Records of ants (Hymenoptera: Formicidae) from Northern Iran

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(Received 10 October 2014; accepted 2 February 2015; first published online 16 March 2015)

The results of ant collecting in two hitherto unsampled areas of Iran, the north eastern province of Khorasan Razavi and the north western Zanjan Province are reported. Both areas fall within lacunae of knowledge on previous distribution. Species previously not known from Iran are \textit{Aphaenogaster holtzi}, \textit{Camponotus (Myrmentoma) rebeccae}, \textit{Cataglyphis albicans}, \textit{Cataglyphis rockingeri}, \textit{Lasius himalayanus} and \textit{Proformica ferreri}.

Keywords: Iran; Formicidae; Khorasan Razavi Province; Zanjan Province

Introduction

Geographically, Iran sits at the crossroads between Europe, Central Asia and South Asia but, other than a very few publications in the early-20th century, almost nothing was known of the ant fauna. A comprehensive review of those early findings, plus a few from 2000-2006, was given by Paknia, Radchenko, Alipanah, and Pfeiffer (2008). They list 110 species and also give a full reference list. More recent records are those of Seifert and Schulz (2009), Paknia, Radchenko, and Pfeiffer (2010), Radchenko and Paknia (2010), Firouzi, Rad, Nezhad, and Agosti (2011), Nezhad, Rad, Firouzi, and Agosti (2012) and Kiran, Alipanah, and Paknia (2013). We report here new ant material from two hitherto unsampled areas of Iran, the north eastern province of Khorasan Razavi and the north western Zanjan Province. Both areas fall within lacunae of knowledge on previous distribution. The list includes six species previously not known from Iran.

Collecting Areas

The North-eastern Khorasan Razavi province (Reyhan Nafisi) is a desert and semi-desert area with maximum 200 mm average annual rainfall. The dominant vegetation of this area is \textit{Haloxyylon} species and \textit{Tamarix hispida} Willd., both being halophytic (salt tolerant) species. The North-eastern Zanjan Province (Shabnam Moradloo) is a mountainous region with a temperate climate. Most collecting stations were from amongst similar vegetation in areas of plains and low hills. Ghollikandi, however, is riverine with woods and, thus, a different pattern of vegetation. Dandi and Seghletooli are arid and semi-arid had the lowest species richness. It seemed clear that moisture level is a key factor that affecting ant species richness. Both areas fall within lacunae of knowledge shown on the maps published by Paknia et al. (2008, 2010).

Methods

Ant sampling by hand collecting was done in the spring and summer of 2012 and 2013. The specimens were preserved in 96\% alcohol and taken to the Biosystematics Laboratory in Shahid
Beheshti University, Tehran. Preliminary sorting and identification was done in Iran. Representative specimens were sent to Brian Taylor (B.T.), who made definitive identifications and comparisons with images of type specimens, as published by the California Academy of Sciences Antweb project. In the lists given below such images are denoted by a code consisting of numbers preceded by CASENT, CFH, CSH, FMNHINS or ANTWEB. The originals can be sighted at www.antweb.org by entering the code in the search box. The specimens identified by B.T. will be labelled, catalogued and deposited with the Oxford University Museum of Natural History, Oxford, UK. Photographs of all the species will be incorporated in a section of the website www.antsofafrica.org. The website is archived by the UKWebArchive under the auspices of the British Library. We give only a restricted reference list as Paknia et al. (2008) gave a comprehensive list.

Species List

The collection zones, species identifications and habitat notes, plus the number of specimens examined by B.T., are given in the online Appendix as Tables 1 and 2, together with location maps and notes on some of the Antweb images relating to the prior publications. The symbol * denotes comparison with type images accessed on Antweb, with the reference number.

DOLICHODERINAE

*Tapinoma simrothi* Krausse, 1911. M18, N06. *(subspecies) CASENT0904017. Type location, Sardinia. Urban. Widespread in southern Europe, North Africa and the Middle East. Antweb lists three records, two with images, from Iran (CASENT0910228 and CFH000035).

FORMICINAE

*Camponotus* (*Myrmentoma*) *rebeccae* Forel, 1913. M08. *(major worker) CASENT0910432. Type location Syria. Also known from Israel (Menozzi, 1933: 81).

*Camponotus* (*Myrmosericus*) *armenaicus* Arnol’di, 1967. M01, M10. *(non-type) CASENT0910245 (Iran). Type location Armenia. Shown by Arnol’di page 1828, fig. 3. Raised to species by Radchenko (1996: 1200, in key). Listed by Paknia et al. (2008). Urban.

*Camponotus* (*Tanaemyrmex*) *xerxes* Forel, 1904. N10, N11. *(listed in original description) CASENT0905292. Type location Iran. Listed by Paknia et al. (2008). Desert and field. Widespread in the Middle East and Central Asia. The ants had a mound nest and the ants were very aggressive.

*Cataglyphis aenescens* (Nylander, 1849). N03. *(subspecies) CASENT0911107. Type location Russia. Listed by Paknia et al. (2008). Semi-desert. Widespread in Asia.

*Cataglyphis albicans* (Roger, 1859). Nafisi 08. *(j. syn. armenus* Arnol’di 1964) CASENT0903292. Type location North Africa; *armenus* from Armenia. Semi-desert. Mainly North Africa, also Middle East.

*Cataglyphis bellicosus* Karavaiev, 1924. M04, M14, N01. *CASENT0905721. Type location Iran, Douchat-Abad, nr. Teheran, Bocquillon, 23.ix.1916. Listed by Paknia et al. (2008). Village, desert and forest.

*Cataglyphis kurdistanicus* Pisarski, 1965. M06. No type images but good drawings in Pisarski (1965). Type location Iraq. Listed by Paknia, Radchenko, and & Pfeiffer (2010). Montane.
Cataglyphis lividus (André, 1881). M09. *CASENT0905499. Type location Israel; subspecies luteus from Iran. Listed by Paknia et al. (2008). Urban.

Cataglyphis rockingeri (Forel, 1911). M14. Worker and queen. *CASENT0911109. where it is listed under Cataglyphis aenescens (Nylander) but it and the Iran worker are larger than the type description of aenescens (there are no type images on Antweb) and is uniformly dark rather than having lighter reddish areas; the overall appearance is almost silky due to the fine very spiculate sculpture. Type location Kazakhstan. Forest.

Cataglyphis ruber (Forel, 1903). M07b. *CASENT0249887. Type location Algeria. It seems eastern populations, this and from Kuwait (BT collection), are more vivid orange-red. Listed by Paknia et al. (2008). Desert.

Cataglyphis setipes (Forel, 1894). M07a, N02. *CASENT0249882. Type location India. Listed by Paknia et al. (2008). Desert.

Formica clara Forel, 1886. N10, N28. *CASENT0911077. Type location Syria. Field and garden. Widespread Palaeartic. Strongly thermophilic (Seifert & Schultz, 2009).

Formica cunicularia Latreille, 1798. M16, N13. *(junior synonym) CASENT0907601. Type location France. Listed by Paknia et al. (2008). City and gardens. Western Palaeartic to West Siberia. Moderately thermophilic (Seifert & Schultz, 2009).

Formica sanguinea Latreille, 1798. M06. *(neotype) CASENT0903273. Type location France. Listed by Paknia et al. (2008). Montane.

Lasius himalayanus Bingham,1903. N07, N08. *CASENT0911043. Type location India, Himalaya (Bingham, 1903, gave “N.W. Himalayas, 6000-9000 ft.”). Desert. North India, Afghanistan (Pisarski, 1967).

Lasius turcicus Santschi, 1921. M11, M12, M17. *non-type (Seifert) CASENT0906080. Type location Turkey. Listed by Paknia et al. (2008). Forest on trees and in city. Palaeartic.

Lepisiota bipartita (F. Smith, 1861). N16, N27. *CASENT0903167. Listed by Paknia et al. (2008). Type location Israel. Desert. Recorded east to India.

Lepisiota dolabellae (Forel, 1911). M15, N16, N17. *CASENT0249883. Type location Syria. Listed by Paknia et al. (2008). City, desert and field. Common Middle East species.

Lepisiota semenovi (Ruzsky, 1905). N19. *(j. syn. coriacea, CASENT0912403. Listed by Paknia et al. (2008). City park. Russia southwards.

Proformica ferreri Bondroit, 1918. M20. *non-type CASENT0906299. Type location Spain. [Proformica epinotalis Kusnetzov-Ugamsky 1927, listed by Paknia 2010]. P. ferreri has longer scapes SI ca 120 (P.e. SI ca 108) and does not have extended maxillary palps; also dorsum of head and clypeus very finely but distinctively striate. Desert. The Iran specimen may be a distinct species as the known distribution is France and the Iberian Pensinsula.

MYRMICINAE

Aphaenogaster holtzi (Emery, 1898). M12. *CASENT0904178. Type location Turkey (Asia Minor), with no reported distribution outside Turkey. Forest, on trees in the arid Gholi Kandi area.

Crematogaster (Cr.) subdentata Mayr, 1877. N20. *CASENT0902140. Type location Tajikistan. Listed by Paknia et al. (2008). Arboreal. Widespread in the subregion.
Messor concolor Thomé & Thomé, 1981. N09. *CASENT0904126. Listed by Paknia et al. (2008). Location near a lake in farm land. In Firouzi et al. (2011) the identification of “Messor picturatus“ is wrong. Assuming the scales on the published images (CSH000023, not available on Antweb) and those of the picturatus type major (CASENT0913208) are correct, the Iran major has lateral and dorsal views that are significantly larger than the type. The descriptive notes (Collingwood) do not match the type, from Algeria, which notably lacks “conspicuously long hairs on the body” and first gaster segment. A fresh specimen from Morocco on Antweb, CASENT0281603, matches the type. Santschi (1927: 244) gave (B.T. translation): “The erect pilosity, mediocrelty abundant on the head and body, is completely missing from the basal segment of the gaster”. It appears likely the Firouzi specimen is the same as that our Myrmica concolor with the Iran populations having a redder alitrunk than the type.

Messor dentatus Santschi, 1927. M05, N12. *CASENT0907733. Type location Israel. Listed by Paknia et al. (2008). Desert and gardens.

Messor ebeninus Santschi, 1927. N22. *CASENT0249823. Type location Lebanon. Listed by Paknia et al. (2008). Farm land. Middle East.

Messor structor (Latreille, 1798). N14. *(subspecies varrialei) CASENT0905855. Type location France. Listed by Paknia et al. (2008). Location near a lake. The Firouzi et al. (2011) identification of “Messor aralocaspius“ is wrong. The illustrated worker (CSH000024; images not available on Antweb) is much hairier and somewhat larger than the types (major at CASENT0913156, minor at CASENT0907727); that on Antweb CFH000016 also is wrong. The correct identification is Messor structor. Widespread western Palaearctic.

Monomorium salomonis (Linnaeus, 1758). N25, N26, N27. *(j. syn.) CASENT0904595. Type location Egypt. Listed by Paknia et al. (2008). Desert, semi-desert and farmland. Widespread tramp species.

Myrmica gallienii Bondroit, 1920. M03. *j. syn. limanica from Ukraine (CASENT0900287). Type location France. Radchenko & Elmes (2010: 138ff.) gave the species distribution as “Central & Eastern Europe, southern Finland, Caucasus, West Siberia (but not China)”. In village. The Firouzi et al. (2011) identification of “Myrmica hellenica” is wrong, that is a much smaller species (type at CASENT0907653). The illustrated specimen (CSH000040) is Myrmica gallienii.

Pheidole orientalis Müller, 1923. M12, M13. Major and minor workers. *CASENT0904193. Type location “The Orient”. Listed by Paknia et al. (2008) under Pheidole pallidula. Forest, on trees in the arid Gholi Kandi area. Middle Eastern.

Pheidole pallidula (Nylander, 1849). M03, M11, N24, N27. Major and minor workers. *identical to CASENT0913386 (bears unpublished name Pheidole pallidula v. obscura-ta Santschi, from Tangier). Type location Sicily. Village, forest, gardens and desert. Southern Europe, North Africa and the Middle East.

Tetramorium caespitum (Linnaeus, 1798). M17. *(subspecies) CASENT0904802 etc. Type location Europe. Listed by Paknia et al. (2008). In city. Widespread Palaearctic.

Tetramorium chefketi Forel, 1911. N29. *CASENT0909100. Type location Turkey. Listed by Paknia et al. (2008). Farmland. Eastern Europe and Middle East. The specimen from Iran listed by Nezhad et al. (2012) and shown on Antweb under Tetramorium moravicum, CFH000023, labelled Tetramorium IR02 by F. Firouzi, appears, as do the workers shown in Nezhad et al. (2012), as Tetramorium forte (CSH000031 and CFH000051).
Tetramorium davidi Forel, 1911. M19. *CASENT0904826. Type location Israel. Listed by Paknia et al. (2008). Desert. Also known from Syria. Specimens on Antweb and given by Nezhad et al. (2012) as Tetramorium punicum, CFH000024 (labelled Messor IR63), and CSH000033 (labelled Tetramorium IR04), appear to be this species.

Tetramorium striativentre Mayr, 1877. N30. *non-type (type was a queen) but identical others, e.g. CASENT0280927. Type location Turkmenistan. The similar T. syriacum has fewer longitudinal striae on the head and appears to be a lighter colour. Listed by Paknia (2010). Desert. Also Afghanistan.

Trichomyrmex destructor (Jerdon, 1851). N23. *(j. syn.) CASENT0008623. Listed by Paknia et al. (2008), as Monomorium destructor. The genus Trichomyrmex has been revived by Ward et al. (2015). In house. Tramp species in tropics and heated temperate buildings.

Notes on Antweb images of specimens from Iran

“Camponotus kiesenwetteri”, a worker from Baluchistan, Iran, CASENT280606, is not the same as several examples of major and minor workers from Greece, the type location (e.g. CASENT0179872, CASENT0249985). The domed petiole profile is suggestive of the poorly defined non-African variations of Camponotus (Orthonotomyrmex) sericeus, as keyed in Radchenko (1997c?/1996).

“Camponotus thales”, CFH000020, a worker from Mazandaran, clearly differs from the type images of the Lesotho species (CASENT0910113 major, CASENT 0910114, minor).

“Cataglyphis bicolor”, listed as from Teheran but without images, FMNHINS0000046224, cannot be verified.

Cataglyphis isis (Forel, 1913), the Iran specimen (ANTWEB1008061), matches the type images (CASENT0249889) from Egypt, and a cotype of the junior synonym Cataglyphis protuberata from Iran, “NW Persia, collector Crawley (CASENT0911117), described by Crawley (1920: 177) and synonymised by Radchenko (1997: 431).

“Lasius flavus” CFH000053, labelled by F. Firouzi, from Mazandaran, Iran (Nezhad et al. 2012) probably is Lasius flavescens Forel 1904, type images CASENT0911048, type location Uzbekistan.

“Proformica nitida”, CFH000007, labelled “Proformica IR02” by F. Firouzi and in Nezhad et al. (2012) appears too small and too light brown to be that species, see the type images CASENT0912279. It is very similar to what we identify as Proformica ferreri (see above).

“Temnothorax anodontoides”, CFH000026, collector F. Firouzi, possibly the same as the Temnothorax anodonta in Paknia (2010) but there are no images of that on Antweb, nor of the type T. anodontoides. Drawings of T. anodontoides, in Radchenko (1994), show a rounded transition from dorsum to declivity of the propodeum in profile view. CFH000026 has small but distinct teeth, or sharp angles at the transition. In frontal view the head of CFH000026 seems similar to the drawing of T. anodonta given by Radchenko (1994).

Disclosure Statement

No potential conflict of interest was reported by the author.
Supplementary Material
The Annex with Table 1 and 2 and maps with the collecting localities is available as supplementary information via the “Supplementary” tab on the articles online page (http://dx.doi.org/10.1080/09397140.2015.1020611).

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