

New records for a catalogue of Chalcididae (Hymenoptera, Chalcidoidea) from Morocco

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Abstract

New records for a catalogue of Chalcididae (Hymenoptera, Chalcidoidea) from Morocco. Three species of Chalcididae (Hymenoptera, Chalcidoidea) were newly recorded from Morocco during a study carried out in the Maâmora forest between 2012 and 2014: *Hockeria bifasciata* (Walker, 1834), *H. mengenillarum* (Silvestri, 1943) and *Proconura decipiens* (Masi, 1929). *P. decipiens* (Masi, 1929) *stat. rev.* will be removed from synonymy with *P. nigripes* (Fonscolombe, 1832). This study includes bibliographical research and revision of specimens deposited in the National Museum of Natural History, Scientific Institute of Rabat (Morocco). Twenty–six species and fourteen genera belonging to the family Chalcididae (Hymenoptera, Chalcidoidea) are now catalogued from Morocco.

Data published through GBIF ([Doi: 10.15470/nochzr](https://doi.org/10.15470/nochzr))

Key words: Hymenoptera, Chalcididae, New data, Maâmora, Morocco

Resumen

Nuevos registros para un catálogo de Chalcididae (Hymenoptera, Chalcidoidea) de Marruecos. Se han registrado tres nuevas especies de Chalcididae (Hymenoptera, Chalcidoidea) en Marruecos, a partir de un estudio realizado en el bosque de Maâmora entre 2012 y 2014: *Hockeria bifasciata* (Walker, 1834), *H. mengenillarum* (Silvestri, 1943) y *Proconura decipiens* (Masi, 1929). *P. decipiens* (Masi, 1929) *stat. rev.* dejará de considerarse sinónimo de *P. nigripes* (Fonscolombe, 1832). Este estudio se ha completado con investigación bibliográfica y la revisión de los especímenes depositados en el Museo Nacional de Historia Natural, Instituto Científico de Rabat (Marruecos). El artículo hace referencia a veintiséis especies y catorce géneros pertenecientes a la familia Chalcididae (Hymenoptera, Chalcidoidea) presentes en Marruecos.

Datos publicados en GBIF ([Doi: 10.15470/nochzr](https://doi.org/10.15470/nochzr))

Palabras clave: Hymenoptera, Chalcididae, Nuevos datos, Maâmora, Marruecos

Resum

Nous registres per a un catàleg de Chalcididae (Hymenoptera, Chalcidoidea) del Marroc. S'han registrat tres noves espècies de Chalcididae (Hymenoptera, Chalcidoidea) al Marroc, a partir d'un estudi portat a terme al bosc de Maàmora entre 2012 i 2014: Hockeria bifasciata (Walker, 1834), H. menginillarum (Silvestri, 1943) i Proconura decipiens (Masi, 1929). P. decipiens (Masi, 1929) stat. rev. deixarà de ser considerat sinònim de P. nigripes (Fonscolombe, 1832). Aquest estudi s'ha completat amb recerca bibliogràfica i la revisió dels espècimens dipositats al Museu Nacional d'Història Natural, Institut Científic de Rabat (Marroc). L'article fa referència a vint-i-sis espècies i catorze gèneres pertanyents a la família Chalcididae (Hymenoptera, Chalcidoidea) presents al Marroc.

Dades publicades a GBIF ([Doi: 10.15470/nochzr](https://doi.org/10.15470/nochzr))

Paraules clau: Hymenoptera, Chalcididae, Noves dades, Maàmora, Marroc

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Introduction

Chalcididae Latreille, 1817 (Hymenoptera, Chalcidoidea) is a moderately large family with worldwide distribution. The family currently contains 85 genera and 1,564 species placed in five subfamilies (Noyes, 2019). All Chalcididae increase in abundance on approaching the Mediterranean rim (De Lombaerde et al., 2002). All Chalcididae are parasitoids of larvae or pupae of other insects, mostly Lepidoptera and Diptera (Delvare, 1995) and are described as host group specific endoparasitoids (Dajoz, 2010) of Lepidoptera, Diptera, Coleoptera larvae, and even some species of Tenthredinidae (Hymenoptera, Symphyta) and some Neuroptera (Bouček, 1988; Herting, 1978). One–hundred and twenty–two hosts can be parasitized by 25 species of Chalcididae; of these, 89 are Lepidoptera, 16 Diptera, 13 Hymenoptera, and four Coleoptera (Ferrer, 2010).

The literature concerning Chalcididae in Morocco is limited to notes on just one or a few species. The first, *Neochalis barbara* Benoist, 1921 (= *Neochalcis fertoni* Kieffer, 1899) was reported in 1921 by Benoist from a Casablanca aviation camp (Casablanca–Settat region), and this was followed by an account by De Lépiney (1927, 1930) of *Brachymeria tibialis* (Walker, 1834) as a parasitoid of the gypsy moth *Lymantria dispar* (Linnaeus, 1758) (Lepidoptera, Lymantriidae) as a defoliator causing serious damage to cork oak. Other species, mainly hosts of this family, have been cited by Bléton and Fieuzet (1939), Steffan (1948), Bouček (1952), Chakir and Fraval (1985), Villemant (1989), Villemant and Fraval (1993). Delvare et al. (1999) reported that *Belaspidia* is represented by two species. The Chalcidoidea Database mentions only nine species for Morocco (Noyes, 2019).

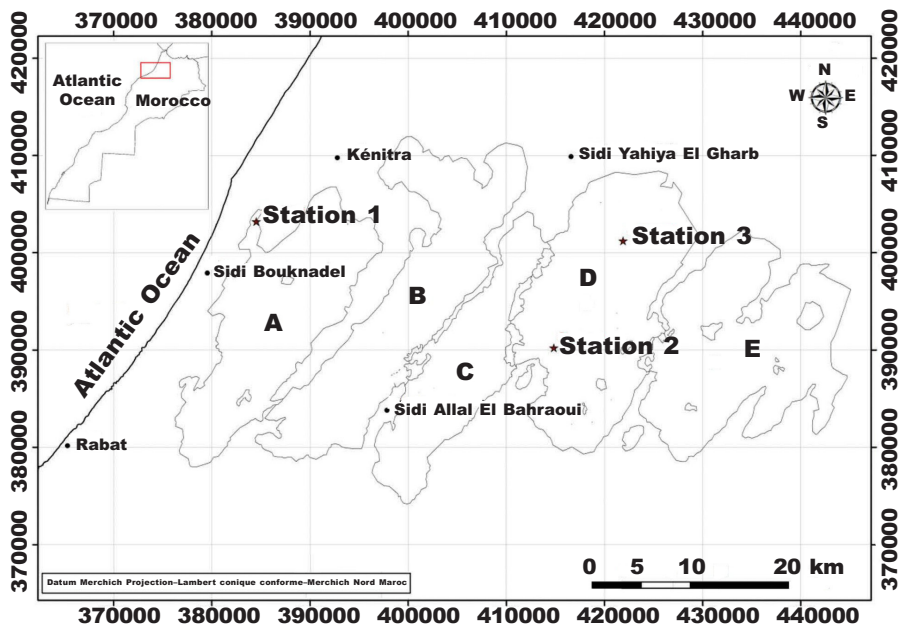


Fig. 1. Study sites (★) and location of sampling trap in Maâmora forest with its different cantons (A, B, C, D and E).

Fig. 1. Puntos de estudio (★) y emplazamiento de las trampas de muestreo en el bosque de Maâmora con las distintas divisiones del mismo (A, B, C, D y E).

The aim of this study is to present for the first time a faunistic synthesis of Moroccan Chalcididae wasps with new records and information about their distribution.

Material and methods

The material studied here belongs to samples collected by the authors in the field together with revision of the material deposited in the MNHNM. Bibliographical data have also been added in this study.

Study area

The specimens were collected at three locations within the forest of Maâmora, Morocco (fig. 1): (1) Station 1: Taïcha, located near the forestry post Taïcha in the western Maâmora, canton A, commune Sidi Taïbi, 34° 13' 29.5" N, 6° 39' 04.8" W, 36 m; (2) Station 2: Al Maha, located in a private reser" W, 175 m; and (3) Station 3: Aïn Assou, located near the forestry post Aïn Assou in the northern Maâmora, canton D, commune Kceïbia, 34° 12' 07.9" N, 6° 15' 10.8" W, 84 m.

The climate of the Maâmora forest is in general thermo–Mediterranean, sub–humid at the first station and semi–arid at the other two stations (Métro and Sauvage, 1955). Geographical positions are given using coordinates in Merchich's geographic reference system.

Sampling method

All samples were collected by K. Kissayi (first author), using one Malaise trap per station once a week over three periods: 26 April to 8 October 2012, 24 May to 23 September 2013 and 27 November 2013 to 14 June 2014. After sorting, specimens were preserved in 70 % alcohol prior to identification.

Identifications

Identifications were carried out by G. Delvare (CIRAD) and K. Kissayi using keys in Habu (1960, 1962), Bouček (1951, 1956, 1988), Bouček and Sedivy (1954), Ferrière and Kerrich (1958), Bouček and Narendran (1981), Narendran (1984, 1986, 1989), Delvare (1988, 1992, 1993), Bouček and Delvare (1992), Bouček and Halstead (1997), Narendran and van Achterberg (2016) and Delvare (2017).

Abbreviations used in the text

CIRAD, Center for International Cooperation in Agronomic Research for Development, Montpellier, France
MNHN, National Museum of Natural History, Scientific Institute, Rabat, Morocco
MNHN, National Museum of Natural History, Paris, France
ITSHM, Institute of Specialized Technicians in Horticulture, Meknes, Morocco
NHM, Natural History Museum Bern, Switzerland
GDPC, Gérard Delvare personal collection
KKPC, Khadija Kissayi personal collection

Results

A total of 4 subfamilies, 14 genera and 26 species of Chalcididae were recorded from Morocco, dataset published in GBIF ([Doi: 10.15470/nochzr](https://doi.org/10.15470/nochzr)): Chalcidinae (7 species), Craetocentrinae (1 species), Dirhininae (2 species) and Haltichellinae (16 species).

Annotated list of Chalcididae species

The list of Moroccan Chalcididae shown below is arranged by subfamilies, tribes, genera and species in alphabetical order. Under distribution in Morocco we include localities and dates of capture (Morocco' indicates that a more precise locality is unavailable).

Remarks. The genus and/ or species mentioned for the first times from Morocco are indicated by *.

New records from Morocco

Subfamily Haltichellinae Ashmead, 1904

Tribe Haltichellini Ashmead, 1904

***Hockeria* Walker, 1834**

****Hockeria bifasciata* Walker, 1834 (fig. 2)**

Distribution in Morocco: Fir forest of the National Park of Talassemthane.

Examined material: Maâmora Forest, canton A, commune Sidi Taïbi, Taïcha, 1♀, 2 VII 2013, canton D, commune Aïn Johra, Al Maha, 1♀, 13 VIII 2013, K. Kissayi leg. (KKCP).

Remarks: this species has a Palaearctic and Indian distribution and is identified for the first time from Morocco. It was previously cited from North Africa from Algeria by Lucas (1849).



Fig. 2. *Hockeria bifasciata* Walker, ♂, habitus side view. (Photo by K. Kissayi.)

Fig. 2. *Hockeria bifasciata* Walker, ♂, habitus, vista lateral. (Fotografia de K. Kissayi.)

****Hockeria menginillarum* (Silvestri, 1943)**

Examined material: Maâmora Forest, canton D, commune Aïn Johra, Al Maha, 1♀, 13 VIII 2013, K. Kissayi leg. (GDGP).

Remarks: Hitherto only known from Italy (Silvestri, 1943) and Turkey (Öncüer, 1991). New from North Africa (Morocco).

Tribe Hybothoracini Bouček, 1952

****Proconura* Dodd, 1915**

****Proconura decipiens* Masi, 1929 (fig. 3)**

Examined material: Maâmora forest, canton D, commune Kceïbia, Aïn Assou, 1♂, 26 III 2013; 1♀, 1♂, 02 VIII 2013; 1♀, 14 VIII 2012; 1♀, 29 VIII 2012, K. Kissayi leg. (KKCP).

Remarks: new record from North Africa (Morocco).

Species previously known in Morocco

There are species already mentioned in the literature but not found in the present study, and also species deposited in museums in addition to those already cited in the catalogue of Noyes (2009).

Subfamily Chalcidinae Latreille, 1817

Tribe Brachymeriini Mani, 1938

***Brachymeria* Westwood, 1829**

***Brachymeria minuta* (Linnaeus, 1767)**

Examined material: Gardens of ITSHM, 4♀♀, 2♂♂, 16 XII 2015, K. Kissayi leg.

Remarks: species previously mentioned in Morocco by Jourdan and Rungs (1934: 210) in Rabat and in Tangier (MNHN, Rabat) and this record is not included in Noyes (2019).



Fig. 3. *Proconura decipiens* (Masi, 1929), ♀, habitus side view. (Photo by C. Locatelli.)

Fig. 3. *Proconura decipiens* (Masi, 1929), ♀, habitus vista lateral. (Fotografia de C. Locatelli.)

***Brachymeria rugulosa* Förster, 1859**

Remarks: species previously mentioned in Morocco by Fabre and Mouna (1983: 4) in Ras-al-Ma, Azrou, Aïn Kahla.

***Brachymeria secundaria* (Ruschka, 1922)**

Remarks: species previously mentioned in Morocco by Villemant and Fraval (1993: 93) in Maâmora forest and this record is not included in Noyes (2019).

***Brachymeria tibialis* (Walker, 1834)**

Examined material: Tangier, 1919, J. De Gaulle leg. (MNHNM, under the name *Chalcis minuta* with an erroneous identification and the specimens under the name *Chalcis intermedia*); Maâmora forest, 7 specimens, 1924, A. Théry leg., L. Berland det. (MNHNM, under name *Chalcis flavipes*).

Remarks: this species was previously mentioned in Morocco from Maâmora forest (De Lépiney, 1930: 87; Villemant and Fraval, 1993: 93; Villemant, 1989: 126); Daïet Achleff, Middle Atlas, about 1,800 m, 19 VII 1938 (Bleton and Fieuzet, 1939: 62), Middle Atlas (Fabre and Mouna, 2005: 93), Azrou Forests (De Lépiney and Mimeur, 1932: 72); Larache, Aïn fefel, Jbel Tazekka, Chaoun (Hérard and Fraval, 1980: 44), Fir forest of Talassemtane National Park (Benyahia 2016: 167); Zaer forest (De Lépiney and Mimeur, 1932: 72), Mechrâ el Kettane, Bled Dendoun, Kenitra (De Lépiney, 1927: 165).

***Brachymeria vitripennis* Förster, 1859**

Remarks: this species was previously mentioned in Morocco by Anonymous (1938: 4) from Tadla, Doukkala, Loukkos, Moulouya, Gharb, Tetouan, Tangier, Haouz. This record is not included in Noyes (2019).



Fig. 4. *Chalcis myrifex* (Sulzer), ♀, habitus lateral view. (Photo by K. Kissayi.)

Fig. 4. *Chalcis myrifex* (Sulzer), ♀, habitus vista lateral. (Fotografia de K. Kissayi.)

Tribe Chalcidini Fabricius, 1775

Chalcis Fabricius, 1787

Chalcis myrifex (Sulzer, 1876) (fig. 4)

Examined material: Tangier, ♀, 1914, Ernest André leg. (MNHN, under the name *Smicra myrifex*).

Remarks: species mentioned in Europe, North Africa and North America. First record from Morocco; previously mentioned in North Africa from Tunisia (Bouček, 1952, 1977).

**Chalcis sispes* (Linnaeus, 1760) (fig. 5)

Examined material: Tangier, 4 specimens, 1911, J. Vachal leg.; same locality, 7 specimens, 1915, Ernest André leg. (MNHN).

Remarks: species mentioned in Europe and North America. First record from Morocco; previously mentioned in North Africa from Tunisia (Bouček, 1952).

Subfamily Cratocentrinae Steffan, 1951

The subfamily Cratocentrinae (Hymenoptera, Chalcididae) was reviewed and reassessed by Heraty et al. (2013) and recently by Delvare (2017) and Abul-Sood et al. (2018).

Cratocentrus Cameron, 1907

Cratocentrus fastuosus (Masi, 1944)

Examined material: Rabat, 1♀, 22 VII 1938, Ch. Rungs leg., J. R. Steffan det.; Beni Amer, 32° 30' N, 6° 42' W, 1♂, 1♀, 17 V 1947, Ch. Rungs leg., J. R. Steffan det. (MNNH).

Remarks: species previously mentioned in Morocco from Taghazoute, 20 km N Agadir, Volubilis, Moulay Idriss (Abul-Sood et al., 2018: 500), Herting (1973: 31, 53) and by Steffan (1959: 313) without locality; the examined material probably corresponds to Steffan records published in 1959.



Fig. 5. *Chalcis sispes* (Linnaeus, 1760), habitus dorsal view. (Photo by K. Kissayi.)

Fig. 5. *Chalcis sispes* (Linnaeus, 1760), habitus vista dorsal. (Fotografia de K. Kissayi.)

Subfamily Dirhininae Ashmead, 1988

Tribe Dirhinini Ashmead, 1904

***Dirhinus* Dalman, 1818**

***Dirhinus* (*Dirhinus*) aff. *hesperidum* (Rossi, 1790)**

Remarks: this species was reported by Delvare and Copeland (2018) from Moulay Idriss, the ancient city of Volubilis, and 18 km N Souk–El Arbaa du Gharb, but it is not included in Noyes (2019).

***Dirhinus himalayanus* Westwood, 1836**

Remarks: this species was reported by Blanchot (1992: 7) from Zagora, a large number in swine facility but it is not included in Noyes (2019).

Subfamily Haltichellinae Ashmead, 1904

Tribe Haltichellini Ashmead, 1904

***Antrocephalus* Kirby, 1883**

***Antrocephalus cameroni* Delvare, 2017**

Remarks: this species was reported by Delvare (2017: 257) from Oued Assaka, and Moulay Idriss, ancient city of Volubilis, GDPC (G. Delvare, pers. comm.).

***Antrocephalus hypsopygiae* Masi, 1928**

Remarks: this species collected from Oued Cherrat, NHM (G. Delvare, pers. comm.); previously mentioned from Morocco by Lotfalizadeh et al. (2012: 79).

***Belaspida* Masi, 1916**

***Belaspida obscura* Masi, 1916**

Remarks: this species mentioned in Morocco from Essaouira–Agadir road, 1 km N Oued Ibouzoule (Delvare et al., 1999: 338); Tata Province, Tichekji; Province of Chtouka Ait Baha, Ait Baha (Stefanescu et al., 2012: 88, 91).

***Belaspida tussaci* Delvare, 1999**

Remarks: species described from Morocco material collected from Arbaoua (Delvare et al., 1999: 339).

***Chirocera* Latreille, 1825**

***Chirocera pectinicornis* (Latreille, 1809)**

Remarks: species known from Morocco (Steffan, 1957: 140) not included in Noyes (2019).

***Haltichella* Spinola, 1811**

***Haltichella rufipes* (Olivier, 1791)**

Remarks: species mentioned in Morocco from Rabat (Rungs, 1936: 18), not included in Noyes (2019).

***Hockeria* Walker, 1834**

***Hockeria singularis* Bouček, 1952**

Remarks: species known in Morocco locality not indicated (Steffan, 1953: 11).

***Hockeria unicolor* Walker, 1834**

Examined material: Maâmora Forest, canton D, commune Aïn Johra, Al Maha, 1♀, 06 IX 2012, K. Kissayi leg.

Remarks: species previously mentioned in Morocco by (Bouček, 1952: 69).

***Neochalcis* Kirby, 1883**

***Neochalcis fertoni* Kieffer, 1899**

Examined material: Maâmora forest, 1 specimen, 18 VI 1925 (MNHN under the name *Neochalis barbara*).

Remarks: species previously mentioned in Morocco from Casablanca (Benoist, 1921: 119).

Tribe Hybothoracini Bouček, 1952

***Bucekia* Steffan, 1951**

***Bucekia differens* (Bouček, 1949)**

Remarks: species mentioned in Morocco (Falahatpisheh et al., 2018: 258) not included in Noyes (2019).

***Lasiochalcidia* Masi, 1929**

***Lasiochalcidia pubescens* (Klug, 1834)**

Remarks: species known in Egypt, Iran and Morocco; in Morocco from Tangier (Bouček, 1952: 104, Steffan, 1951a: 5 and 1951b: 77) but these records are not included in Noyes (2019).

***Lasiochalcidia rubripes* (Kieffer, 1899)**

Remarks: species known from Italy (Corsica only), Hungary and Morocco; in Morocco it was reported by Falahatpisheh et al. (2018: 260) but this record is not included in Noyes (2019).

***Psilochalcis* Kieffer, 1905**

***Psilochalcis benoisti* (Steffan, 1948)**

Remarks: species distributed in Europe and North Africa. In Morocco it was reported by Steffan (1948: 121, 1951a: 61; Bouček, 1956: 244).

Discussion

This study presents data, for the first time, on 26 species of Chalcididae (Hymenoptera: Chalcidoidea) belonging to 14 genera and 4 subfamilies in Morocco. Of these, *Hockeria bifasciata* Walker, 1834, *H. mengenillarum* (Silvestri, 1943), and the genus *Proconura* represented by *P. decipiens* (Masi, 1929), found in cork oak forest of Maâmora, are new records from Morocco. These species are possibly economically relevant because they are parasitoids of various pests. *Hockeria bifasciata* is reported as a primary parasitoid of some families of Lepidoptera, and *H. mengenillarum* is also a primary parasitoid of Strepsiptera (Bouček, 1952). Hosts quoted for *P. nigripes* require confirmation because *P. nigripes* and *P. decipiens* are two distinct species that have been erroneously synonymized (G. Delvare, pers. com.). Moreover, according to the literature, four genera (*Bucekia* Steffan, *Chirocera* Latreille, *Dirhinus* Dalman and *Haltichella spinola*) and 12 species are here reported for the first time in Morocco. Special mention has been made of the genus *Chalcis* Fabricius never previously reported in Morocco but represented by two species. Consequently, this study has enriched the Moroccan Chalcididae fauna described given by Noyes (2019) by 17 species. Most new records were made by visiting MNHNM (Rabat) and MNHN (Paris) and those newly identified during this work are summarized in table 1 and dataset published in GBIF ([Doi: 10.15470/nochzr](https://doi.org/10.15470/nochzr)). From among all the Moroccan Chalcididae, one species, *Belaspidia obscura* Masi, can be considered endemic to Morocco.

Knowledge of Chalcididae, particularly in the North African region, is still very incomplete and has several shortcomings. Comparison of Moroccan Chalcididae with the fauna of other North African countries reveals that Morocco currently has greater species richness of this family (24 species) than its neighbouring countries. In Algeria, Egypt, Tunisia, Libya and Mauritania 21, 20, 15, 13 and 1 species are cited, respectively. Nevertheless, these data do not reflect the reality according to Noyes (2019); because unfortunately no recent revisions are available and no recent studies have been conducted in all countries in the region.

Finally, despite the economic relevance of various species of this family and of other families of Chalcidoidea, they have not been the focus of studies in Moroccan until our research project that began in 2012 in the cork oak forest of Maâmora (Kissayi and Benhalima, 2016, 2017a, 2017b, 2018; Delvare et al., 2017; Kissayi et al., 2017a, 2017b). Located in the western Palaearctic region, between the Mediterranean Sea and the Atlantic Ocean, in addition to being one of the 34 hotspots of biodiversity, Morocco most probably hosts a large entomofauna. Faunistic studies and further investigations on chalcids wasps are thus strongly recommended in other parts of the country and indeed throughout the entire North African region.

Table 1. The newest genera and species of Chalcididae recorded in Morocco during this study: * genera and species not included in Noyes (2019); ** genera and/or species newly identified.

Tabla 1. Nuevos géneros y especies de Chalcididae registrados en Marruecos durante este estudio: * géneros y especies no incluidos en Noyes (2019); ** generos y/o especies identificados por primera vez.

Subfamily	Tribe	Genus and species	Sources	References	
Chalcidinae	Brachymeriini	<i>Brachymeria</i> Westwood, 1829			
		* <i>Brachymeria minuta</i> (Linnaeus, 1767)	Bibliography newly collected	Jourdan and Rungs (1934); this study	
		* <i>Brachymeria rugulosa</i> (Förster, 1859)	Bibliography	Fabre and Mouna (1983)	
		* <i>Brachymeria secundaria</i> (Ruschka, 1922)	Bibliography	Villemant and Fraval (1993)	
			* <i>Brachymeria vitripennis</i> Förster, 1859	Bibliography	Anonymous (1938)
	Chalcidini	* <i>Chalcis</i> Fabricius, 1787	Museums	This study	
		* <i>Chalcis myrifex</i> (Sulzer, 1776)	MNHNM	This study	
		* <i>Chalcis sispes</i> (Linnaeus, 1760)	MNHN	This study	
	Dirhininae	Dirhinini	* <i>Dirhinus</i> Dalman, 1818	Bibliography	Blanchot (1992); Delvare and Copeland (2018)
			* <i>Dirhinus (Dirhinus) aff. hesperidum</i> (Rossi, 1790)	Bibliography	Delvare and Copeland (2018)
* <i>Dirhinus himalayanus</i> Westwood, 1836			Bibliography	Blanchot (1992)	
Haltichellinae	Haltichellini	<i>Antrocephalus</i> Kirby, 1883			
		* <i>Antrocephalus cameroni</i> Delvare, 2017	Bibliography	Delvare (2017)	
		* <i>Chirocera</i> Latreille, 1825	Bibliography; MNHNM	Steffan (1957); this study	
		* <i>Chirocera pectinicornis</i> (Latreille, 1809)	Bibliography; MNHNM	Steffan (1957); this study	
		* <i>Haltichella</i> Spinola, 1811	Bibliography	Rungs (1936)	
		* <i>Haltichella rufipes</i> (Olivier, 1791)	Bibliography	Rungs (1936)	
		<i>Hockeria</i> Walker, 1834			
		** <i>Hockeria bifasciata</i> (Walker, 1834)	Newly collected	This study	
		** <i>Hockeria menginillarum</i> (Silvestri, 1943)	Newly collected	This study	
		* <i>Hockeria singularis</i> Bouček 1952	Bibliography	Steffan (1953)	
	Hybothoracini	* <i>Bucekia</i> Steffan, 1951	Bibliography	Falahapisheh et al. (2018)	
		* <i>Bucekia differens</i> (Bouček, 1949)	Bibliography	Falahapisheh et al. (2018)	
		<i>Lasiochalcidia</i> Masi, 1929			
		* <i>Lasiochalcidia rubripes</i> (Kieffer, 1899)	Bibliography	Falahapisheh et al. (2018)	
		** <i>Proconura</i> Dodd, 1915	Newly collected	This study	
		** <i>Proconura decipiens</i> (Masi, 1929)	Newly collected	This study	

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