

New and additional records for the ant fauna from Iran

(Hymenoptera: Formicidae)

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Abstract. The ant fauna (Hymenoptera: Formicidae) in two provinces (Zanjan, Mazandaran) of Iran has been studied in 2008 and 2009: 10 additional species new for the Iranian fauna have been discovered. The ant fauna of Iran includes now 158 species records.

Key words. Formicidae, ants, fauna, new record, Iran, Middle East.

Introduction

Iran's faunal diversity is comparatively high due to the country's varied geological, altitudinal and climatic structure; therefore it would be expected that there is a rich ant fauna in this country. Currently, the ant fauna of Iran comprises 148 species in 32 genera (PAKNIA et al. 2008, 2010, RADCHENKO & PAKNIA 2010, FIROUZI et al. 2011). We carried out surveys in the two Northern Iranian provinces Mazandaran and Zanjan to study the diversity in their various ecosystems (Fig.1). The first province is situated south of the Caspian Sea on the Northern slopes of the Alborz Mountains with forest steppe and the second is in the semiarid area south of the Alborz Mountains on the Iranian plateau.

Material and methods

The study materials were collected in spring and summer, in 2008 and 2009. The samples are preserved in 96% alcohol and referred to the Biosystematics Laboratory in Shahid Beheshti University. For the identification of the species the keys by AGOSTI & COLLINGWOOD (1987), COLLINGWOOD (1979, 1985), COLLINGWOOD & AGOSTI (1996) have been used. Ant specimens were sent to Cedric COLLINGWOOD and Bernhard SEIFERT to confirm their proper identification. Hay Mayans Insect Museum in the Iranian Research Institute of Plant Protection, Tehran, Iran (HMIM) and Donat Agosti's ant collection (DAAC) have been used as reference collections and as repository of voucher specimens. The pictures have been taken using a Wild M5 dissecting microscope with attached Nikon D300, and were edited with Combine ZP software.

Results and discussion

Additional to the earlier published checklist and annotations (PAKNIA et al. 2008, 2010, RADCHENKO & PAKNIA 2010, FIROUZI et al. 2011), ten ant species have been recorded for the first time for Iran. The ant fauna of Iran includes now 158 species records.

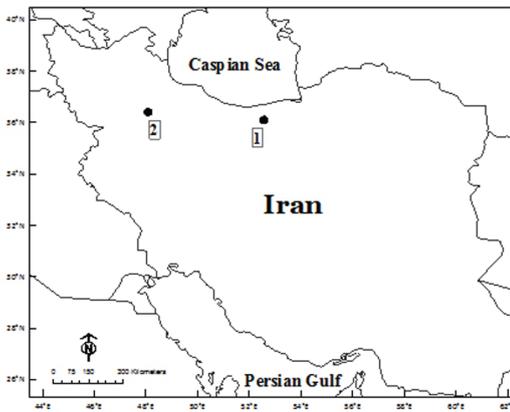


Fig. 1. Map of Iran. Dark circles show sampling locations of the newly recorded ants: 1- Mazandaran, 2- Zanzjan.

Camponotus piceus Leach, 1825

Material: 1 ♀, mountainous area, near a barrier, Zanzjan ($36^{\circ}47.2'N$, $48^{\circ}31.7'E$), 1952 m a.s.l., 22.viii.2009, leg. Sakine Hossein Nezhad.

Description (Figs 2-3): Front of head continuing same plane as rest, not truncate. Clypeus trapezoidal. Mesopropodeal impression a deep furrow in all worker castes. Dorsal surface of propodeum meeting declivitous caudal part at a distinct angle. Propodeal dorsum convex, propodeum forming mostly a distinct, separated cube (AGOSTI & COLLINGWOOD 1987). At least gaster distinctly shining, gastric sculpture finely transversally striate or smooth. Colour uniformly dark. With erect hairs on occiput, propodeum, petiole and gaster. Body length 6.5 mm.

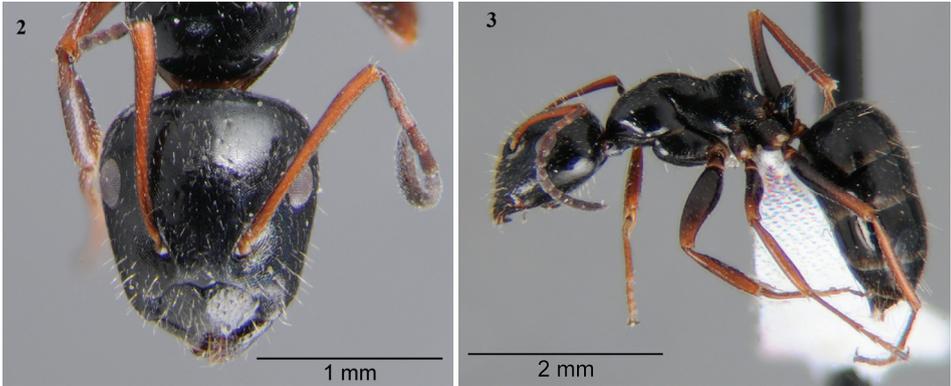
Distribution: Outside of Iran, *C. piceus* is recorded from the western Palaearctic. Its range covers central, western and southern Europe and the southwest Mediterranean area including Tunisia and Algeria (BRAČKO 2006, KUTTER 1977, MARKÓ et al. 2006).

Lasius flavus Fabricius, 1728

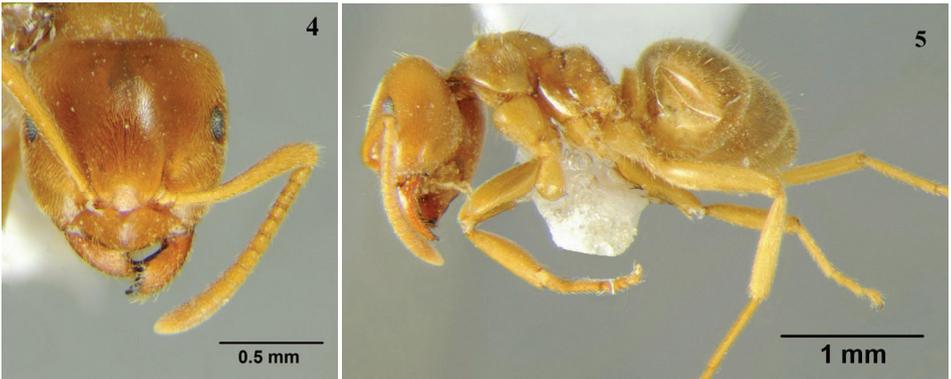
Material: 8 ♀, forest steppe, Mazandaran ($36^{\circ}06.3'N$, $52^{\circ}35.9'E$), 2067 m a.s.l., 10.v.2009, leg. Fateme Firouzi.

Description (Figs 4-5): Scale thin in side view, low and broad in front view with dorsal margin mildly convex straight or in larger specimens occasionally emarginated. Clear yellow to brownish yellow. Body hairs on dorsum of gaster and alitrunk long. Appendages and body covered with more or less thick adpressed pubescence. More dilute on head. No erect hairs on tibiae, scapes or genae (COLLINGWOOD 1979). Occipital margin slightly concave, With erect hairs. Component eyes small. Propodeum without long hairs. Body length 2.9 to 3.5mm.

Distribution: Outside of Iran, *L. flavus* was recorded from Turkey (AKTAÇ 1977). This species additionally is widely distributed in the western and southern Europe (BRAČKO 2006, SEIFERT 1983, SEIFERT & BUSCHINGER 1997, MARKÓ et al. 2006) and Central Asia (Petrov 1986). *L. flavus* is very widespread in the temperate (boreal) part of the Palaearctic.



Figs 2-3. *Camponotus piceus* (worker CSH000018): 2 Head in frontal view, 3 Alitrunk in profile view.



Figs 4-5. *Lasius flavus* (worker CFH000053): 4 Head in frontal view, 5 Alitrunk in profile view.



Figs 6-7. *Lepisiota frauenfeldi* (worker CSH000030): 6 Head in frontal view, 7 Alitrunk in profile view.

Lepisiota caucasica Santschi, 1917

Material: 18 ♀, rural area, near a dam, Zanjan (36°38.2'N, 48°22.4'E), 1704 m a.s.l., 23.vi.2008, leg. Sakine Hossein Nezhad.

Description (Figs 6-7): Clypeus very finely keeled. Propodeum angulate. Petiole distinctly toothed. Alitrunk clear shining red; head and appendages mainly reddish (AGOSTI & COLLINGWOOD 1987). Head with slightly curved sides and broadly round occiput. genae with pubescence. Hairs absent on alitrunk and gaster. gaster and tibia Brownish black. Body length 3.8 to 4.5mm.

L. caucasica belongs to the *frauenfeldi* species-group. It differs from *L. frauenfeldi* by colour of alitrunk that in *L. frauenfeldi* is mainly or entirely dark. Also, in *L. frauenfeldi* the part of midbody is usually with a small patch of red and the pronotum is sculptured.

Distribution: *L. caucasica* can be found in the Balkan (AGOSTI & COLLINGWOOD 1987), Caucasus (SANTSCHI 1917).

Messor ceresis Santschi, 1938

Material: 2 ♀, urban area, Mazandaran (36°32.2'N, 52°40.4'E), 13 m a.s.l., 1.iv.2009, leg. Fateme Firouzi.

Description (Figs 8-9): Underside of head with at least some long J-shaped hairs. First funiculus segment larger and distinctly longer than second. Mid and hind tibial spurs simple. First gaster tergite with short hairs, few or none. Bicoloured ants with head and alitrunk reddish contrasting with dark gaster. Head of larger workers red or reddish distinctly lighter than gaster. Maximum head width 2.0 or less. Head completely sculptured. Propodeum angled. Head coarsely striate, subrectangular. 0-2 projecting hairs at each side on the occiput, two pairs each on the pronotum. Petiole and postpetiole with a few hairs at the distal margin of the first gasteral tergite (AGOSTI & COLLINGWOOD 1987). Head sub rectangular. Frontal carina short, not extending beyond the level of eyes. Body length 6.8 to 7mm.

Distribution: This species was recorded from Lebanon (SANTSCHI 1934) and Saudi Arabia (COLLINGWOOD & AGOSTI 1996).

Messor rufitarsis Förster, 1850

Material: 10 ♀, rural area, Zanjan (36°23.1'N, 48°06.7'E), 1964 m a.s.l., 8.viii.2008, leg. Sakine Hossein Nezhad.

Description (Figs 10-11): The head is dark red. The scape does not reach entirely the hind margin of the head, is black with red tip; antennal segments red, at the base brownish; the mandibles red, over the entire length longitudinal wide wrinkles, in between punctate. The clypeus longitudinally with wrinkles; apically with small denticles. Lateral cavities fused with the cavities of the antennae, very deep. Frontal triangle completely smooth. The head longitudinally wrinkled, most on the frons, on the cheeks and occiput less prominent, all over with scattered coarse punctuations which are the base with relatively long hairs. Alitrunk with dorsum of mesosoma and scutellum smooth and very shiny, with coarser scattered punctuations, not present in the middle. Prothorax with fine wrinkles across and laterally very coarsely punctuated. Pleurae of mesothorax only towards the caudal end very finely rugate. The entire metathorax very distinctly transversally rugate. Petiole longer than postpetiole. Surface and the pages on both nodes wrinkled. The other segments smooth, glossy, with scattered, coarse points, from which the hairs arise. The 2nd segment twice broader than the 3rd (FÖRSTER 1850). All over the alitrunk, petiole, postpetiole and gaster with long hairs.



Figs 8-9. *Messor ceresis* (worker CFH000044): 8 Head in frontal view, 9 Alitrunk in profile view.



Figs 10-11. *Messor rufitarsis* (worker CSH000028): 10 Head in frontal view, 11 Alitrunk in profile view.



Figs 12-13. *Messor orientalis* (worker CSH000026): 12 Head in frontal view, 13 Alitrunk in profile view.

Pronotum, Alitrunk appendage nodes and gaster dark red; mesonotum and propodeum light brown. Body length 6.5 to 7 mm.

This species is from *structor* species-group and differs by squared propodeum and generally darker colour.

Distribution: *M. rufitarsis* is an East European and Asiatic species and outside of Iran, this species is recorded from Caucasus (SCHLICK-STEINER et al. 2006).

Messor orientalis Emery, 1896

Material: 9 ♀, rural area, Zanjan (36°23.1'N, 48°06.7'E), 1964 m a.s.l., 8.viii.2009, leg. Sakine Hossein Nezhad.

Description (Figs 12-13): Head width of the large worker >2.6 mm. First funiculus segment longer than second plus third (COLLINGWOOD & AGOSTI 1996). Gula with short moderately curved or straight hairs, strongly sculptured robust. Brown or blackish brown species. Propodeum angulate to broadly dentate. The largest species of the *M. structor* species group from which it is distinguished by the major workers which have a clearly angulate or dentate propodeum (COLLINGWOOD 1985). All over the body covered with long hairs. Head sub rectangular. Body length 7 to 8mm.

Distribution: This species is distributed in some of the Middle East countries (COLLINGWOOD 1985, SANTSCHI 1939, TOHMÉ & TOHMÉ 1981) and Greece (COLLINGWOOD 1993).

Proformica nitida Kuznetsov-Ugamsky, 1923

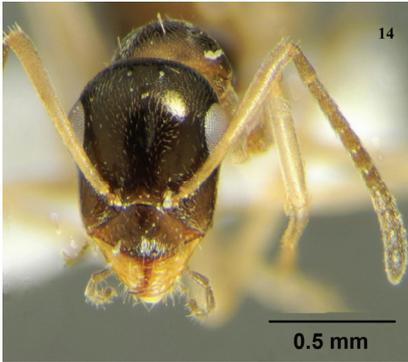
Material: 2 ♀, forest steppe, Mazandaran (36°06.3'N, 52°35.9'E), 2067 m a.s.l., 21.vi.2009, leg. Fateme Firouzi.

Description (Figs 14-15): Occiput with few, very finely impressed punctures. Head apically distinctly narrowed with slightly curved sides and broadly round occiput. Clypeus very finely keeled, almost entirely smooth, shining and only laterally with fine longitudinal stripes; apically in the center without emargination, anteriorely blunt-angled. In the middle of the frons, from the central ommatidium towards the clypeus a narrow and longish groove. Scape narrow and long. Antennal scape and funicular segments with many depressed small hairs; the hairs are thinner than those of other species. Thorax slender, without noticeable sculpture, smooth and shiny, with scattered and whitish hair. Transition between basal and sloping surface of epinotum is equal-moderately convex, with no discernible angles. Basal area in the center with a weak pass, depression. Scale of petiole rather thick, not at the upper edge sharp, but in profile considered top obtuse rounded. Upper margin with weak deeper excision in the middle, sometimes it is missing entirely. The whole body with a thin, scattered, projecting hair (KUZNETZOV-UGAMSKIJ 1928). Head dark brown, scape and mandibles yellow, funiculus darker than scape, pronotum and propodeum blackish brown and darker than mesonotum, coxae and all appendage yellow, petiole and dorsal gaster dark brown. Body length: 3.8 to 4.6 mm.

Distribution: This species is reported from Kyrgyzstan (SCHULTZ 2006) and Uzbekistan (KUZNETZOV-UGAMSKIJ 1928).

Tetramorium forte Forel, 1904

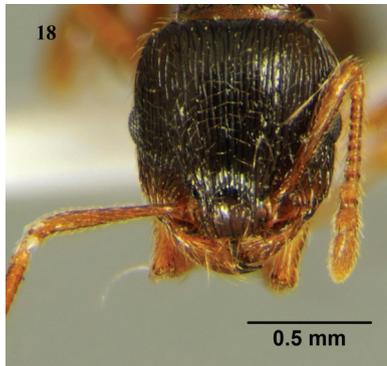
Material: 30 ♀, rural area, Zanjan (36°23.1'N, 48°06.7'E), 1964 m a.s.l., 22.viii.2009, leg. Sakine Hossein Nezhad. 22 ♀, urban area, Mazandaran (36°32.2'N, 52°40.4'E), altitude 13 m a.s.l., 8.iv.2009, leg. Fateme Firouzi.



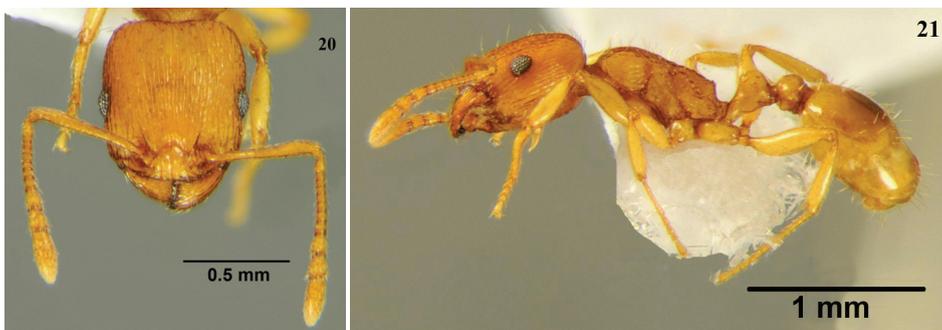
Figs 14-15. *Proformica nitida* (worker CFH000007): 14 Head in frontal view, 15 Alitrunk in profile view.



Figs 16-17. *Tetramorium forte* (workers CSH000031 and CFH000051). 16 Head in frontal view, 17 Alitrunk in profile view.



Figs 18-19. *Tetramorium moravicum* (worker CFH000023): 18 Head in frontal view, 19 Alitrunk in profile view.



Figs 20-21. *Tetramorium punicum* (workers CSH000033 and CFH000024): 20 Head in frontal view, 21 Alitrunk in profile view.

Description (Figs 16-17): Frontal carinae short. Occiput either with longitudinal or divergent striae or it is smooth. Head coarsely sculptured throughout. At least centre dorsum of petiole nodes smooth. Postpetiole with concentric striae. Petiole usually with a few rugae (AGOSTI & COLLINGWOOD 1987). Mesosoma robust, broad, with pronounced pronotal angles. Mesopropodeal suture shallowly depressed. Propodeal spines moderately long and straight. Dark brown to blackish, appendages lighter, orange-brown. Head, dorsal parts of mesosoma, petiole and postpetiole entirely carinate or rugose. Genae and surface of occipital corners rugose. Dorsal surface of head with reticulate microsculpture. Scapes usually smooth and shining, sometimes with diffuse microsculpture, and with an inconspicuous antero-dorsal carina at the base which may grade into the trace of a transverse extension but not into a conspicuous dorsally projecting flange. Ventral head surface longitudinally striate without any microsculpture. Dorsal surface of mesosoma rugose with variably developed reticulate microsculpture, on the propodeum evenly and roughly reticulate, especially between the spines. Ventral parts of petiolar nodes heavily reticulate (Gunsten et al. 2006). All over the body covered with long hairs. Body length 3.9 to 4.5mm.

Distribution: This species was known from France, Morocco, Portugal and Spain (GUNSTEN et al. 2006).

Tetramorium moravicum Kratochvil, 1941

Material: 18 ♀, urban area, Mazandaran, (36°42.4'N, 52°38.3'E), -9 m a.s.l., 15.iv.2009, leg. Fateme Firouzi.

Description (Figs 18-19): Frontal carinae short; occiput either with longitudinal or divergent striae or smooth, Head coarsely sculptured throughout. Nodes more or less sculptured over whole surface. Nodes weakly or irregularly sculptured; striae continue approximately parallel to the occipital border (AGOSTI & COLLINGWOOD 1987). Dark brown to blackish, appendages lighter and orange-brown. Whole of the body covered with long hairs. Body length 2.5 to 2.9 mm.

It is necessary to note that *T. moravicum* belong to the *forte* species-group. This species differ from *T. forte* by more prominent antero-dorsal carina at the base of the scape than in *T. forte* which extends into a conspicuous dorsally projecting flange (GUNSTEN et al. 2006). Also, in contrast to *T. forte*, the scape is reticulate or faintly longitudinally rugose in *T. mo-*

ravicum, and the occipital corners are quite prominent with the main rugae on the head running parallel throughout their length and not converging into an arcuate pattern in lateral view as in *T. forte* (SCHULZ 1996).

Distribution: This species was known in the western and southern Europe and additionally was recorded from Turkey (BRAČKO 2006, GUNSTEN et al. 2006, MARKÓ et al. 2006).

Tetramorium punicum Smith, 1861

Material: 8 ♀, rural area, Zanjan (36°23.1'N, 48°06.7'E), 1964 m a.s.l., 15.viii.2009, leg. Sakine Hossein Nezhad. 30 ♀, Forest steppe, Mazandaran, (36°06.3'N, 52°35.9'E), altitude 2067 m a.s.l., 21.vii.2009, leg. Fateme Firouzi.

Description (Figs 20-21): Frontal carinae short. Occiput either with longitudinal or divergent striae or it is smooth. Head finely sculptured or smooth and shining at least at sides. Colour yellowish to pale brown. Alitrunk sculptured at least in part. Dorsum of head rugose or sculptured in part. Occiput and dorsum of nodes smooth (AGOSTI & COLLINGWOOD 1987). Occipital margin concave. Propodeum angulated. Whole of the body covered with long hairs. Body length: 2.7 to 3.0 mm.

Distribution: This species in the Palaearctic region is reported from countries such as Egypt (FINZI 1936), Greece (COLLINGWOOD 1993), Libya (MAYR 1908), Tunisia (SANTSCHI 1910) and Turkey (SANTSCHI 1921).

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