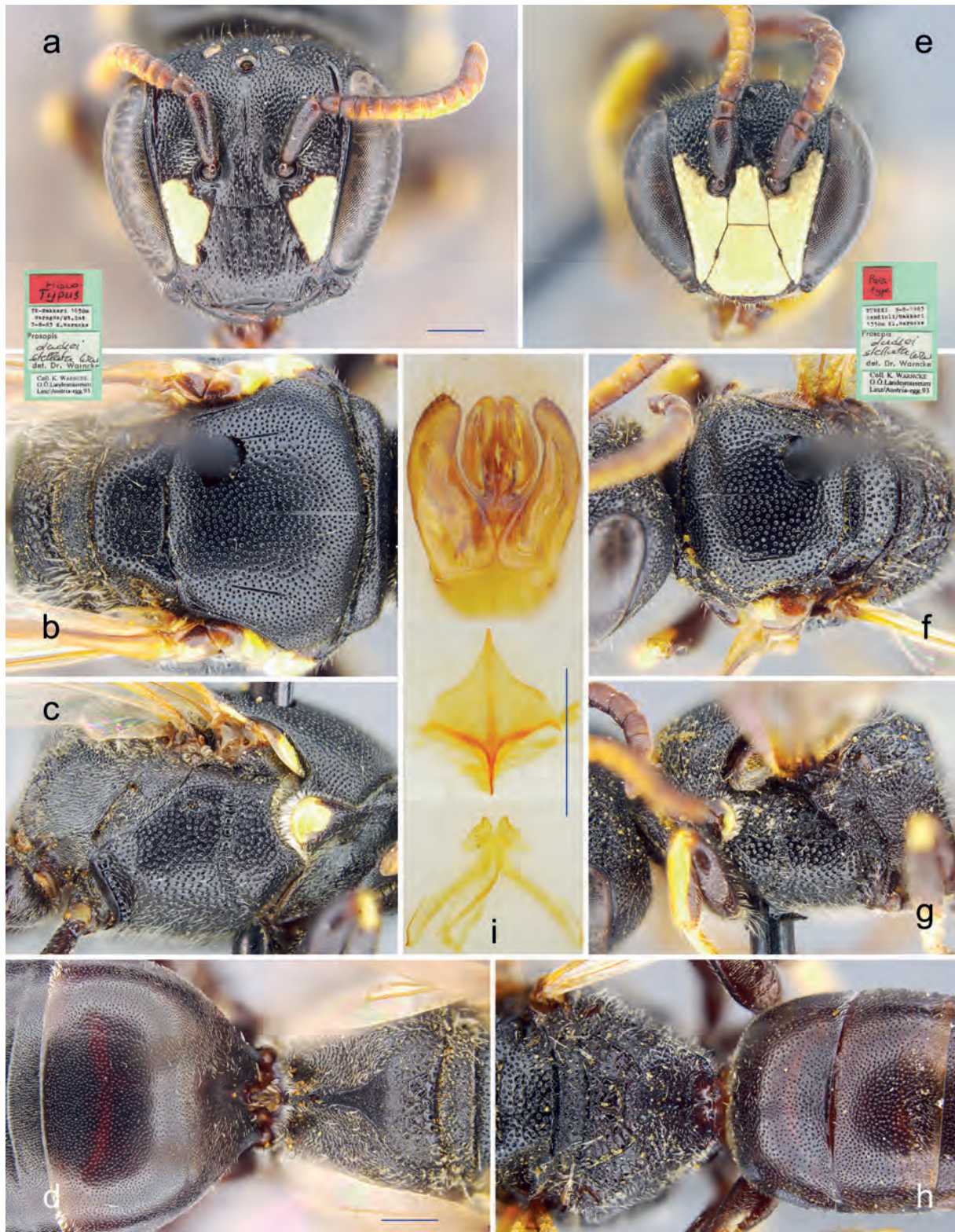


Fig. 14: *H. (Prosopis) stellatus* (WARNCKE, 1992). Holotype female: a–face, b–mesonotum, c–mesopleuron, d–propodeum and metasoma. Paratype male: e–face, f–mesonotum, g–mesopleuron, h–propodeum and metasoma, i–terminalia. – Scale bar 0.5 mm.

Hylaeus (Prosopis) trinotatus (PÉREZ, 1896)

Prosopis trinotata PÉREZ, 1896: 64, ♀ ♂. Italy: Sicily.

Prosopis (Nesoprosopis) trinotata PÉREZ, 1895[!] – WARNCKE 1972: 761.

Material examined: **Aksaray:** Esmekaya, 950 m, 38°16N 33°22E, 16.07.1998, ♀, leg. C. Schmid-Egger. **Antalya:** Arapsuyu, Azmak, 5 m, 30.06.2002, ♂; 04.07.2002, ♀, leg. H. Özbek (on *Mentha longifolia*). **Balıkesir:** Bandırma, Kuşcenneti, 15 m, 07.09.1983, 7 ♂ ♂, ♀, leg. P. van Ooijen.

Remarks: Three provinces are added to the recorded distribution of *H. trinotatus*. This species is sporadically distributed throughout the country. The known localities indicate that *H. trinotatus* prefers flat, warm and dry habitats, which occur mainly in steppes and open areas. It is only sparsely collected in Turkey (3 provinces, Fig. 16.9).

Distribution: Southwest Europe, Iraq, Israel, Turkey: Aksaray, Antalya and Balıkesir. **New to Turkey.**

Hylaeus (Prosopis) variegatus (FABRICIUS, 1798)

Mellinus variegatus FABRICIUS, 1798: 265, ♀. Europe.

Prosopis (Nesoprosopis) variegata variegata (FABRICIUS, 1798) – WARNCKE 1992: 761; 1992: 751–752.

Hylaeus (Prosopis) variegatus (FABRICIUS, 1798) – ALIEV 1986: 262. DATHE & PROSHCHALYKIN 2018: 75.

Material examined: **Adana:** Ceyhan, Kurtkulağı, 29.07.1998, ♂, leg. T. Osten; Yumurtalık, 31.07.1998, ♂, ♀, leg. T. Osten. **Adıyaman:** Gölbaşı, 37°47N 37°39E, 21.06.1985, ♂, leg. M. Schwarz (coll. Schwarz/Ansfelden); Karadut, Nemrut Dağı, 37°56N 38°47E, 02.07.1993, ♀, leg. Halada (coll. Schwarz/Ansfelden). **Ağrı:** Ağrı Dağı, 1800 m, 39°41N 44°18E, 02.07.1985, ♀, leg. M. Schwarz (coll. Schwarz/Ansfelden); 1650 m, 39°44N 43°03E, 27.06.1993, 4 ♂ ♂, 2 ♀ ♀, leg. Jirousek; 50 km E, 1800 m, 39°43N 43°39E, 12.07.1985, 2 ♂ ♂, leg. M. Schwarz (coll. Schwarz/Ansfelden); Cumaçay, 1930 m, 23.07.1996, ♂, ♀, leg. P. Rasmont (on *Cirsium arvense vestitum*); Eleşkirt 30 km W, 2200 m, 14.07.1987, 3 ♂ ♂, ♀, leg. R. Hensen. **Aksaray:** 27 km SE of Aksaray, 38°14N 34°18E, 18.07.1998, ♂, leg. C. Schmid-Egger. **Antalya:** Akdeniz University Campus, 15 m, 36°53N 30°39E, 29.05.2009, 2 ♀ ♀, leg. J.S. Ascher, H. Özbek, J.G. Rozen; Alanya, Demirtaş, 100 m, 29.07.1985, 2 ♂ ♂, leg. R. Hensen; İncekum 20 km W, 20 m, 07.08.1985, ♂, leg. P. van Ooijen; Anamur, 36°02N 32°79E, 21.07.1998, ♂, leg. C. Schmid-Egger (coll. AMNH); Çiğlik, 217 m, 02.06.2009, ♂, leg. J.S. Ascher, H. Özbek (coll. AMNH); Kaş, Kasaba, 15.09.1951, ♂, leg. H.A. Guenin; Kemer, 08–09.09.1951, ♂, 2 ♀ ♀, leg. H.A. Guenin; Konyaaltı, 3 m, 29.05.2009, ♂, leg. J.S. Ascher, H. Özbek, J.G. Rozen (coll. AMNH); Konyaaltı Plajı, 36°51N

30°38E, 2 m, 29.05.2009, 2 ♂ ♂, ♀ leg. J.S. Ascher, H. Özbek, J.G. Rozen (coll. AMNH); Arapsuyu, Azmak, 10 m, 30.06.2002, ♂, 24.09.2004, 7 ♂ ♂ leg. H. Özbek (on *Mentha longifolia*); Düzçam, 200 m, 30.05.2004, ♂, leg. H. Özbek (on *Vitex agnus-castus*); Kumluca, Arıkanda, 36°28N 30°07E, 11.07.1998, ♀, leg. C. Schmid-Egger; Olimpus, 14.07.1996, 2 ♂ ♂, leg. Brechtel/Ehrmann. **Artvin:** Demirkent, Salekör, 1600 m, 02.09.1995, ♀ P. Hartmann; Kaçkar, Yaylalar, 2200 m, 17.07.1995, 3 ♂ ♂, leg. Gelbrecht/Schwa (on *Anchusa* sp.). **Aydın:** Burhaniye, 10 m, 18.07.1985, ♂, leg. P. van Ooijen; Çine, 20–23.09.1951, ♂, leg. H.A. Guenin; Söke, 14.08.1985, ♀, leg. F. Wagner. **Balıkesir:** Edremit, Ören, 27°02E 39°33N, 04.08.1987, ♀, leg. Dollfuss. **Bingöl:** Kuruca Geçidi, 1800 m, 08.07.1984, ♂, leg. A.W. Ebmer; Solhan, 2120 m, 25.06.2000, ♂, ♀, leg. M. Kesdek; 1750 m, 15.08.1985, 2 ♀ ♀, leg. R. Hensen; Tatvan, 1750 m, ♀, leg. R. Hensen. **Bitlis:** Ahlat, 14.07.1996, ♀, leg. Tyrner/Vorisek; Tatvan, 15.08.1985, 2 ♀ ♀, leg. R. Hensen. **Bursa:** Armutlu, 50 m, 27.07.1986, 3 ♂ ♂, leg. P. van Ooijen; Çağlayan, 10.07.1986, ♂, leg. Prudek/Riha; Uludağ, 225, 24.08.1985, 2 ♂ ♂, leg. R. Hensen. **Denizli:** Pamukkale, 37°56N 29°08E, 14.07.1998, 2 ♂ ♂ leg. C. Schmid-Egger. **Diyarbakır:** Malabadi, 650 m, 38°08N 41°12E, 28.05.1985, ♂, leg. H. Rausch. **Edirne:** Keşan, Mecidiye, 50 m, 29.07.2003, ♂, leg. Ö. Çalmaşur. **Erzincan:** 55 km W, 1600 m, 39°44N 38°52E, 13.07.1985, 2 ♂ ♂, leg. M. Schwarz (coll. Schwarz/Ansfelden); Çağlayan, 39°36N 39°42E, 23.06.2002, ♂, leg. P. Kment (coll. Petr Bogusch); Refahiye, 1700 m, 15.07.1984, ♂, ♀, leg. A.W. Ebmer. **Erzurum:** Atatürk University research field, 12.07.1970, ♂, ♀, leg. H. Özbek (on *Onobrychis viciifolia*); 13.07.2004, ♂; 18.07.1970, ♂; 29.07.1970, ♂; 17.08.1970, ♂, leg. H. Özbek (on *Melilotus officinalis*); Atatürk University Campus, 2000 m, 39°53N 41°14E, 13.07.2003, 4 ♀ ♀, leg. H. Özbek (on *O. viciifolia*); 20.06.2008, 3 ♂ ♂, leg. J.G. Rozen, H. Özbek (coll. AMNH); 28.06.2001, ♂, ♀, leg. J.G. Rozen, H. Özbek (coll. AMNH) (on *O. viciifolia*); 11.07.2007, 2 ♂ ♂, leg. J.S. Ascher, H. Özbek, J.G. Rozen (coll. AMNH); 13–14.07.2001, 4 ♂ ♂, ♀, leg. H. Özbek (on *O. viciifolia*); 16–21.07.2003, 9 ♂ ♂, 16 ♀ ♀, leg. J.G. Rozen, H. Özbek (coll. AMNH); Abdurrahmangazi, 2200 m, 14.07.2000, ♂, leg. C. Güçlü (on *Trifolium pratense*); Geçit Köy, 2084 m, 27.07.2010, ♂, leg. J.S. Ascher, H. Özbek (coll. AMNH); Hınıs yolu, Mescitli, 1700 m, 19.07.2003, ♀, leg. H. Özbek (on *Euphorbia* sp.); Ilıca, Ağzıaçık Geçidi, 2000 m, 19.07.2003, 3 ♂ ♂, leg. H. Özbek (on *Cephalaria procera*); Kargapazarı Mt, 2300 m, 15.07.2002, ♂, leg. H. Özbek (on *Thymus* sp.); Tafta, 20.06.1970, 3 ♀ ♀, leg. H. Özbek (on *Trifolium repens*); Çat yolu, DSİ, Gölet, 39°47N 41°09E, 09.07.2004, ♂, 4 ♀ ♀, leg. J.G. Rozen, H. Özbek (coll. AMNH); Köprüköy, İncesu, 2340 m, 03.07.2004, ♂, leg. S. Çoruh, C. Güçlü (on *Astragalus* sp.); Oltu, Başaklı, 1700 m, 20.06.1970, ♀, leg. H. Özbek (on *Echinops* sp.); Subatık, 1300 m, 13.08.2004, ♂, leg. H. Özbek (on *Daucus carota*); 22 km

WSW of Oltu, 1700 m, 08.07.2007, ♂, leg. J.S. Ascher, H. Özbek, J.G. Rozen; Çamlıbel Karakolu, 1900 m, 01.07.2000, ♂, leg. H. Özbek; Palandöken, 27.07.1986, 2200–2400 m, 2 ♂♂, leg. A.W. Ebmer; Pasinler, Demirdöven barajı, 1795, 01.07.2007, ♂, leg. J.S. Ascher, H. Özbek, J.G. Rozen (coll. AMNH); 5 km NE of Pasinler, 01–10.07.2007, 4 ♂♂, leg. J.S. Ascher, H. Özbek (coll. AMNH); Tortum, 1700 m, 16.07.1987, ♀, leg. R. Hensen; Tekman, 1953 m, 08.07.2007, ♂, leg. J.S. Ascher, H. Özbek, J.G. Rozen; Uzundere, Aksukapi 11 km N, 1250 m, 29.06.2003, 2 ♂♂, leg. H. Özbek, S. Çoruh (on *Euphorbia* sp.). **Hakkâri:** Beytuşşebab, 1400 m, 06.07.1987, ♀, leg. R. Hensen; Varagöz, 1650, 37°25N 44°13E, 02.08.1986, ♀, leg. S.M. Blank; Oramar, 10 km NE, 1700 m, 29.06.1985, ♂, leg. M. Schwarz (coll. Schwarz/Ansfelden); Yüksekova 10 km E, 2100–2200 m, 2 ♂♂, ♀; 30 km W, 1850 m, 19.07.1986, 2 ♂♂, leg. A.W. Ebmer. **Hatay:** İskenderun 20 km S, 05.07.1996, 5 ♀♀, leg. Brechtel/Ehrmann; Belen, 28.08.1983, ♂, leg. J. Timmer; Samandağı, Nur dağları, 06.07.1996, ♂, 2 ♀♀, leg. Brechtel/Ehrmann. **Iğdır:** 19.08.1983, ♂, leg. J. Timmer; Bayraktutan, 890 m, 17.08.2005, 3 ♂♂, leg. H. Özbek; Köy Hizmetleri Araştırma İstasyonu, 900 m, 31.07.2002, ♂, leg. M. Kesdek. **İstanbul:** 30.08.1950, ♀, leg. A. Mochi; Ömerli, 20.07.1994, ♀, leg. ? (coll. AMNH); Şile, 29.07.1983, ♂, leg. P. van Ooijen. **İzmir:** Bergama, 300 m, 22.07.1985, ♂, leg. R. Hensen. **Kars:** Sarıkamış, Karakurt 20 km W, 1600 m, 40°10N 42°22E, 04.07.1985, ♀, leg. M. Schwarz (coll. Schwarz/Ansfelden); 30 km W, 2100 m, 40°20N 42°22E, 04.07.1985, 2 ♀♀, leg. M. Schwarz (coll. Schwarz/Ansfelden). **Kayseri:** Kermelik, 1320 m, 13.07.1996, ♀, leg. D. Flagotier (on *Echium italicum*). **Konya:** Beyşehir, 1150 m, 18.06.1987, ♀, leg. R. Hensen. **Malatya:** Pütürge, Tepehan, 1340 m, 12.07.1995, 5 ♀♀, leg. Y. Barbier (on *Echium italicum*). **Mardin:** 1000 m, 02.07.1987, ♀, leg. R. Hensen. **Mersin:** Gülnar, 31.07. 1988, ♂, leg. C. Schmid-Egger; Mut, Dereköy, 02.09.1987, ♀, leg. H. Özbek; Ortaköy, 11.07.1996, ♂, leg. Brechtel/Ehrmann; Silifke, 50 m, 02.08.1985, 2 ♂♂, leg. R. Hensen; Karkıcan, 200 m, 04.08.1985, ♂, leg. R. Hensen; Ovacık, Büyükeceli, 50–100 m, 14.07.1998, ♂, leg. M. Riha. **Muğla:** Bodrum, Salmakis, 37°02N 27°25E, 16–21.07.2001, 6 ♂♂, ♀, leg. F. Burger (on *Vitex agnus-castus*); Fethiye, 06–07.09.1951, 2 ♂♂, ♀, leg. H.A. Guenin; Ölüdeniz, 30.07.1985, ♂, leg. P. van Ooijen; Köyceğiz, 06.05.1998, ♂, leg. G. Tozlu; Marmaris 56 km NNW, 15 km E Milas, 37°18N 27°57E, 13.07.1998, ♂, leg. C. Schmid-Egger; Çamköy, 37°07'70N 27°53'30E, 20–22.06.1998, 7 ♀♀, leg. O. Niehuis. **Nevşehir:** 2 km S, 1250 m, 04–19.07.1984, 4 ♂♂, leg. A.W. Ebmer; Avanos, Zelve, 1050 m, 14.07.1990, 2 ♀♀; 17–18.07.1984, ♂, ♀, leg. A.W. Ebmer; Göreme, 38°39N 34°53E, 17.07.1998, ♂, leg. C. Schmid-Egger; Kaymaklı, 1200 m, 23.06.1987, ♂, leg. R. Hensen; Ürgüp, 1100 m, 11.08.1985, 2 ♂♂, leg. P. van Ooijen; Topuz Dağı Geçidi W, 1300 m, 05.07.1984, ♀, leg. A.W. Ebmer. **Niğde:** Çiftehân, Bolkar

dağları, 1700–1800 m, 17.07.1990, 2 ♂♂, leg. A.W. Ebmer. **Osmaniye:** Kastabala, 08.07.1996, ♂, leg. Brechtel/Ehrmann (on *Eryngium* sp.). **Siirt:** 20 km S, 500 m, 23.06.1985, ♀, leg. C.J. Zwakhals. **Sinop:** Ayancık, 50 m, 23.07.1977, ♀, leg. H. Özbek (on *Carduus* sp.). **Sivas:** Gürün 15 km W, 1600 m, 07.07.1984, ♂, leg. A.W. Ebmer; İmranlı 40 km E, 1700 m, 15.07.1984, ♀, leg. A.W. Ebmer; Şuğul vadisi, 1400 m, 31.07.1986, 2 ♀♀, leg. A.W. Ebmer; Yeniçubuk, 1100 m, 14.07.1996, 2 ♀♀, leg. P. Rasmont (on *Allium cepa*); Yıldızeli, Çamlıbel Pass, 1600–1700 m, 16.07.1984, 4 ♀♀, leg. A.W. Ebmer. **Tokat:** Pazar, Ballica Mağarası, 40°16N 36°17E, 01.07.2002, ♂, leg. P. Kment (coll. Petr Bogusch). **Van:** Central, 1800 m, 13.07.1987, ♀, leg. R. Hensen; Başkale, 2200 m, 10.07.1987, ♂, ♀, 30 km N, 2700 m, 11.07.1987, 2 ♂♂, leg. R. Hensen; Güzeldere Geçidi, 2500, 12.07.1984, ♀, leg. A.W. Ebmer.

Remarks: In the present study, *H. variegatus* was collected from 34 provinces throughout the country, including Thrace (European part of Turkey). Our results show that it is widespread and numerous in both warmer and cooler regions, from sea level (Antalya, Muğla) to 2200 m altitude (Erzurum, Hakkâri) in various habitats. However, it appears concentrated in the provinces of Antalya and Erzurum. The species has a long flight season, from May to September, and probably there is more than one generation. Several plant species were discovered to be visited by *H. variegatus*. Among them are important forage plants in the country: on *Onobrychis viciifolia*, *Trifolium pratense* and *T. repens* (ÖZBEK 2011, 2018). It is frequently collected in Turkey (35 provinces).

Distribution: Transpalearctic species, from North Africa to Central Asia, Mongolia, China and Russia in the Far East. Frequently recorded from Turkey, Armenia, Azerbaijan, Lebanon and Syria. Turkey: Erzurum (ÖZBEK 1977); Adana, Adıyaman, Ağrı, Aksaray, Antalya, Artvin, Aydın, Balıkesir, Bingöl, Bitlis, Bursa, Denizli, Diyarbakır, Edirne, Erzincan, Hakkâri, Hatay, Iğdır, İstanbul, İzmir, Kars, Kayseri, Konya, Malatya, Mardin, Mersin, Muğla, Niğde, Osmaniye, Siirt, Sinop, Sivas, Tokat, Van.

Hylaeus (Prosopis) variolaris MORAWITZ, 1876

Hylaeus variolaris MORAWITZ, 1876: 286–287, ♀♂. Uzbekistan: Sarafshan.

Prosopis variolaris (MORAWITZ, 1876) – WARNCKE 1981: 154.

Hylaeus (Prosopis) variolaris MORAWITZ, 1876 – DATHE & PROSHCHALYKIN 2017: 43–44; 2018: 76.

Material examined: **Erzurum:** Atatürk University Campus, 1950 m, 13.07.2004, ♂, leg. H. Özbek (on *Melilotus officinalis*) (coll. AMNH). **Kayseri:** Pınarbaşı, 1500 m, 25.06.1987, 2 ♂♂, leg. R. Hensen.

Remarks: Exact collecting data of *H. variolaris* were recently published by DATHE & PROSHCHALYKIN (2017, 2018) for Central Asia. ASCHER & PICKERING (2019) also report the presence of this species in Turkey and Azerbaijan in “Discover Life”, but without precise location information. The species is easy to recognize, so these notifications are quite plausible. In any case, here we report *H. variolaris* as new for the Turkish fauna, and Kayseri is the westernmost distribution point of this species as a whole. *H. variolaris* is only rarely collected in Turkey (2 provinces, Figs 16.10, 17.X).

Distribution: Azerbaijan, Tajikistan, Turkmenistan, Uzbekistan (DATHE & PROSHCHALYKIN 2017; 2018). In Turkey: Erzurum, Kayseri. **New for Turkey.**

Subgenus *Spatulariella* POPOV, 1939

Hylaeus (Spatulariella) alpinus (MORAWITZ, 1867)

Fig. 1a

Prosopis alpina MORAWITZ, 1867: 50, ♀♂. Switzerland: St. Moritz.

Prosopis (Spatulariella) alpina MORAWITZ, 1867 – WARNCKE 1972: 758.

Hylaeus (Spatulariella) alpinus (MORAWITZ, 1867) – DATHE, SCHEUCHL & OCKERMÜLLER 2016: 18, 35.

Material examined: Bursa: Uludağ, 1700 m, 19.07.1987, 2 ♀♀, leg. A.W. Ebmer.

Remarks: *H. alpinus* is a European species, which according to DATHE et al. (2016) is found on mountain locations, preferably at altitudes between 1000 m and 2100 m (Fig. 17.10).

Distribution: Pyrenees, Alps (up to 1900 m), Tatras, Balkans, Northern Greece (Varnous, Pindos). ASCHER & PICKERING (2019) in “Discover Life” state that this species occurs in Turkey, but the dots on their maps refer only to the country, not to a location.

Hylaeus (Spatulariella) adpersus (ALFKEN, 1935)

Fig. 1c

Prosopis adpersa ALFKEN, 1935: 177, ♀. Palestine.

Prosopis (Spatulariella) adpersa ALFKEN, 1935 – WARNCKE 1972: 758; 1981: 164; 1985: 58; 1992: 768.

Material examined: Artvin: Murgul, Damar, 01.07.1997, ♀, leg. Prudek/ Riha. **Kayseri:** Erciyes Mt, 1850 m, 05.07.1984, 2 ♂♂, leg. A.W. Ebmer. **Mersin:** Mezitli, Akarca, 25 km WNW, 805 m, 14.05.1959, ♀, leg. V123. **Sivas:** 40 km W Gürün, Ziyaret Geçidi, 2000 m, 15.07.1986, ♂, leg. A.W. Ebmer.

Remarks: *H. adpersus* can be considered to be a southern Mediterranean species that does not occur in Europe. Here, three Turkish provinces are added to the known distribution. The species has a sporadic distribution. Artvin is the most eastern and northern distribution record of this species in general. It is only sparsely collected in Turkey (6 provinces).

Distribution: Tunisia, Iraq, Israel; Turkey: Mardin, Mersin, Şanlıurfa (WARNCKE 1972); Artvin, Kayseri, Sivas.

Hylaeus (Spatulariella) armeniacus (WARNCKE, 1981)

Fig. 1f

Prosopis (Spatulariella) armeniacus WARNCKE, 1981: 163–165, ♀♂. Turkey: Horasan [Erzurum]. – WARNCKE 1985: 58; 1992: 768.

Hylaeus (Spatulariella) armeniacus (WARNCKE, 1981) – ITIS (2020).

Material examined: Adıyaman: Nemrut Mt National Park, Karadut, 37°56N 38°47E, 02.07.1993, ♂, leg. Jirousek (coll. Schwarz/Ansfelden). **Ağrı:** 10 km South, 1650 m, 26.07.2003, 2 ♂♂, leg. H. Özbek; Hamur, 1650 m, 26.07.2003, 2 ♂♂, leg. H. Özbek. **Şanlıurfa:** Siverek, Karabahçe, 800 m, 09.05.2002, 2 ♂♂, leg. H. Özbek. **Tunceli:** Ovacık 17 km W, 1250 m, 19.08.1985, 2 ♂♂, 4 ♀♀, leg. R. Hensen.

Remarks: Three provinces are added to the distribution records of *H. armeniacus*. It is noteworthy that although Erzurum is the locus typicus of this species and thousands of *Hylaeus* specimens have been collected from various parts of the Erzurum province, including Horasan, unfortunately this species has not been found again. The distribution of *H. armeniacus* is concentrated in the eastern and south-eastern parts of the country. The flight season is from May to the end of August. It is only sparsely collected in Turkey (7 provinces).

Distribution: Azerbaijan, Armenia, Iran, Israel, Lebanon; Turkey: Erzurum, Konya, Mersin, Şanlıurfa (WARNCKE 1981); Adıyaman, Ağrı, Tunceli.

Hylaeus (Spatulariella) cypricola (WARNCKE, 1972)

Fig. 1h

Spatulariella (Brachyspatulariella) dimidiata PITTIONI, 1950: 96–102, ♂♀. Cyprus: Limassol.

Prosopis (Spatulariella) cypricola WARNCKE, 1972: 759, nom. nov. for *Spatulariella dimidiata* PITTIONI, 1950 nec. *P. dimidiata* PERKINS, 1899. – WARNCKE 1985: 58; 1992: 766, 768.

Hylaeus (Spatulariella) cypricola (WARNCKE, 1972) – DATHE 1980: 284.

Remarks: *H. cypricola* was originally described from Cyprus. Warncke stated that it is not endemic there, as DATHE (1980) assumed, because it has been reported from several places in northern Egypt so far (WARNCKE 1992: 766). An occurrence on the nearby Turkish mainland is therefore probable, but despite intensive search in Turkey no sample was found for the present study. The species can therefore not (yet) be counted to the Turkish fauna.

Hylaeus (Spatulariella) hyalinatus SMITH, 1842

Fig. 1b

Hylaeus hyalinatus SMITH, 1842: 58, ♀ ♂. Great Britain.

Prosopis (Spatulariella) hyalinata hyalinata (SMITH, 1842) – WARNCKE 1972: 758; 1981: 165; 1992: 765.

Hylaeus (Spatulariella) hyalinatus SMITH, 1842 – DATHE 1980: 280; DATHE & PROSHCHALYKIN 2018.

Material examined: **Ağrı:** Cumaçay, 1930 m, 23.07.1996, 4 ♀ ♀, leg. P. Rasmont. **Artvin:** Yusufeli, Altıparmak, 1200–1700 m, 29.08.1995, ♀, leg. P. Hartmann; Yaylalar, 2000–2300 m, 29.08.1995, 3 ♀ ♀, leg. M. Kraus. **Bolu:** 40°44N 31°37E, 21.06.1993, ♂, leg. Jirousek. **Erzurum:** Oltu 20 km SW, 07.07.1985, ♂, M. Schwarz. **Konya:** 25 km N, 11.06.1966, ♀, leg. H.H.F. Hamann. **Sivas:** Gürün, 1200 m, 24.07.1986, ♀, leg. S.M. Blank.

Remarks: Here, another five provinces are added to the distribution area of *H. hyalinatus*. It has a sporadic distribution. The majority of the specimens was caught in July and August. The species seems to be missing in the Aegean region. It is sparsely distributed in Turkey (6 provinces).

Distribution: In Europe from Iberia to Greece, east to the Caucasus (DATHE et al. 2016); introduced to North America. In Turkey: Erzurum (ÖZBEK 1977); Ağrı, Artvin, Bolu, Konya, Sivas.

Hylaeus (Spatulariella) iranicus DATHE, 1980

Fig. 1l

Hylaeus (Spatulariella) iranicus DATHE, 1980: 93–94, ♂ ♀. Iran: Damavand (Elburs).

Prosopis (Spatulariella) hyalinata iranica (DATHE, 1980) – WARNCKE 1992: 765, 776.

Material examined: **Erzurum:** Atatürk University Campus, 2000 m, 11.07.2007, 2 ♂ ♂, leg. J.S. Ascher, H. Özbek, J.G. Rozen (coll. AMNH); Köprüköy, 2,5 km N of Örentaş, 04.07.2004, ♀, leg. J.S. Ascher, H. Özbek, J.G. Rozen (coll. AMNH); Tortum, 1400 m, 21.07.2010, 2 ♀ ♀, leg. J.G. Rozen, J.S. Ascher, H. Özbek; Palandöken, 2200–2400 m, 27.07.1986, ♀, leg. A.W. Ebmer; Pasinler, 8 km ENE of Pasinler, 19.07.2010, 2 ♂ ♂, leg. J.S. Ascher, H. Özbek (coll. AMNH). **Gümüşhane:** Torul, 40°34N

39°17E, 1000 m, 12.07.1985, 6 ♀ ♀, leg. M. Schwarz (coll. Schwarz/Ansfelden). **Hakkâri:** Suvarihalil Geçidi, 2500 m, 27.06.1985, ♂, 2 ♀ ♀, leg. M. Schwarz (coll. Schwarz/Ansfelden); Tanin Geçidi, 2200 m, 25.06.1985, ♂, 2 ♀ ♀, leg. C.J. Zwakhals. **Kars:** Sarıkamış, Karakurt, 20 km W, 40°10N 42°22E, 1600 m, 04.07.1985, ♀, leg. M. Schwarz (coll. Schwarz/Ansfelden). **Kahramanmaraş:** Göksun, 1400 m, 26.06.1987, ♀, leg. Hensen. **Konya:** Akşehir, Sultandağları, 1800 m, 18.07.1990, 2 ♀ ♀, leg. A.W. Ebmer. **Mersin:** Mut, Sertavul Geçidi, 1550 m, 08.07.1990, ♀, leg. A.W. Ebmer. **Nevşehir:** Göreme, 38°39N 34°52E, 17.07.1998, 2 ♂ ♂, ♀, leg. C. Schmid-Egger; Ürgüp, Topuzdağı Geçidi, 1300 m, 17.07.1984, ♀, leg. A.W. Ebmer; Avanos, Zelve, 1050 m, 17.07.1984, ♀, leg. A.W. Ebmer. **Sivas:** Gürün, Şuğul Vadisi, 1400 m, 13.07.1990, 3 ♂ ♂, ♀; 31.07.1986, 7 ♂ ♂, 3 ♀ ♀, leg. A.W. Ebmer. **Van:** Başkale, 2200 m, 10.07.1987, 2 ♀ ♀, leg. R. Hensen.

Remarks: *H. iranicus* has a narrow distribution area, it is only known from Iran and Turkey, and in Turkey previously only from Hakkâri and Kars. The present study adds another eight Turkish provinces to the distribution records. Konya is the most western region of the species. *H. iranicus* is quite abundant in the province of Erzurum. As a mountain species it occurs at altitudes of 1000–2500 m, and the samples were collected, probably related to this, mainly in July. Although *H. iranicus* is a recently described species, it has been identified from almost all geographical regions of the country except the Aegean and Marmara regions. It is collected moderately in Turkey (10 provinces).

Distribution: Iran; Turkey: Hakkâri, Kars (WARNCKE 1992), Erzurum, Gümüşhane, Kahramanmaraş, Konya, Mersin, Nevşehir, Sivas, Van.

Hylaeus (Spatulariella) irritans DATHE, 1980

Fig. 1e

Hylaeus irritans DATHE, 1980: 94–95, ♀. Iran: Zoshk.

Prosopis (Spatulariella) alticola WARNCKE, 1981: 162–163, ♂ ♀. Iran: Elburs.

Prosopis (Spatulariella) irritans DATHE, 1980 – WARNCKE 1992: 776.

Material examined: **Ağrı:** Eleşkirt, 2200 m, 14.07.1987, ♀, leg. R. Hensen. **Erzurum:** Köprüköy, 3 km NE of Geyikli, 1700 m, 27.07.2010, ♂, leg. J.S. Ascher, H. Özbek (coll. AMNH). **Sivas:** İmranlı, 40 km E, 1700 m, 15.07.1984, ♂, leg. A.W. Ebmer.

Remarks: Like *H. iranicus*, *H. irritans* was described by DATHE (1980) from Iran. In Turkey, the species had become known from the provinces Erzincan and Hakkâri. The current study adds three more provinces to the distribution records. It is a mountain species that

occurs at 1700–2800 m altitude. We believe that in order to accurately determine the range of this species, further research should be carried out in the mountain regions of the country, especially above 2000 m. It is collected only sparsely in Turkey (5 provinces).

Distribution: Iran, Turkey: Erzincan, Hakkâri (2000–2800 m) (DATHE 1980; WARNCKE 1992), Ağrı, Erzurum, Sivas.

Hylaeus (Spatulariella) longimacula (ALFKEN, 1936)

Fig. 1j

Prosopis hyalinata var. *longimacula* ALFKEN, 1936: 53, ♀ ♂.
Lebanon: Said Neil, Becaa.

Prosopis (Spatulariella) punctata longimacula ALFKEN, 1936 –
WARNCKE 1972: 757; 1981: 189; 1985: 58; 1992: 766.

Hylaeus (Spatulariella) punctatus longimaculus (ALFKEN, 1936)
– DATHE 1980: 286.

Hylaeus (Spatulariella) longimaculus (ALFKEN, 1936) – DATHE
& PROSHCHALYKIN 2018: 79.

John Ascher (Singapore) kindly pointed out to me that the original form "*longimacula*" is to be interpreted correctly as a noun; it therefore remains unchanged as an apposition (HHD).

Material examined: **Adana:** Aladağ, 780 m, 02.07.1985, ♀, leg. Y. Barbier. **Adıyaman:** Kahta, 1700 m, 08.08.1985, ♂, leg. R. Hensen; Karadut, Nemrut Dağı, 37°56N 38°47E, 02.07.1993, ♂, leg. Jirousek. **Ağrı:** Eleşkirt, 30 km W, 2200 m, 14.07.1984, ♀. Leg. R. Hensen. **Aksaray:** Hisar, 23.08.2003, ♂, leg. C. Güçlü. **Ankara:** Kızılcahamam, 29.07.1987, ♂, leg. J. Wimmer; Şereflikoçhisar, 800 m, 23.08.2003, ♂, leg. C. Güçlü. **Antalya:** Alanya, 50 m, 28.07.1985, 10 ♂♂, 5 ♀♀, R. Hensen; Demirtaş, 100 m, 29.07.1985, ♂, leg. R. Hensen; İncekum, 20 m, 07.08.1985, ♂, P. van Ooijen; Akseki, 1200 m, 09.08. 1985, ♂, ♀, leg. P. van Ooijen; Elmalı, 24 km S, 1500–1600 m, 04.07.1990, 2 ♂♂, ♀, leg. A.W. Ebmer; Göltaşı, 13.07.1996, ♂, leg. Brechtel/Ehrmann; Kemer, Kuzdere, Kesme, 130 m, 36°36N 30°29E, 05.06.1998, ♀, leg. Lange/Ziegler; Kuzdere, Kumluca, Arıkanda, 36°28N 30°07E, 11.07.1998, 2 ♂♂, ♀, leg. C. Schmid-Egger; Side, Manavgat, 10 m, 17.06.1987, 2 ♀♀, leg. R. Hensen; Termessos, 16.07.1983, ♂, leg. Niehuis. **Balıkesir:** Burhaniye, 10 m, 18–20.07.1985, 5 ♂♂, 4 ♀♀, leg. P. van Ooijen. **Bingöl:** 5 km E, 1155 m, 30.05.2002, ♀, leg. H. Özbek; Genç, 5 km S, 1400 m, 13.08.1985, ♂, leg. R. Hensen. **Bitlis:** Ahlat, 1750 m, 15.08.1984, ♀, 14 ♀♀, leg. R. Hensen. **Bursa:** 300 m, 20.07.1987, ♂, leg. R. Hensen; Armutlu 15 km NE, 50 m, 27–29.07.1986, 6 ♂♂, 2 ♀♀, leg. P. van Ooijen; 20 km E Armutlu, 30 m, 20–21.08.1985, ♂, 2 ♀♀, leg. P. van Ooijen; Mudanya, 25 m, 25.08.1985, ♀, leg. R. Hensen. **Diyarbakır:** 650 m, 09.08.1985, 4 ♂♂, leg. R. Hensen. **Erzurum:** Atatürk University Campus, 2000 m, 39°53N 41°14E, 18.07.2003, 2 ♀♀, leg. J.G. Rozen, H. Özbek; Oltu, Çamlıbel, 22 km WSW of Oltu, 1700 m, 07.07.2007, 2 ♂♂, ♀, leg. J.S. Ascher, H. Özbek, J.G. Rozen; 14 km ENE of Pasinler,

04.07.2007, ♀, leg. J.S. Ascher, H. Özbek, J.G. Rozen. **Eskişehir:** Sakari, Ilıca, 06–09.07.1997, 5 ♂♂, 4 ♀♀, leg. Prudek/Riha. **Gümüşhane:** Torul, 800 m, 12.07.1985, ♂, leg. C.J. Zwakhals; 1000 m, 40°34N 39°17E, 12.07.1985, 9 ♀♀, leg. M. Schwarz. **Hakkâri:** 35 km E Uludere, 19.09.1983, ♂, ♀, leg. Schmid-Egger; Beytüşşebab, Habur Deresi, 1100 m, 37°32N 43°12E, 01.08.1982, 4 ♀♀, leg. W. Schacht (coll. Schwarz/Ansfelden); Varagöz, 1650 m, 37°25N 44°13E, ♂, 02.08.1986, leg. S.M. Blank; Yüksekova 30 km W, 1850 m, 19.07.1986, ♂, leg. A.W. Ebmer; Sat Dağı, 1700 m, 37°25N 44°13E, 4 ♂♂, 8 ♀♀, 04–08.08.1983, leg. W. Schacht (coll. Schwarz/Ansfelden). **Hatay:** Samandağı, 10 km E, 05.07.1998, 5 ♂♂, 7 ♀♀, leg. T. Osten. **İğdir:** 1000 m, 19.08.1983, 4 ♂♂, ♀, leg. J. Timmer. **İstanbul:** Anadolukavağı, 30 m, 15.07.1987, ♂, 3 ♀♀, leg. P. van Ooijen. **İzmir:** Bergama, 300 m, 22.07.1985, 3 ♂♂, 2 ♀♀, leg. R. Hensen. **Kahramanmaraş:** Göksun, 1400 m, 26.06.1987, ♀, leg. R. Hensen. **Konya:** Beyşehir, 1150 m, 19.08.1987, ♂, ♀, R. Hensen; Bozkır, Sarioğlan, 1000 m, 25.07.2003, ♂, ♀, leg. M. Kesdek. **Mersin:** Erdemli, 24 km NW, 800 m, 06.06.1991, ♂, 2 ♀♀, leg. S. Kadlec; 20 km NW, 900 m, 05.07.1996, 2 ♂♂, 2 ♀♀, leg. Tyrmer/Vorisek; Göktepedağı, 10.07.1998, ♂, leg. M. Riha; Silifke, 35 km NNW, Kargıcan, 200 m, 04.08.1985, ♂, 2 ♀♀, leg. R. Hensen; Uzuncaburç, 400 m, 36°34N 33°57E, 20.07.1998, ♂, leg. C. Schmid-Egger; 400 m, 02.08.1985, 3 ♂♂, 21 ♀♀, leg. R. Hensen; Kızkalesi, Korykos, 10 m, 03.08.1985, 2 ♀♀, leg. R. Hensen. **Muğla:** Datça, 15 km W, 07.10.2007, ♀, leg. DW Baldock; Fethiye, Ölüdeniz, 26.07.1983, ♂, leg. C. Schmid-Egger; Milas, 37°18N 27°57E, 13.07.1998, ♂, 2 ♀♀, leg. C. Schmid-Egger. **Nevşehir:** Acıgöl, Çardak, 38°33N 34°47E, 07.07.1993, ♂, leg. Jirousek (coll. Schwarz/Ansfelden); Kaymaklı, 1200 m, 23.06.1987, ♀, leg. R. Hensen; Ürgüp, 1100 m, 11–15.08.1985, 5 ♂♂, 19 ♀♀, leg. P. van Ooijen. **Siirt:** 10 km S, 37°51N 41°57E, 23.06.1985, ♂, leg. M. Schwarz (coll. Schwarz/Ansfelden). **Sivas:** Gürün, Şuğul Vadisi, 1400 m, 13.07.1990, 6 ♂♂, 2 ♀♀, leg. AW. Ebmer. Şanlıurfa: Birecik, 06.08.1985, ♂, 2 ♀♀, leg. R. Hensen; Halfeti, 425 m, 07.08.1985, 5 ♂♂, 3 ♀♀, leg. R. Hensen (coll. Schwarz/Ansfelden); 400 m, 28.06.1987, 5 ♀♀, R. Hensen (coll. Schwarz/Ansfelden); 37°15N 37°52E, 27.05.1987, ♂, leg. Madl; 38°30N 43°24E, 03.05.1994, ♀, leg. D. Kenes. **Tunceli:** Ovacık, 1250, 19.08.1985, 4 ♂♂, 9 ♀♀, leg. R. Hensen. **Van:** Center, 1700 m, 38°30N 43°24E, 28.06.1993, ♀, leg. M. Halada (coll. Schwarz/Ansfelden). **Yalova:** Çiftlik 4 km E, 50 m, 31.07.1986, ♀, leg. P. van Ooijen. [Kıbrıs, Dipkarpuz, Altinkum, 22.07.2005, 2 ♂♂, leg. H. Özbek (on *Heliotropium europaeum*)].

Remarks: Twenty provinces are hereby added to the range of *H. longimacula*. Available records show that this species is one of the most widespread and abundant species in the country. It occurs in various habitats from sea level with warm climate (Antalya, Muğla) to 2200 m altitude in cool areas (Ağrı, Erzurum), mainly in open fields. Flower visits were observed at *Heliotropium europaeum*. The flight period is from May to September, the

species can have more than one generation a year. It is frequently recorded from Turkey (36 provinces).

Distribution: Southern Mediterranean (Morocco to Egypt), Balkan countries, Middle East, Armenia, Azerbaijan, Georgia, Iran. Turkey: Adana, Afyonkarahisar, Antalya, Bursa, Denizli, Hatay, İstanbul, İzmir, Kastamonu, Konya, Kütahya, Manisa, Mersin, Muğla, Samsun, Tekirdağ (WARNCKE 1972, as *Prosopis punctata longimacula*), Adıyaman, Ağrı, Aksaray, Ankara, Balıkesir, Bingöl, Bitlis, Diyarbakır, Erzurum, Eskişehir, Gümüşhane, Hakkâri, Kahramanmaraş, Nevşehir, Siirt, Sivas, Şanlıurfa, Tunceli, Van, Yalova.

Hylaeus (Spatulariella) planulus (WARNCKE, 1981)

Figs 15, 1k

Prosopis (Spatulariella) planula WARNCKE, 1981: 167–168, ♀ ♂.
Turkey: Hakkâri. – WARNCKE 1992: 768.

Hylaeus (Spatulariella) planulus (WARNCKE, 1981) – **comb. nov.**

Records: Holotype: ♂ Turkey: Pass W Hakkâri in Altın Daglari, 2600–3000 m, 13.08.1979 (leg. Warncke). Paratypes: 1 ♀, 1 ♂ same location.

Remarks: The face of *H. planulus* is flat as a whole, with the supraclypeal area only slightly raised. This is particularly noticeable in the female, where the supraclypeal field merges broadly and flatly into the forehead. The apical process of sternum 8 of the male is large and three-lobed, similar to *H. ibex* MORAWITZ, 1877 (see DATHE & PROSHCHALYKIN 2017: 22); however, in contrast the elongated gonoforcipes remain narrow in width.

H. planulus was described from Hakkâri at altitudes of 2600–3000 m. In the present study no further specimens were recorded. This could be due to the fact that *H. planulus* is species of high altitude. We are of the opinion that for such species more effort should be expended in collecting at high mountains. Currently *H. planulus* appears endemic in Turkey, only known from the type locality (Hakkâri) and represented with three samples (2 ♂ ♂, 1 ♀). It is rarely recorded from Turkey (1 province, Fig. 17.11).

Distribution: Turkey: Hakkâri.

Hylaeus (Spatulariella) punctatus (BRULLÉ, 1832)

Fig. 1i

Prosopis punctata BRULLÉ, 1832: 359, ♂ ♀. Greece: Pamisus valley.

Prosopis (Spatulariella) punctata punctata BRULLÉ, 1832 – WARNCKE 1972: 757; 1992: 766, 768.

Hylaeus (Spatulariella) punctatus (BRULLÉ, 1832) – DATHE 1980: 285; DATHE et al. 2016.

Material examined: Turkey: 06.08.–20.10.1918, ♂, ♀, leg. L. Gardener. **Adana:** Pozantı, 06.07.1983, ♀, leg. J. Hladil. **Antalya:** WNW 25 km, Güllük Dağı, 950 m, 36°59N 30°27E, 04.06.1998, ♂, 4 ♀ ♀, leg. S.M. Blank; Arapsuyu, Azmak, 5 m, 24.09.2004, 2 ♂ ♂, 6 ♀ ♀, 10 m, 15.10.2003, 11 ♂ ♂, 10 ♀ ♀, leg. H. Özbek (*Mentha longifolia*); Akseki, Cevizli, 03.07.1996, ♀, leg. Brechtel/Ehrmann; Altınyaka, 28.05.2009, 1010 m, ♂, leg. J.S. Ascher, H. Özbek, J.G. Rozen; Gündoğmuş, Pembedlik, 1090 m, 36°83N 32°05E, 02.08.2009, ♂, 9 ♀ ♀, leg. C. Schmid-Egger (coll. S.-E.); Gelesendra, 1500 m, 02.08.2009, ♂, 2 ♀ ♀, leg. C. Schmid-Egger (coll. S.-E.); İbradi, 6 km SE, 37°12N 31°55E, 31.07.2009, 3 ♀ ♀, leg. C. Schmid-Egger (coll. S.-E.); Söğütçüme, 1150 m, 36°39N 030°22E, 02.06.1998, ♀, leg. S.M. Blank; Kemer W 7 km, Kesme, 130 m, 36°39N 030°29E, 05.06.1998, 6 ♂ ♂, 12 ♀ ♀, leg. S.M. Blank (on *Paliurus spina-christi*); Termessos, 500 m, 37°02N 30°28E, 25.05.1985, 4 ♀ ♀, leg. H. Rausch; 24.05.2009, ♂, leg. J.S. Ascher, H. Özbek, J.G. Rozen (coll. AMNH). **Aydın:** Kuşadası, 08.05.1992, ♂, leg. W.H. Liebig. **Bilecik:** Osmaneli, 27.06.1983, ♀, leg. J. Hladil. **Erzurum:** Atatürk University Campus, 2000 m, 13.07.2003, 2 ♀ ♀, 14.07.2003, ♀, leg. H. Özbek (on *Melilotus officinalis*); DSİ Gölet, 1960 m, 39°47N 41°09E, 22.07.2005, ♀, Narman, Kireçli Dağı, 1950 m, 17.08.2004, ♀, leg. S. Çoruh; Tortum, Kazandere, 1190 m, 03.08.2004, ♂, leg. S. Çoruh (on *Daucus carota*). **Hatay:** 25.05.1967, ♂, leg. J. Gusenleitner; İskenderun, 20 km S Güzelyayla, 05.07.1996, ♀, leg. Brechtel/Ehrmann; Samandağı, 27.07.1988, ♂, leg. C. Schmid-Egger. **Isparta:** Eğirdir, 15.05.1988, ♂, leg. N. Mohr. **İzmir:** Efes, 18.05.1992, ♀, leg. W.H. Liebig. **Kars:** Paslı, 11.07.1997, ♀, leg. Halada; Sarıkamış, Karakurt, 1500 m, TCK çeşmesi, 40°08N 42°21E, 14.08.2007, ♀, 19.08.2003, 2 ♂ ♂, 9 ♀ ♀, leg. H. Özbek. **Kayseri:** Develi, Kulpak, 38°27N 34°14E, 28.05.2001, leg. W.H. Liebig. **Konya:** 25 km N, 11.06.1966, ♂, leg. H.H.F. Hamann; Bozkır, Sarıoğlan, 1000 m, 25.07.2003, 2 ♂ ♂, leg. M. Kesdek; Eflatunpınarı, 37°51N 31°37E, 15.07.1998, 2 ♂ ♂, ♀, leg. C. Schmid-Egger; Güneysınır, Güragaç, 1020 m, 06.08.2002, ♂, 2 ♀ ♀, leg. M. Kesdek; Seydişehir, 10 km E, 03.07.1996, ♂, leg. Brechtel/Ehrmann. **Mersin:** Balandız, 1000 m, 36°20N 33°46E, 06.06.1985, ♂, ♀, leg. Aspöck/Rausch; Gülnar, 1000 m, 31.07.1988, 3 ♂ ♂, 2 ♀ ♀, leg. C. Schmid-Egger (coll. S.-E.); Silifke, Kızkalesi, 09.05.1988, ♂, leg. N. Mohr; 22.09.1983, ♀, leg. C. Schmid-Egger. **Muğla:** Bafa Gölü, 19.04.1996, 2 ♂ ♂, leg. P. Hartmann; Bodrum, Salmakıs, 37°02N 27°25E, 13–24.07.2001, 5 ♂ ♂, 3 ♀ ♀, leg. F. Burger (on *Polygonum* sp.); Marmaris, Milas 15 km E, 37°18N 27°57E, ♂, leg. C. Schmid-Egger. **Şanlıurfa:** Halfeti, 08.06.1983, ♂, leg. Schmidt. **Van:** Muradiye, 1750 m, 16.07.1988, 2 ♂ ♂, leg. C. Schmid-Egger.

Remarks: This study includes *H. punctatus* from another 14 provinces covering all geographical regions except the Black Sea region. It occurs from sea level (Antalya, İzmir) to 2000 m altitude (Erzurum). The flight season extends from the end of May to mid-October with a peak in June

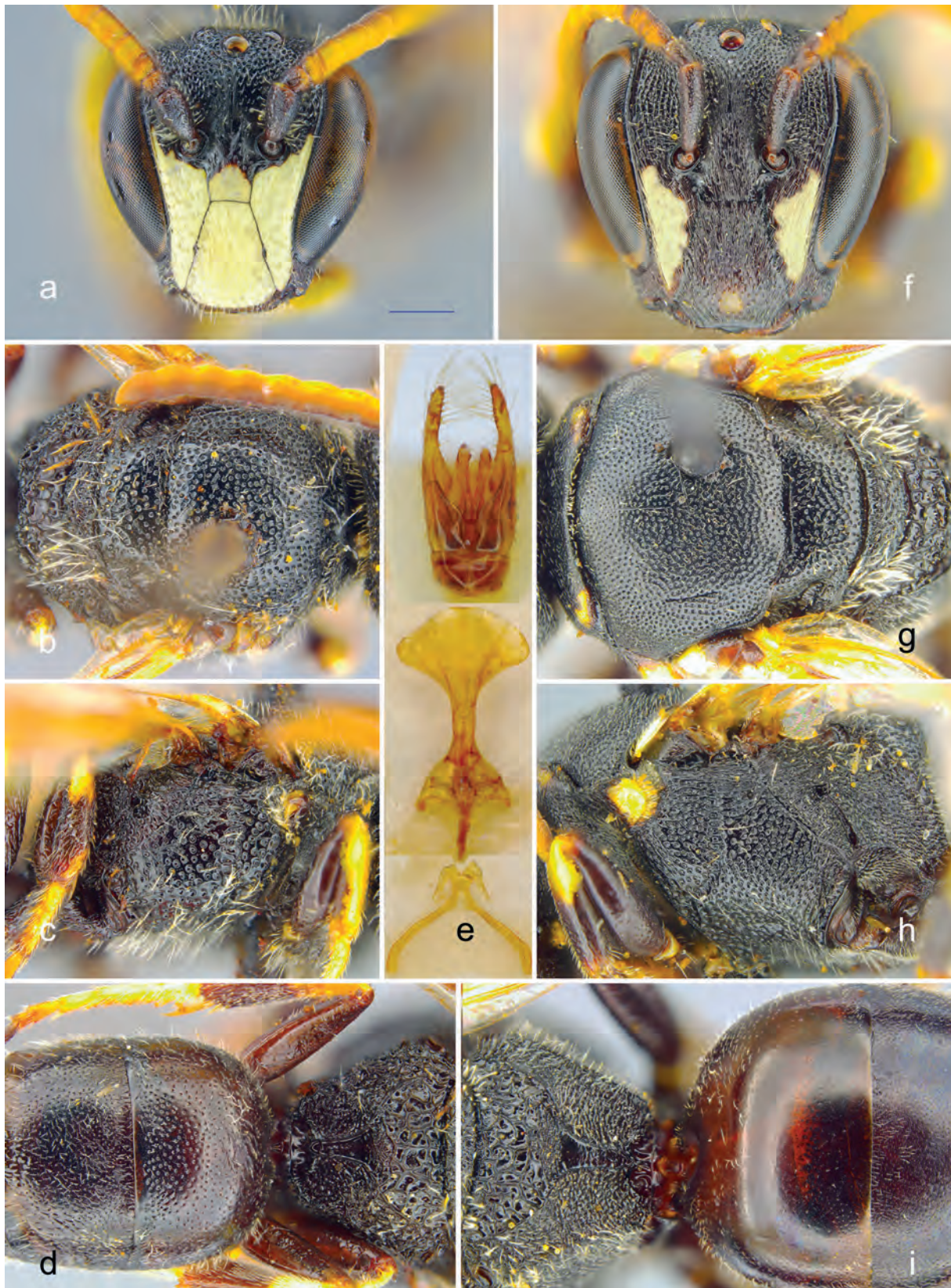


Fig. 15: *H. (Spatulariella) planulus* (WARNCKE, 1981). Holotype male: a–face, b–mesonotum, c–mesopleuron, d–propodeum and metasoma, e–terminalia. Paratype female: f–face, g–mesonotum, h– mesopleuron, i– propodeum and metasoma. – Scale bar 0.5 mm.



Fig. 16: Distribution map of newly recorded *Hylaeus* species in Turkey.



Fig. 17: Distribution map of rarely recorded *Hylaeus* species in Turkey: species collected in only one (I-12) or two (II-X) provinces.

and July. This suggests that *H. punctatus* has more than one generation. Some specimens have been caught on the flowers of the following plant species: *Daucus carota*, *Melilotus officinalis*, *Mentha longifolia* and *Polygonum* sp. It is frequently found in Turkey (15 provinces).

Distribution: A European Mediterranean species known from Azerbaijan, Turkey and Ukraine, introduced in North and South America (SHEFFIELD et al. 2011). In Turkey: Erzurum (ÖZBEK 1977); Adana, Antalya, Aydın, Bilecik, Hatay, Isparta, İzmir, Kars, Kayseri, Konya, Mersin, Muğla, Şanlıurfa, Van. WARNCKE (1992) noted the species in Turkey without location.

Hylaeus (Spatulariella) sulphuripes (GRIBODO, 1894)

Fig. 1g

Prosopis sulphuripes GRIBODO, 1894: 265–266, ♀ ♂. Algeria.

Prosopis (Spatulariella) sulphuripes GRIBODO, 1894 – WARNCKE 1972: 759; 1992: 766, 768.

Material examined: Erzurum: Palandöken Mt, 2200 m, 16.08.1987, ♂, leg. H. Özbek.

Remarks: *H. sulphuripes* is hereby for the first time recorded from Turkey as well the Asian continent. Currently, *H. sulphuripes* is represented by a single sample only. It is rarely recorded in Turkey (1 province, Figs 16.11, 17.12).

Distribution: Southern West Europe, North Africa. **New for Turkey!**

Hylaeus (Spatulariella) tauricus (WARNCKE, 1981)

Fig. 1d

Prosopis hyalinata taurica WARNCKE, 1981: 165–166, ♀ ♂.
Turkey: Sertavul/Taurus.

Hylaeus (Spatulariella) tauricus WARNCKE, 1981 – **comb. nov.**

Material examined: **Aksaray:** Sivrihisar Geçidi, 1800 m, 38°16N 34°19E, 03.07.1984, ♀, leg. A.W. Ebmer. **Ardahan:** Hanak, 2100 m, 25.07.1986, ♀, leg. A.W. Ebmer. **Erzurum:** Palandöken, 2200–2400 m, 27.07.1986, 2 ♂ ♂, ♀, leg. A.W. Ebmer; Pasinler, Çalıyazı, 2300 m, 13.07.1997, ♂, leg. E. Yıldırım (on *Cephalaria procera*); Ügümü, 1600 m, 10.07.2007, ♂, leg. H. Özbek; Tortum-Narman arası, Kireçli Geçidi, 2100 m, 14.07.1984, ♂, leg. A.W. Ebmer. **Kayseri:** Erciyas Dağı, 1850 m, 05.07.1984, 2 ♂ ♂, leg. A.W. Ebmer; Develi Geçidi, 1800 m, 15.07.1990, ♀, leg. A.W. Ebmer; Bakırdağı, Gez Beli, 1750–1900 m, 06.07.1984, ♂, 2 ♀ ♀, leg. A.W. Ebmer. **Sivas:** Yıldızeli, Çamlıbel Geçidi, 1600–1700 m, 16.07.1984, ♂, leg. A.W. Ebmer.

Remarks: *H. tauricus* was first described from Mersin and Karaman as a subspecies of *Hylaeus hyalinatus* at altitudes of 1200–1300 m (WARNCKE 1981). In the present study it is reported from another five provinces. The species has a sporadic distribution and could be considered as a mountain species occurring between 1200 m and 2400 m above sea level. It is only sparsely collected in Turkey (7 provinces).

Distribution: Turkey: Mersin, Karaman (WARNCKE 1981); Aksaray, Ardahan, Erzurum, Kayseri, Sivas.

Discussion

In this study we list records of 73 species from 10 subgenera of the genus *Hylaeus* from more than 1600 locations in Turkey. Together with the published records, 86 species were identified for the area. Worldwide, the genus comprises 52 subgenera with about 600 species, of which more than 200 occur in the Palaearctic (MICHENER 2007; DATHE 2015; PROSHCHALYKIN & DATHE 2017). As we have shown, more than 40 % of the Palaearctic species live in Turkey. For comparison: according to current knowledge, 57 *Hylaeus* species are recorded from Russia (PROSHCHALYKIN & DATHE 2012; 2017), and 70 species from Central Asia (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan) (DATHE & PROSHCHALYKIN 2018), whereby the special importance of this area as a centre for the development of biological diversity has been repeat-

edly emphasized (DATHE & PROSHCHALYKIN 2017). Eleven of the 52 *Hylaeus* subgenera worldwide occur in the Western Palaearctic (DATHE & PROSHCHALYKIN 2018). With the exception of the subgenus *Mehelyana* SANDHOUSE, 1943, which contains only one very rare species, *H. friesei* (ALFKEN, 1904), all these subgenera are also found in Turkey. *Hylaeus* s. str. proves to be dominant with 26 species; *Prosopis* is already clearly less well represented with 16 species, while *Dentigera* and *Spatulariella* each have 12 species, *Paraprosopis* 8 species, *Lambdopsis* 5, *Koptogaster* 3 and *Patagiata* 2. The subgenera *Abrupta* and *Nesoprosopis* are each represented by a single species.

Despite intensive collection efforts for many years throughout the whole country, we could not rediscover 13 of the known species: *Hylaeus chukar*, *H. tephronotus* and *H. planulus* were described from Hakkâri (WARNCKE 1981, 1992); *H. decaocto* from Hakkâri and Konya; *H. funereus* from Hakkâri and Adıyaman; *H. giresunus* from Hakkâri and Giresun; *H. torquatus* from Mardin, known also from Hakkâri and Siirt; *H. cervinus* from Erzurum and Kars (WARNCKE 1992), but recorded also from Adana (DATHE 2000); *H. monedulus* from Bitlis; *H. trochilus* from Niğde (WARNCKE 1992); and *H. tetrus* from Isparta and Kayseri (DATHE 2000) (Fig. 17). It is worth mentioning that apart from *H. torquatus*, *H. araxanus* and *H. crassanus*, the remaining species mentioned above as well as *H. funereus*, *H. kurdus*, *H. planulus* and *H. tauricus*, are currently known from Turkey exclusively. They may be considered endemic to the country. Interestingly, *H. araxanus* was described after a single male from Iğdır (WARNCKE 1981) (Fig. 17), but no other Turkish specimen has been registered. WARNCKE (1981: 192) mentioned 146 specimens of both sexes as paratypes from Iran, and only recently DATHE & PROSHCHALYKIN (2018) discovered that the species occurs quite frequently in Central Asian countries. *H. crassanus* has only been recorded from İstanbul (WARNCKE 1972) (Fig. 17).

The presence in Turkey of two species, *H. cypricola* and *H. damascenes*, is not definitely documented. The first was described from Cyprus and reported from Egypt (WARNCKE 1992), but an occurrence on the nearby Turkish mainland is probable. The second is reported from Syria, Lebanon, Iraq and Iran. WARNCKE (1981, 1985) mentioned the occurrence of this species in southern Turkey, but does not give a locality. According to ASCHER & PICKERING (2019) these two species are present in Turkey. Another riddle: a male of *H. tephronotus* is unknown, although the original series comprises nine females.

Of the 73 *Hylaeus* species here recorded, 11 are new to the Turkish fauna: *H. kahri*, *H. pallidicornis*, *H. deceptorius*, *H. gracilicornis*, *H. paulus*, *H. trisignatus*, *H. pectoralis*, *H. incongruus*, *H. trinotatus*, *H. variolaris* and *H. sulphuripes*. Of these, *H. kahri* occurs particularly frequently throughout the country (23 provinces). *H. paulus* is moderately abundant (12 provinces), while three species, *H. pallidicornis*, *H. deceptorius* and

H. trinotatus, were recorded sparsely (5, 4 and 3 provinces respectively). The rest of them are rare: *H. pectoralis* and *H. variolaris* were found in two provinces, *H. gracilicornis*, *H. trisignatus*, *H. incongruus* and *H. sulphuripes* each in only one province (Fig. 17). With the exception of *H. trinotatus*, which occurs in central and western Anatolia, the other species mainly occur in eastern Anatolia; for example, seven species from Erzurum, four species from Hakkâri, two species from Ağrı, Bingöl and Van. The provinces Adiyaman, Bitlis, Mardin and Şanlıurfa are each represented by a single species (Fig. 17). The eastern part of Turkey can therefore be regarded as a special centre for richness and diversity of *Hylaeus* species. In Eastern Anatolia, the altitude of the mountains exceeds 2500–3500 m, with numerous narrow valleys and high plains. Overall, it is a biologically rich landscape, which is the main reason that Anatolia, especially its eastern part, has a high biodiversity. TERZO (1998) found a similar situation for the bee genus *Ceratina* in the Middle East, stressing that “In the western Palearctic region, the eastern part of Turkey, all the species of the subgenus *Euceratina* occurring in the Near East are present in East-Turkey and not the reverse”.

The present data show that the ranges of the Turkish *Hylaeus* species are variable; 21 species are rarely recorded from one or two provinces, 22 species are sparsely recorded (3–7 provinces), 20 species are moderately (8–17) and 21 species are frequently recorded (18 and more). The rarely recorded species (Fig. 17) *H. chukar*, *H. tephronotus*, *H. planulus* are known from the type locality Hakkâri, whereas *H. araxanus*, *H. trochilus*, *H. monedulus* are registered from the type localities Iğdır, Niğde and Bitlis (WARNCKE 1981, 1992). *H. araxanus* is only represented by one male (holotype), *H. trochilus* by three specimens, and *H. monedulus* by two specimens. Two species are European: *H. crassanus* was already known from İstanbul (WARNCKE 1972), whereas *H. alpinus* has been recorded from Bursa in the present study. The occurrence of *H. trisignatus* was previously considered to be restricted to Central Asia (PROSHCHALYKIN & DATHE 2018), but it is interestingly recorded from Hakkâri, represented by one female. The transpalearctic species *H. gracilicornis* was recorded from Hakkâri. *H. incongruus*, with a distribution range from Europe to Eastern Siberia, and *H. sulphuripes*, hitherto known from Southwest Europe and North Africa, are both recorded newly from Erzurum. The first is represented by six specimens, and the second by a single specimen.

Of three species not represented by recent specimens, *H. decaocto* and *H. tetrus* (Fig. 17) are rare species, each represented by two specimens, while *H. funereus* material is available from several collection events. Rare species found again recently in Turkey are the European *H. glacialis* (from Erzurum and Hakkâri; 5 specimens), the transpalearctic *H. pectoralis* (from Erzurum and Muğla; 4 specimens), and the Asian species *H. maculatus* from Gümüşhane (4 specimens) and *H. variolaris* from Siirt, Kayseri and Erzurum (3 specimens). *H. jantaris* was

first discovered in Hakkâri (DATHE 1980) and is currently recorded from Van and Hakkâri; although this species is known from only two provinces, it is quite numerous there.

Some of the frequently recorded species are very common and abundant: *H. meridionalis* is the most widespread and abundant *Hylaeus* species, ranging from warmer (seashore, Antalya, Muğla, Yalova) to colder regions (2800 m Erzurum), and mostly in open areas, in 46 provinces. With 41 and 40 provinces *H. lineolatus* and *H. imparilis* follow that species. Both species have Palearctic distribution areas. In addition, four species were recorded from more than 30 provinces: *H. cornutus* and *H. longimacula* from 36 provinces, *H. variegatus* and *H. leptocephalus* from 35 and 31 provinces respectively.

Comparing the distribution of *Hylaeus* species in Turkey, we note that almost all those which were previously unrecorded, or infrequently collected, are high mountain species that live at an altitude of 2000 to 3500 m. We believe that in order to define accurately the distribution of these species, and even detect additional species, further research should be focused on the mountainous regions of the country (above 2000 m), especially in Eastern Anatolia, throughout the season.

The following plant species have been observed to be visited preferentially by Turkish *Hylaeus* species: *Achillea millefolium*, *Ammi visna*, *Astrodaucus orientalis*, *Centaurea solstitialis*, *Daucus carota*, *Eryngium billardieri*, *E. campestre*, *E. creticum*, *Echium italicum*, *Euphorbia altissima*, *Heliotropium europaeum*, *Hippomarathrum microcarpum*, *Melilotus alba*, *M. officinalis*, *Mentha longifolia*, *Onobrychis viciifolia*, *Polygonum* sp., *Tortilis uranica*, and *Vitex agnus-castus*.

Our investigation still leaves many questions unanswered. Overall, we still know far too little about our bees, including the taxonomic status of numerous species, their distribution, phenology and ecology. The data show many gaps and often only few records in proportion to a vast territory. Nevertheless, we have every reason to emphasize once again the richness of the Turkish fauna, its diversity, and assuredly also its ecological importance. We assume that this first modern inventory is only a beginning, notwithstanding the numerous sites and samples. We therefore suspect the existence of unknown, additional components in this rich biodiversity, which can only be gradually revealed by further, above all targeted investigations. It is an important objective of our present work to encourage this and to provide some assistance.

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