

A C T A Z O O L O G I C A  
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**O kompleksie *Coloburella-Boernerella*, wraz z opisem nowego gatunku (*Collembola*, *Isotomidae*)**

**О комплексе *Coloburella-Boernerella*, с описанием нового вида (*Collembola*, *Isotomidae*)**

**The *Coloburella-Boernerella* complex with description of a new species (*Collembola*, *Isotomidae*)**

[Pl. XXXIV]

In 1917 LATZEL described a peculiar Isotomid from Klagenfurt, Austria. The species appeared to be so distinct that he erected the new genus *Coloburella* LATZ. to receive the single species *C. reticulata* LATZ.

Seven years later, in 1924, DENIS examined an Italian collection of *Collembola* and discovered a possibly related form which had been taken at Pineta di Ravenna and at Bois de Ladino, which he named *Boernerella zangherii* DENIS, and for which he erected the genus *Boernerella* DENIS. In his paper, however, there was no mention of LATZEL's article or the genus *Coloburella* LATZ. In 1927 DENIS again recorded the species from Pineta di Ravenna (? Ravenna).

*Coloburella* LATZ. was listed by GISIN in 1944 with *Boernerella* DENIS given as a synonym. STACH, in 1947, discussed the complex and separated the two genera again, a position taken by SALMON in his 1951 key. STACH also mentioned

a specimen of *B. zangherii* DENIS which he had seen from Eichberg, in the Austrian Alps.

Lastly, CASSAGNAU and DELAMARE-DEBOUTTEVILLE in 1951 described a new species, *Colorurella vandeli* CASS. & DEL.-DEB., assigning it to *Coloburella* LATZ. and again synonymizing *Boernerella* DENIS with the above genus.

It will be seen that there is no unanimity of opinion as to the status of these two genera.

While *Coloburella reticulata* LATZ. has not been reported since its discovery, *Boernerella* DENIS has been examined by DENIS, STACH, and CASSAGNAU and DELAMARE-DEBOUTTEVILLE and has been fairly well described. It is an anurophorine genus, somewhat achorutiform in appearance, with a very coarsely granulate integument, a sclerotized and tuberculate plate dorsally on the otherwise membranous prothorax, a well developed sense organ on the third antennal segment, a normal tenaculum, a greatly reduced furcula with the dentes represented only by a pair of papillae, and dental ridges proportionately greatly enlarged. The apices of these ridges are double-pronged and free at the apex from the furcula. The mucrones are absent.

It is unfortunate that LATZEL did not include illustrations of the various morphological features needed for accurate identification of *Coloburella reticulata* LATZ. and his descriptions of the genus and species lack something in completeness. He did relate *Coloburella* LATZ. to *Tetracanthella* SCHÖTT and *Anurophorus* NIC. which may give some clue as to its general position. However, his description of the furcula, a critical organ in this instance, is either incorrect or else it places the genus completely apart from *Boernerella* DENIS with which it was later associated.

*Boernerella* DENIS appears to be unique among *Collembola* in that the mucrones are absent and the dental ridges, which engage with the tenaculum when the furcula is retracted, have become greatly enlarged and appear to functionally replace the lost mucrones as well as to engage the tenaculum. Further, the integument of *Coloburella* LATZ. is described by LATZEL as reticulate, a condition not found in any *Boernerella* DENIS. As STACH has pointed out, the absence of a third



antennal segment organ could well have been the result of its being missed by LATZEL. This has happened before. However, because LATZEL specifically mentions the absence of this sensory structure, perhaps it does not occur in *C. reticulata* LATZ.

There seems to be sufficient doubt as to the identity of *Coloburella* LATZ. to make it undesirable to bring the two genera together and, until further specimens of *Coloburella* LATZ. are found and critically examined, *Boernerella* DENIS logically should remain as a generic entity. Other than that *Coloburella* LATZ. probably belongs in the *Anurophorinae* (LATZEL says „Gehört in den Verwandtschaftskreis von *Tetracanthella* SCHÖTT und *Anurophorus* NIC.“) we cannot now place it with any certainty. It is probable that the best order will be attained by treating these genera as follows:

Genus *Coloburella* LATZEL, 1917

Genotype by monotypy: *Coloburella reticulata* LATZEL.

Type locality: Klagenfurt, Austria.

This species was collected in a forest, from rotting wood, where it was associating with *Achorutes roseus* (GERV.). The type species needs to be collected and critically examined again. According to STACH (1947) the type material was deposited in the Vienna Museum of Natural History. Dr. BOERNER borrowed the series, and unfortunately the preserving liquid evaporated.

Genus *Boernerella* DENIS, 1924.

Genotype by monotypy: *Boernerella zangherii* DENIS.

*Boernerella zangherii* DENIS 1924

Type locality: Pineta di Ravenna and Bois de Ladino, Italy.

*B. zangherii* DENIS was collected from mosses. The description of the genus and species is quite detailed, and there

are good illustrations. It is possible that the description of LATZEL had not as yet come to DENIS' attention for he makes no mention of *Coloburella* LATZ. in discussing the affinities of *Boernerella* DENIS. Rather, he relates it to *Anurophorus* NIC., *Pseudanurophorus* STACH, *Tetracanthella* SCHÖTT, *Cryptopygus* WILLEM, and *Proctostephanus* BOERNER. This species has been seen and studied by STACH (1947) from the Austrian Alps, and by CASSAGNAU and DELAMARE-DEBOUTTEVILLE (1951) from material the source of which is not stated.

***Boernerella vandeli*** (CASSAGNAU and DELAMARE-DEBOUTTEVILLE, 1951)

Type locality: Near Toulouse, France.

This species was collected from mosses near the bases of oaks in company with *Sphaeridia pumilis* (KRAUS.). The authors described the species in the genus *Coloburella* LATZ., believing that the two genera in question should be united until the identity of *Coloburella* LATZ. could be established as a different generic unit. We take the opposite view, that the two should be kept separate until such a time as *Coloburella* LATZ. can be studied and proven to be identical with *Boernerella* DENIS.

***Boernerella octogenaria*** n. sp.

Length, approximately 1 mm. Grayish-blue dorsally, becoming mottled laterally and lighter ventrally [Pl. XXXIV; fig. 1]. Head grayish blue with a lighter triangular area ventrally. Antennae pigmented, lighter at the joints. Pigment dense and irregular on the precoxae and coxae. Legs pigmented, but with an irregular lighter area dorsally at about the middle of the trochanters, femora, and tibiotarsi; the tibiotarsi are more deeply pigmented than the femora and trochanters. A lighter triangular field occurs mid-dorsally on the anterior margin of the mesonotum. Dorsolaterally on either side of each segment from Th. II to Abd. IV is a subcircular lighter ring. These lighter subcircular markings vary in contrast among individuals with different densities of body pigment,



being less obvious in those that are heavily pigmented, but most persistent on the thoracic nota. In specimens showing the greatest contrast in color pattern there is a mid-dorsal dark stripe running from Th. II to Adb. IV, bounded on either side by a lighter longitudinal stripe. In specimens where the color pattern is inconspicuous these mid-dorsal stripes are not so persistent as are the dorsolateral light rings. Ventrally there is a darker area lying just anterolateral to the base of the furcula on either side.

Body cylindrical, tapering slightly toward the posterior; the anus directed posteroventrally as in other *Anurophorinae*. Integument very coarsely granular, under higher magnification these granules appear to be subgranular, possibly because of underlying pigment bodies. Vestiture of short, simple, somewhat posteriorly directed setae; prothorax bare but bears a granular, pigmented transverse dorsal plaque. Abd. III slightly shorter than IV. All abdominal segments separated. Anal horns absent.

Eyes 8 on either side [Pl. XXXIV, fig. 2], G and H smaller than the rest; on a dark, elongated eyespot. Postantennal organ elongate-elliptical, its length from 2,5 to 3 times the diameter of one of the larger anterior eyes, situated in a slight depression, slightly bent near the center where there is sometimes evidence of a slight constriction. Antennae subequal to the length of the head diagonal when viewed laterally, Ant. I—III subequal in length, IV usually at least twice the length of III. Sense organ of III [Pl. XXXIV, fig. 3] with two erect and completely exposed clubs; no specialized setae observed. No specializations apparent on IV [Pl. XXXIV, fig. 4].

Mandibles and maxillae of the usual shape; mandibles each with three to five apical internal teeth and a large molar surface.

Tenent hairs difficult to make out. There is one in the usual median location, extending well beyond the base of the claw. On tibiotarsi II and III there are a variable number of tenent hair-like bristles, with the apices slightly recurved, situated laterally and also above the conspicuous median, knobbed hair, apparently as in *B. zangherii* DENIS. Unguis [Pl. XXXIV, fig. 5] slightly curving apically, without lateral or

internal teeth. Unguiculus less than half the length of the unguis, untoothed, with the base bearing broad lamellae and the apex acuminate.

Furcula greatly reduced [Pl. XXXIV, fig. 6 and 7]. Manubrium not obviously separated from the sternal area of Abd. IV, but to judge by the limits illustrated by CASSAGNAU and DELAMARE-DEBOUTTEVILLE, the posterior face of the manubrium (considering the manubrium and dental remnants together) bears six symmetrically placed setae, with two more proximo-mesally and just behind the base. Other adjacent bristles as in fig. 6 of a female from the Belle Smith Springs series. Apical manubrial margin with two small papillae which are all that remain of the dentes. Near the mesal bases of these dental papillae are, on either side, a pair of strongly developed, outwardly curving manubrial hooks. The apices of these hooks extend beyond the margins of the dental papillae, when viewed laterally, and are connected by a lamella as in fig. 7. Mucrones entirely absent. Rami of tenaculum [Pl. XXXIV, fig. 7] each bearing three teeth; the corpus with several anterior setae.

Type localities: Belle Smith Springs, south of Harrisburg, Illinois, from leaf mould, April 29, 1949, SANDERSON and STANNARD; Eddyville, Illinois, from leaf mould, April 28, 1948, BURKS and STANNARD. Cotype series deposited in the collections of the Illinois State Natural History Survey.

This is the first record of the genus *Boernerella* DENIS outside of Europe, and we take great pleasure in dedicating this species to Dr. Jan STACH, whose 80th birthday this volume honours.

The three known species of *Boernerella* DENIS are closely related to each other. With the state of our knowledge concerning the individual variation in species in *Collembola* one cannot be completely certain that he is dealing with three species, or with variations on a single theme. As there are differences, though small, between the three forms it seems best to consider all three as separate species.

They can be separated by the following provisional key:



1. Unguis with inner tooth, rami of tenaculum bidentate  
 . . . . . *B. zangherii* DENIS
- Unguis without inner tooth, rami of tenaculum tridentate.  
 . . . . . 2
2. Dorsal surface of manubrium with 12—13 setae . . . .  
 . . . . . *B. vandeli* (CASS. & DEL.-DEB.).
- Dorsal surface of manubrium with six setae . . . . .  
 . . . . . *B. octogenaria* n. sp.

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#### STRESZCZENIE

Autorzy omawiają wzajemne stosunki rodzajów *Coloburella* LATZEL i *Boernerella* DENIS oraz opisują nowy gatunek *B. octogenaria* n. sp. ze stanu Illinois w Ameryce Północnej. Dają również klucz do oznaczania gatunków rodzaju *Boernerella* DENIS.

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## РЕЗЮМЕ

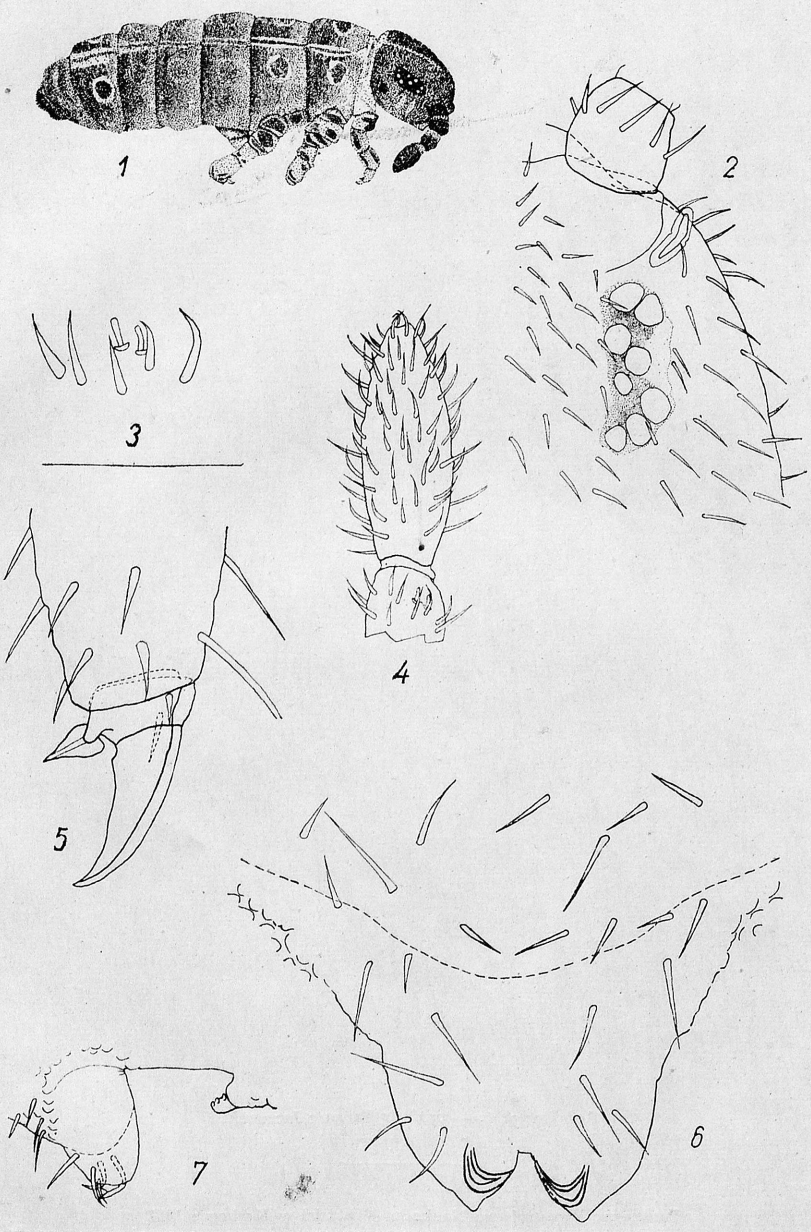
Авторы рассматривают взаимные отношения родов *Coloburella* LATZEL и *Boernerella* DENIS и описывают новый вид *B. octogenaria* n. sp. из штата Иллинойс в Северной Америке. Ими дается тоже определительная таблица видов рода *Boernerella* DENIS.

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## Plate XXXIV

- Fig. 1. *Boernerella octogenaria* n. sp. Dorsolateral view of whole animal,  $\times 60$ .  
Fig. 2. Right dorsal aspect of head, showing eyes and postantennal organ,  $\times 468$ .  
Fig. 3. Sense organ of Ant. III, right antenna,  $\times 980$ .  
Fig. 4. Apex of right antenna,  $\times 436$ .  
Fig. 5. Anterior aspect of left front foot,  $\times 1071$ .  
Fig. 6. Posterior aspect of furcula, the dotted line indicates the ventral fold of the integument beneath the furcula,  $\times 760$ .  
Fig. 7. Right aspect of furcula and tenaculum,  $\times 427,5$ .





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