Myrmica bergi Ruzsky, 1902

(Figs 36–38)

Myrmica bergi Ruzsky, 1902b: 473, w, Kazakhstan (also described as a new by Ruzsky, 1902c: 12); 1903: 314, 1905: 675, w, q, m; Emery 1908a: 166, 1921: 37; Kuznetsov-Ugamsky 1927: 191, 1929: 44; Arnoldi 1934: 160; Weber 1947: 472; Sadil 1952: 244; Arnoldi 1970: 1839, 1976: 556; Tarbinsky 1976: 45; Seifert 1988: 11; Radchenko 1994b: 42, 1994c: 143, 1994d: 76; Bolton 1995: 277; Radchenko et al. 2002: 413, *nec* Sadil 1952: 244.

Myrmica rubra L. r. *bergi*: Forel 1904a: 374.

Myrmica rugosa var. *kirgisica* Ruzsky, 1903: 314, w, Russia; 1905: 659; Emery 1908a: 168, 1921: 40; Weber 1947: 464. Synonymy by Seifert 1988: 11; Radchenko 1994d: 76; Radchenko et al. 2002: 413; confirmed here.

Myrmica rubra var. *kirgisica*: Forel 1907: 18.

Myrmica bergi subsp. *kirgisica*: Arnoldi 1970: 1839.

Myrmica bergi var. *barchanica* Ruzsky, 1905, 678, w, Russia; Emery 1908a: 173, 1921: 37; Weber 1947: 473. Synonymy by Arnoldi 1970: 1839; Seifert 1988: 11; Radchenko 1994d: 76; Radchenko et al. 2002: 413; confirmed here.

Myrmica bergi var. *fortior* Crawley, 1920: 163, w, Iran (junior primary homonym of *Myrmica smythiesi* var. *fortior* Forel 1904b: 22).

M. bergi subsp. *persiana* Weber 1947: 474 (replacement name for *Myrmica bergi* var. *fortior* Crawley, 1920: 163); Bolton 1995: 281. Synonymy by Radchenko 1994d: 76; Radchenko et al. 2002: 413; confirmed here.

Myrmica kamyschiensis Arnoldi, 1934: 159, w, q, Ukraine; synonymy by Seifert 1988: 11; Radchenko 1994d: 76; Radchenko et al. 2002: 413; confirmed here.

Myrmica bergi subsp. *kamyschiensis*: Karawajew, 1936: 272, w, m; Weber 1947: 474; Arnoldi 1970: 1838.

Type localities and type specimens. *M. bergi*: “окр. Аральского моря, Тас-Булак на западн. берегу, 5.VII.1900 (Берг); устье Сыр-Дарьи, Раим, 7–8.V.1901 (он же); Ак-Джулпас на северо-вост. бер., 26. V.01 (он же); окр. Казалинска, берег Сыр-Дарьи, 13.VI.1901 (он же)” [vicinity of Aral Sea, Tas-Bulak, W shore, 5.vii.1900, leg. Berg; mouth of the riv. Syr-Darya, Raim, 7–8.v–1901, same collector; Ak-Dzhulpas, NE shore, 26.v.1901, same collector; vicinity of Kazalinsk, bank of the riv. Syr-Darya, 13.vi.1901, same collector] (Ruzsky 1902a); “Fundorte: Tas-Bulak an Westufer des Aralsees; Mьndung des Syr-Darja; Ack-Dshulpas am nordцstlischen Ufer des Aralsees (H. L. Berg, 1900–1901) (Ruzsky 1902b). *M. rugosa* var. *kirgisica*: “Найдена около Астрахани. Кроме того, еще один экземпляр – в песках близ Ханской Ставки” [Was found near Astrakhan‘. Additionally, one more specimen – on sandy areas near Khanskaya Stavka]. *M. bergi* var. *barchanica*: “пески около Ханской Ставки (Астраханская губ.)” [sandy areas near Khanskaya Stavka (Astrakhan‘ Prov.)]. *M. bergi* var. *fortior*: “Enzeli, N.W. Persia, 1919 (Buxton)”. *M. kamyschiensis*: “Krim, Kertsch-Meeres-enge, sandiger Salzstrand des Brackwasserbeckens Kamysch-Burun am Meer. Nistet im feinen Muschelsand im Juncusbestand, IV.1923 (Nr. 888 meiner Sammlung); auch am sьdlichen Rande der Ukrajnischen Steppen, Salzmoor bei Sivaschufer (Medvedev, 1931)”.

Material examined. **Lectotype** of *M. bergi*, w (middle specimens on the pin with 3 w, designated by Arnoldi 1970; see Notes below), “986, Aral see, L. S. Berg, 1901”, “Lectotype” (MOSCOW); **paralectotypes**: 2 w on the pin with lectotype; 1 w, “Kazalinsk, 1901, Berg” (MOSCOW); 1 w, “Аральское море, Л. С. Берг, 1901” [Aral Sea, L. S. Berg, 1901], “5630 Coll. Karawajewi”, “*M.* (*Myrmica*) *bergi* Ruzs. typus”, “Paratypus *Myrmica bergi* Ruzs.” [KIEV]; 2 w (bottom specimen without head), “*Myrm. Bergi* m, w” (written by Ruzsky’s own hand), “*Myrmica bergi* Ruzski [*Sic*!] Lago Aral” (GENOA); **lectotype** of *M. bergi* var. *barchanica*, w (designated by Radchenko et al. 2002), *“Myrmica bergi* var. *barchanica* Ruszs, Ханская Ставка, рынь-пески, 6.VI.1902, М. Рузский” [Khanskaya Stavka, ryn’-peski, 6.vi.1902, M. Ruzsky] (written by Ruzsky’s own hand) (MOSCOW); **paralectotype**: w, “*Myrmica bergi*

var. *barchanica* Ruszs., Ханская Ставка, пески, 5.VI.1902, М. Рузский” [Khanskaya Stavka, peski, 5.vi.1902, M. Ruzsky] (written by Ruzsky’s own hand) (PETERSBURG); **lectotype** of *M. bergi* var. *fortior*, w (designated by Radchenko et al. 2002), ”NW Persia, 1919, P. A. Buxton”, “*Myrmi ca bergi* var. *fortior* Crawley” (OXFORD); **paralectotypes**: 10 w with same labels as lectotype (OXFORD, LONDON, MOSCOW); **syntypes** of *M. kamy schien sis* (designated by Radchenko et al. 2002; see Notes below): 1 w, “A 888”, “*M. bergi kamyschiensis*”, “Holotype” (all written by Arnoldi’s own hand); 2 w, “A 888”, “*M. bergi kamyschiensis*”, “Paratype” (all written by Arnoldi’s own hand) (MOSCOW); 1 w, “No. 888, Керчь, Камыш-Бурун, 21.IV.23, K. Arnoldi” [Kerch’, Kamysh-Burun, 21.iv.23, K. Arnoldi”, “5629 Coll. Karawajewi”, “*Myrmica* (*Myrmica*) *kamyschiensis* Arnoldi typus”, “Paratypus *Myrmica kamys chiensis* K. Arn.” (KIEV); **non-type material**: > 200 w, several tens of q and m from the whole area of the species.

Distribution (Map 14). Steppe Zone from the delta of Danube riv. to Altai Mts., Transcaucasus, NE Iran, plains and mountains of Middle Asia.

Etymology. *M. bergi*: this species was named for its collector, Prof. Lev Semenovich Berg, who was a distinguished Russian natural scientist, most famous for his work on marine biology and the theory of nomogenesis (the initials H. L. Berg in Ruzsky 1902b probably means "Herr L. Berg"). *M. kirgisica*: from the name "Kirgis" with the adjective suffix for nouns *ica* (from the Greek ικο) = belonging to, from, which indicates that it is a resident of the "Kirgis Steppe". At the beginning of 20th century the name Kirgis (spelled also as Kirgiz) signified the vast area of dry steppe and semi-deserts that extended from the lower Volga river through modern Kazakhstan, to Dzhungaria near the Chinese border. At that time, the modern Kazakh nation were called Kirgiz (to avoid confusion with the Russian and Ukrainian Kazaks), while the modern Kirgiz peoples (living in Kyrgyzstan) were called the Kara-Kirgiz (Black Kirgiz). *M. barchanica*: from the name barchan (winged-shaped sand dunes) with the adjective suffix for nouns *ica* (from the Greek ικο) = belonging to, from, which indicates that it is a resident of barchans. The types were found in sandy areas near Astrakhan', where there are many barchans. *M. persiana*: named for Persia (modern Iran), where the types were found. *M. kamyschiensis*: from the name of the type locality, Kamysh-Burun, with the Latin suffix *ensis* = place of origin.

Notes. We made a full appraisal of *M. bergi* and concluded that all of its subspecific forms are synonyms of *M. bergi*, although several were sufficiently distinct to be considered as geographic races (Radchenko et al. 2002). *M. bergi* is a member of the *scabrinodis* species group and is most similar to *M. gallienii*, differing from the latter by the shorter propodeal spines, lower petiole, darker colour, etc.; males differ by relatively longer scape.

Arnoldi (1970: 1839) wrote concerning *M. bergi*: "As lectotypes (*Sic*!) I designate worker: Tas-Bulak near Aral Sea (L. S. Berg), male – Frunze, Kirgizia (Arnoldi)". Regarding the male Arnoldi was in error because he added to the type series a specimen collected by himself many years after the first description of the species; furthermore we could not find specimens with this data either in MOSCOW or in PETERSBURG. However, we found three workers from the Aral Sea, on a pin labelled by Arnoldi as "Lectotype", and formally designated the middle specimen as the lectotype of *M. bergi* (Radchenko et al. 2002).

The types of var. *kirgisica* most probably are lost. We found in MOSCOW a pin with 3 workers from "Астраханский заповедник, 10.VI.60, поды, Писарев" ["Astrakhan' Natural Reserve, 10.vi.60, pody, Pisarev"], labelled by Arnoldi as "Lectotype, *M. bergi kirgisica*". Again Arnoldi was in error, considering as "lectotypes" specimens collected 58 years after the first description, at best one could only be considered as a neotype. Despite labelling these specimens, Arnoldi (1970) did not formally designate a lectotype or neotype for var. *kirgisica*.

We consider Arnoldi's type specimens of *M. kamyschiensis* as syntypes (Radchenko et al. 2002), because he did not designate any type specimens in his ori ginal description of this species (Arnoldi 1934). We are sure that Arnoldi added his type labels much later (see above), probably when he revised *Myrmica* in the 1960s, because he followed his later opinion on the taxonomic status of this form, labelling the specimens "*M. bergi kamyschiensis"* rather than "*M. kamyschiensis*" as in his original description.

Material from Czechoslovakia, identified by Sadil (1952) as *M. bergi*, in fact belongs to *M. gallienii* (Arnoldi 1970).

Arnoldi's (1948) *M. bergi iranica* is *nomen nudum*. However, we investigated workers from Zuvand (Talysh, Azerbaijan) (MOSCOW), labelled by Arnoldi as "*M. bergi iranica*" or "*M. bergi persiana*"; all of them belong to *M. bergi*.

Ecology. Although *M. bergi* is distributed in semi-arid and even arid regions, within these it dwells exclusively in intrazonal, damp and almost always salted habitats, where it can be very abundant locally. Arnoldi (1934: 161) states that it is "Characteristic for salty bogs". The populations of *M. bergi* from the steppe zone of southern Ukraine have been most studied (Bondar et al. 1998; Bondar 1999; Bondar, Rusina 2003; Stukalyuk, Radchenko 2008, and personal observations). Here it nests in the reed, sedge and grass associations that border the sea shore (salt marshes and lagoon shores) and surround the numerous salted lakes of differing sizes. Around salted lakes workers can be seen foraging over the caustic encrusted, white, salty deposits even in full sunshine. Nests are built shallowly in the soil but almost always have a large mound of soil above them in which the majority of ants live. Usually the mound is constructed around plant stalks, especially sedges, and in times of flooding the entire colony migrates up the stems where it can construct temporary nest high above the water level, covered with soil and pieces of vegetation (Bondar et al. 1998), and the foraging workers actively swim, sometimes for several tens of meters. The other studies cited above have shown that colonies can be large and polygynous, containing several thousand workers, and in optimal conditions they can be polycalic

Map 14. Distribution of *M. bergi*.

comprising several tens of nests. Possibly this may be a local adaptation to high relatedness, it being probably that populations living around isolated lakes are quite inbred. We have seen small colonies nesting more typically in the soil (for *scabrinodis*-group species), living in competition with other ant species in short moist, grazed grassland on the raised

banks of the river Dnepr where flooding is less likely.
Tarbinsky (1976) studied *M. bergi* living in Kirgizia; he wrote (*loc. cit*., p. 46) that it "Lives up to altitude 1600 m, along river and stream banks, near *Salix* and *Hippophaл* shrubs, or near *Phragmites*, in semi-shaded places. It nests in sandy soil, sometimes with small mounds, but usually without them. In the morning and evening ants forage on open sand but during the day, in shade under shrubs or *Phragmites*". In this respect it is quite similar to the Ukrainian populations. However, Tarbinsky (*loc. cit.*) also said that colonies are "quite large compared to other *Myrmica* species*"* (which agrees with our observations) "and monogynous" which is atypical for south Ukrainian populations. Ruzsky (1905) recorded that var. *barchanica* nested in sandy soils with rich vegetation, mainly *Populus* and *Salix*.