Further records of ants (Hymenoptera: Formicidae) from Iran

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Wide ranging surveys of the ant fauna of Iran have enabled us to add a further 30 named species to the country list. A review of almost all the published literature and of photographs of unidentified specimens within the public domain gives a grand total of 248 species, from seven subfamilies and 37 genera. In the majority of instances, our own specimens were compared with type images available from antweb.com. This has led us to propose new or revised status for Cataglyphis turcomanica Crawley 1920, Lepisiota integrisquama (Kuznetsov-Ugamsky, 1929), Lepisiota surchanica (Kuznetsov-Ugamsky, 1929) and Messor obscurior Crawley 1920. We note that the total includes a number of what may be misidentifications and a small number of named species that seem unlikely to occur in Iran.

Keywords: Iran; ant distribution; Formicidae

Introduction


Not all of these give species names. Here we report on collections made in twelve areas of Iran, helping to move to a comprehensive knowledge of what ant species are to be found in this large country and the diversity of species within the greatly differing ecological regions.

New collection records

The records from our collections can be seen in Appendix 1. All the records are of workers unless stated. For most species reference numbers are given to type specimen images now available on
Antweb.org. The images can be sighted by entering the number, e.g. ANTWEB100468 and CASENT0904019, into the search box on a web browser. The search box on the Antweb site no longer leads to the specimen. Images of our specimens can be sighted by accessing the lists on the second author’s website commencing at http://antsofafrica.org/ant_species_2012/miscellaneous_ants_iran_list.htm. Those lists are the result of an intensive effort to review all the literature and to collate images of type specimens and many Iran specimens now to be found on the major web sites, antweb.org and AntBase.net (accessed at the beginning of October 2017). A referee has drawn attention to some of the following nomenclature differing from the “on-line” catalogue, AntCat.org. That does not have valid ICZN status and, so, we prefer to use the nomenclature in the published works, such as Bolton (1995). The name of the author K. V. Arnoldi is as given in the short abstracts in German on all his works.

DOLICHODERINAE


_Tapinoma karavaievi_ Emery, 1925. Type location imprecise. Emery (1925) gave the type location as “Turkestan”, he also reported a specimen from Astrabad (northern Iran). The Emery specimens, e.g. as shown at CASENT0904019, are not from the original report by Mayr (1877, as “_Tapinoma nigerrimum_”) of collections in Turkestan, in an area most probably in (now) Uzbekistan, but from Imam-Baba, Turkmenistan. Prior Iran records in Paknia et al. (2008). Additional findings: Seiri 16, Tehran area: Jazini 11, Fada’ian Aslam Park, Tehran. On ground moderate to low rainfall area.


FORMICINAE

_Camponotus (Myrmentoma) lateralis_ (Olivier, 1792). Type location France, no type images; see junior synonym _balearis_, CASENT0912190. Mohammadi, Mossadegh, and Esfandiari (2012): Fars Province. New finding: Borjali 03, Chaf & Chamkala. Found on city plant, Caspian moist littoral area.


_Camponotus (Myrmosericus) armeniacus_ Arnoldi, 1967. Type location Armenia, non-type images CASENT0910245 (Iran). Prior records summarised by Moradloo et al.


Camponotus (Tanaemyrmex) fellah Emery, 1891. Type location Egypt, CASENT0905293 (minor worker). The catalogue of Dalla Torre (1893) listed the species as Camponotus oasium var. fellah Emery, 1891. Whilst the catalogue as a whole was edited by Dalla Torre, Volume VII is attributed to Carl Emery. Crawley (1920b: 178) noted a single worker from “Mesopotamia” or “North-West Persia” that was “probably var. oasium or possibly var. fellah but impossible to determine without a major worker”. Prior Iran records in Paknia et al. (2008). Additional findings: Aram 03, Kamardarak; Aram 04, Dayukandi; Aram 07, Kazaj; Aram 23, Dayukandi; Safariyan 04, Bijar; Safariyan 06, Zagros; Heidary 03, Torman. Mostly on ground. Heidary collection in desert, others in moderate rainfall, montane areas.

Camponotus (Tanaemyrmex) ruzskyellus Forel, 1922 (as Camponotus (Myrmoturba) maculatus F. r. ruzskyellus n. stirps; raised to species Emery 1925: 104). Type location Armenia, CASENT0910314, also reported from Iraq. The synonymy under C. oasium by Radchenko (1997b: 809) appears wrong as shown by the very clear differences between the wholly pale type and the likely dark brown workers of oasium from North Africa (B.T., pers. observ.). No prior Iran reports. New findings: Aram 2, Kamardarak; Seiri 12b, Tehran area. On ground and under rock, moderate rainfall, montane areas.

Camponotus (Tanaemyrmex) sanctus Forel, 1904. Type location Israel, CASENT0249880. Prior Iran records in Paknia et al. (2008). Additional findings: Torabi 05, Azadi Park; Afshari 06, Bideh, Semirom; Borjali 02, Alborz. On ground and at least moderate rainfall.


Cataglyphis albicans armenus (Roger, 1859, j. syn. armenus Arnoldi, 1964) CASENT0903292. Type location North Africa; armenus from Armenia. There are no type images of Cataglyphis albicans so the trinomial armenus is used here. Prior records summarised by Moradloo et al. (2015). Additional findings: Aram 04, Dayukandi; Aram 06, Kamardaraq, 21.vii.2012; Safariyan 04, Bijar; Torabi 01, Beheshti, Shiraz; Seiri 09, 10, 11, 12a, Tehran area; Heidary 02.1, Laverekhasht; Afshari 05, Semirom; Borjali 36 & 38, Alborz. All on ground. Widespread.

Cataglyphis albicas armenus (Roger, 1859, j. syn. armenus Arnoldi, 1964) CASENT0903292. Type location North Africa; armenus from Armenia. There are no type images of Cataglyphis albicas so the trinomial armenus is used here. Prior records summarised by Moradloo et al. (2015). Additional finding: Heidary 08, Lamerd. Ice cream bait in desert.

Cataglyphis alibabae Pisarski, 1965. Type location Iraq, no type images but type drawings. No prior Iran records. New finding: Torabi 08, Baba Kouhi, Shiraz. Under a stone in low rainfall forest.
Cataglyphis bellicosus Karavaiev, 1924. CASENT0905721. Type location Iran, Douchat-Abad, nr. Tehran, Bocquillon, 23.ix.1916. Prior records summarised by Moradloo et al. (2015). Additional findings: Aram 19, Mazraeh; Safariryan 02, Abider Park; Abolfathi 06, Khomeini Square, Borujerd; Abolfathi 10, Chogha Hill, Borujerd; Heidary 04, Chakhkowr; Kia 08, Janat Abad, Qom; Borjali 37, Alborz; Jazini 23, Behesht-Zahra Park. All on ground. Widespread.


Cataglyphis foreli (Ruzsky, 1903). Type location Russia, CASENT0911118. Listed from Iran by Radchenko (1998). Additional finding: Afshari 12, Ghale Ghadam, Semirom. On ground in field, low rainfall area.

Cataglyphis frigidus (André, 1881). Type location Syria, CASENT0102117 (probably a media worker). Cataglyphis persicus minor matches type. Prior Iran records in Paknia et al. (2008). Additional findings: Aram 15 & 32, Firuzabad; Torabi 12, Enghelab Park, Shiraz. On ground, moist to moderate rainfall. The majors of Paknia ZMGU1419 (held by B.T.) and Torabi 12 are identical, minors of both match the persicus type.


Cataglyphis lividus (André, 1881). CASENT0905499. Type location Israel; subspecies luteus from Iran. Prior records summarised by Moradloo et al. (2015). Additional findings: Aram 18, Hashtjin; Safariryan 27, Seidan Village; Kia 10, Jamkarak, Qom; Afshari 13, Vanak, Semirom. On ground and trees, medium to low rainfall.

Cataglyphis longipedem (Eichwald, 1841). Type location Turkmenistan (Eichwald gave Krasnowodsk, or Krasnovodsk, but now Türkmenbaşy, which once was in Russia), no images on Antweb. Recorded from Iran by Crawley (1920b). Additional findings: Seiri 03, Khojir National Park; Jazini 22, Lavisan Park. On ground, forest, moderate rainfall.

Cataglyphis niger (André, 1881). Type location Israel, no type images but see the type of Cataglyphis bicolor F. stirps nigra André v. caerulescens, Santschi, 1929: 50, worker) from Syria CASENT0912212. Prior Iran records in Paknia et al. (2008). Additional findings: Aram 20, Nowdeh; Heidary 06, Khayrgou; Heidary 07, Ashkenan; Kia 09, Kahak, Qom. Moderate to very low rainfall.

Cataglyphis nodus (Brullé, 1832). Type location Greece, no type images but junior synonyms, e.g. orientalis (Forel, 1895). Type location Turkey (on label), CASENT0911115. Prior Iran records in Paknia et al. (2008). Additional findings: Aram 20, Kamaradar; Abolfathi 07, Chogha Hill, Borujerd; Kia 07, Kohe Sefid, Qom; Mahmoodi 02, 03 & 04, Khoosar National Park. On parkland ground, moderate rainfall.

Cataglyphis rockingeri (Forel, 1911), CASENT0911109, where it is listed under C. aenescens (Nylander). Type location Kazakhstan. The type and the Iran workers are larger than what seems likely to be the type form aenescens and is uniformly dark rather than having lighter reddish areas; the overall appearance is almost silky due to the fine very spiculate sculpture. Prior records summarised by Moradloo et al. (2015). Addi-
al findings: Aram 10, Hashtjin; Aram 11, Mazraeh; Seiri 01, Garamdar. On ground, moderate rainfall.

*C. ruber agilis* (Forel, 1903). Type location Algeria. The type *ruber* is at CASENT0249887. The eastern populations seem to be lighter, *agilis* from Tunisia being at CASENT0912224. Prior records summarised by Moradloo et al. (2015). Additional findings: Aram 12, Hafthekhaneh; Aram 13, Nemahil; Safariyan 03, Saral field; Jazini 01, Birds Park. On ground, moderate rainfall.


*C. viaticoides* André, 1881. Type location Lebanon, CASENT0915503 (minor worker). No prior record from Iran. New findings: Heidary 05, Ashkenan; Mahmoodi 01, Khosar National Park; Mahmoodi 24, Eram Park. On parkland ground, moderate to very low rainfall.

*F. clara* Forel, 1886. CASENT0911077. Type location Syria. Prior records summarised by Moradloo et al. (2015). Additional findings: Seiri 04 & 05, Tehran area; Ghatei 16, Kiashtar, Guilan; Afshari 18, Hana, Semiroom; Borjali 06, Lahijan; Borjali 07, Kiashahr; Mahmoodi 35, Pardisan Forest Park; Jazini 15, Fadaei Eslam Park; Jazini 27, Taleghani Park. On parkland ground, moderate rainfall.

*F. cunicularia* Latreille, 1798 (junior synonym). CASENT0907601. Type location France. Prior records summarised by Moradloo et al. (2015). Additional findings: Aram 22, Hashtjin; Safariyan 09, Sarab Lake; Ghatei 15, Anzali, Guilan; Borjali 04, Siahkhal; Borjali 05, Chaf; Mahmoodi 05, Goflogou Park; Mahmoodi 17 & 36, Pardisan Forest Park; Jazini 03 & 28, Mellat Park; Jazini 17, Taleghani Park. On parkland ground, moderate rainfall.


*L. flavescens* Forel, 1904. Type location Uzbekistan, CASENT0911043. No prior record from Iran. New finding: Ghatei 21, Masai, Guilan. On ground, moist forest.

*L. himalayanus* Bingham, 1903. Type location India, CASENT0911043 (labelled “*L. brunneus var. himalayanus*”). No prior record from Iran. New findings: Kia 23, Kahak, Qom; Afshari 25, Vanak, Semiroom; Borjali 09, Kelachay; Mahmoodi 29, Nahjol Balaghe Park; Jazini 29, Shahr Park. On ground, moderate rainfall.

*L. lasioides* (Emery, 1869). Type location Italy, type queen images CASENT0915590, see also Seifert (1992). Prior Iran records in Paknia et al. (2008). Additional findings: Borjali 08, Chaboksar; Mahmoodi 06, Eram Park; Jazini 10, Qeytariyeh Park. On parkland ground, moderate rainfall.

Lasius turcicus Santschi, 1921, non-type (Seifert) CASENT0906080. Type location Turkey. Prior records summarised by Moradloo et al. (2015). Additional findings: Torabi 18, Eram Garden, Shiraz; Ghatel 20, Fuman, Guilan; Ghatel 22, Shaft, Guilan; Ghatel 34, Rasht, Guilan; Borjali 10, Anzali; Borjali 11 & 12, Chuchesfahan. On ground, moist forest and montane, moderate rainfall.


Lepisiota dolabelae (Forel, 1911), CASENT0249883. Type location Turkey. Prior records summarised by Moradloo et al. (2015). Additional findings: Torabi 24, Nowdeh; Abolfathi 13, Dar al Salam, Borujerd; Seiri 06, Tehran area; Borjali 13, Siahkhal; Mahmoodi 07, Goflogou Park; Mahmoodi 34, Chagar Forest Park; Jazini 06, Taleghani Park; Jazini 14, Shahr Park. On ground, moderate rainfall.

Lepisiota integrisquama (Kuznetsov-Ugamsky, 1929), new status. Type location Kazakhstan, no type images but type drawings. Original name Acantholepis frauenfeldi integrisquama Kuznetsov-Ugamsky, 1929: placed as a junior synonym of Lepisiota semenovi by Dlussky, Soyunov, and Zabelin (1990). This has a slightly different shaped head in full-face view, a near straight upper margin to the petiole and quite abundant erect hairs on the dorsal alitrunk. No prior Iran records. New findings: Torabi 16, Baba Kouhi, Shiraz; Torabi 17, Sadieh Mound, Shiraz; Heidary 01, Khayrgou. Low to very low rainfall forest.


Lepisiota litoralis (Kuznetsov-Ugamsky, 1929). Type location Turkestan, syntype worker CASENT0912406. Kuznetsov-Ugamsky’s illustration of the petioles of this and L. semenovi show, that like our specimens, liitoralis has a deeper incurved dorsum to the petiole in front view. No prior Iran records. Additional finding: Afshari 29, Mehr Gerd, Semirrom. Montane, low rainfall.


Lepisiota spinisquama (Kuznetsov-Ugamsky, 1929). Type location Kazakhstan (Keltem Meschat = Kaltemashat northeast of Schymkent). Type images CASENT0912407. No prior Iran records. New finding: Safariani 11, Vahdat Dom. Pitfall trap, montane, moderate rainfall.

Lepisiota surchanica (Kuznetsov-Ugamsky, 1929), new status. Type location Uzbekistan, no type images but type drawings. Original name Acantholepis frauenfeldi surchanica Kuznetsov-Ugamsky, 1929. The status is revised as the fine surface sculpture and the petiole shape, notably the upper margin, seem diagnostic. No prior Iran records. New findings: Torabi 14, Beheshli, Shiraz; Mahmoodi 33, Western Cascade; Jazini 21, Pirouzi Park. On ground, moderate rainfall.

Paratrechina jaegerskioeldi (Mayr, 1904). Type location Egypt, no images of the type but cotype images CASENT0910993. No prior Iran records. New finding: Torabi 25,
Hafezieh. Low rainfall, forest. As with *P. vividula* (see below), the placement of this species in *Nylanderia* by LaPolla, Brady, and Shattuck (2010) was due to a misunderstanding of the type species for *Paratrechina*, which is *P. vagabunda* Motschoulsky, 1863. Below his clear illustrated description of *vagabunda*. Motschoulsky (1863) wrote (in French and Latin): “A second smaller species, more slender and of a lighter colour on the alitrunk and legs is not rare (uncommon) on the plants in our hot houses [he lived in St Petersburg] and I have named this *Paratr. currens*”. As *P. vagabunda* was given as 2.54 mm long, the smaller *P. currens* would not have been the slender, long-legged *P. longicornis*.


*Plagiolepis alluaudi* Emery, 1894. Type location Seychelle Islands, but well known as a tramp species, CASENT0101699. No prior Iran records. New findings: Torabi 22, Azadi Park, Shiraz; Afshari 32, Vanak, Semirom. Low rainfall forest.

*Plagiolepis ancyrensis* Santschi, 1920. Type location Turkey. Type images CASENT0912415. No prior Iran records. New finding: Kia 31, Dastjerd, Qom. Montane, moderate rainfall.


*Plagiolepis taurica* Santschi, 1920. Type location Ukraine. Type images CASENT0912433. Prior Iran records in Paknia et al. (2008). Additional findings: Aram 05 (alates, male and queen), Haftehkaneh; Seiri 17 (dealate queen), Seghe Tooli. Moderate rainfall montane.

*Polyrhachis lacteipennis* F. Smith, 1858. Type location India, type images queen CASENT0903386. Prior Iran records in Paknia et al. (2008). Additional finding: Heidary 15, Chahkowr. Very low rainfall area. Dietrich (2004) separated specimens from Israel, Jordan and Yemen as a new species, *Polyrhachis palaearctica*. Antweb do not have photographic images of the type but Dietrich gave SEM images of the lateral and dorsal alitrunk of the worker and the dorsal alitrunk of the queen. The worker appears to be a close fit to those from Israel and Iran held by B.T. Dietrich, however, mentioned *P. lacteipennis* only vaguely and did not sight the type queen or, apparently, the type of what he refers to as “*Polyrhachis simplex*”, which also is not on Antweb. The SEM image of the *P. palaearctica* queen is a near exact match for the *P. lacteipennis* queen, CASENT0903386. He separated *P. grisescens* as a separate species but the type images (CASENT0905639) also are little or no different from the fresh specimens from Israel and Iran. So we leave our findings as *P. lacteipennis*.

Village. Montane, moderate rainfall. Paknia, Radchenko, and Pfeiffer (2010) reported Proformica epinotalis from Iran. There is a syntype of that species at CASENT0912272 and an Iran specimen on ANTWB1008083. The latter is smaller than the syntype and has a distinctly narrower head. According to Galkowski, Lebas, Wegnez, Lenoir, and Blatrix (2017) the taxonomy of the genus is confused and in need of revision. This reiterates Agosti (1994) and the situation is compounded by the dimorphic workers common to the genus.

MYRMICINAE

Aphaenogaster gibbosa (Latreille, 1798). Type location France; no type images; junior synonym laevior (A. striola var. laevior Forel, 1892) CASENT0907684. Prior Iran records in Paknia et al. (2008). Additional findings: Ghatei 35, Shaft, Guilan; Borjali 17, Lahijan; Borjali 19, Chabokksar. Found on or in soil, Caspian moist littoral area.

Aphaenogaster subterranea (Latreille, 1798). Type location France; no type images; subspecies ichnusa (Aphaenogaster (Atomyrma) subterranea Latr., v. ichnusa, Santschi, 1925) CASENT0913132. No prior Iran records. New finding: Borjali 20, Lahijan. Found on soil, Caspian moist littoral area.

Aphaenogaster syriaca Emery, 1908. Type location Lebanon, CASENT0904176. Prior Iran records in Paknia et al. (2008). Additional findings: Ghatei 36, Bame Sabz, Lahijan; Borjali 18, Langarud. Found on soil, Caspian moist littoral area.

Cardiocondyla elegans Emery, 1869. Type location Italy, CASENT0904460. Prior Iran records in Paknia et al. (2008). Additional record: Ghatei 37 (queen), Lahijan, Guilan; Ghatei 38, Shaft, Guilan. Found on parkland soil, Caspian moist littoral area.

Cardiocondyla persiana Seifert, 2003. Type location Iran, Fars and Shiraz, purported type specimen CASENT0919736 but it is substantially smaller (ca 80%) than that in Seifert’s drawing (assuming the scales are correct) and lacks the head sculpture, etc. The Torabi specimen reported here is an exact match for the drawn specimen. Additional finding: Torabi 26, Enghelab Park, Shiraz. Found under a tree, low rainfall forest.


Cardiocondyla stambuloffii Forel, 1892. Type location Bulgaria, CASENT090756. Prior Iran records in Paknia et al. (2008). Additional findings: Borjali 21, Astaneh-ye Ashrafiyeh; Borjali 22, Rodsar. Found on parkland soil and plant, Caspian moist littoral area.

Cardiocondyla ulianini Emery, 1889. Type location Russia, CASENT0904461. No prior Iran records. New findings: Paknia ZMGU1418 (held by B.T.; this may be C. brachyceps), Miankaleh, viii.2004; Safariyan 17, Sarab Lake; Safariyan 22, Vahdat Dam. Pitfall trap at edge of grassland, moderate rainfall montane area.

Crematogaster (Cr.) afghanica Pisarski, 1967. Type location Afghanistan, FOCOL1798-1. A comparison of the type images strongly suggest that Cr. afghanica may be a simple junior synonym of Cr. auberti. Pisarski (1967) did not mention Cr. auberti apparently basing his separation on a comparison with Cr. sorokini Ruzsky. That also, however, seems almost indistinguishable from Cr. auberti and was described originally as a variety of Cr. auberti. New findings: Paknia ZMGU053 (held by B.T.), Fars Province, Lars City, ii.2002; Seiri 24, Tehran area. Parkland, moderate rainfall.

Crematogaster (Cr.) schmidti (Mayr, 1853). Type location Austria, CASENT0908487. Prior Iran records in Paknia et al. (2008). Additional findings: Aram 21, Kazaj; Ghatei 39, Rezvanshahr, Guilan; Ghatei Sangar, Guilan; Kia 41, Kokab Park, Qom; Borjali 23, Langarud. On trees, mostly moist areas.

Crematogaster (Cr.) sorokini Ruzsky, 1905. Type location Kazakhstan (Turkestan), nontype images CASENT0914149. Prior Iran records in Paknia et al. (2008). Additional findings: Safariyan 15 & 16, Bijar; Heidary 09, Paghalat. On parkland ground and trees, moderate rainfall. Antweb has Cr. bogojoawlenkii as raised to species by Dlussky, Syunov, and Zabelin (1990) but they listed it as a synonym of Cr. sorokini.

Crematogaster (Cr.) subdentata Mayr, 1877. Type location Kazakhstan (Bairakum, Sarafschan Valley), CASENT0902140. Prior records summarised by Moradloo et al. (2015). Additional records: Abolfathi 28, Imam Huseyn Sq., Borujerd; Afshari 42, Sadegh Abad, Semirom; Mahmoodi 18, Khargus Darreh Forest Park; Mahmoodi 27, Chagar Forest Park; Jazini 02 & 05, Shahr Park. On parkland ground and trees, moderate rainfall.


Messor ceresis Santschi, 1934. Type location Lebanon, CASENT0913172. Prior Iran record Hossein Nezhad, Rad, Firouzi, and Agosti (2012). Additional findings: Kia 49, Kokab, Qom; Borjali 26, Anzali; Jazini 04, Behesht-Zahra Park. On parkland ground, moderate rainfall.

Messor concolor Thomé & Thomé, 1981. Type location Algeria, CASENT0904126. Other authors have suggested this is a junior synonym of Messor wasmanni Krause but there are no type images of that. Images labelled M. wasmanni, e.g. CASENT0106293, show only very weak sculpture on the front of the head and on the alitrunk. Our specimens match the concolor type. Prior records summarised by Moradloo et al. (2015). Additional records: Abolfathi 29, Goldasht Garden, Borujer; Abolfathi 30, Dorahi, Borujerd; Kia 48, Alavi Park, Qom; Afshari 52, Komeh, Semirom; Mahmoodi 37, Chagar Forest Park; Seiri 20 & 21, Tehran area; Jazini 08, Lavisan Park; Jazini 30, Taleghani Park; Jazini 31, Niavaran Park. On parkland ground, moderate rainfall.


Messor denticulatus Santschi, 1927 (given in Santschi [p. 240 and 249] as Messor minor André stirps laboriosus; received from M. Karavaiew under the name meridionalis). Type location Turkmenistan (Asgabat = Ashgabat), CASENT0913176; another specimen, CASENT091377, has a Karavaiew label and a second label “Messor instabilis laboriosus Sants.” The name denticulatus is not in the Santschi paper (Bolton, 1995: 482, had this as published “v.1927”). The origin is Kuznetsov-Ugamsij(y) 1927: 90, which bears the date 14.ii.1927, and is given as “Messor barbarus meridinalis var. denticulatus nov.” from Aschabad (Bolton, 1995: 482, had this as published “iv.1927”). Prior Iran records in Paknia et al. (2008). Additional finding: Afshari 51, Mehr Gered, Semirom. Mountain garden, low rainfall.

Messor hebraeus Santschi, 1927. Type location Israel, CASENT0913184. No prior Iran record. New finding: Kia 50, Khave, Qom. On parkland ground, moderate rainfall.

Messor melancholicus Arnoldi, 1977. Type location Azerbaijan, CASENT0913198. No prior Iran records. New findings: Safararian 24, Saral Field; Torabi 31, Beheshiti, Shiraz; Ghatei 47, Shaft, Guilan; Ghatei 57, Anzali, Guilan; Borjali 25, Alborz. On ground, all rainfall areas.

Messor nahali Thomé & Thomé, 1981. Type location Syria, CASENT0913772. No prior Iran records. New finding: Torabi 34, Hafezieh, Shiraz. Low rainfall forest.

Messor obscurior Crawley, 1920, new status. Type location Iraq, CASENT0907731. Original name Messor barbarus race semirufus E. André var. obscurior. Crawley, 1920a. Crawley gave major TL 7.5-8.0, minor TL 3.5 mm. Dark brown, some almost black, uniform except for lighter appendages; sculpture on head and alitrunk coarser than semirufus. Baroni Urbani (1974) noted he based his synonymy on the original description and had not seen the type specimens. Equally, he had not seen the type of semirufus as that appears to have been lost. No prior Iran records. New findings: Aram 26, Jafarabad, 30.v.2012; Abolfathi 35, Fial, Borujerd; Heidary 10, Torman; Mahmoodi 12, Pardisan Forest Park. Moderate rainfall to dry areas.

Messor rufotestaceus (Foerster, 1850). Type location Algeria, no type images. It appears there may be a second species M. thoracicus (Mayr, 1862) originally described as Atta thoracica. Type location Syria, again no type images, or of the junior synonym Aphaenogaster gracilinodis Emery 1878. Type location Syria, no type images. Prior records in Paknia et al. (2008), see ANTWEB1008075. Additional findings: Torabi 36, Sadieh Shiraz; Afshari 54, Komerd, Semirom. Garden soil, low rainfall.


Monomorium indicum Forel, 1902. Type location India, CASENT0913803. No prior Iran records. New findings: Paghalat; Ghatei 58, Ghanavat, Qom; Mahmoodi 14 & 38, Khoosar National Park. Garden and in house, no rainfall association.


Myrmica constricta Karavaiev, 1934. Type location Ukraine, CASENT0913076. No prior Iran records listed by Paknia et al. (2008) but Myrmica specioides Bondroit, 1916 appeared in Paknia (2010). The latter, type location France, CASENT0904068 (labelled Bondroit, Paris), appears identical to CASENT0913076. Radchenko and Elmes (2010) gave keys to separate the species. Their Key 5.1, Couplet 15 effectively separates via -scape base gradually curved to “constricta”, and, scape base strongly angled to “specioides”. The definite specioides type (CASENT0904068) has a near straight scape base whereas the constricta type has a distinctly angled scape base. That is the converse of Radchenko and Elmes (2010) statement. The specimen sent to B.T. as ZMGU635 is specioides. That recorded here as Ghatei 55 and the specimen from Iran, Mazandarin (Paknia), on ANTWEB1008079 (as specioides) are constricta. New records: Paknia ZMGU635, Amole, 2006; Ghatei 55, Masai, Guilan. On park ground, Caspian moist littoral area.

Myrmica deplanata Emery, 1921, with prior unavailable name Myrmica scabrinodis lobicornis Nyl. var. deplanata, Ruzsky, 1905, type location Russia, no type images. Junior synonym, moravica (Myrmica moravica Soudek, 1922) type location Czech Republic, CASENT0904084. The distribution list in Radchenko and Elmes (2010) includes Iran, without details, but see CFH000021, from Mazandaran by Firouzi (note lateral and dorsal images appear to be wrongly scaled, the head is correct, by comparison with Borjali 28). See also Firouzi, Pashaei Rad, Hossein Nezhad, and Agosti (2011). Additional finding: Borjali 28, Khoshk-e Bijar. On park ground, Caspian moist littoral area.

Myrmica gallienii Bondroit, 1920, junior synonym from Ukraine (CASENT0900287), type location France. Prior records summarised by Moradloo et al. (2015). Male Aram 31b – see CASENT0172723 from Belarus. Additional findings: Aram 29, Nemahil; Aram 31a (queen), Nemahil; Afshari 56, Hana, Semirnom; Afshari 68, Sadegh Abad, Semirnom; Borjali 29, Rasht; Borjali 41 (queen), Rasht. Park or farm land, moist to low rainfall.


Pheidole fervens F. Smith, 1858. Type location Singapore, major CASENT0901520, minor CASENT0901519. Not listed as such in prior Iran records. New findings: Kia 26, Koohe khezr, Qom; Ghatei 59, Stakhhal, Guilan. On ground, moist to moderate rainfall.

Pheidole latinoda Roger, 1863. Type location Sri Lanka or India, no type images. No prior Iran record. New finding: Heidary 14a, Lamerd. Attracted to bait in desert.

Pheidole orientalis Müller, 1923, CASENT0904193. Type location “Orient”. In Seifert (2016), which postdates the second author’s on-line consideration of “Pheidole pallidula” by some ten years, it is considered that Pheidole orientalis is a junior synonym of P. koshnewnikovi Ruzsky, 1905. While there are similarities, the latter is consistently some 20% smaller than the orientalis type and those we report here. Prior records summarised by Moradloo et al. (2015). Additional findings: Aram 30, Mazraeh; Mahmoodi 13, 16 & 21, Chagar Forest Park; Jazini 19, Mellat Park. On ground moderate rainfall.

Pheidole pallidula (Nylander, 1849). Type location Sicily, no type images but see CASENT0913386 (bears unpublished name Pheidole pallidula v. obscurata Santschi,

*Pheidole providens* (Sykes, 1835). Type location India, no type images but later drawing, and likely junior synonym *Pheidole indica* Mayr, 1879, type location India, major CASENT0906613, minor CASENT0906612. Probably among *Pheidole teneriffana* in prior Iran records (Paknia et al. 2008). Additional findings: Abolfathi 38, Ghiam Sq., Borujerd; Afshari 61, Semirom, Isfahan; Borjali 31, Anzali. Moderate rainfall to dry areas.


*Strongylognathus christophi* Emery, 1889. Type location Russia, type queen no images but see syntype worker CASENT0904866, from same location. No prior record from Iran, although Paknia (2010) lists a *Stronglyognathus* species (as sp. ir-astaneh-01). New findings: Borjali 32, Kelachay; Ghaeti 62, Shat, Guilan. Caspian moist littoral area.


*Tetramorium caespitum* (Linnaeus, 1758), no type images but see (subspecies) CASENT0904802 etc. Type location Europe. Prior records summarised by Moradloo et al. (2015). Also *Tetramorium caespitum flavidulum* Emery 1909, type location Turkey, CASENT0904803, and *T. caespitum fusciclavum* Emery 1925, type location, Italy, CASENT0904802. Additional findings: Aram 31 (queen), Nemahil; Safarinya 19, Sarab Lake; Safarinya 20, *flavidulum* form, Bijar Protected area; Ghaeti 63, Fuman, Guilan; Ghaeti 45, *fusciclavum* form, Revanshahr, Guilan; Ghaeti 64, Sangar, Guilan; Afshari 66 Vanak, Semirom. Caspian moist littoral and moderate rainfall montane areas.

*Tetramorium chefketi* Forel, 1911. Type location Turkey, CASENT0909100. Prior records summarised by Moradloo et al. (2015). Additional findings: Abolfathi 41, Andishe Town, Borujerd; Borjali 33, Anzali; Jazini 20, Niavaran Park. Caspian moist littoral and moderate rainfall montane areas.


*Tetramorium indicum* Santschi, 1927. Type location Kyrgyzstan (Kisil-Kija = Kızıl Kiya Pass, approx. 42°42’N, 78°54’E), CASENT0913998. No prior Iran record. New findings: Afshari 46, Komeh, Semirom; Mahmodi 15, Nahjol Balaghé Park. Low to moderate rainfall areas.

*Tetramorium striativentre* Mayr, 1877. Type location Turkmenistan, non-type (type was a queen; no type images and type location not given by Mayr; Antweb has “Samar-kand”, which is in Uzbekistan) CASENT0280927. Prior records summarised by Moradloo et al. (2015). Additional finding: Safarinya 21, Sarab Lake. Moderate rainfall montane area.

Additional finding: Safariyan 25, Vahdat Dam. Pitfall trap, moderate rainfall montane area.

**PONERINAE**


**Discussion**

In their checklist of Iran ants, Paknia et al. (2008) listed 110 species belonging to 26 genera and six subfamilies. Paknia et al. (2010) added a further 32 species and six more genera. Moradloo et al. (2015) found a further six species. Here we list a further 30 named species. Taken at face value the combination of the foregoing and the other papers listed in the introduction gives a grand total of 248 species, from seven subfamilies and 37 genera. It has to be said, however, that there are a number of what seem possible misidentifications and a small number of other named species that seem unlikely to occur in Iran. Many of the foregoing come from habitats entirely different to those found in Iran or from geographical locations far distant from Iran. Four are listed as genus members only and have no descriptions or available images. Of the named species there are three for which the original description is not accessible and eight for which no images are available. One is imaged on Antweb (CASENT0910243) and labelled as *Crematogaster* sp. 19. Our own combined studies appear to have found five as yet undescribed species. Numerically, the predominant genera in our studies reflect those of the whole country. The genera *Cataglyphis*, 34 species, and *Messor*, 31 species, are almost entirely restricted to dry zones. The other most abundant genera, *Camponotus*, 32 species, *Monomorium*, 14 species and *Tetramorium*, 17 species, have members living in almost all climatic zones but, taxonomically, the Palaearctic members have been relatively poorly studied. Paknia et al. (2008) similarly commented on the apparent dominance of the three main genera being due in part to their preferred habitats being in mainly arid and semi-arid areas. They speculated that, as members of those genera are relatively large in size, the dominance might be a simple result of most of the sampling being by hand collecting. Paknia et al. (2010) noted that the Caspian Hyrcanian forests yielded up several species from otherwise unrepresented genera. The surveys we report included much hand collecting, complemented by use of pitfall trapping, that yielded up specimens of small to minute ants, including *Aphaenogaster* and *Cardiocondyla*. Here we cover contrasting climatic areas (see the summary map, Figure S1). With the exception of the central Kavir-e-Namak, or Great Salt Desert, and the eastern Dasht-e Lut, Lut Desert, reasonably comprehensive ant collections now have been made across much of Iran.

**Disclosure Statement**

No potential conflict of interest was reported by the authors.

**Supplementary material**

The Annex with Supplementary Tables 1–2 and a map with the collecting localities is available as supplementary information via the “Supplementary” tab on the articles online page (http://dx.doi.org/10.1080/10.1080/09397140.2018.1442301).
References

This list does not include a small number of papers listed by other authors as being delivered at, for instance, an Iranian Plant Protection Congress, or as theses.


