

VI. Genus *Bergiola* Stschelk.  
(Tettig.)

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**History.**

Stschelkanovzeff described in 1907 (see bibliography at the end) a new genus of *Decticinae* allied to *Paradrymadusa* Herm., which he called *Bergiella*, but this name proved to be preoccupied and in 1910 he renamed the genus *Bergiola*, publishing a German literal translation of the original description (it was mainly in Russian) and a photograph.

Only the female sex of this insect was known to the author, but the structure of the ovipositor was so peculiar, that there could be no doubt as to the validity of the genus.

Recently, I received from Dr. V. M. Engelhardt some grasshoppers collected in Transbaikalia and amongst them was a curious little Dectacid which is undoubtedly also a *Bergiola*, though differing specifically from the genotype. Another new species of the same genus has been sent to me by Miss E. F. Miram from the Zoological Museum of the Russian Academy of Sciences; it was collected in Mongolia by Mr. Alexander N. Kiritchenko who was surprised by the somewhat unusual habits of the insect (see below, p. 3). Finally, I refer provisionally to the genus *Bergiola* a new species sent to me by Mr. L. D. Moritz who collected it in N. Persia, and represented by the male sex only.

I wish to express my sincere thanks to the above named collectors and to Miss E. F. Miram for their kind assistance in obtaining specimens of these interesting insects.

Gen. **Bergiola** Stschelk.

1907. *Bergiella* Stschelkanovzeff, l. c., p. 381.

1910. *Bergiola* (nom. nov.) Stschelkanovzeff, l. c., p. 50.

Small, brachypterous. Fastigium of vertex at least as broad as the first antennal joint. Pronotum short, scarcely produced and truncate behind in the male, rounded-truncate in the female; in the male slightly raised behind; lateral lobes deep (in the male deeper than long; in the female elongate), rounded below. Prosternum with very short spinules (in the genotype), or unarmed (in all other species). Mesosternal lobes short, obtusangular or rounded; metasternal lobes very short, rounded-truncate. Elytra in the male fornicate, covered by the pronotum beyond the stridulating vein, their visible part distinctly shorter than the length of pronotum. Elytra in the female very short, lateral. Front tibiae with 3 spines on the upper inner side. Hind tibiae with two pairs of spurs below. First joint of the hind tarsi with a very short pulvillus. Male cerci short with a preapical tooth. Ovipositor short or moderately long, recurved; its apex suddenly attenuated and with the upper and lower edges slightly expanded and rugulose; the surface of the apical portion rugulose.

Genotype: *Bergiola balchaschica* (Stschelk.).

**Affinities of the genus.**

Stschelkanovzeff compared his genus with *Paradrymadusa* Herm., mainly on the account of the strongly abbreviated tarsal plantulae, and this is certainly the nearest Palaearctic relative of *Bergiola*. Indeed, there are no very definite characteres to distinguish between the males of the two genera, apart from the striking difference in size, but the female of *Bergiola* has the ovipositor recurved, with the apex suddenly attenuate and strongly pointed, while the surface of the apical portion is rugose and the upper and the lower margin are not edge-like, but somewhat expanded and also rugose. The general recurved shape of the ovipositor is known in some species of *Paradrymadusa*,

as well, but it must be remembered that the genus is very imperfectly defined and awaits a thorough revision which will certainly lead to its division into several genera.

It is, however, not in the Palaearctic fauna, but in North America that we find actually the nearest relatives of *Bergiola*, in the genus *Idiostatus* Pictet, as typified by *I. hermannii* Thomas. This latter species is not known to me except by the description, but the structure of the ovipositor in *Bergiola* is very distinctive and does not permit to regard the two genera as identical <sup>1</sup>.

### Ecology and distribution.

The types of *Bergiola balchaschica* have been taken under stones, and Mr. A. N. Kiritchenko who collected *B. mongolica* also found the insects hiding under stones and trying to escape by short leaps when the stone was overturned. This is certainly a somewhat unusual habitat for a Dectid, but the same habit of hiding under stones, in crevices of rocks, etc., was observed by me in Transcaucasia in some species of *Paradrymadusa*; they usually hide themselves during the day under bushes, but not uncommonly they occur on mountain slopes with scanty vegetation, but plenty of stones, and use the latter instead of bushes. It is easy to understand that this habit may easily develop further and the insect may become permanently associated with stones in a country like Mongolia where the shrubby vegetation is reduced by the climatic conditions to a minimum. It is very interesting to note that this habit seems to lead to a reduction in the leaping power of the insects; according to Mr. A. N. Kiritchenko, *Bergiola mongolica* makes only very short leaps and this is explained by the structure of its hind legs which have short femora and extremely short tarsal plantulae.

It is somewhat difficult and unsafe to discuss the distribution of species of *Bergiola* since the data are much too fragmentary. Three species of it (*balchaschica*, *daurica* and *mongolica*) belong all practically to the same area populated mainly by the old Angara fauna to which

<sup>1</sup> I am much obliged to Mr. Morgan Hebard, Philadelphia, for his opinion on the affinities of my *B. daurica*.

the genus presumably belongs. American affinities also point in the same direction, the Nearctic relatives of *Bergiola* being most probably of Asiatic (Angarian) origin. The occurrence of one species in Persia (*B. persica*) where the true Angarian elements do not penetrate is, therefore, very unexpected, but it must be not forgotten that the species is, perhaps, not a true *Bergiola*, but belongs to another genus.

### Key to species.

- 1 (2). All femora armed with spinules below. Ovipositor half the length of the hind femur..... 1. **balchaschica** (Stschelk.).
- 2 (1). All femora unarmed below, only the posterior ones with a single spinule.
- 3 (6). Inner tooth of the male cercus near the apex.
- 4 (5). Inner tooth of the male cercus small, directed obliquely towards the abdomen. Female with the last two sternites gibbose; subgenital plate triangular, with two convergent lateral furrows. Pronotum rounded behind. Female elytra wholly lateral, not touching each other above..... 2. **mongolica**, sp. n.
- 5 (4). Inner tooth of the male cercus larger than its apex and directed obliquely from the abdomen, so that the cercus appears bifurcated. Last sternites of female not gibbose; subgenital plate trapezoidal, without furrows. Pronotum truncate behind. Female elytra larger, touching each other..... 3. **daurica**, sp. n.
- 6 (3). Inner tooth of male cercus before the middle. Pronotum truncate behind..... 4. **persica**, sp. n.

#### 1. *Bergiola balchaschica* (Stschelk.) (fig. 1).

1907. *Bergiella balchaschica* Stschelkanovzeff, l. c., p. 382.

1910. *Bergiola balchaschica* Stschelkanovzeff, l. c., p. 51, fig.

♀ (description compiled from the original one). Probably, grey in life (types preserved in alcohol); lateral pronotal lobes with a fairly broad pale margin. Elytra lateral, scarcely projecting from under the pronotum. Front femora with one to three spinules, middle femora with one spinule on the anterior lower carina. Hind femora with 3-4 spinules on each of the lower carinae. Last sternite gibbose. Subgenital plate thick, with a shallow triangular emargination behind.

Ovipositor short and stout; its lower margin very feebly and regularly curved; upper margin more curved, especially in the middle; margins distinctly denticulate in the apical fourth of the ovipositor.

Length of body, 21 mm.; pronotum, 6 mm.; hind femur, 16 mm.; ovipositor, 8 mm.

The species has been described from two females taken at Kashkardenghiz, N. shore of lac Balchasch. The types should be at the Zoological Museum of the Moscow University, but all my attempts to find

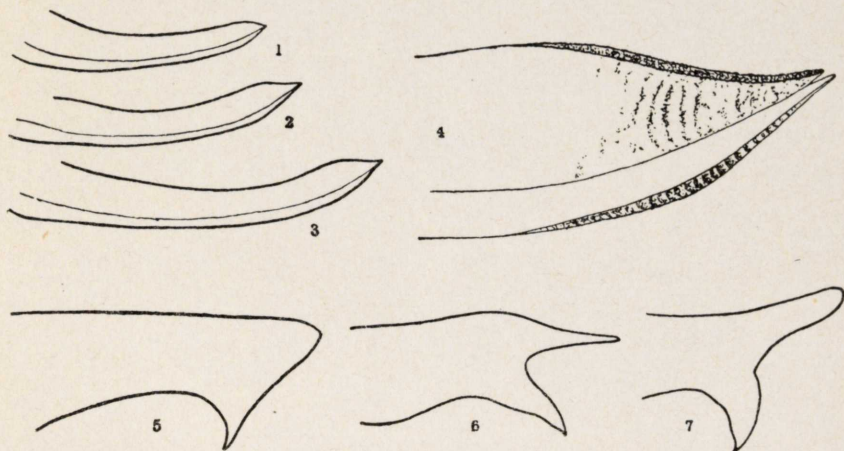


Fig. 1. Ovipositor of *Bergiola balchaschica* (Stschelk.), drawn from the original figure.—Fig. 2. Ovipositor of *B. daurica* sp. n.—Fig. 3. Ovipositor of *B. mongolica* sp. n.—Fig. 4. End of ovipositor of *B. mongolica* sp. n., strongly enlarged. Fig. 5. Right cercus of *B. mongolica* sp. n., ♂.—Fig. 6. Right cercus of *B. daurica* sp. n., ♂.—Fig. 7. Right cercus of *B. persica* sp. n., ♂.

out whether they are still in existence failed. There is no doubt, however, that the species is different from others described in the present paper, the female possessing very short and stout ovipositor suddenly pointed apically. Spinulose femora present another character separating *B. balchaschica* from the other three species.

## 2. *Bergiola mongolica* sp. n. (figs. 3, 4, 5.)

Somewhat larger and more stoutly built than other known species.

♂. Fastigium of vertex distinctly broader than the first antennal joint. Pronotum somewhat elongate; metazona not raised, broadly

rounded behind; lateral lobes distinctly longer than deep with the front angle and lower margin regularly rounded and the hind margin straight. Elytra reaching about the middle of the second tergite, covered by the pronotum beyond the middle of the speculum, with the apex broadly parabolic. All femora unarmed; posterior femora short, strongly incrassate in the basal portion.

Last tergite hairy, with broad and shallow round emargination. Cercus short, stout, somewhat depressed; outer margin straight; apex obtusely conical; inner tooth near the apex of the cercus short, acute, slightly curved, directed obliquely towards the base. Subgenital plate with an acute triangular emargination behind.

General coloration dark-brown (greenish in life, according to the collector's observation). Lateral pronotal lobes with blackish marmoration and broad pale margins; hind margin of metazonal disc black. Elytra brownish-black, with pale margins. Apex of the first and the second, and the base of the last, tergites blackish. Femora with black dots above, the posterior ones with black striation at the base above and in the lower portion of the outer area.

♀ (*paratype*). Elytra lateral, well rounded, reaching the apex of the first tergite. Sixth sternite somewhat gibbose; its hind margin distinctly depressed. Seventh (the last) sternite with a strong round inflation in the anterior half, while its posterior half is depressed and bi-concave, the two concavities being separated by a low, obtuse median ridge, the surface of which is finely transversely striate. Subgenital plate thick, convex, rounded-triangular; the apex with a triangular emargination which is as broad as long, with its anterior angle straight; from about the apex of the emargination runs a furrow, parallel to the lateral margin of the plate. Ovipositor a little shorter than the hind femur, distinctly recurved, strongly transversely rugulose in the apical portion.

General coloration as in the male; elytra brown.

Length of body ♂ 17 mm., ♀ 20 mm.; pronotum ♂ 5,5 mm., ♀ 6 mm.; elytra (visible portion) ♂ 2,5 mm., ♀ 1 mm.; hind femur ♂ 14 mm., ♀ 16 mm.; ovipositor ♀ 12,5 mm.

Described from 3 ♂♂, 4 ♀♀, 1 ♂ larva taken in the Western foothills of Ikhé-Bogdo, Gobi Altai, Mongolia, 15-24. VIII. 1926. (Alexander N. Kiritchenko.)

Two paratypes in the British Museum, the type and other paratypes in the Zoological Museum of the Russian Academy of Sciences.

One of the male paratypes is slightly smaller and paler coloured than the rest, but not different otherwise. The posterior emargination of the male subgenital plate varies in its depth and in the apical angle, but this depends mainly on the preservation of the particular specimen.

### 3. *Bergiola daurica* sp. n. (figs. 2, 6).

Small and slender.

♂. Fastigium of vertex slightly broader than the first antennal joint. Pronotum short; metazona raised, truncate behind; lateral lobes as deep as long; their front angle obtuse with rounded apex; lower margin scarcely rounded; hind margin slightly concave. Elytra reaching beyond the middle of the second tergite, covered by the pronotum up to the stridulatory vein, with the apex rounded-truncate. All femora unarmed; posterior femora relatively long and slender, moderately incrassate basally.

Last tergite hairy, with a slight round emargination behind. Cercus short, stout, somewhat depressed; outer margin distinctly convex, inner margin concave; apex bifurcate, the outer branch (*i. e.* the actual apex of the cercus) being narrow, pointed and somewhat decurved, while the inner branch (*i. e.* the pre-apical spine) is broader and decurved at the apex. Subgenital plate with a shallow round emargination.

General coloration brownish-grey. Pronotum with blackish marmoration; lateral lobes with a sharply defined pale lower and hind margin. Elytra brownish. Abdomen marmorated with grey and brown, with an indefinite pale lateral stripe; sides below the stripe blackish. Femora with indefinite brown markings; posterior femora with the base above and the lower half of the external area transversely striate with chocolate-brown.

♀ (*paratype*). Pronotum not raised behind; hind margin truncate. Elytra extending a little beyond the first tergite, almost entirely uncovered, touching each other at the back; their costal margin practically straight; apical and hind margin well rounded. Sixth and se-

venth sternite not gibbose. Subgenital plate trapezoidal, transverse, broadly and shallowly obtusely emarginate behind, with obtusangular lobes. Ovipositor considerably shorter than hind femur, well recurved, apex indistinctly rugulose.

General coloration as in the male.

Length of body ♂ 12 mm., ♀ 17 mm.; pronotum ♂ 4 mm., ♀ 4,5 mm.; elytra (visible portion) ♂ 2,5 mm., ♀ 2 mm.; hind femur ♂ 14 mm., ♀ 17 mm.; ovipositor ♀ 10 mm.

The type male and one female paratype are from the Nertchinsky zavod, Sretensk district, Transbaicalia, 12. IX. 1925; two female paratypes (one badly damaged) from Tsassuchei, Borzansky district, Transbaicalia, 23. VIII. 1925. (V. M. Engelhardt.)

One female paratype in the British Museum; other paratypes and the type in the Zoological Museum of the Russian Academy of Sciences.

#### 4. *Bergiola persica* sp. n. (fig. 7).

♂. Fastigium of vertex as broad as the first antennal joint. Pronotum short; metazona somewhat raised and truncate behind; lateral lobes a little longer than deep; their front angle very obtuse with rounded apex; lower margin broadly rounded; hind margin slightly concave. Elytra reaching beyond the first tergite, covered by the pronotum beyond the stridulatory vein; their costal margin almost straight and the apex broadly and obliquely parabolic. Front and middle femora unarmed; hind femora with a minute spinule on the lower outer carina.

Last tergite obtusangulate-prominent, with the margins slightly concave, split up by a narrow fissure into two short, acute, closely approximated lobes. Cercus short, conical, slightly depressed; outer margin slightly concave, inner margin also; apex long, subconical, blunt; inner tooth before the middle of the cercus, thick, beak-like. Subgenital plate with an acutangular excision behind.

General coloration very pale yellowish-grey («desert colour»). Head above indefinitely mottled with pale-brown. Pronotum brownish; lateral lobes darker, with broad ivory-white margin below and behind; this whitish band is somewhat indistinct in front, but very sharply defined behind and terminates abruptly under the shoulders.



Elytra of very pale sandy colour; speculum brownish; interrarial field with some cells near the apex black, but all veins and veinlets are pale. Abdomen with indefinite oblique greyish streaks and dots on the sides of each segment. Femora without any markings.

Length of body 12,5 mm.; pronotum 3,5 mm.; elytra (visible portion) 2 mm.; hind femur 12 mm.

One adult male (type) and one male larva (paratype) taken at Shakabar, N. Persia, 5. VII. 1927. (L. D. Moritz.)

The type in the Zoological Museum of the Russian Academy of Sciences; the paratype in the British Museum.

Since the genus is largely based on the structure of the ovipositor, this species may have to be removed from it when the female sex becomes known. The type of pronotal pattern in *B. persica* is very similar to that in *Drymadusa*.

#### Literature.

STSCHELKANOVZEFF, J.

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