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## Checklist of medically important Hymenoptera of Afghanistan

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**Abstract.** A recent investigation was conducted to assess the threat of insect venom hypersensitivity to deployed U.S. service members operating in the region. In parallel with this study, a checklist of medically important Hymenoptera was assembled from limited field collections as well as a comprehensive review of the literature and information provided by electronic databases. We compiled names of 14 families comprising 396 species of Hymenoptera capable of stinging humans. This is the first such checklist for Afghanistan, and should aid future taxonomic work and provide reference information for public health-related entomology in this region.

### Introduction

Afghanistan is a landlocked country located in south-central Asia with an area of approximately 650,000 square kilometers. It is dominated by the Hindu Kush and Himalayan mountain ranges in the north and arid desert to the south. Afghanistan is an entomologically understudied country but is undoubtedly rich in insect fauna due to its diversity of habitats. During a 2010 deployment in support of Operation Enduring Freedom, a study was conducted to determine the prevalence of insect stings and venom hypersensitivity in military personnel operating in Afghanistan (Turbyville et al. 2013). Because of the rugged terrain, lack of readily accessible medical facilities, and political instability of the country, prompt medical attention is not always available to military personnel, international aid workers, and local nationals who may suffer severe allergic reactions to Hymenoptera venom. In order to initially assess this threat, we compiled a list of potentially medically important Hymenoptera (i.e., capable of sting/venom injection in humans) from limited field collections and observations, as well as from a comprehensive review of relevant literature. We recorded the sociality of hymenopteran species known to occur in Afghanistan when reported in the literature; social taxa are capable of demonstrating more aggressive behavior in Hymenoptera (Pankiw 2009). We did not assess the level of sociality (e.g., primitive or highly social) in social species, but those belonging to the apine bees, paper-nesting wasps, yellow-jackets, hornets, and ants can display highly social behaviors (Goulet and Huber 1993).

This list should be considered preliminary, as additional Hymenoptera species of medical importance undoubtedly occur in Afghanistan. For example, ants exhibit intrageneric variation in the presence or absence of a produced sting and differentiation between sting-produced reactions and reactions from abdominally-secreted chemicals is ambiguous; therefore it was difficult to recognize stinging ants of medical importance in the literature. Klotz et al. (2005) reported many stinging ant genera of medical significance, although not all species of these genera possess a sting. No attempt was made to compile

names of Hymenoptera taxa without modified ovipositors capable of stinging humans; however, additional taxa (e.g., sawflies, microhymenoptera) are reported in the literature for Afghanistan.

## Methods and Materials

We collected Hymenoptera primarily by aerial-netting ad libitum on military installations in southern (near Kandahar City) and eastern (Bagram Air Field) Afghanistan from June 2010 through January 2011. Collected specimens were curated, photographed, and identified to species if possible. Voucher specimens and photographic prints were deposited in the Florida State Collection of Arthropods (FSCA), Division of Plant Industry (DPI), Florida Department of Agriculture and Consumer Services (FDACS). Logistical challenges prevented the authors from surveying outside of their respective areas of operation; thus, a literature review was also conducted to further identify stinging Hymenoptera species recorded in Afghanistan. For World Wide Web and specimen record database searches, we used various combinations of the following key words: Hymenoptera, Afghanistan, Iran, Iraq, Kyrgyzstan, Pakistan, Tajikistan, Turkey, Uzbekistan, Middle East, Asia, bees, wasps, ants, hornets, checklist, distribution, and taxonomy.

Supraspecific taxonomy in our checklist follows Goulet and Huber (1993) with the exception of the taxonomic placement of Crabronidae (Alexander 1992; see also Pulawski 2003), and Anthophoridae, which are now included within Apidae (Ascher and Pickering 2013). Superfamilies, families, and species are listed alphabetically and do not imply any phylogenetic relationships within or between these taxonomic divisions. Common names often associated with family level groupings (VanDyk and Belov 2013) are included in Table 1. Record type (i.e., collected, observed, or recorded in the literature), sociality, and literature references for species records are given after the species name and authority in Table 1. Sociality was gleaned from the literature but in some cases species-specific information could not be found; thus, 'unknown' was listed with those species in genera known to show both types of life histories.

## Results and Discussion

In total, 396 potentially medically important Hymenoptera species representing 14 families were collected or determined from the literature during this study (Table 1). None of the species collected were new records for Afghanistan. Three of the species collected, *Polistes wattii* Cameron, *Vespula germanica* (Fabricius), and *Vespa orientalis* Linnaeus, were very common near man-made structures located on military installations. The superfamilies Apoidea and Vespoidea account for all stinging species of Hymenoptera in Afghanistan. While our literature review provided most of the species names in our checklist, relatively few publications specifically address Hymenoptera species found in Afghanistan. In addition, records for Afghanistan were often limited to country name and region, with no detailed locality information.

The checklist presented here is based on the summary of results provided by Turbyville et al. (2013). We include additional species, but the checklist should still be considered preliminary. Turbyville et al. (2013) provide a detailed discussion and statistical analyses of insect venom hypersensitivity to U.S. service members operating in this region. Species records obtained from internet-accessible databases may require further vetting. Additional field surveys and examination of institutional insect collections will likely augment this list. These baseline data are intended to provide a starting point for public health entomology specialists as well as collection managers and other taxonomic researchers focusing on Hymenoptera in this region.

## Endnotes

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### Literature Cited

- Alexander, B. A. 1992.** An exploratory analysis of cladistic relationships within the superfamily Apoidea, with special reference to sphecoid wasps (Hymenoptera). *Journal of Hymenoptera Research* 1: 25–61.
- Archer, M. E. 1989.** A key to the world species of the Vespinae (Hymenoptera). Parts 1 and 2. Research Monograph of the University College of Ripon and York St. John. York, England. 89p.
- Ascher, J. S., and J. Pickering. 2013.** Discover Life bee species guide and world checklist (Hymenoptera: Apoidea: Anthophila). *In*: Discover Life. University of Georgia; Athens, Georgia. [http://www.discoverlife.org/mp/20q?guide=Apoidea\\_species](http://www.discoverlife.org/mp/20q?guide=Apoidea_species). (Accessed 28 June 2013).
- Bharti, H. 2008.** Altitudinal diversity of ants in Himalayan regions (Hymenoptera: Formicidae). *Sociobiology* 52: 305–322.
- Bagriacik, N., and N. Samin. 2011.** A checklist of Iranian Vespinae (Hymenoptera: Vespoidea: Vespidae). *Archives of Biological Sciences, Belgrade* 63: 487–492.
- Carpenter, J. M. 1996.** Distributional checklist of species of the genus *Polistes* (Hymenoptera) Vespidae; Polistinae, Polistini. *American Museum Novitates* 3188: 1–30.
- Carpenter, J. M., and J. Kojima. 2002.** Correction to the nomenclature in the genus *Dolichovespula* (Hymenoptera: Vespidae; Vespinae). *Entomological Science* 5: 389–390.
- Dikmen, F., and A. M. Aytakin. 2011.** Notes on the *Halictus* Latreille (Hymenoptera: Halictidae) fauna of Turkey. *Turkish Journal of Zoology* 35: 537–550.
- Dvorak, L., and L. Castro. 2007.** New and noteworthy records of vespid wasps (Hymenoptera: Vespidae) from the Palaearctic region. *Acta Entomologica Musei Nationalis Pragae* 47: 229–236.
- Ebrahimi, E., C. Schmid-Egger, and R. Wahis. 2008.** New records of Pompilidae (Hymenoptera) from Iran. *Linzer Biologische Beiträge* 40: 1435–1442.
- Engel, M. S. 2006.** A new species of *Osmia* from Iran (Hymenoptera: Megachilidae). *Acta Entomologica Slovenica* 14(2): 123–130.
- Gonzalez, V. H., M. S. Engel, and I. A. Hinojosa-Díaz. 2010.** A New Species of *Megachile* from Pakistan, with Taxonomic Notes on the Subgenus *Eutricharaea* (Hymenoptera: Megachilidae). *Journal of the Kansas Entomological Society* 83(1): 58–67.
- Goulet, H., and J. T. Huber. 1993.** Hymenoptera of the World: An identification guide to families. Centre for Land and Biological Resources Research, Ottawa, Ontario. 668 p.
- Güler, Y., A. Murat Aytakin, and F. Dikmen. 2011.** Bombini and Halictidae (Hymenoptera: Apoidea) fauna of Afyonkarahisar Province of Turkey. *Journal of the Entomological Research Society* 13(1): 1–22.
- Gupta, R. K. 2004.** An annotated catalogue of the bee species of the Indian Region. Jai Narain Vyas University; Jodhpur, India. <http://beesind.com>. (Accessed 28 June 2013).
- Klotz, J. H., R. D. de Shazo, J. L. Pinnas, A. M. Frishman, J. O. Schmidt, D. R. Suiter, G. W. Price, and S. A. Klotz. 2005.** Adverse reactions to ants other than imported fire ants. *Allergy, Asthma & Immunology* 95: 418–425.
- Lelej, A. S., B. Gharali, and H. Lotfalizadeh. 2008.** New records of velvet ants (Hymenoptera: Mutillidae) from the West of Iran. *Far Eastern Entomologist* 191: 1–7.
- Lelej, A. S., and O. N. Kabakov. 1980.** On Bradynobaenidae and Mutillidae (Hymenoptera) of Afghanistan. *Entomologicheskoe Obozrenie* 59: 181–196.
- Maria Ban, C., and B. Tomozei. 2006.** New data on the Apoid hymenopterans (Hymenoptera: Andrenidae, Anthophoridae, Apidae) from Dobrogea (Romania). *Travaux du Muséum National d'Histoire Naturelle* 49: 307–318.
- Mavromoustakis, G. A. 1965.** On some bees of the family Megachilidae (Hymenoptera. Apoidea) from Afghanistan. *Annales Historico-Naturales Musei Nationalis Hungarici Pars Zoologica* 57: 407–412.
- Michez, D. 2013.** *In*: Rasmont, P., and E. Haubruge (editors). Atlas Hymenoptera. Université de Mons; Mons, Belgium. <http://www.atlashymenoptera.net/>. (Accessed 28 June 2013).



- Paknia, O., A. Radchenko, and M. Pfeiffer. 2010.** New records of ants (Hymenoptera: Formicidae) from Iran. *Asian Myrmecology* 3: 29–38.
- Pankiw, T. 2009.** Reducing honey bee defensive responses and social wasp colonization with methyl anthranilate. *Journal of Medical Entomology* 46: 782–788.
- Pesenko, Y. A. 2006.** Contributions to the Halictid Fauna of the Eastern Palaearctic Region: Genus *Seladonia* Robertson (Hymenoptera: Halictidae, Halictinae). *Esakia* 46: 53–82.
- Pesenko, Y. A., and A. Pauly. 2005.** Monograph of the bees of the subfamily Nomioiinae (Hymenoptera: Halictidae) of Africa (excluding Madagascar). *Annales de la Société Entomologique de France* 41(2): 129–236.
- Pisarski, B. 1967.** Fourmis (Hymenoptera: Formicidae) d'Afghanistan récoltées par M. Dr K. Lindberg. *Annales Zoologici* 24(6): 375–426.
- Pulawski, W. J. 2003.** Catalog of Sphecidae. California Academy of Sciences; San Francisco, California. [http://research.calacademy.org/ent/catalog\\_sphecidae](http://research.calacademy.org/ent/catalog_sphecidae). (Accessed 28 June 2013).
- Radchenko, A., and G. W. Elmes. 2003.** *Myrmica afghanica* (Hymenoptera: Formicidae), a new ant species from Afghanistan. *Zootaxa* 375: 1–8.
- Radloff, S. E., R. Hepburn, and S. Fuchs. 2005.** The morphometric affinities of *Apis cerana* of the Hindu Kush and Himalayan regions of western Asia. *Apidologie* 36: 25–30.
- Pauly, A. 2013.** *In*: Rasmont, P., and E. Haubruge (editors). Atlas Hymenoptera. Université de Mons; Mons, Belgium. <http://www.atlashymenoptera.net/>. (Accessed 28 June 2013).
- Pauly A., Pesenko Yu., and V. Radchenko. 2013.** *In* Rasmont, P., and E. Haubruge (editors). Atlas Hymenoptera. Université de Mons; Mons, Belgium. <http://www.atlashymenoptera.net/>. (Accessed 28 June 2013).
- Renneson, J. 2013.** Iconography of the Vespidae of the World. <http://www.vespidae.be/>. (Accessed 14 June 2013).
- Santibanez, M., and M. Bell. 2012.** Beekeeping in Afghanistan. University of California-Davis College of Agriculture and Environmental Sciences Info Sheet: Davis, California. [http://afghanag.ucdavis.edu/c\\_livestock/bees/IS\\_Bees\\_Afghanistan.pdf](http://afghanag.ucdavis.edu/c_livestock/bees/IS_Bees_Afghanistan.pdf). (Accessed 10 June 2013).
- Srinivasan, G., and P. Girish Kumar. 2010.** New records of potter wasps (Hymenoptera: Vespidae: Eumeninae) from Arunachal Pradesh, India: five genera and ten species. *Journal of Threatened Taxa* 2(12): 1313–1322.
- Thi Phuong Lien, N., and J. M. Carpenter. 2002.** Vespidae of Vietnam (Insecta: Hymenoptera) 1. Vespinae. *Journal of the New York Entomological Society* 110: 199–211.
- Turbyville, J. C., J. C. Dunford, and M. R. Nelson. 2013.** Hymenoptera of Afghanistan and the central command area of operations: Assessing the threat to deployed U.S. service members with insect venom hypersensitivity. *Allergy and Asthma Proceedings* 34: 179–184.
- VanDyk, J., and V. Belov (editors). 2013.** Bug-Guide. Department of Entomology, Iowa State University; Ames, Iowa. <http://bugguide.net>. (Accessed 9 June 2013).
- Wahis, R. 2005.** Sur les espèces nord-africaines du genre *Apareia* Haupt (Hymenoptera : Pompilidae, Pompilinae). *Notes fauniques de Gembloux* 55: 43–49.
- Wahis, R., and C. Schmid-Egger. 2002.** The genus *Eoferreola* Arnold, 1935 in the Palaearctis with description of a new species (Hymenoptera: Pompilidae). *Notes fauniques de Gembloux* 46: 39–73.
- Wolf, H. 1968.** Beiträge zur Kenntnis der fauna Afganistans. Pompilidae, Hym. *Časopis Moravského Museja Brno. Supplement* 53: 233–248.
- Wolf, H. 2005.** Wegwespen (Hymenoptera, Pompilidae) des Ober-österreichischen Landesmuseums Linz (Austria) aus Jordanien, Syrien, Tunesien und Oman. *Linzer Biologische Beiträge* 37(2): 1765–1784.
- Woyke, J. 1984.** Survival and prophylactic control of *Tropilaelaps clareae* infesting *Apis mellifera* colonies in Afghanistan. *Apidologie* 15: 421–434.
- Zonstein, S. 2007.** A new species of the spider wasp genus *Claveliocnemis* Wolf, with new data on distribution and biology of its congeners (Hymenoptera: Pompilidae). *Israel Journal of Entomology* 37: 205–214.

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**Table 1. Checklist of medically important Hymenoptera of Afghanistan.**

**C = Collected** in Afghanistan during this study; **O = Observed** in Afghanistan during this study; **R = Reported** in the literature from Afghanistan. Species names with 'Unknown' indicate that both solitary and social behaviors have been observed or sociality was not reported in the literature. Non-aculeate Hymenoptera are not listed.

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**Apocrita (Aculeata)**
**Apoidea (Apiformes)****Andrenidae (mining bees)**

- Andrena afghana* Warncke. **R.** Solitary. Ascher and Pickering 2013  
*A. albopunctata* (Rossi). **R.** Solitary. Ascher and Pickering 2013  
*A. caroli* Pérez. **R.** Solitary. Ascher and Pickering 2013  
*A. cinereophila* Warncke. **R.** Solitary. Ascher and Pickering 2013  
*A. everna* Warncke. **R.** Solitary. Ascher and Pickering 2013  
*A. flavipes* Panzer. **R.** Solitary. Ascher and Pickering 2013  
*A. fuscata* Erichson. **R.** Solitary. Ascher and Pickering 2013  
*A. induta* Morawitz. **R.** Solitary. Ascher and Pickering 2013  
*A. jalalabadensis* Warnke. **R.** Solitary. Ascher and Pickering 2013  
*A. labialis* (Kirby). **R.** Solitary. Ascher and Pickering 2013  
*A. laghmana* Warncke. **R.** Solitary. Ascher and Pickering 2013  
*A. marmora* Nurse. **R.** Solitary. Ascher and Pickering 2013  
*A. nigroaenea* (Kirby). **R.** Solitary. Ascher and Pickering 2013  
*A. oulskii* Radoszkowski. **R.** Solitary. Ascher and Pickering 2013  
*A. ovatula* (Kirby). **R.** Solitary. Ascher and Pickering 2013  
*A. pilipes* Fabricius. **R.** Solitary. Ascher and Pickering 2013  
*A. prunella* Warnke. **R.** Solitary. Ascher and Pickering 2013  
*A. savignyi* Spinola. **R.** Solitary. Ascher and Pickering 2013  
*A. scita* Eversmann. **R.** Solitary. Maria Ban and Tomozei 2006  
*A. similis* Smith. **R.** Solitary. Ascher and Pickering 2013  
*A. spreta* Pérez. **R.** Solitary. Ascher and Pickering 2013  
*A. transitoria* Morawitz. **R.** Solitary. Ascher and Pickering 2013  
*Camptopoeum afghanicum* Patiny. **R.** Solitary. Ascher and Pickering 2013  
*C. rufiventre* Morawitz. **R.** Solitary. Ascher and Pickering 2013  
*Panurgus afghanensis* Warnke. **R.** Solitary. Ascher and Pickering 2013

**Apidae (cuckoo, carpenter, digger, bumble, and honey bees)**

- Apis mellifera* Linnaeus. **O/R.** Social. Woyke 1984  
*A. cerana* Fabricius. **R.** Social. Radloff et al. 2005  
*A. dorsata* Fabricius. **R.** Social. Santibanez and Bell 2012  
*A. florea* Fabricius. **R.** Social. Gupta 2004  
*Bombus asiaticus* Morawitz. **R.** Social. Gupta 2004  
*B. biroi* Vogt. **R.** Social. Gupta 2004  
*B. branickii* (Radoszkowski). **R.** Social. Gupta 2004  
*B. cullumanus* (Kirby). **R.** Social. Gupta 2004  
*B. ferganicus* (Radoszkowski). **R.** Social. Gupta 2004  
*B. keriensis* Morawitz. **R.** Social. Gupta 2004  
*B. kotzschii* Reinig. **R.** Social. Ascher and Pickering 2013  
*B. lucorum* (Linnaeus). **R.** Social. Gupta 2004  
*B. marussinus* Skorikov. **R.** Social. Gupta 2004  
*B. melanurus* Lepeletier. **R.** Social. Gupta 2004  
*B. morawitzi* Radoszkowski. **R.** Social. Ascher and Pickering 2013  
*B. morawitzianus* (Popov). **R.** Social. Gupta 2004  
*B. obtusus* Richards. **R.** Social. Gupta 2004

- B. semenovianus* (Skorikov). **R.** Social. Gupta 2004  
*B. subtypicus* Morawitz. **R.** Social. Gupta 2004  
*B. terrestris* (Linnaeus). **R.** Social. Gupta 2004  
*B. tunicatus* Smith. **R.** Social. Gupta 2004  
*Ceratina hieratica* Baker. **R.** Solitary. Ascher and Pickering 2013  
*Eucera afghana* Tkalců. **R.** Solitary. Ascher and Pickering 2013  
*E. arachosiae* Tkalců. **R.** Solitary. Ascher and Pickering 2013  
*E. hispana* Lepeletier. **R.** Solitary. Gupta 2004  
*E. capsica* Morawitz. **R.** Solitary. Gupta 2004  
*E. clypeata* Erichson. **R.** Solitary. Gupta 2004  
*E. diana* Nurse. **R.** Solitary. Ascher and Pickering 2013  
*E. dimidiata* Brullé. **R.** Solitary. Ascher and Pickering 2013  
*E. ferruginea* Lepeletier. **R.** Solitary. Ascher and Pickering 2013  
*E. hispana* Lepeletier. **R.** Solitary. Ascher and Pickering 2013  
*E. pusilla* Morawitz. **R.** Solitary. Ascher and Pickering 2013  
*E. sogdiana* Morawitz. **R.** Solitary. Ascher and Pickering 2013  
*Melecta excelsa* Lieftinck. **R.** Solitary. Ascher and Pickering 2013  
*M. kuschakewiczi* (Radoszkowski). **R.** Solitary. Ascher and Pickering 2013  
*Nomada distinguenda* Morawitz. **R.** Solitary. Ascher and Pickering 2013  
*N. immaculata* Morawitz. **R.** Solitary. Ascher and Pickering 2013  
*N. ruficollis* Morawitz. **R.** Solitary. Ascher and Pickering 2013  
*N. xanthopoda* Schwarz. **R.** Solitary. Ascher and Pickering 2013  
*Parammobatodes nuristanus* (Warncke). **R.** Solitary. Ascher and Pickering 2013  
*Pasites maculatus* Jurine. **R.** Solitary. Ascher and Pickering 2013  
*Tetraloniella nigriceps* (Morawitz). **R.** Solitary. Ascher and Pickering 2013  
*Thyreus ramosus* (Lepeletier). **R.** Solitary. Ascher and Pickering 2013  
*Xylocopa angulosa* Maa. **R.** Solitary. Ascher and Pickering 2013  
*X. bentoni* Cockerell. **R.** Unknown. Gupta 2004  
*X. bicristata* Maa. **R.** Solitary. Ascher and Pickering 2013  
*X. fenestrata* (Fabricius). **R.** Solitary. Ascher and Pickering 2013  
*X. hedicki* Ozdikmen. **R.** Solitary. Ascher and Pickering 2013  
*X. iris* (Christ). **R.** Solitary. Ascher and Pickering 2013  
*X. olivieri* Lepeletier. **R.** Solitary. Ascher and Pickering 2013  
*X. parviceps* Morawitz. **R.** Solitary. Ascher and Pickering 2013  
*X. povolnyi* Tkalců. **R.** Solitary. Ascher and Pickering 2013  
*X. pseudoviolacea* Popov. **R.** Solitary. Ascher and Pickering 2013  
*X. turanica* Morawitz. **R.** Solitary. Ascher and Pickering 2013  
*X. valga* Gerstäcker. **R.** Solitary. Ascher and Pickering 2013  
*X. varentzowi* Morawitz. **R.** Solitary. Ascher and Pickering 2013

#### Colletidae (plasterer and yellow-faced bees)

- Colletes morawitzi* Noskiewicz. **R.** Solitary. Ascher and Pickering 2013  
*Hylaeus communis* Nylander. **R.** Solitary. Ascher and Pickering 2013  
*H. dolichocephalus* Morawitz. **R.** Solitary. Ascher and Pickering 2013

#### Halictidae (sweat bees)

- Ceylalictus punjabensis* (Cameron). **R.** Unknown. Ascher and Pickering 2013  
*Halictus brunnescens* (Eversmann). **R.** Solitary. Dikmen and Aytakin 2011  
*H. cephalicus* Morawitz. **R.** Solitary. Ascher and Pickering 2013  
*H. determinandus* Dalla Torre. **R.** Solitary. Ascher and Pickering 2013  
*H. funerarius* Morawitz. **R.** Solitary. Ascher and Pickering 2013  
*H. humkalensis* Blüthgen. **R.** Solitary. Ascher and Pickering 2013  
*H. kuschkensis* Ebmer. **R.** Solitary. Ascher and Pickering 2013  
*H. lucipennis* Smith. **R.** Solitary. Ascher and Pickering 2013



- H. maculatus* Smith. **R.** Solitary. Ascher and Pickering 2013  
*H. minor* Morawitz. **R.** Solitary. Pauly et al. 2013  
*H. mucoreus* Eversmann. **R.** Solitary. Ascher and Pickering 2013  
*H. nasica* Morawitz. **R.** Solitary. Ascher and Pickering 2013  
*H. nuristanicus* Pesenko. **R.** Solitary. Ascher and Pickering 2013  
*H. paropamisos* Ebmer. **R.** Solitary. Ascher and Pickering 2013  
*H. pulvereus* Morawitz. **R.** Solitary. Ascher and Pickering 2013  
*H. quadricinctus* (Fabricius). **R.** Solitary. Ascher and Pickering 2013  
*H. seladonius* (Fabricius). **R.** Solitary. Ascher and Pickering 2013  
*H. semitectus* Morawitz. **R.** Solitary. Ascher and Pickering 2013  
*H. semiticus* Blüthgen. **R.** Solitary. Ascher and Pickering 2013  
*H. senilis* (Eversmann). **R.** Solitary. Dikmen and Aytekin 2011  
*H. takuiricus* Blüthgen. **R.** Solitary. Ascher and Pickering 2013  
*Lasioglossum acherontion* Ebmer. **R.** Unknown. Pauly 2011.  
*L. albitarsoides* (Blüthgen). **R.** Unknown. Pauly 2013  
*L. algirum* (Blüthgen). **R.** Unknown. Ascher and Pickering 2013  
*L. annulipes* (Morawitz). **R.** Unknown. Ascher and Pickering 2013  
*L. aschabadiense* (Blüthgen). **R.** Unknown. Pauly 2013  
*L. brevicorne* (Schenck). **R.** Unknown. Pauly 2013  
*L. capsicum* (Morawitz). **R.** Unknown. Pauly 2013  
*L. chloridicum* Ebmer. **R.** Unknown. Ascher and Pickering 2013  
*L. clypeiferellum* (Strand). **R.** Unknown. Pauly 2013  
*L. croceipes* (Morawitz). **R.** Unknown. Ascher and Pickering 2013  
*L. debile* Ebmer. **R.** Unknown. Pauly 2013  
*L. discum* (Smith). **R.** Unknown. Ascher and Pickering 2013  
*L. dolus* Ebmer. **R.** Unknown. Pauly 2013  
*L. epiptygiale* (Blüthgen). **R.** Unknown. Pauly 2013  
*L. exulans* Ebmer. **R.** Unknown. Ascher and Pickering 2013  
*L. fallax* (Morawitz). **R.** Unknown. Ascher and Pickering 2013  
*L. filipes* Ebmer. **R.** Unknown. Pauly 2013  
*L. fulvitarse* (Morawitz). **R.** Unknown. Ascher and Pickering 2013  
*L. fulvopacum* Ebmer. **R.** Unknown. Ascher and Pickering 2013  
*L. griseolum* (Morawitz). **R.** Unknown. Pauly 2013  
*L. hilare* Ebmer. **R.** Unknown. Pauly 2013  
*L. hyalinipennis* (Morawitz). **R.** Unknown. Pauly 2013  
*L. hypsiston* Ebmer. **R.** Unknown. Ascher and Pickering 2013  
*L. ilicum* (Blüthgen). **R.** Unknown. Pauly 2013  
*L. laevinode* (Morawitz). **R.** Unknown. Pauly 2013  
*L. leucopymatum* (Dalla Torre). **R.** Unknown. Pauly 2013  
*L. maculipes* (Morawitz). **R.** Unknown. Pauly 2013  
*L. massuricum* (Blüthgen). **R.** Unknown. Pauly 2013  
*L. mesosclerum* (Pérez). **R.** Unknown. Pauly 2013  
*L. mesoviride* Ebmer. **R.** Unknown. Ascher and Pickering 2013  
*L. nigrilabre* (Morawitz). **R.** Unknown. Ascher and Pickering 2013  
*L. obscuratum* (Morawitz). **R.** Unknown. Pauly 2013  
*L. opaculampron* Ebmer. **R.** Unknown. Pauly 2013  
*L. orion* Ebmer. **R.** Unknown. Ascher and Pickering 2013  
*L. orpheopse* (Blüthgen). **R.** Ascher and Pickering 2013  
*L. orpheum* (Nurse). **R.** Unknown. Pauly 2013  
*L. osiris* Ebmer. **R.** Unknown. Ascher and Pickering 2013  
*L. pallidum* (Radoszkowski). **R.** Unknown. Ascher and Pickering 2013  
*L. persicum* (Cockerell). **R.** Unknown. Pauly 2013  
*L. picipes* (Morawitz). **R.** Unknown. Ascher and Pickering 2013  
*L. pistorium* (Vachal). **R.** Unknown. Pauly 2013

- L. pseudoleptorhynchum* (Blüthgen). **R.** Unknown. Pauly et al. 2013  
*L. pygmaeum* (Schenck). **R.** Unknown. Pauly et al. 2013  
*L. rhynchites* (Morawitz). **R.** Unknown. Ascher and Pickering 2013  
*L. salebrosum* (Blüthgen). **R.** Unknown. Pauly 2013  
*L. schoischi* Ebmer. **R.** Unknown. Pauly 2013  
*L. semilucens* (Alfken). **R.** Unknown. Pauly 2013  
*L. skorikovi* (Blüthgen). **R.** Unknown. Ascher and Pickering 2013  
*L. subequestre* (Blüthgen). **R.** Unknown. Ascher and Pickering 2013  
*L. sublaterale* (Blüthgen). **R.** Unknown. Ascher and Pickering 2013  
*L. suppressum* Ebmer. **R.** Unknown. Pauly 2013  
*L. tarsatum* (Schenck). **R.** Unknown. Pauly 2013  
*L. tadschicum* (Blüthgen). **R.** Unknown. Ascher and Pickering 2013  
*L. tschakarensis* (Blüthgen). **R.** Unknown. Pauly 2013  
*L. urguticum* Ebmer. **R.** Unknown. Ascher and Pickering 2013  
*L. vagans* (Smith). **R.** Unknown. Ascher and Pickering 2013  
*Nomiapis bispinosa* Brullé. **R.** Unknown. Pauly 2013  
*N. diversipes* (Latreille). **R.** Unknown. Güler et al. 2011  
*N. kophenes* Baker. **R.** Unknown. Pauly 2013  
*N. bactriensis* Pesenko. **R.** Unknown. Ascher and Pickering 2013  
*N. gussakovskiji* Blüthgen. **R.** Unknown. Ascher and Pickering 2013  
*N. klausii* Pesenko. **R.** Unknown. Pesenko and Pauly 2005  
*N. ino* Nurse. **R.** Unknown. Ascher and Pickering 2013  
*Pseudapis bispinosa* (Brullé). **R.** Unknown. Ascher and Pickering 2013  
*P. edentata* (Morawitz). **R.** Unknown. Pauly 2013  
*P. kophenes* (Baker). **R.** Unknown. Ascher and Pickering 2013  
*P. nilotica* (Smith). **R.** Unknown. Ascher and Pickering 2013  
*P. platula* (Warncke). **R.** Unknown. Ascher and Pickering 2013  
*Seladonia lucidipennis* (Smith). **R.** Unknown. Pesenko 2006  
*S. pollinosa cariniventris* (Morawitz). **R.** Unknown. Pesenko 2006  
*Vestitohalictus kuschkenensis* (Ebmer). **R.** Unknown. Pauly 2013  
*V. mucoreus* (Eversmann). **R.** Unknown. Pauly 2013  
*V. surabadensis* (Ebmer). **R.** Unknown. Pauly 2013

#### Megachilidae (leaf-cutter and mason bees)

- Anthidium afghanistanicum* Mavromoustakis. **R.** Solitary. Gupta 2004  
*A. eremicum* Alfken. **R.** Solitary. Ascher and Pickering 2013  
*A. klapperichi* Mavromoustakis. **R.** Solitary. Ascher and Pickering 2013  
*A. montanum reichardti* Gussakovskij. **R.** Solitary. Mavromoustakis 1965  
*A. septemspinorum* Lepeletier. **R.** Solitary. Ascher and Pickering 2013  
*A. syriacum* Pérez. **R.** Solitary. Ascher and Pickering 2013  
*Coelioxys sogdiana* Morawitz. **R.** Solitary. Ascher and Pickering 2013  
*Haetosmia brachyura* (Morawitz). **R.** Solitary. Ascher and Pickering 2013  
*Hoplitis perezii* (Ferton). **R.** Solitary. Ascher and Pickering 2013  
*H. picicornis* (Morawitz). **R.** Solitary. Ascher and Pickering 2013  
*Megachile albifasciata* Rebmann. **R.** Solitary. Ascher and Pickering 2013  
*M. albimarginalis* Rebmann. **R.** Solitary. Ascher and Pickering 2013  
*M. arachosiana* Gonzalez, Engel, and Hinojosa-Diaz. **R.** Solitary. Gonzalez et al. 2010  
*M. asiatica* Morawitz. **R.** Solitary. Ascher and Pickering 2013  
*M. babylonica* Rebmann. **R.** Solitary. Ascher and Pickering 2013  
*M. flavidula* Rebmann. **R.** Solitary. Ascher and Pickering 2013  
*M. jakesi* Tkalců. **R.** Solitary. Ascher and Pickering 2013  
*M. persica* Rebmann. **R.** Solitary; Ascher and Pickering 2013  
*M. picicornis* Morawitz. **R.** Solitary; Ascher and Pickering 2013  
*M. povolnyi* (Tkalců). **R.** Solitary. Ascher and Pickering 2013

- M. proxima* Smith. **R.** Solitary. Ascher and Pickering 2013  
*M. striatella* Rebmann. **R.** Solitary. Ascher and Pickering 2013  
*M. tenorai* (Tkalčů). **R.** Solitary. Ascher and Pickering 2013  
*M. transgrediens* Rebmann. **R.** Solitary. Ascher and Pickering 2013  
*Osmia fasciata* Latreille. **R.** Solitary. Ascher and Pickering 2013  
*O. fedtschenkoi* Morawitz. **R.** Solitary. Ascher and Pickering 2013  
*O. indigotea* Morawitz. **R.** Solitary. Ascher and Pickering 2013  
*O. longicornis* Morawitz. **R.** Solitary. Ascher and Pickering 2013  
*O. mediana* Engel. **R.** Solitary. Engel 2006  
*O. sogdiana* Morawitz. **R.** Solitary. Ascher and Pickering 2013

#### Melittidae (melittid bees)

- Melitta dimidiata* Morawitz. **R.** Solitary. Michez 2013  
*M. leporina* (Panzer). **R.** Solitary. Ascher and Pickering 2013  
*M. piersbakeri* Engel. **R.** Solitary. Ascher and Pickering 2013  
*M. sibirica* (Morawitz). **R.** Solitary. Ascher and Pickering 2013

#### Apoidea (Spheciformes)

##### Crabronidae (n/a; sensu Alexander 1992)

- Ammatomus mesotenus* (Handlirsch). **R.** Solitary. Pulawski 2003  
*Astata boops* (Schrank). **R.** Solitary. Pulawski 2003  
*A. diabolica* Balthasar. **R.** Solitary. Pulawski 2003  
*Belomicrus* sp. **R.** Solitary. Pulawski 2003  
*Bembecinus asiaticus* Gussakovskij. **R.** Solitary. Pulawski 2003  
*Bembix bicolor* Radoszkowski. **R.** Solitary. Pulawski 2003  
*B. eburnea* Radoszkowski. **R.** Solitary. Pulawski 2003  
*B. kirgisisca* Morawitz. **R.** Solitary. Pulawski 2003  
*B. melanura* Morawitz. **R.** Solitary. Pulawski 2003  
*B. oculata* Panzer. **R.** Solitary. Pulawski 2003  
*B. rostrata* (Linnaeus). **R.** Solitary. Pulawski 2003  
*Cerceris bicincta* Klug. **R.** Solitary. Pulawski 2003  
*C. bupresticida* Dufour. **R.** Solitary. Pulawski 2003  
*C. dorsalis* Eversmann. **R.** Solitary. Pulawski 2003  
*C. fimbriata* (Rossi). **R.** Solitary. Pulawski 2003  
*C. povolnyi* de Beaumont. **R.** Solitary. Pulawski 2003  
*C. quadricincta* (Panzer). **R.** Solitary. Pulawski 2003  
*C. rubida* (Jurine). **R.** Solitary. Pulawski 2003  
*C. sabulosa* (Panzer). **R.** Solitary. Pulawski 2003  
*C. spinipectus* Smith. **R.** Solitary. Pulawski 2003  
*C. vagans* Radoszkowski. **R.** Solitary. Pulawski 2003  
*Crabro tuberculiger* Kohl. **R.** Solitary. Pulawski 2003  
*C. uljanini* Radoszkowski. **R.** Solitary. Pulawski 2003  
*Crossocerus klapperichi* de Beaumont. **R.** Solitary. Pulawski 2003  
*Diodontus minutus* (Fabricius). **R.** Solitary. Pulawski 2003  
*Dryudella nuristanica* (Balthasar). **R.** Solitary. Pulawski 2003  
*Ectemnius confinis* (Walker). **R.** Solitary. Pulawski 2003  
*E. sexcinctus* (Fabricius). **R.** Solitary. Pulawski 2003  
*E. meridionalis* (Costa). **R.** Solitary. Pulawski 2003  
*Laphyragogus* sp. **R.** Solitary. Pulawski 2003  
*Lindenius afghanus* Leclercq. **R.** Solitary. Pulawski 2003  
*L. panzeri* (Vander Linden). **R.** Solitary. Pulawski 2003  
*L. prosopiformis* (Nurse). **R.** Solitary. Pulawski 2003  
*L. pygmaeus* (Rossi). **R.** Solitary. Pulawski 2003  
*L. satschouanus* (Kohl). **R.** Solitary. Pulawski 2003

*Liris atratus* (Spinola). **R.** Solitary. Pulawski 2003  
*L. festinans* (Smith). **R.** Solitary. Pulawski 2003  
*L. haemorrhoidalis* (Fabricius). **R.** Solitary. Pulawski 2003  
*L. memnonius* (Smith). **R.** Solitary. Pulawski 2003  
*L. niger* (Fabricius). **R.** Solitary. Pulawski 2003  
*L. nigricans* (Walker). **R.** Solitary. Pulawski 2003  
*L. subtessellatus* (Smith). **R.** Solitary. Pulawski 2003  
*Mimumesa unicolor* (Vander Linden). **R.** Solitary. Pulawski 2003  
*Oxybelus haemorrhoidalis* Olivier. **R.** Solitary. Pulawski 2003  
*O. lamellatus* Olivier. **R.** Solitary. Pulawski 2003  
*O. latro* Olivier. **R.** Solitary. Pulawski 2003  
*O. mucronatus* (Fabricius). **R.** Solitary. Pulawski 2003  
*O. quatuordecimnotatus* Jurine. **R.** Solitary. Pulawski 2003  
*O. subspinosus* Klug. **R.** Solitary. Pulawski 2003  
*O. variegates* Wesmael. **R.** Solitary. Pulawski 2003  
*Palarus variegates* (Fabricius). **R.** Solitary. Pulawski 2003  
*Pemphredon lethifer* (Shuckard). **R.** Solitary. Pulawski 2003  
*Philanthus triangulum* (Fabricius). **R.** Solitary. Pulawski 2003  
*Solierella* sp. **R.** Solitary. Pulawski 2003  
*Sphecius persa* Gussakovskij. **R.** Solitary. Pulawski 2003  
*S. uljanini* (Radoszkowski). **R.** Solitary. Pulawski 2003  
*Stizoides tridentatus* (Fabricius). **R.** Solitary. Pulawski 2003  
*Stizus bipunctatus* (Smith). **R.** Solitary. Pulawski 2003  
*S. koenigi* Morawitz. **R.** Solitary. Pulawski 2003  
*S. spectrum* Handlirsch. **R.** Solitary. Pulawski 2003  
*Tachysphex consocius* Kohl. **R.** Solitary. Pulawski 2003  
*T. incertus* (Radoszkowski). **R.** Solitary. Pulawski 2003  
*T. mocsaryi* Kohl. **R.** Solitary. Pulawski 2003  
*T. schmiedeknechti* Kohl. **R.** Solitary. Pulawski 2003  
*T. unicolor* (Panzer). **R.** Solitary. Pulawski 2003  
*Tachytes levantinus* Pulawski. **R.** Solitary. Pulawski 2003  
*T. matronalis* Dahlbom. **R.** Solitary. Pulawski 2003  
*Tachytes* sp. **C.** Unknown. Pulawski 2003  
*Trypoxylon attenuatum* Smith. **R.** Solitary. Pulawski 2003  
*T. klapperichi* Balthasar. **R.** Solitary. Pulawski 2003  
*T. scutatatum* Chevrier. **R.** Solitary. Pulawski 2003

#### **Sphecidae (thread-waisted wasps)**

*Ammophila afghanica* Balthasar. **R.** Solitary. Pulawski 2003  
*A. assimilis* Kohl. **R.** Solitary. Pulawski 2003  
*A. dentigera* Gussakovskij. **R.** Solitary. Pulawski 2003  
*A. gracillima* Taschenberg. **R.** Solitary. Pulawski 2003  
*A. heydeni* Dahlbom. **R.** Solitary. Pulawski 2003  
*A. hungarica* Mocsáry. **R.** Solitary. Pulawski 2003  
*A. sarekandana* Balthasar. **R.** Solitary. Pulawski 2003  
*Chalybion femoratum* (Fabricius). **R.** Solitary. Pulawski 2003  
*C. klapperichi* (Balthasar). **R.** Solitary. Pulawski 2003  
*Chlorion magnificum* Morawitz. **R.** Solitary. Pulawski 2003  
*C. regale* Smith. **R.** Solitary. Pulawski 2003  
*Eremochares dives* (Brullé). **R.** Solitary. Pulawski 2003  
*Palmodes occitanicus* (Fargeau and Serville). **R.** Solitary. Pulawski 2003  
*Parapsammophila algira* (Kohl). **R.** Solitary. Pulawski 2003  
*Podalonia afghanica* Balthasar. **R.** Solitary. Pulawski 2003  
*P. alpina* (Kohl). **R.** Solitary. Pulawski 2003



*P. ebenina* (Spinola). **R.** Solitary. Pulawski 2003  
*P. hirsuta* (Scopoli). **R.** Solitary. Pulawski 2003  
*P. tydei* (Le Guillou). **R.** Solitary. Pulawski 2003  
*Prionyx afghaniensis* (de Beaumont). **R.** Solitary. Pulawski 2003  
*P. haberhaueri* (Radoszkowski). **R.** Solitary. Pulawski 2003  
*P. macula* (Fabricius). **R.** Solitary. Pulawski 2003  
*P. nudatus* (Kohl). **R.** Solitary. Pulawski 2003  
*P. songaricus* (Eversmann). **R.** Solitary. Pulawski 2003  
*P. stschurowskii* (Radoszkowski). **R.** Solitary. Pulawski 2003  
*P. viduatus* (Christ). **R.** Solitary. Pulawski 2003  
*Sceliphron curvatum* (Smith). **R.** Solitary. Pulawski 2003  
*S. destillatorium* (Illiger). **R.** Solitary. Pulawski 2003  
*S. madraspatanum* (Fabricius). **R.** Solitary. Pulawski 2003  
*S. seistaniensis* Jha and Farooqi. **R.** Solitary. Pulawski 2003  
*Sphex flavipennis* Fabricius. **R.** Solitary. Pulawski 2003  
*S. funerarius* Gussakovskij. **R.** Solitary. Pulawski 2003  
*S. leuconotus* Brullé. **R.** Solitary. Pulawski 2003  
*S. oxianus* Gussakovskij. **R.** Solitary. Pulawski 2003  
*S. pruinus* Germar. **R.** Solitary. Pulawski 2003

### Ampulicidae

*Ampulex fulgens* de Beaumont. **R.** Solitary. Pulawski 2003

### Vespoidea

#### Bradynobaenidae (bradynobaenid wasps)

*Apterogyna appropinqua* Skorikov. **R.** Solitary. Lelej and Kabakov 1980  
*Macroocula morawitzi* (Radoszkowski). **R.** Solitary; Lelej and Kabakov 1980  
*M. panfilovi* Lelej. **R.** Solitary. Lelej and Kabakov 1980

#### Formicidae (ants)

*Aenictus wroughtoni sagei* Forel. **R.** Social. Pisarski 1967  
*Euponera ochracea* (Mayr). **R.** Social. Pisarski 1967  
*Myrmica afghanica* Radchenko and Elmes. **R.** Social. Radchenko and Elmes 2003  
*M. aimonissabaudiae* Menozzi. **R.** Social. Bharti 2008  
*Tetramorium schneideri* Emery. **R.** Social. Paknia et al. 2010

#### Mutillidae (velvet ants)

*Artiotilla afghanica* (Suárez). **R.** Solitary. Lelej and Kabakov 1980  
*Bischoffitilla afghanica* (Lelej). **R.** Solitary. Lelej and Kabakov 1980  
*Dasylabris bucharensis* Skorikov. **R.** Solitary. Lelej and Kabakov 1980  
*D. desertorum* (Radoszkowski). **R.** Solitary. Lelej and Kabakov 1980  
*D. hazara* Lelej. **R.** Solitary. Lelej and Kabakov 1980  
*D. indra* Lelej. **R.** Solitary. Lelej and Kabakov 1980  
*D. intermedia* Skorikov. **R.** Solitary. Lelej and Kabakov 1980  
*D. miranda* Lelej. **R.** Solitary. Lelej and Kabakov 1980  
*D. mitra* Lelej. **R.** Solitary. Lelej and Kabakov 1980  
*D. mongolica* (Radoszkowski). **R.** Solitary. Lelej and Kabakov 1980  
*Dentilla dichroa* (Sichel and Radoszkowski). **R.** Solitary. Lelej et al. 2008  
*D. speciosa* (Lelej). **R.** Solitary. Lelej and Kabakov 1980  
*D. zarudnyi* Lelej. **R.** Solitary; Lelej and Kabakov 1980  
*Ephutomma deserta* Lelej. **R.** Solitary. Lelej and Kabakov 1980  
*Myrmilla badchysiana* Lelej. **R.** Solitary. Lelej and Kabakov 1980  
*M. kabulensis* Lelej. **R.** Solitary. Lelej and Kabakov 1980  
*M. lagmana* Lelej. **R.** Solitary. Lelej and Kabakov 1980



*M. rostriformis* Lelej. **R.** Solitary. Lelej and Kabakov 1980  
*Mutilla erschoffii* Radoszkowski. **R.** Solitary. Lelej and Kabakov 1980  
*Nemka aurantiaca* (Skorikov). **R.** Solitary. Lelej and Kabakov 1980  
*Nuristanilla kabakovi* Lelej. **R.** Solitary. Lelej and Kabakov 1980  
*Promecilla vinuta* (Nagy). **R.** Solitary. Lelej and Kabakov 1980  
*Pseudomyrmosa minuta* (Morawitz). **R.** Solitary. Lelej and Kabakov 1980  
*Pseudophotopsis afghanica* Lelej. **R.** Solitary. Lelej and Kabakov 1980  
*P. binghami* (Bischoff). **R.** Solitary. Lelej and Kabakov 1980  
*P. brachythorax* (Skorikov). **R.** Solitary. Lelej and Kabakov 1980  
*P. caspica* (Radoszkowski). **R.** Solitary. Lelej and Kabakov 1980  
*P. caucasica* (Radoszkowski). **R.** Solitary. Lelej and Kabakov 1980  
*P. irana* (Skorikov). **R.** Solitar. Lelej and Kabakov 1980  
*P. kabakovi* Lelej. **R.** Solitary. Lelej and Kabakov 1980  
*P. pavlovskyi* Skorikov. **R.** Solitary. Lelej and Kabakov 1980  
*Skorikovia elongata* (Radoszkowski). **R.** Solitary. Lelej and Kabakov 1980  
*Smicromyrme turanica* (Morawitz). **R.** Solitary. Lelej and Kabakov 1980  
*Stenomutilla sejugis* (Radoszkowski). **R.** Solitary. Lelej and Kabakov 1980  
*Tricholabiodes nuristanus* Lelej. **R.** Solitary. Lelej and Kabakov 1980

### **Pompilidae (spider wasps)**

*Agenioideus excisus* (Morawitz). **R.** Solitary. Wolf 1968  
*Apareia kassebeeri* Wahis. **R.** Solitary. Wahis 2005  
*Arachnotheutes minor tunesiacus* Wolf. **R.** Solitary. Wolf 2005  
*Claveliocnemis incisipennis* Wolf. **R.** Solitary. Zonstein 2007  
*Cryptocheilus discolor* (Fabricius). **R.** Solitary. Wolf 1968  
*C. notatum melanium* (Lepeletier). **R.** Solitary. Wolf 1968  
*C. pseudonotatum* Susterer. **R.** Solitary. Wolf 1968  
*C. rubellum* (Eversmann). **R.** Solitary. Wolf 1968  
*C. stehliki* Wolf. **R.** Solitary. Wolf 1968  
*Ctenagenia ozbeki* Wahis. **R.** Solitary. Ebrahimi et al. 2008  
*Dicyrtomellus kizilkumi* (Radoszkowski). **R.** Solitary. Wolf 1968  
*Eoferreola manticata* (Pallas). **R.** Solitary. Wahis and Schmid-Egger 2002  
*Ferreola diffinis* (Lepeletier). **R.** Solitary. Wolf 1968  
*Paragenioides povolnyi* Wolf. **R.** Solitary. Wolf 1968  
*Pareiocurgus bactriacus* Wolf. **R.** Solitary. Wolf 1968  
*Pompilus plumbeus plumbeus* (Fabricius). **R.** Solitary. Wolf 1968  
*Tachyagetes excellens* Haupt. **R.** Solitary. Wolf 1968  
*Tachypompilus analis* (Fabricius). **R.** Solitary. Wolf 1968

### **Vespidae (yellow-jackets, hornets, paper wasps; potter, mason, and pollen wasps)**

*Ancistrocercus antelope* (Panzer). **R.** Social. Renneson 2013  
*A. gazella* (Panzer). **R.** Solitary. Dvorak and Castro 2007  
*Delta dimidiatipenne* (de Saussure). **R.** Social. Renneson 2013  
*Dolichovespula intermedia* (Birula). **R.** Social. Archer 1989  
 (also see Carpenter and Kojima 2002)  
*D. sylvestris* (Scopoli). **R.** Social. Bagriacik and Samin 2011  
*Katamenes tauricus* (de Saussure). **R.** Social. Dvorak and Castro 2007  
*Polistes dominulus* (Christ). **R.** Social. Carpenter 1996  
*P. gallicus* (Linnaeus). **R.** Social. Carpenter 1996  
*P. indicus* Stolfa. **R.** Social. Carpenter 1996  
*P. olivaceus* (DeGeer). **R.** Social. Carpenter 1996  
*P. wattii* Cameron. **C/R.** Social. Carpenter 1996  
*Rhynchium brunneum* (Fabricius). **R.** Unknown. Srinivasan and Kumar 2010  
*Vespula germanica* (Fabricius). **C/R.** Social. Archer 1989

*V. auraria* Smith. **R.** Social. Archer 1989

*V. orientalis* Linnaeus. **C/R.** Social. Archer 1989

*V. tropica* (Linnaeus). **R.** Social. Thi Phuong Lien and Carpenter 2002

