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The genus *Chrysis* (Hymenoptera: Chrysididae) in Hormozgan province of Iran, with four new records for Iranian fauna

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Abstract

The genus *Chrysis* LINNAEUS, 1761 (Hymenoptera: Chrysididae) was studied in the Hormozgan province of Iran (Southern Iran). The specimens were collected by using Malaise traps during 2011 and 2012. A total of fourteen species were identified. All the species have been recorded for the first time in the Hormozgan province and four species including *Chrysis aestiva* DAHLBOM, 1854; *C. mysta* du BUYSSON, 1900; *C. palliditarsis* SPINOLA, 1838 and *C. varidens* ABEILLE, 1878 have been recorded for first time in Iran. Synonyms and geographical distribution of all the species are given. The number of *Chrysis* species in Iran is now raised from 62 to 66.

Introduction

The Chrysididae, commonly known as cuckoo wasps, are a cosmopolitan family and have the greatest diversity in the Palaearctic region (MORGAN 1984). According to KIMSEY & BOHART (1991) about 3.000 valid species of Chrysididae have been named and arranged in 84 genera. The most recent investigation reports 87 genera and 2.509 species in the world (AGUIAR et al. 2013). The Cuckoo wasps are parasitoids or

cleptoparasites of other wasps, sawflies, Phasmatodea, bees and Lepidoptera (KIMSEY & BOHART 1991). In the Palaearctic they are usually thermophilous and search for sandy sites, clay brick walls, stone walls, wood steppes, rocky steppes, semideserts, deserts, but even forests and other places where their hosts live (du BUYSSON (In ANDRÉ) 1891-1896; ROSA 2006; TYRNER 2007).

This family was revised by KIMSEY & BOHART (1991) and some important revisional and faunistic papers have been published in the last years for Northern Africa (LINSENMAIER 1999), the Afrotropical region (MADL & ROSA, 2012); Europe (KUNZ 1994; LINSENMAIER 1997; MINGO 1994; ROSA 2006; TYRNER 2007); the Far East of the Palaearctic region (KURZENKO & LELEJ 2007); Central Asia (TARBINSKY 2000, 2002, and followings; VINOKUROV 2008). All these publications provided usefull information also for the study of the Iranian fauna.

The previous records of Chrysididae from Iran were reported by: BISCHOFF (1910); du BUYSSON (1887, 1891, 1893, 1898, 1900); KIMSEY & BOHART (1991); LINSENMAIER (1959, 1968, 1987, 1997); MOCSÁRY (1889, 1890, 1892, 1914); MÓCZÁR (1997); RADOSZKOWSKI (1866, 1881, 1889 1891); SEMENOW (1892); SEMENOV-TIAN-SHANSKIJ (1912, 1920, 1932, 1967); SEMENOV-TIAN-SHANSKIJ & NIKOL'SKAYA (1954); TRAUTMANN (1927). POURRAFEI et al. (2011) added new distributional data and keys for tribes and genera based on material collected in North-west of Iran, while ROSA et al. (2013) published the first provisional checklist of the Iranian species, including all the historical published data and some new records. However, the chrysidid fauna of Iran is still not fully studied (ROSA et al. 2013). Within the Chrysididae, the subfamily Chrysidinae is the largest, including 47 worldwide genera; *Chrysis* LINNAEUS 1761 is the largest genus including about 1,000 species throughout the world (KIMSEY & BOHART 1991). Before this study, no information was available on the chrysidid wasps in Hormozgan province.

Material and Methods

Cuckoo wasps were collected from ten localities in Hormozgan province (Bahne, Bangelayan, Chelo, Dargaz, Faryab, Geno, Goleshvar, Ramkan, Tahqiqat and Zakin), from April to August 2011 and 2012. The Hormozgan province is one of the southern provinces of Iran with an area of about 70,697 km^2; it includes different habitats such as forests, rangelands, deserts and mountains located beside the warm waters of the Persian Gulf and Oman Sea (Fig. 1). Different plant species give origin to a specific ecosystem inhabited by rare animal species (MOZAFFARIAN 1991), the province has a warm and humid climate favorable for cuckoo wasps. In total 263 Chrysididae were collected, including 153 specimens belonging to the genus *Chrysis* here discussed. Chrysidids were collected by Malaise traps installed in forests, on mountain slopes, fruit orchards (tropical and sub-tropical trees) and in field crops at different altitudes. The specimens were extracted from the traps and maintained in 96 % ethanol then prepared and sorted into morphospecies. Most of the morphospecies were identified to species level, but few remained undetermined. All specimens are deposited in the insect collection of the Department of Entomology, Tarbiat Modares University, Tehran, Iran and in the P. Rosa private collection (PR).

In the species list, the following data are included: valid taxa names, synonyms, published records with provincial distribution in Iran and other chorological data. The newly recorded taxa for the fauna of Iran are indicated by an asterisk (*) in the text.

The material was collected on the sites listed below. Geographical coordinates and altitude were taken in the field by GPS.

Hormozgan province:

- Bahne, Bandar Abbas: altitude 1020 m [27°53′7″N - 56°19′58″E]. Site placed on the mountain top and characterized deciduous forest trees (Fig. 2A).
- Bangelayan, Bandar abbas: altitude 685 m [27°28′53″N - 56°18′26″E]. Site characterized by fruit orchards (tropical and sub-tropical trees) near the Naband River, the Malaise trap was placed between the fruit trees (Fig. 2B).
- Chelo, Minab: altitude 16 m [27°10′30″N - 57°01′09″E]. Site characterized by fruit orchards (tropical and sub-tropical trees), the Malaise trap was placed between the fruit trees (Fig. 2C).
- Dargaz, Bandar Abbas: altitude 1124 m [27°50′26″N - 56°17′12″E]. Site characterized by fruit orchards (tropical and sub-tropical trees) (Fig. 2D).
- Faryab, Roodan: altitude 313 m [27°28′5″N - 57°4′25″E]. Site characterized by fruit orchards (tropical and sub-tropical trees) and field crops.
- Geno, Bandar Abbas: altitude 1274 m [27°24′16″N - 56°08′51″E]. Site characterized by deciduous forest trees, Palm and pasture plants. Geno Mountain is a protected area, the Malaise trap was placed on the southern slop between deciduous forest trees and pasture plants (Fig. 2E).
- Goleshvar, Minab: altitude 14 m [27°58′30″N - 56°59′53″E]. Site characterized by fruit orchards (tropical and sub-tropical trees).
- Qeshm Island, Ramkan: altitude 34 m [26°52′25″N - 56°01′7″E]. Site characterized by fruit orchards (tropical and sub-tropical trees). The Malaise trap was placed near the mangrove forest (Fig. 2F).
- Agricultural and Natural Resources Research center of Minab ,Minab:: altitude 28 m [27°8′39″N - 57°04′31.22″E]. Site characterized by fruit orchards (tropical and sub-tropical trees) and pasture plants. The Malaise trap was placed in the center of the Agricultural and Natural Resources center (Fig. 2G).
- Zakin [1] = Zakin site 1, Bandar Abbas: altitude 680 m [27°28′53″N - 56°18′27″E]. Site characterized by fruit orchards (tropical and sub-tropical trees) and pasture plants. The Malaise trap was placed on the hillside of Faryab Mountain between the fruit trees. (Fig. 2H).
- Zakin [2] = Zakin site 2, Bandar Abbas: altitude 1530 m [27°51'53″N - 56°18′33″E]. Site characterized by fruit orchards (tropical, sub-tropical and temperate trees) and forest trees.

Results

Chrysis acceptabilis RADOSZKOWSKI, 1891

Material examined: Bangelayan, 2♂♂, 15.VII.2012; Chelo, 1♀, 20.IV.2012; 1♂, 15.VI.2012; 1♀, 18. VI. 2012; Goleshvar, 3♀♀, 1♂, 22.VI.2012; Zakin [1], 1♂, 16.V.2011; 1♂, 12.VI.2011; 3♂♂, 1♀, 20.VI.2011 (1 ex. PR); Zakin [2], 1♀, 16.V.2012; 1♀, 3.VIII.2012, all specimens leg. A. Ameri.

Iranian records: Sarakhs (Khorasan-Razavi) (RADOSZKOWSKI 1891).

Distribution: NW India, Pakistan, Saudi Arabia, Egypt, Chad (LINSENMAIER 1968); Morocco, Sudan (LINSENMAIER 1999).

Remarks: KIMSEY & BOHART (1991) placed *Chrysis acceptabilis* in synonymy with *C. kokandica* RADOSZKOWSKI, 1877 in the *Ch. splendidula* group, without type examination. ROSA et al. (2013) stated that the type of *acceptabilis* RADOSZKOWSKI agrees with the interpretation given by LINSENMAIER (1968). This species, having very short F1 and F2 belongs to the subgenus *Cornuchrysis* BALTHASAR sensu LINSENMAIER and not to the *splendidula* group as stated in KIMSEY & BOHART (1991).

* *Chrysis aestiva* DAHLBOM, 1854

Tetrachrysis quadrimaculata BISCHOFF, 1910
Chrysis moczari LINSENMAIER, 1959
Material examined: Faryab, 1♂, 13.V.2011, leg. A. Ameri.

Iranian records: New record for Iran.

Distribution: Palestine, Rhodes (LINSENMAIER 1959), Turkey (STRUMIA & YILDIRIM 2009).

Remarks: This species was misinterpreted by the European authors for a very long time. Old citations of *C. aestiva* for the European countries can be related to *Chrysis mixta* DAHLBOM, 1854, *C. maderi* LINSENMAIER, 1959 and *C. sardarica* RADOSZKOWSKI, 1891. Therefore, the distribution of *C. aestiva* seems to be limited to the western Mediterranean countries. In Palestine *C. aestiva* is quite common (LINSENMAIER 1959: 123). *Chrysis moczari* LINSENMAIER, 1959 was downgraded to subspecies of *C. aestiva* by LINSENMAIER (1968: 75), and synonymised by KIMSEY & BOHART (1991), but still considered as a valid subspecies by STRUMIA & YILDIRIM (2009). The distinctive characters given for the identification of *C. moczari* are inadequate to identify a valid taxon: habitus more robust, anterior angles of pronotum convergent, colouration on thorax more shining, with less deep and scattered punctuation. LINSENMAIER (1969) placed *C. pomerantzovi* RADOSZKOWSKI, 1891 in synonym with *C. aestiva*, without type examination. The type of *C. pomerantzovi* is housed in Krakow (Poland) and it is closely related to *C. aestiva* sensu auctorum. Unfortunately the type of *C. aestiva* seems to be lost and it is not housed in Berlin, as stated by KIMSEY & BOHART (1991), where only the type of *T. quadrimaculata* BISCHOFF is preserved. The *C. aestiva* species-group should be revised to fix the synonymies and produce new and valid keys for the species identification.

Chrysis annulata du BUYSSON, 1887

C. balucha NURSE, 1903
? *C. quettaensis* NURSE, 1903
Material examined: Goleshvar, 1♀, 06.VII.2012; Zakin [1], 1♀, 20.VI.2011, all specimens leg. A. Ameri.

Iranian records: Khuzestan, Fars, Azarbaijan (ROSA et al. 2013).

Distribution: Cyprus, Palestine, Syria (LINSENMAIER 1959), India, W Asia (LINSENMAIER 1969); Europe, North Africa, Middle East, Pakistan (KIMSEY & BOHART 1991).

Remarks: KIMSEY & BOHART (1991: 384) placed *Chrysis balucha* NURSE in synonym with *C. annulata* without type examination and they stated that the type depository of *C. balucha* is unknown. The type could be housed in London or Budapest where other specimens by Nurse and Bingham are conserved. In the original description Nurse speculated that this species, described only on copious males, could be synonym of *C. quettaensis* NURSE, 1903, described only on copious females collected in the same places and belonging to the same species-group (*C. cerastes* group). Based on this speculation, we agree that *C. balucha* and *C. quettaensis* could be male and female of the same taxon, but a type examination is needed to prove all the synonyms within this species group. Often in the history of Chrysididae the males and the females of the same species were described separately. Currently *C. quaettensis* is considered as a subspecies of *C. distincta* MOCSÁRY, 1887 (*C. cerastes* group) by LINSENMAIER (1968) and a synonym of *C. distincta* by KIMSEY & BOHART (1991).

The locality "India" given by LINSENMAEIR (1969) for *C. annulata* should be referred to the title of the article (New species of Indian Chrysididae), in which *C. balucha* was described. In fact, in Linsenmaier's collection any specimen collected in India is preserved. The type locality of *C. balucha* is Quetta, currently in Pakistan. Linsenmaier did not considered that at the beginning of the XX century Pakistan was still included in the Indian nation, part of the British Empire. Therefore the distribution of *C. annulata* is strictly Palaearctic and we cannot consider it as belonging to the Oriental region too.

Chrysis concolor schwarzi LINSENMAIER, 1968

Material examined: Faryab, 1♂, 23. V. 2011; Zakin [1], 1♂, 23. IV. 2011; 1♂, 25. IV. 2011, all specimens leg. A. Ameri.

Iranian records: Iran (province unknown) (LINSENMAIER 1987); Azarbaijan, Lorestan (ROSA et al. 2013).

Distribution: Palestine, Turkey (LINSENMAIER 1968, 1997).

Chrysis dentipes RADOSZKOWSKI, 1877

Chrysis iraniensis du BUYSSON, 1900
Chrysis eversmanni MOCSÁRY, 1912
Material examined: Zakin [1], 1♂, 23.V.2011, leg. A. Ameri (PR).

Iranian records: Iran (Tehran) (du BUYSSON 1900).

Distribution: Tadjikistan, Turkmenistan, Uzbekistan, Northern Africa (KIMSEY & BOHART 1991); Kyrgyzstan: Tian-Shan (TARBINSKY 2002a).

Remarks: LINSENMAIER (1959, 1968) overlooked the names *C. dentipes* RADOSZKOWSKI and *C. iraniensis* du BUYSSON. In his revisional works this taxon is found under the name *Chrysis eversmanni* MOCSÁRY.

Chrysis frivaldszkyi sparsepunctata du BUYSSON (in ANDRÉ), 1895

Material examined: Zakin [1], 1♂, 12.VI.2011, 1♂, 25.V.2012; Zakin [2], 1♂, 25.V.2012, leg. A. Ameri.

Iranian records: Mazandaran, Golestan, Fars, Kuhgiloye & Boyerahmad (ROSA et al. 2013).

Distribution: Turkmenistan (du BUYSSON 1895), Palestine, Syria, Transcaspia, Turkey (LINSENMAIER 1959).

Chrysis fulvicornis MOCSÁRY, 1889

C. salambo BALTHASAR, 1953

Material examined: Zakin [1], 1♀, 23.V.2011, leg. A. Ameri.

Iranian Records: Iran (unknown) (LINSENMAEIR 1968).

Distribution: Iran, Jordan, Palestine, Turkmenistan (LINSENMAEIR 1968), Kyrgyzstan: Tian-Shan (TARBINSKY 2002a).

Remarks: LINSENMAIER (1968) described the subspecies *C. graeciana* from Greece and Rhodes. He also considered the golden and green form found in Palestine as *C. fulvicornis* ssp. *salambo* BALTHASAR.

Chrysis infantula SEMENOV, 1967

Material examined: Zakin [1], 1♀, 20.VI.2011, leg. A. Ameri.

Iranian records: Esfahan (ROSA et al. 2013).

Distribution: Turkmenistan, Uzbekistan (SEMENOV-TIAN-SHANSKIJ 1967).

Remarks: *C. infantula* is a very rare species, currently known only on three specimens: the female holotype, the male listed in ROSA et al. (2013) and the female collected at Zakin.

Chrysis marginata MOCSÁRY, 1889

Material examined: Zakin [1], 2♀♀, 3.VI.2011, 1♂ 13.VI.2011 (PR), all specimens leg. A. Ameri.

Iranian records: Azarbayjan, Kerman (ROSA et al. 2013).

Distribution: Cyprus, SW Europe, Palestine, Rhodes, Turkey (LINSENMAEIR 1959), W Asia, Creete (LINSENMAEIR 1969) Kazakhstan, Kyrgyzstan: Tian-Shan, Tadjikistan, Transcaucasia, Turkmenistan, Uzbekistan (TARBINSKY 2002b).

Remarks: LINSENMAIER (1959) described the South European specimens of *C. marginata* as a different subspecies, *C. marginata aliunda* LINSENMAIER, 1959. The latter is well distinct from the typical form, based on the smaller and slender general habitus, the colouration and the body sculpture. However without molecular analysis it is impossible to separate it from *C. marginata marginata* being a fast colonising species that moved westwards recently, as shown by PAGLIANO et al. (2000).

Chrysis martinella du BUYSSON, 1900

C. solox SEMENOV, 1954
C. klapperichi BALTHASAR, 1957
C. satunini SEMENOV, 1967

Material examined: Bahne, 1♂, 23. VII. 2012; Zakin [1], 3♂♂, 13. VI. 2011 (PR); 1♀, 03. VI. 2011; 1♂, 27. IV. 2011; Zakin [2], 1♂, 25. V. 2012, all specimens leg. A. Ameri.

Iranian records: Tehran (du BUYSSON 1900).

Distribution: Persia, Palestine (LINSENMAIER 1959); Lebanon (LINSENMAIER 1968), Turkey (LINSENMAIER 1969); Greece, Afghanistan, Middle East, former USSR (KIMSEY & BOHART 1991).

Remarks: LINSENMAIER (1968) considered *C. solox* as a valid subspecies distributed in Central Asia, whose synonym is *C. klapperichi* BALTHASAR. KIMSEY & BOHART (1991) synonymised all the names with *C. martinella*. In Greece a different subspecies is found, *C. martinella petrasensis* LINSENMAIER, 1968

**Chrysis mysta* du BUYSSON, 1900

C. igoriana SEMENOV, 1967
C. kathederi du BUYSSON, 1904

Material examined: Zakin [1], 2♂♂, 25.IV.2011 (1 ex. PR), all specimens leg. A. Ameri.

Iranian records: New record for Iran.

Distribution: Palestine, Syria, Turkey (LINSENMAIER 1959); W Asia, Libya (LINSENMAEIR 1968); S former USSR (LINSENMAEIR 1969).

**Chrysis palliditarsis* SPINOLA, 1838

Chrysis diversa DAHLBOM, 1845
Chrysis cotesi du BUYSSON, 1893
Chrysis scabiosa du BUYSSON, 1904
Chrysis violascens MOCSÁRY, 1908
Chrysis colonica MOCSÁRY, 1912

Material examined: Chelo, 1♀, 15.VI.2012; 1♂, 20.IV.2012; 1♀, 2♂♂, 01.VI.2012; Faryab, 2♀♀, 27.V.2011; 1♀, 30.V.2012; Geno, 1♀, 30.V.2011; 1♀, 11.V.2012; Goleshvar, 5♀♀, 06.VII.2012; 3♀♀, 22.VI.2012; 3♀♀, 18.V.2012; 1♀, 05.V.2012; 1♀, 01.VI.2012; Ramkan, 1♀ 30.IV.2012; 1♀, 18.VI.2012; 1♀, 17.VII.2012; Tahqiqat, 1♀, 10.VII.2012; 1♂, 1♀, 11.VI.2012; Zakin [1], 1♀, 1♂, 23.V.2011; 2♂♂, 3.VI.2011 (1 ex. PR); 2♀♀, 13.VI.2011 (1 ex. PR); 1♀, 27.VII.2012; Zakin [2], 1♀, 27.VII.2012, all specimens leg. A. Ameri.

Iranian records: New record for Iran.

Distribution: North Africa, Egypt, Palestine, Turkestan (LINSENMAIER 1959); Middle East, former USSR, Afrotropical (KIMSEY & BOHART 1991).

Remarks: *Chrysis palliditarsis* is widely distributed in the Palaearctic and Afrotropical region (MADL & ROSA, 2012).

***Chrysis subcaerulea* RADOSZKOWSKI, 1891**

Material examined: Bangelayan, 1♀, 09.IV.2012; 5♀♀, 5.VII.2012; 1♀, 27.XI.2012; Chelo, 1♀, 20.IV.2012; 1♀, 01.VI.2012; Dargaz, 1♀, 09.VI.2012; Faryab, 1♀, 30.V.2012; Zakin [1], 2♂♂, 3.VI.2011 (1 ex. PR); 8♀♀, 13.VI.2011 (1 ex. PR); Zakin [2], 2♀♀, 25.V.2012, all specimens leg. A. Ameri.

Iranian records: Qazvin (ROSA et al. 2013).

Distribution: Turkmenistan (RADOSZKOWSKI 1891); former USSR, Middle East (KIMSEY & BOHART 1991).

Remarks: One of the authors (P.R.) found that *C. subcoerula* could be the synonym of *Chrysis chlorochrysa* MOCSÁRY, 1889. Already du BUYSSON (1895: 500) considered *C. subcoerula* as the female of *chlorochrysa*, but curiously without synonymising it (Obs. - Le female décrit par M. le général O. Radoszkowsky appartient à la *C. chlorochrysa* MOCSÁRY, d'après le spécimen que l'auteur a eu l'amabilité de m'envoyer.). A study of the type material is currently carried on.

****Chrysis varidens sillensis* ABEILLE, 1878**

Chrysis eva BALTHASAR, 1951;
Chrysis klio BALTHASAR, 1953.

Material examined: Zakin [1], 2♂♂, 9.V.2011 (1 ex. PR), leg. A. Ameri.

Iranian records: New record for Iran.

Distribution: S Europe, N Africa (LINSENMAEIR 1959); Afghanistan (BALTHASAR 1953).

Remarks: The *C. varidens-ragusai* species group includes few taxa not clearly separated. Both *C. varidens* ABEILLE and *C. ragusai* de STEFANI are widely distributed in the S Palaearctic and many related species have been described and later placed in synonymy. LINSENMAIER (1959) considered the two species as forming different species groups, but KIMSEY & BOHART (1991) merged them together in one species group. *Chrysis varidens varidens* is distributed in SW Europe: France (ABEILLE 1878), Spain (MINGO 1994), Italy (STRUMIA 1995). In Northern Africa a different subspecies, *Chrysis varidens atlasia* LINSENMAIER, 1987 from Morocco is known. LINSENMAIER (1987: 146) described also *C. varidens sillensis* from Turkey and we include our specimens in this subspecies, which is well distinct from the SW European one. BALTHASAR (1953) described *C. klio*, a similar species considered by LINSENMAEIR (1987) as a valid species, but later placed in synonym of *C. varidens* by KIMSEY & BOHART (1991). We could not yet examine the type of *C. klio* and we can not confirm or exclude this synonymy. Therefore, in the present paper we consider the specimens collected in Zakin as belonging to *C. varidens sillensis*, but a future examination of other types and perhaps a molecular study will confirm this identification. However, none of the cited taxa was registered for Iran.

Discussion

Iran is located in the Palaearctic region and comprises vast arid and semiarid areas, which cover nearly half of the country. However it represents a number of distinctive

ecoregions that support numerous endemic plants and animals (ZOHARY 1973; OLSON et al. 2001). From a biogeographical point of view, this territory is a transition zone between three regions: Palaearctic, Afrotropical and Oriental. Iran also includes high mountains with alpine areas (NOROOZI et al. 2008), broadleaf forest in the southern coastal plains of the Caspian forests, and steppe forests in the north and west (ZOHARY 1973).

The Hormozgan province is located in the southern part of Iran with around 1.000 km of coastline along the warm waters of the Oman Sea and the Persian Gulf, in correspondence with the Strait of Hormuz, at the entrance of the Persian Gulf. The inner part is mainly mountainous, including the southern tip of the Zagros Range. The Zagros Mountains contain several ecosystems. Prominent among them are the forest and forest steppe areas with a semi-arid climate and is home to a rich and complex flora. Additionally, there are four internationally important wetlands characterized as intertidal areas with extensive mudflats, lagoons and creeks, some with extensive mangrove vegetation. Many of these unique ecoregions from North to South have not yet been studied intensively and, as a consequence, it is not yet possible to draw complete and correct biogeographic conclusions about the Chrysididae fauna of Hormozgan as well as the one present in Iran.

Based on the species listed in ROSA et al. (2013) we can assume that the chrysidid Iranian fauna is also rich of endemism, about the 20 % of the known species, and it is closely related to the Central Asian one.

In the present study fourteen species belonging to the genus *Chrysis* collected in the Hormozgan province were identified. They represent the first records of Chrysididae for this province. Four species are cited for the first time for Iran (*C. aestiva* DAHLBOM, 1854, *C. mysta* du BUYSSON, 1900, *C. palliditarsis* SPINOLA, 1838 and *C. varidens* ABEILLE, 1878) increasing the number of known *Chrysis* from 62 (ROSA et al. 2013) to 66.

During this research we collected a species widely distributed in the Afrotropical region, *Chrysis palliditarsis* SPINOLA, which is currently the third known Afrotropical taxon present in Iran. The other two species are *Chrysis stilboides* SPINOLA, 1838, cited by du BUYSSON (1899: 168 but to be confirmed), and *Chrysis viridissima* KLUG, 1845, known for Middle East, North Africa, the Arabian peninsula and Ethiopia, Mauritania, Sudan in Africa. The last two species are very common in Africa and they have also been occasionally cited also for the Oriental region, confirming once more that Iran is a transition country between three biogeographical regions.

As already written in ROSA et al. (2013) Iran has various geographical regions and climates and, as a consequence, it would be expected that many additional species remain to be discovered in Iran as well as in the Hormozgan province.

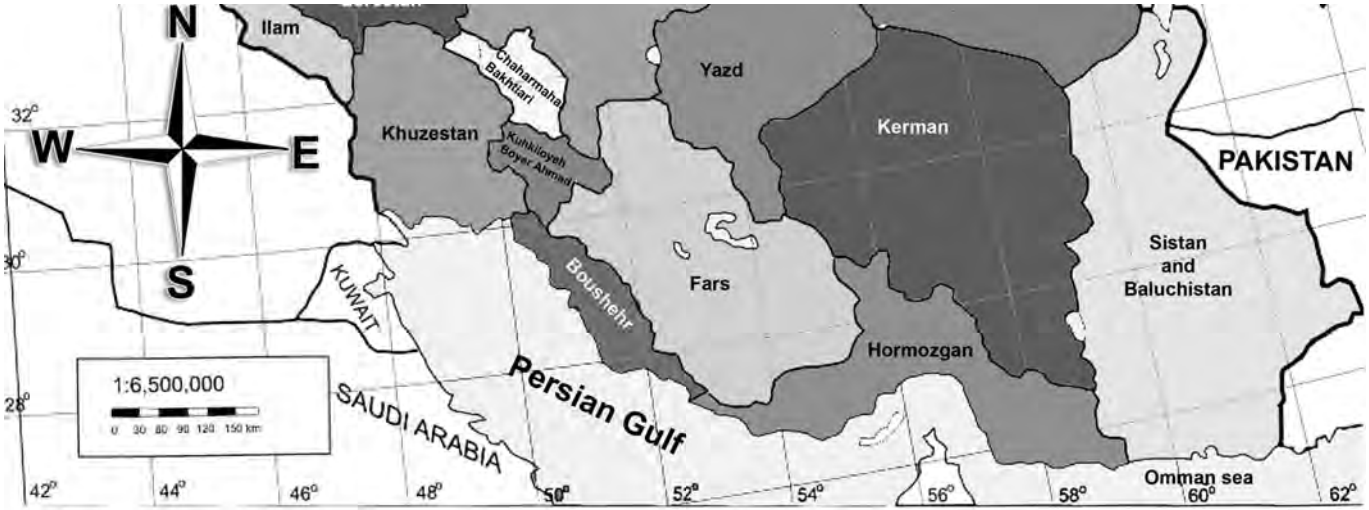

Fig. 1: Southern Iran, Hormozgan province where the specimens of *Chrysis* have been collected.

Fig. 2: Localities in Hormozgan province where the specimens of *Chrysis* have been collected: (**A**) Bahne, (**B**) Bangelayan, (**C**) Chelo, (**D**) Dargaz, (**E**) Geno, (**F**) Ramkan, (**G**) Agricultural and Natural Resources Research center of Minab, (**H**) Zakin.

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