

## STUDY ON DIVERSITY OF BEES (HYMENOPTERA, APOIDEA) FROM DIFFERENT REGIONS OF IRAQ

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### ABSTRACT

The fauna of bees (Hymenoptera, Apoidea) from different regions of Iraq is surveyed in this study; there were 16 species, 13 genera that belong to four families which are collected in this investigation.

Also, all the species that are recorded for Iraq in previous investigations are revised; totally there are 110 species, 32 genera belonging to five families: Apidae, Andrenidae, Colletidae, Halictidae and Megachilidae were listed.

Key words: Apoidea, Bees, Diversity, Fauna, Hymenoptera, Iraq.

### INTRODUCTION

The higher classification of bees has changed recently; Gauld and Bolton (1988) recognized only two families, Sphecidae and Apidae in the superfamily Apoidea, they classified all bees within Apidae in different subfamilies; whereas Michener (1993) recognized 11 families of bees within an informal series Apiformis of Apoidea: Apidae, Andrenidae, Anthophoridae, Colletidae, Ctenoplectridae, Fidellidae, Halictidae, Megachilidae, Melittidae, Oxaeidae and Stenotritidae; but later reduced the number of families to seven by Michener (2000, 2007), these families included: Melittidae, Megachilidae, Apidae, Andrenidae, Colletidae, Stenotritidae, and Halictidae.

Bees are thought to have played an important role in the diversification of the angiosperms in the early to mid-Cretaceous (Grimaldi, 1999); and also they played a role with other insect's pollination in ecosystem service: fruits, vegetables or seeds production from 87 of the 115 leading global food crops depend upon animal pollination (Klein *et al.*, 2007).

To addition, in agriculture, pollination is an important input of crop production, comparable to any other input such as fertilizers and pesticides; similar to the worldwide values, the only studies that have tried to measure pollination contribution to commodity at national levels also have produced inconsistent values. For example, in the United State of America alone, the value of pollination has been reported to range from US\$ 4.5 billion in the 1960s to US\$18.9 billion in the late 1980s (O'Grady, 1987; Robinson *et al.*, 1989; Morse and Calderone, 2001).

## Study on Diversity of Bees (Hymenoptera, Apoidea)

In Iraq, previous studies in this concern were very few and scarce, for example, Hassan (2007) studied the pollinators (Apoidea) that pollinated alfalfa plant in Babylon governorate; Augul (2016) conducted a survey of flower pollinators, including the Apiformis from different localities; whereas Ahmed (2017) studied the taxonomic aspects of the species that belong to this guild from northern Iraq. So, the current investigations have been made to survey the wild bee species that belong to series of Apiformis from the different localities, followed by a revised checklist of the species registered in previous studies.

### MATERIALS AND METHODS

The specimens were collected from different parts of Iraq during 2015 and 2017; the whole specimens studied were labeled and stored in the Iraq Natural History Research Center and Museum, University of Baghdad.

The collected specimens were identified to the lowest taxonomic rank using different keys such as: Amiet *et al.* (2004); Michener (2007); Karunaratne and Edirisinghe (2008); Eardly *et al.* (2010); Sheffield *et al.* (2011); Nadimi *et al.* (2013), in addition, compared with identified species stored in insects collection of Iraq Natural History Research Center and Museum, University of Baghdad to assure the diagnosis.

The Synonymized of name species depended on Sakagami and Ebmer (1987), Ebmer (1988), Pauly (1999), BWARS (2012), Kuhlmann *et al.* (2015), Salem and El-Azab (2017) and Ascher and Pickering (2018).

### RESULTS AND DISCUSSION

In present investigation, there were 16 species, 13 genera belonging to 4 families, which were collected from different regions of Iraq; also we revised the species registered previously in the checklists as below:

#### **Family, Andrenidae**

*Andrena albifacies* Alfken, 1927

**Global distribution:** Egypt, Israel, Libya and Iraq (Grace, 2010).

*Andrena albopicta* Radoszkowski, 1874

**Global distribution:** Turkey, Iraq and Iran (Grace, 2010).

*Andrena cordialis* Morawitz, 1877

**Global distribution:** Iraq (Derwesh, 1965); Greece, Crete and Turkey (Grace, 2010).

*Andrena flavipes* Panzer, 1799

**Materials Examined** (3 ♀♀ specimens): Baghdad province, Al-Madaen, 1, 18.IV.2015. Wasit province: Al-Zubaidiya, 2, 20.X.2017.

**Global distribution:** Iraq (Derwesh, 1965); Europe, North Africa, Turkey, China, Nepal, India and Uzbekistan (Huan-li and Tadauchi, 2008).

*Andrena morio* Brullé, 1806

**Global distribution:** Iraq (Khalaf and Al-Omar, 1974); Germany, Hungary, North Africa and Central Asia (Warncke and Scobiola-Palade, 1980); whereas Grace (2010) listed this species in: Greece, Rhodes, Crete, Cyprus, Turkey, Syria, Lebanon, Egypt, Libya, and Israel.

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*Andrena sigiella* Gusenleitner, 1998

**Global distribution:** Iraq, Jordan, Syria and Israel (Grace, 2010).

*Andrena viridescens* Viereck, 1916

=*Andrena cyanescens* Nyl.

**Global distribution:** This species is listed to fauna of Iraq by Derwesh (1965) under the synonym of *Andrena cyanescens* Nyl.; Romania and Central Europe (Warncke and Scobiola-Palade, 1980); Greece and Turkey (Grace, 2010).

*Andrena vetula* Lepeletier, 1841

**Global distribution:** Iraq (Derwesh, 1965); Greece, Turkey, Cyprus, Syria, Lebanon, Israel, Palestine, Egypt and Libya (Grace, 2010).

**Family: Apidae**

*Amegilla albigena* (Lepeletier, 1841)

=*Anthophora albigena* Lep.

**Global distribution:** In Iraq it was listed by Derwesh (1965) under the name of *Lasius (Anthophora) albigena*. Greece, Cyprus, Turkey, Syria, Jordan and Egypt (Grace, 2010); Algeria, Armenia, Croatia, Czech Republic, Italy, Spain, Portugal, France, Slovakia, Greece, Macedonia, Uzbekistan, Morocco, Egypt, Afghanistan, India, Iran, Israel, Lebanon, Nepal, Tajikistan and Turkmenistan (Insectoid.Info, 2018).

*Amegilla harttigi* (Alfken 1926)

**Global distribution:** Iraq (Grace, 2010) and Saudi Arabia (Ascher and Pickering, 2018).

*Amegilla quadrifasciata* (de Villers, 1789)

**Materials Examined** (3 ♀♀ specimens): Wasit province: Aziziyah, 3, 3.X.2017.

**Global distribution:** Palaearctic region (Baldock, 2014); in Iraq this species was listed by Khalaf and Al-Omar (1974) under the name *Anthophora quadrifasciata* Vill.

*Ancyla holtzi* Friese, 1902

**Global distribution:** Iraq, Greece, Cyprus, Turkey and Iran (Grace, 2010).

*Ancyla orientalis* Warncke, 1979

**Global distribution:** Iraq, Greece, Turkey and Syria (Grace, 2010).

*Anthophora atriceps* (Pérez, 1879)

**Global distribution:** Iraq (Khalaf and Al-Omar, 1974); Egypt (Grace, 2010); Morocco, Algeria, Syria, Tunisia, Iran, Israel, Switzerland (Insectoid.Info, 2018).

*Anthophora orientalis* Morawitz, 1877

**Global distribution:** In Iraq, this species was listed by Khalaf and Al-Omar (1974); Croatia, Greece, Italy and Spain (Rasmont and Dehon, 2015 a).

*Anthophora salviae* (Panzer, 1804)

=*Anthophora crinipes* Smith, 1854

**Global distribution:** In Iraq, this species was registered under the name *Anthophora crinipes* Smith, 1854 by Khalaf (1958) and Derwesh (1965); Europe (Rasmont *et al.*, 1995).

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*Anthophora fulvitaris* Brullé, 1832

**Global distribution:** Iraq (Khalaf, 1958); Austria, France, Greece, Hungary, Italy, Portugal, Romania, Spain, Ukraine (Rasmont and Dehon, 2015 b).

*Anthophora sulaimanensis* (Mawlood & Amin, 2017)

**Global distribution:** Iraq (Mawlood and Amin, 2017).

*Apis florea* Fabricius, 1787

**Global distribution:** Iraq (Glaiim, 1992); Iran; Israel, UAE, Saudi Arabia, Ethiopia, Sudan, Pakistan, India, Sri Lanka, China, Thailand, Vietnam, Singapore and Indonesia (Ascher and Pickering, 2018).

*Apis mellifera* Linnaeus, 1758

**Materials Examined** (118 workers): Baghdad province: Jaddria, 11, 29.III.2017, 13, 14.IV.2017; Al Taji, 10, 22.IV.2017; Al Radhwania, 7, 3.V.2017. Wasit province: Al-Suwaira, 13, 30.VI.2017; Al-Zubaidiya, 15, 1.IX.2017, 12, 2.IX.2017, 3, 3.IX.2017. Babylon province: Al Qasim, 16, 2.IX.2016; Shomali, 3, 3.IX.2017. Maysan province: Hawizeh Marshes, Umm An-Ni'aaj, 9, 9.III.2017. Diyala province, Baqubah, 6, 18.XII.2017.

**Global distribution:** Cosmopolitan except for Antarctica (Mortensen *et al.*, 2017).

*Bombus fervidus* (Fabricius, 1798)

**Global distribution:** El – Haidari *et al.* (1971) was listed to Iraq; although this species is native in North America: Canada, Mexico and United States (Hatfield *et al.*, 2015a).

*Bombus vosnesenskii* Radoszkowski, 1862

**Global distribution:** El – Haidari *et al.* (1971) listed this species to Iraq; although it is native in Canada, Mexico and United States (Hatfield *et al.*, 2015b).

*Certaina laevifrons* Morawitz, 1894

**Material Examined** (1♂, 3♀♀ specimens): Wasit province, Aziziyah, 2♀♀, 4. X. 2017; Baghdad province; Bab Al-Mudham, 1♀, 29.IX.2017. Kerbela province, Kerbela, 1♂, 27.VII.2017.

**Global distribution:** Iraq (Derwesh, 1965); Turkmenistan, Central Asia, Southern of Iran to northern of Kazakhstan and from Caspian Sea to Kyrgyzstan (Terzo and Rasmont, 2011).

*Ceratina nigrolabiata* Friese, 1896

**Global distribution:** Iraq (Derwesh, 1965); Turkey (Terzo and Rasmont, 2011); South and Central Europe from Portugal to Greece, including European part of Russia; Azerbaijan, Georgia, Syria (Ascher and Pickering, 2018).

*Ceratina schwarzi* Kocourek, 1998

**Global distribution:** Iraq, Greece, Cyprus, Turkey, Syria, Iran and Israel (Grace, 2010).

*Certaina tibialis* Morawitz, 1895

= *Ceratina ahngerii* Kokujev, 1905

**Global distribution:** Iraq (Derwesh, 1965); Israel, Turkey, Syria, Iran, Azerbaijan, Tajikistan, Turkmenistan (Terzo, 1998).

*Eucera bidentata* Pérez, 1887

**Material Examined** (1 ♂, 1 ♀ specimens): Baghdad province: Jaddria, 11.IX.2017.

**Global distribution:** Iraq (Derwesh, 1965); Greece on Lesbos and Cyprus (Grace, 2010).

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*Eucera clypeata* Erichson, 1835

**Global distribution:** Iraq, Greece, Turkey, Syria, Israel, Palestine, Jordan, Iran and North Africa (Grace, 2010).

*Eucera cypria* Alfken, 1933

**Global distribution:** Iraq, Greece and Cyprus (Grace, 2010).

*Eucera distinguenda* (Morawitz, 1875)

= *Tetralonia distinguenda* Morawitz, 1875

**Global distribution:** Iraq (Derwesh, 1965); India, Kazakhstan, Pakistan, Turkmenistan (Insectoid.info, 2018).

*Eucera alborufa* (Radoszkowski, 1871)

= *Tetralonia radoszkowskii* Morawitz, 1875

**Global distribution:** This species was listed to Iraq by Khalaf and Al-Omar (1974) under the name *Tetralonia radoszkowskii* Mor.; but there is no information about this species globally.

*Eucera longicornis* Linnaeus, 1758

**Global distribution:** Iraq (Derwesh, 1965); Europe (excluding the Far North) and Transcaucasia (Aliyev and Maharramov, 2015).

*Eucera tibialis* (Morawitz, 1837)

**Global distribution:** Iraq and Turkey (Grace, 2010).

*Nomada basalis* Herrich-Schaeffer, 1839

**Global distribution:** Iraq, Greece, Syria, Israel, Palestine, Turkey and Iran (Grace, 2010).

*Nomada collarae* Schwarz, 1964

**Global distribution:** Iraq and Turkey (Grace, 2010).

*Nomada fenestrata* Lepeletier, 1841

**Global distribution:** Iraq, Turkey, Israel, Jordan, Iran and Egypt (Grace, 2010); Pakistan, Tunisia, Morocco, Canary Islands, Spain and France (Ascher and Pickering, 2018).

*Nomada fucata* Panzer, 1798

**Global distribution:** Iraq (Derwesh, 1965); North east turkey (Grace, 2010); Austria, Belgium, Czech Republic, France, Germany, Poland, Greece, Italy, Kazakhstan, Spain, Sweden, United Kingdom and Denmark; Africa: Egypt; Asia: Iran, Israel, Kyrgyzstan (Insectoid.info, 2018).

*Nomada mauritanica* Lepeletier, 1841

**Global distribution:** Iraq, Greece, Cyprus, Turkey and Israel (Grace, 2010).

*Nomada tigridis* Morice, 1921

**Global distribution:** Iraq (Derwesh, 1965).

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*Pasites maculatus* Jurine, 1807

**Global distribution:** Iraq (Khalaf and Al-Omar, 1974); Algeria, Cyprus, Czech Republic, France, Slovakia, Italy, Greece, Hungary, Austria, Bulgaria, Spain, China, Iran, Israel, Pakistan and South Korea (Inectoid.Info, 2018).

*Thyreus ramosus* (Lepeletier, 1841)

=*Crocisa ashabadensis* Radoszkowski, 1893

**Global distribution:** In Iraq this species was listed by Derwesh (1965) under the name of *Crocisa ashabadensis* Radoszkowski; Central and Southern Europe, northeast Africa, Arabia, west Asia, Himalaya and China (Beaumont, 1939; Rasmont, 2014).

*Tetraloniella glauca* (Fabricius, 1775)

**Global distribution:** In Iraq this species was listed by Grace (2010) under the name *Tetralonia olivieri* (lepeletier, 1841); Iran, Cyprus and Turkey (Ascher and Pickering, 2018).

*Thyreomelecta dimidiatipuncta* (Spinola, 1838)

**Global distribution:** Iraq, Libya, Egypt (Grace, 2010).

*Xylocopa aestuans* (Linnaeus, 1758)

**Global distribution:** In Iraq this species was listed by Khalaf and Al-Omar (1974); globally, it distributes in United Arab Emirates (Harten, 2005); Saudi Arabia (Hannan *et al.*, 2012); Southeast Asia, Indochina, the Malay Peninsula and Indonesia (Pauly, 2016).

*Xylocopa fenestrata* (Fabricius, 1798)

**Material Examined** (2♂♂, 9♀♀ specimens): Baghdad province: Bab Al-Muadham, 1♂, 2♀♀, 13.VI.2016; 1♂, 4♀♀, 11.VIII.2017. Wasit province: Al-Zubaidiya, 2♀♀, 3. IX.2017. Maysan province: Hawizeh Marshes, Umm An-Ni'aaj, 1♀, 14.III.2017.

**Global distribution:** Iraq (Derwesh, 1965); Turkey (Warncke, 1982); Afghanistan, Burma, China, India, Iran, Madagascar, Mauritius, Nepal, Pakistan, Sri-Lanka and Reunion (Ascher and Pickering, 2018).

*Xylocopa pubescens* Spinola, 1838

**Global distribution:** Iraq (Swailem *et al.*, 1974); Afghanistan, Algeria, Burma, Egypt, Ethiopia, India, Iran, Israel, Morocco, Nepal, Pakistan, Turkey, Syria, Senegal, Sudan, Kenya, Mozambique and Tanzania (Warncke, 1982; Ascher and Pickering, 2018).

*Xylocopa olivieri* Lepeletier, 1841

**Global distribution:** Iraq (Derwesh, 1965); Turkey (Warncke, 1982); Israel (Guershon and Ionescu-Hirsch, 2012); Albania, Azerbaijan, Greece, Crete, Cyprus, Iran, Kyrgyzstan, Macedonia, Syria and Turkmenistan (Ascher and Pickering, 2018).

*Xylocopa rufa* Friese, 1901

**Global distribution:** Iraq (Derwesh, 1965); Caucasus, Turkestan, Pakistan, Sudan, Israel and Iran (Warncke, 1982); Armenia, Kyrgyzstan, Tajikistan, Turkmenistan, India and China (Ascher and Pickering, 2018).

*Xylocopa violacea* (Linnaeus, 1758)

**Global distribution:** Iraq (Swailem *et al.*, 1974); Europe, North Africa and western Asia (Warncke, 1982).

**Family, Colletidae**

*Colletes nanus* Friese, 1898

**Global distribution:** Iraq (Derwesh, 1965); Egypt, Jordan, Israel, Libya and Syria (Grace, 2010).

*Hylaeus cornutus* Curtis, 1831

=*Prosopis cornutus* Sm.

**Global distribution:** West and Central Asia: Iraq, Caucasus, Turkey, Israel, Iran and Turkestan; Great Britain, Denmark; North Africa: Morocco, Algeria and Egypt (Celary and Dylewska 1988). It distributes also in Armenia, Azerbaijan, Syria and Russia (Proshchalykin and Dathe, 2017).

*Hylaeus klugii* (Friese, 1898)

**Global distribution:** Iraq, Egypt, Iran, Israel and Khuzestan (Grace, 2010); according to the previous author, the subspecies of *H. klugii mesopotamae* (Warncke, 1992) is described in Iraq.

*Hylaeus nyroca* (Warncke, 1992)

**Global distribution:** Iraq (Grace, 2010).

*Hylaeus pictus* (Smith, 1853)

**Global distribution:** In Iraq this species is listed under the name of *Hylaeus damascenus magretti* by Derwesh (1965); also it distributes in Turkey, Israel and Iran (Grace, 2010).

*Hylaeus trinotata* Pérez, 1895

**Global distribution:** Iraq, Turkey; in Iraq the subspecies of *H. t. mesopotamica* collected from Sumel district, Dohuk (Grace, 2010).

**Family: Halictidae**

*Ceylalictus punjabensis* (Cameron, 1907)

=*Nomioides excellens* Saunders, 1908

**Global distribution:** In Iraq the species was listed under the name of *Nomioides excellens* by Derwesh (1965); Iran, India, Egypt, Saudi Arabia, Cape Verde, Jordan, Israel, Morocco, Senegal, Djibouti, Tunisia, Afghanistan, Niger, UEA, Mauritania, Pakistan, Sudan, Kenya and Libya (Ascher and Pickering, 2018).

*Ceylalictus variegatus* (Olivier, 1789)

= *Andrena variegata* Olivier, 1789

= *Nomioides variegata* (Olivier, 1789)

**Global distribution:** This species is listed in Iraq under the name *Nomioides variegata* (Olivier, 1789) by Derwesh (1965); Eastern Europe, Cyprus, Mediterranean Basin, Middle East, Sardinia and Sicily (Balzan *et al.*, 2016).

*Dufourea nodicornis* (Warncke, 1979)

**Global distribution:** Iraq, Egypt, Libya, Israel, Jordan and Syria (Grace, 2010).

*Halictus fatsensis* Blüthgen, 1936

**Global distribution:** Iraq, Cyprus, Israel, Jordan and Turkey (Grace, 2010); Egypt (Ebmer, 2014).

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*Halictus cephalicus* Morawitz, 1874

**Global distribution:** Iraq, Afghanistan, Iran, Israel, Syria, Russia, Southeastern Europe, Caucasus, Turkey (Astafurova *et al.*, 2017).

*Halictus lucidipennis* Smith, 1853

*Halictus varipes* Morawitz, 1876

**Global distribution:** Derwesh (1965) listed this species in Iraq under the name *Halictus varipes*; Pauly *et al.* (2002) also listed it in: Algeria, Cape Verde, Chad, Egypt, Ethiopia, Morocco, Tunisia, Libya, Senegal, Gambia, Mali, Burkina-Faso, Niger, Cameroon, Sudan, Eritrea, Djibouti, Kenya, Arabia, Oman, Yemen, Jordan, Iran, Turkey, Israel, Turkmenistan, Uzbekistan, Tajikistan, Kyrgyzstan, Kazakhstan, Afghanistan, Bhutan, Burma, India, Pakistan, Sri Lanka, Nepal, Thailand and China.

*Halictus mongolicus* Morawitz, 1880

**Global distribution:** Iraq (Derwesh, 1965); China, Turkistan and Mongolia (Ze-Qing *et al.*, 2004).

*Halictus scabiosae* (Rossi, 1790)

**Global distribution:** Iraq (Derwesh, 1965); Greece and Turkey (Grace, 2010); Western Palaearctic with Western Mediterranean, from Morocco to Rhodes and Bosphorus, from the Atlantic Ocean to the north, to Belgium and Channel Island Jersey (Ebmer, 1988); in addition, Balzan *et al.* (2016) listed this species in Sardinia and Sicily.

*Halictus senilis* (Eversmann, 1852)

**Materials Examined** (3♂♂, 4♀♀): Wasit province, Aziziyah, 2♂♂, 2♀♀, 3.X.2017. Kerbela province, Kerbela, 1♂, 2♀♀, 27.VII.2017.

**Global distribution:** Iraq (Khalaf, 1958); Turkey, Jordan and Libya (Grace, 2010); Spain, Tunisia, Egypt, Iran, Mongolia, Eurasia from southeast Russia to Turkestan, Afghanistan, Pakistan, Israel (Pauly *et al.*, 2016).

*Halictus tectus* Radoszkowski, 1875

=*Halictus sogdianus* Morawitz, 1876

**Global distribution:** In Iraq this species is listed by Derwesh (1965) under the name of *Halictus sogdianus* Morawitz; Eurasia from southern France, also Iberia to Mongolia (Ebmer, 1988); Greece (Grace, 2010).

*Halictus tetrazonianellus* Strand, 1909

*Halictus leucognathus* Morice, 1921

**Global distribution:** In Iraq this species is listed under the name of *Halictus leucognathus* Morice, 1921 (Derwesh, 1965); Bulgaria, Greece, Moldova, Ukraine, Turkey to Turkmenistan, Israel and Jordan (Ebmer, 2014).

*Halictus vestitus* Lepelletier, 1841

**Global distribution:** Iraq (Derwesh, 1965); China; Mongolia; former USSR; France and Austria (Ze-Qing *et al.*, 2007).

*Lasioglossum carneiventre* (Dours, 1872)

**Global distribution:** Iraq, Algeria, Egypt, Iran, Israel and Syria (Ebmer, 2014).



*Lasioglossum aegyptiellum* (Strand 1909)

**Global distribution:** In Iraq the checklist of Derwesh (1965) listed this species under the name of *Halictus platysectus* Dours.; according to Ebmer (1988) this species distributes in Mediterranean-West Asian, from Morocco to Iran and Turkmenia; also Pauly (2016) listed this species for Croatia, Minor Asia to Iraq and Iran, Israel and Egypt,

*Lasioglossum leucozonium* (Schrank, 1781)

= *Halictus leucozonius* Kirby

**Materials Examined** (1♂): Wasit province, Al Zubaidiya district, 1♂, 20.X.2017.

**Global distribution:** In Iraq this species registered as *Halictus leucozonius* Kirby by Derwesh (1965). Holarctic region (McGinley, 1986; and Ebmer, 1988); Greece, Turkey, Iran, Cyprus (Grace, 2010).

*Lasioglossum malachurum* (Kirby, 1802)

= *Halictus longulus* Smith, 1848

= *Halictus malachurus* Kirby

**Global distribution:** Derwesh (1965) listed this species in Iraq under the name of *Halictus longulus* Smith; West-Palaeartic: from the Azores to Iran, from Morocco north to England and Denmark (Ebmer, 1988); in addition Grace (2010) listed this species in: Greece, Cyprus, Turkey, Israel, Palestine, Jordan and Egypt.

*Lasioglossum mandibulare* (Morawitz, 1866)

**Global distribution:** Iraq, France, Portugal, Turkmenistan, Kazakhstan, Israel, Romania, Austria, Ukraine (Ebmer, 2014).

*Lasioglossum marginatum* (Brullé 1832)

= *Halictus kervilleanus* Perez, 1910

**Global distribution:** This species is listed in Iraq by Derwesh (1965) under the synonym; Greece, Cyprus, Turkey, Syria, Lebanon, Israel, Jordan and Iran (Grace, 2010).

*Lasioglossum picipes* (Morawitz, 1876)

= *Halictus amaranus* Morice, 1921

**Global distribution:** This species is listed in Iraq by Derwesh (1965) under the synonym of *Halictus amaranus*; Israel and Iran (Grace, 2010).

*Lasioglossum politum* Schenck 1853

**Global distribution:** Iraq, Greece, Turkey, Iran, Israel, Jordan and Egypt (Grace, 2010).

*Lasioglossum sheherezade* Ebmer, 2000

**Global distribution:** Iraq (Grace, 2010).

*Lasioglossum vagans* (Smith, 1857)

= *Halictus chaldaeorum* Morice, 1921

**Global distribution:** This species is registered in Iraq by Derwesh (1965) under the name *Halictus chaldaeorum*; Turkey, Lebanon, Jordan, Israel and Egypt (Grace, 2010).

*Nomiapis bispinosa* (Brullé, 1832)

**Materials examined** (1♂ specimen): Maysan province, Hawizeh Marsh, Umm An-Ni'aaj, 1♂, 9.VI.2015.

**Global distribution:** This species is registered in Iraq under the name of *Nomia rufiventris*, Spinola (Derwesh, 1965). Crete, Cyprus, Turkey and Egypt (Grace, 2010); Portugal, Spain,

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Italy, Southern France, Sardinia, former Yugoslavia, Greece, Hungary, southern Russia and Pakistan (Michez *et al.*, 2013).

*Nomioides ino* (Nurse, 1904)

**Global distribution:** Iraq, Iran, Turkey and Jordan (Grace, 2010); Turkmenistan, Uzbekistan, Tajikistan, Mongolia (Pauly, 2017).

*Nomioides turanicus* Morawitz, 1876

**Global distribution:** Iraq, Egypt, Turkey and Iran (Grace, 2010).

*Pseudapis edentata* (Morawitz 1876)

**Materials Examined** (2♂♂, 6♀♀): Maysan province, Umm An-Ni'aaj, 1♂, 2♀♀, 9.VI.2015. Wasit province, Al-Shahabi, 1♂, 4♀♀, 10.VI.2015.

**Global distribution:** In Iraq, Derwesh (1965) listed this species under the name *Nomia edentata* Morawitz; Turkey, Iran and Egypt (Grace, 2010).

*Pseudapis innesi* (Gribodo, 1894)

**Materials examined** (2♀♀): Maysan province, Hawizeh Marsh, Umm An-Ni'aaj, 9.VI.2015.

**Global distribution:** Iraq and Egypt (Grace, 2010).

*Pseudapis nilotica* (Smith, 1875)

**Global distribution:** In Iraq, it was registered by Khalaf and Al-Omar (1974) under the name of *Nomia savignyi* Kohl; also distributes from Morocco and Mauritania to Pakistan; Egypt, Jordan, Israel and Iran (Grace, 2010)

*Sphecodes* sp.

**Material Examined** (2♀♀): Baghdad province; Bab Al-Muadham, the specimens collected at 22.VI.2017.

**Global distribution:** The genus of *Sphecodes* Latreille, 1804 distributes in Holarctic Region and North to the Subarctic (Astafurova and Proshchalykin, 2014).

### Family: Megachilidae

*Anthidium florentinum* (Fabricius, 1775)

**Global distribution:** Iraq (Khalaf and Al-Omar, 1974); Greece, Macedonia, Crete, Turkey, Iran and Israel (Grace, 2010).

*Anthidium tessellatum* Klug, 1832

**Global distribution:** In Iraq this species is listed by Derwesh (1965); Egypt (Warncke, 1980); Israel, Jordan, Lebanon (Grace, 2010).

*Anthidiellum strigatum* (Panzer, 1805)

**Global distribution:** In Iraq this species is listed under the name of *Anthidium strigatum* Panzer by Derwesh (1965); Central Asia, Cyprus, Europe, Greece, Iran, Lebanon, North Africa, Palestine, Russia, Syria, Turkey (Warncke, 1980); Israel and Libya (Grace, 2010); the last author is listed the subspecies *A. s. crassepunctatum* Popov, 1935 for Iraqi fauna.

*Coelioxys afra* Lepeletier, 1841

**Global distribution:** Iraq (Derwesh, 1965); Africa (Pasteels, 1977); Algeria, Egypt, Kyrgyzstan, Morocco, Russia, Tunisia, Turkmenistan, Uzbekistan (Warncke, 1992); South, Eastern and Central Europe, UK, Asia Minor (Banaszak and Romasenko, 1998); Western

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Europe to China and Indonesia (Proshchalykin and Lelej, 2004); Greece, Cyprus, Turkey, Israel and Egypt (Grace, 2010) and Iran (Khaghaninia *et al.*, 2010).

*Coelioxys coturnix* Pérez, 1884

**Global distribution:** Iraq (Derwesh, 1965); Palaearctic region (Ortiz-Sánchez, 2014). It was introduced to the USA.

*Coelioxys decipiens* Spinola, 1838

**Global distribution:** Iraq (Derwesh, 1965); also this species distributed from north Africa towards Cyprus, Crete, Turkey, Asia Minor and Central Asia, until the Himalayas (Ornosa *et al.*, 2007, Ortiz-Sánchez *et al.*, 2009, Grace, 2010).

*Coelioxys haemorrhoea* Forster, 1853

**Materials examined** (1♂, 4♀♀ specimens): Maysan province: Hawizeh Marshes, Umm An-Ni'aaj, 1♂, 3♀♀, 9.VI.2015; Baghdad province: Bab Al-Muadham, 1♀, 10.IX.2017.

**Global distribution:** Iraq (Derwesh, 1965); also distributes in Southern Europe, from the Iberian Peninsula to Austria; North Africa to Central Asia (Ornosa *et al.*, 2007).

*Coelioxys obtusa* Pérez, 1884

**Global distribution:** Iraq (Derwesh, 1965); Turkey (Özbek and van der Zanden, 1994); Egypt, Morocco, France, Greece, Croatia, Caucasus, Spain Italy, Poland, Iran, Turkmenistan (Ascher and Pickering, 2018).

*Coelioxys ruficauda* Lepeletier, 1841

**Global distribution:** Iraq, Crete, Turkey and Egypt (Grace, 2010).

*Megachile apicalis* Spinola, 1808

**Materials examined:** Maysan province, Hawizeh Marsh, Umm An-Ni'aaj, 1♀, 9.VI.2015.

**Global distribution:** Iraq (Khalaf and Al-Omar, 1974); Eurasia, United States (James and Pitts-Singer, 2008); Cyprus, Turkey, Israel, Greece, Rhodes, North Africa although not reported for Egypt and Libya (Grace, 2010).

*Megachile argentata* (Fabricius, 1793)

**Materials examined** (3♂♂, 5♀♀): Baghdad province: Al-Madaen, 1♂ and 4♀♀, 29.IX.2017. Wasit province: Al-Zubaidiya, 2♂♂, 1♀, 3.X.2017.

**Global distribution:** Iraq (Derwesh, 1965); Europe (Özbek and van der Zanden, 1994); North-Eastern China, Caucasus, North Africa, North America (Proshchalykin, 2007); Syria (Grace, 2010) Algeria and Hungary (Balzan *et al.*, 2016).

*Megachile babylonica* Rebmann 1970

**Global distribution:** Iraq (Grace, 2010).

*Megachile concinna* Smith, 1879

**Materials examined** (1♂, 1♀): Maysan province, Hawizeh Marsh, Umm An-Ni'aaj, 1♀, 1♂, 9.VI.2015.

**Global distribution:** Iraq (Insectoid.info, 2018); Holarctic region (Ascher and Pickering, 2018).

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*Megachile farinosa* (Smith, 1853)

**Global distribution:** Grace (2010) listed this species in Iraq under the name of *Chalicodoma farinosa* (Smith, 1853); also it distributed in Egypt, Turkey (Grace, 2010; Ascher and Pickering, 2018).

*Megachile flavipes* (Spinola, 1838)

**Global distribution:** Iran (Morice, 1921), Iraq (Derwesh, 1965) and Turkey (Warncke, 1992).

*Megachile minutissima* Radoszkowski 1876

**Global distribution:** Iraq (Derwesh, 1965); Egypt, Turkey and Israel (Grace, 2010).

*Megachile rotundata* (Fabricius, 1787)

**Materials examined** (1♂, 2♀♀): Maysan province, Hawizeh Marsh, Umm An-Ni'aaj, 2♀♀, 9.VI.2015; Wasit province, Kut, 1♂, 27.V.2017.

**Global distribution:** Iraq, Iran, Greece, Cyprus and Turkey (Grace, 2010).

*Megachile schnabli* Radoszkowski, 1893

**Global distribution:** Iraq (Derwesh, 1965); Iran, Turkmenistan and Tajikistan (Ascher and Pickering, 2018).

*Megachile squamosa* Rebmann, 1970

**Global distribution:** Iraq (Grace, 2010).

*Megachile striatella* Rebmann, 1968

**Global distribution:** Egypt, Iraq, Iran, Greece and Libya (Grace, 2010).

*Osmia indigotea* Morawitz, 1875

**Global distribution:** Iraq (Derwesh, 1965).

*Osmia brevicornis* (Fabricius, 1798)

= *Osmia panzeri* Morawitz, 1869

**Global distribution:** In Iraq this species is listed by Derwesh (1965) under the synonym; Romania (Ban-Calefariu, 2009).

*Protosmia paradoxa* (Friese 1899)

**Global distribution:** In Iraq, this species is listed by Khalaf and Al-Omar (1974) under the synonym of *Osmia paradoxa* Fr.; Greece, Cyprus, Turkey, Lebanon, Palestine, Israel, Jordan and Syria (Grace, 2010).

*Stelis phaeoptera* (Kirby, 1802)

**Global distribution:** Iraq (Derwesh, 1965); Greece, Israel, Egypt and Libya (Greece, 2010).

*Stelis signata* (Latreille, 1809)

**Global distribution:** Iraq (Derwesh, 1965); Cyprus, Greece, Israel, Lebanon and Turkey (Grace, 2010); in addition to, the last author listed the subspecies *S. s. eremica* Alfken 1938 in Iraq.

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## دراسة التنوع في النحل (رتبة غشائية الأجنحة، فوق عائلة النحليات) لمناطق مختلفة من العراق

رزاق شعلان عكل  
مركز بحوث ومتحف التاريخ الطبيعي العراقي، جامعة بغداد

تاريخ أقبول ٢٠١٨/٠٣/٠٦

تاريخ الاستلام: ٢٠١٨/٠٢/١١

### الخلاصة

اجري مسحا لمجموعة النحل (Hymenoptera, Apoidea) من مناطق مختلفة في العراق؛ اذ بلغ عدد الانواع التي جمعت خلال التحريات ١٦ نوعاً، ١٣ جنساً تعود الى ٤ عوائل.

اجريت مراجعة للتسمية العلمية و الانتشار للأنواع المسجلة سابقاً للمجموعة العراقية؛ اجمالاً تم الاشارة الى ١١٠ نوعاً، ٣٢ جنساً تعود الى خمسة عوائل هي:  
Megachilidae و Halictidae ، Colletidae ، Andernidae ، Apidae.