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DESCRIPTION OF A NEW GENUS AND FIVE NEW SPECIES OF EARTHWORMS (OLIGOCHAETA, LUMBRICIDAE)

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IZVLEČEK – OPISI NOVEGA RODU IN PETIH NOVIH VRST DEŽEVNIKOV (OLIGOCHAETA, LUMBRICIDAE) – Opisan je novi rod *Meroandriella* g. n. in pet novih vrst deževnikov: *Meroandriella dinarica* g. n., sp. n., *Alpodinaridella* (*Alpodinaridella*) *lozniciansa* sp. n., *Aporrectodea papukiana* sp. n., *Aporrectodea pannoniella* sp. n. in *Aporrectodea bohiniiana* sp. n.

ABSTRACT – Described is a new genus *Meroandriella* g. n. and five new species of earthworms, namely: *Meroandriella dinarica* g. n., sp. n., *Alpodinaridella* (*Alpodinaridella*) *lozniciansa* sp. n., *Aporrectodea papukiana* sp. n., *Aporrectodea pannoniella* sp. n. and *Aporrectodea bohiniiana* sp. n.

Introduction

Already in some previous works (MRŠIĆ 1987 a, b, MRŠIĆ and ŠAPKAREV 1987) attention was called to the necessity of a radical revision of the genus *Allolobophora* EISEN 1874 (sensu POP 1941). In the text mention is made first of the genus denominated *Allolobophora* s. lato. The problems concerned relate to the elimination of species from *Allolobophora* s. lato to other genera i. e. species that clearly do not belong to the same group.

As of late few authors only have tried to solve the taxonomic problems within the family Lumbricidae and thus also the genus *Allolobophora* s. lato. From this genus species were classified into different genera, however, the diagnoses are based on the species previously grouped into *Allolobophora* s. lato, namely: *Helodrilus* HOFFMEISTER 1845 (emend. ZICSI 1985), *Proctodrilus* (ZICSI 1985), *Cernosvitovia* (OMODEO 1956 (emend. ZICSI 1981, emend. MRŠIĆ and ŠAPKAREV 1987) with the subgenera *Cernosvitovia* OMODEO 1956 (emend. MRŠIĆ and ŠAPKAREV 1987) and *Zicsiona* MRŠIĆ and ŠAPKAREV 1987, *Bimastos* MOORE 1983 (emend. ZICSI 1981), *Perelia* nom. nov. pro EASTON 1983 (= *Svetlovia* PEREL 1976 nom. preoc.), *Aporrectodea* OERLEY 1885 (syn. *Nicodrilus*) (BOUCHE 1972, emend. PEREL 1976), *Orodrilus* BOUCHE 1972, *Proselodrilus* BOUCHE 1972, *Scherotheca* BOUCHE 1972, with the subgenera *Scheroteka* BOUCHE 1972 and *Opothedrilus* BOUCHE 1972, *Alpodinaridella* MRŠIĆ 1987 with the subgenera *Alpodinaridella* MRŠIĆ 1987 and *Dinaridella* MRŠIĆ 1987, and also the subgenus *Creinella* MRŠIĆ 1987. With respect to the other genera into which species were classified from the genus *Allolobophora* s. lato, I can say that the relevant diagnoses are in consequence, intermingling due to different points of view and attitudes of the authors to the criteria of significance attributed to single taxonomic characters. On the other hand, certain taxonomic characters have only recently been introduced into this field, to say, the structure and the shape of nephridial bladders that may serve in revising this genus.

The purpose of the present text is neither to polemize which of the authors adopted the most reasonable approach to the classification of species from *Allolobophora* s. lato into other genera, nor to analyse the criteria applied in putting forward the diagnoses of the genera. To this problem a separate chapter will be dedicated wherein a radical

revision of the genus *Allolobophora* will be performed through the species living in the territory of the Balcan Peninsula.

In this paper I restricted myself to the description of a new genus *Meroandriella* and the descriptions of five new species.

Meroandriella g. n.

The nephridial bladder is hooked, its glandular (bent) part being oriented toward the back of the body. It has two pairs of seminal vesicles in the 9th and the 11th segment. The other two pairs of seminal vesicles are perfectly reduced. It has two pairs of spermathecae in the 10th and the 11th segment. The calciferous glands with diverticula are in the 10th segment. The longitudinal musculature is arranged in fascicles. Other characteristics of the genus are included in the description of the species.

Type Species: *Meroandriella dinarica* sp. n.

Notes: BOUCHE (1972) described a new genus *Orodrilus* on the basis of such species as live in France and in which the seminal vesicles have become reduced. In the French species, however, the seminal vesicles appear in the 10th and the 12th segment. The processes of the reduction of seminal vesicles occur also in certain species of the genera *Octodrilus* OMODEO 1956 and *Octodriloides* ZICSI 1986. In these genera, too, the seminal vesicles have become reduced or else have completely disappeared from the 11th or the 9th and the 11th segment.

Meroandriella dinarica sp. n. (Fig. 1)

Stojna, Kočevje (Slovenia), May 21, 1985, 3 ex., No. 3647, leg. Mršič

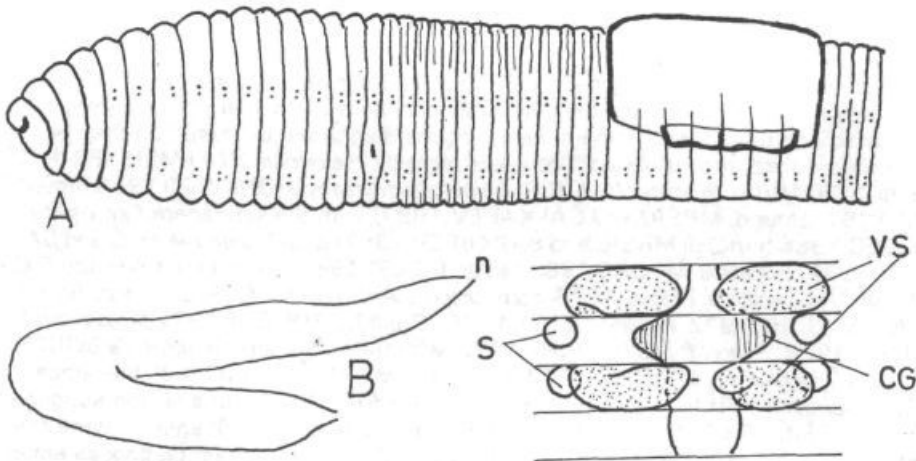


Fig. 1 Body laterally (A), nephridial bladder (B), and a schematized display of the species *Meroandriella dinarica*.

n – nephridiopore, VS – seminal vesicles, CG – calciferous glands, S – spermathecae.

Sl. 1. Telo z bočne strani (A), nefridialni kanal (B) in shematizirani prikaz pri vrsti *Meroandriella dinarica*

n-nefridioporus, VS-semenski kanali, CG-apnene žleze, S-žepi semenskih vrečk.

Diagnosis: The clitellum extends from the 29th to the 35th segment, while the tuberculae pubertatis from the 31st to the 1/2 of the 34th segment. The prostomium is epilobous 1/2 and the first dorsal pore is in the intersegmental furrow 4/5. The other

characteristics coincide with the description of the genus. With regard to its external morphology it closely resembles the species *Aporrectodea jassyensis*.

Description of the Species: The body is pigmentless, from 49 to 52 mm long, consisting of 139 to 145 segments. The setae are arranged in closely set pairs. The prostomium is epilobous 1/2. The first dorsal pore is in the intersegmental furrow 4/5. The glandular field covers the 15th segment. A strong glandular atrium surrounds the male aperture. The setae on the 9th segment are surrounded by a glandular papilla. The clitellum extends from the 29th to the 35th segment and the tuberculae pubertatis from the 31st to the 1/2 of the 34th segment.

They are provided with two pairs of seminal vesicles in the 9th and the 11th segment, and two pairs of spermathecae in the 10th and the 11th segment. The testes are in the 10th and the 11th segment and the ovaries in the 13th segment. The calciferous glands provided with lateral diverticula are in the 10th segment. The gizzard occupies the 15th and the 16th segment, and the crop the 17th, the 18th and the 19th segment. The septa are markedly thickened from 6/7 to 11/12, and thickened from 12/13 to 14/15. The nephridial bladder is hooked and the glandular (i. e. bent) part oriented towards the back of the body.

Material: holotypus: 1 ex.; Coll. Mršić, No. 3647.

paratypus: 2 ex., Coll. Mršić, No. 3647b

Distribution: At present the species is known only in connection with the type locality.

Derivatio nominis: The species was named after the type locality i. e. the area of the Dinaric karst in Slovenia.

Alpodinaridella (Alpodinaridella) lozniana sp. n. (Fig. 2)

Crni vrh, Planina Gučevo (Gučevo Highland) above Loznica in Serbia, 760 m ex., leg. Mršić, No. 3887, 3888

Crni vrh, Planina Gučevo (Gučevo Highland) above Loznica in Serbia, 500 m, 7 ex., leg. Mršić, No. 3889

Diagnosis: The new species most closely resembles the species *Alpodinaridella (Alpodinaridella) gestroi*. The two species differ from each other above all in the position of the clitellum and the tuberculae pubertatis. In *A. (A.) lozniana* the clitellum extends from the 33rd, the 1/2 of the 34th segment, whereas the tuberculae pubertatis from the 28th, the 29th to the 31st, the 1/2 of the 32nd segment. In *A. (A.) gestroi* the clitellum extends from the 29th, the 1/2 of the 29th, the 30th to the 39th, the 40th segment, while the tuberculae pubertatis appear on the 32nd, the 1/2 of the 33rd, the 34th to the 37th, the 38th, the 1/2 of the 38th segment.

Description of the Species: The body is pigmentless, from 38 to 52 mm long, consisting of 109 to 138 segments. The prostomium is epilobous 1/3. The first dorsal pore lies in the intersegmental furrow 4/5. The male aperture is on the 15th segment. The male aperture is surrounded by a glandular area extending from the 2/3 of the 14th to the 1/2 of the 16th segment. The glandular papillae are situated on the 10th and more rarely around setae ab on the 22nd segment.

The clitellum extends from the 25th, the 26th to the 33rd, the 1/2 of the 34th segment, while the tuberculae pubertatis appear on the 28th, the 29th to the 31st, the 32nd, the 1/2 of the 32nd segment.

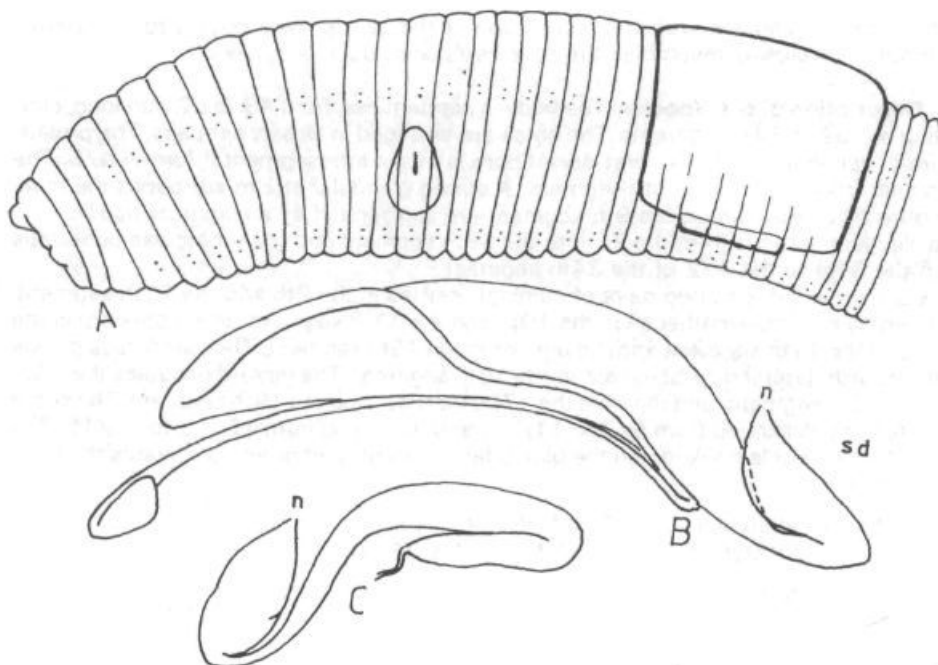


Fig. 2 Body laterally (A), nephridial bladder after the 15th segment (B), and nephridial bladder on the 10th segment in the species *Alpodinaridella (Alpodinaridella) lozniciansa*.

n – nephridiopore, sd – sac-like distension.

Sl. 2. Telo z bočne strani (A), nefridijalni kanal po 15. segmentu (B) in nefridijalni kanal na 10. segmentu pri vrsti *Alpodinaridella (Alpodinaridella) lozniciansa*
n – nefridioporus, sd-vrečasta razširitev

The nephridial bladder takes the shape of a fishing-hook; it has a large sac-like distension in front of the entrance into the nephridiopore. The bent part of the nephridial bladder is oriented towards the back of the body. It has two pairs of seminal vesicles in the 11th and the 12th segment, and two pairs of spermathecae in the 10th and the 11th segment. The calciferous glands with lateral diverticula are situated on the 10th segment. The intersegmental septa are thickened from 6/7 to 11/12. The gizzard occupies the 15th and the 16th segment, while the crop the 17th and the 18th segment.

Material: holotypus: 1 ex., coll. Mršić, No. 3887a

paratypus: 14 ex., coll. Mršić, No. 3888, 38889

Distribution: The species has so far been found on the slopes of Gučevo Highland, Serbia, only.

Derivatio nominis: The species was named after Loznica, a locality at the foot of Gučevo Highland.

Notes: The species is classified into the genus *Alpodinaridella* MRŠIĆ 1987 due to a specific structure of the nephridial bladder which at the entrance into the nephridiopore is characterized by a sac-like distension. Its classification into the subgenus *Alpodinaridella* results from the type of the structure of the sexual apparatus. Classified into this genus and subgenus is also the species *A. (A.) gestroi* (COGNETTI 1905).

Aporrectodea papukiana sp. n. (Fig. 3)

Rogoljica, Psunj (Croatia), April 13, 1987, 3 ex., leg. Mršić, No. 3821

Jankovac, Papuk (Croatia), April 14, 1987, 3 ex., leg. Mršić, No. 3818

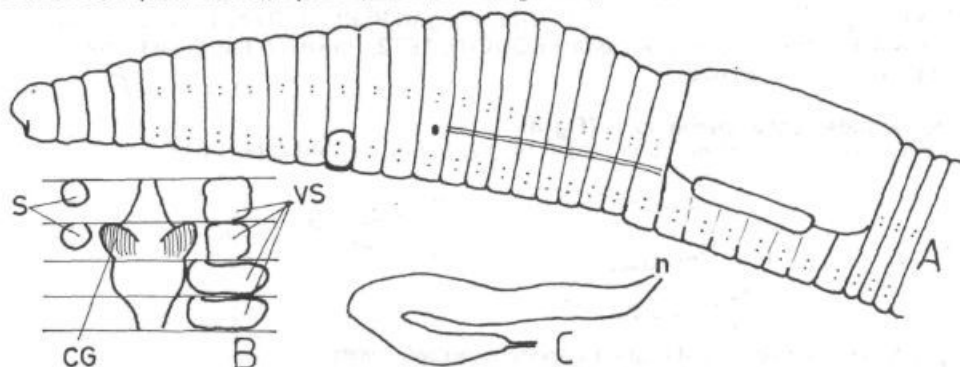


Fig. 3 Body laterally (A), a schematized display of the sexual apparatus (B), and nephridial bladder (C) in the species *Aporrectodea papukiana*.

n – nephridiopore, S – spermathecae, vs – seminal vesicles, cg – calciferous glands.

Sl. 3. Telo z bočne strani (A), shematizirani prikaz spolnoga aparata (B) in nefridijalni kanal (C) pri vrsti *Aporrectodea papukiana*.

n-nefridioporus, S-žepi semenskih vrečk, vs-semenske vrečke, cg-apnene žleze

Diagnosis: In the external morphology and the structure of the sexual apparatus this species most closely resembles the species *Aporrectodea georgii*. They differ from each other in the position of the clitellum, the tuberculae pubertatis and the spermathecae. The clitellum of the new species extends from the 24th, the 25th to the 29th, the 30th segment, the tuberculae pubertatis are present from the 25th to the 28th (the 29th) segment, and the spermathecae in the 9th and the 10th segment.

The clitellum of the species *A. georgii* extends from the 28th, the 29th to the 35th segment, while the tuberculae pubertatis from the 31st to the 33rd segment, and the spermathecae appear in the 9th and the 10th segment.

Description of the Species: The body is pigmentless, from 29 to 49 mm long, consisting of 90 to 109 segments. The prostomium is epilobous 1/2. The first dorsal pore is invisible. The male aperture, devoid of a glandular atrium, is in the 15th segment. The glandular papillae occupy the space around setae ab on the 12th segment.

The clitellum extends from the (24th) 25th to the (30th) 31st segment, while the tubercula pubertatis appear on the (25th) 26th to the (28th) 29th segment.

It has four pairs of seminal vesicles from the 9th to the 12th segment, and two pairs of spermathecae in the 9th and the 10th segment. The nephridial bladder is hooked, its glandular (bent) part being oriented towards the back of the body. The calciferous glands are in the 10th and the 11th segment, with diverticula in the 10th segment. The gizzard occupies the 15th and the 16th segment, and the crop the 17th and the 18th segment. The intersegmental septa are thickened from 6/7 to 9/10. The longitudinal musculature is arranged in fascicles.

Material: holotypus: 1 ex., coll. Mršić, No. 3818 a

paratypus: 2 ex., coll. Mršić, No. 3818b

3 ex., coll. Mršić, No. 3821

Distribution: The species is spread on the highland of Papuk and Psunj in the Pannonian lowlands, Croatia.

Derivatio nominis: The species was named after the highland of Papuk.

Notes: With respect to the structure of the nephridial bladders and its morphological as well as anatomical characteristics it doubtlessly makes part of the genus *Aporrectodea* (OERLY 1885 (emend. PEREL 1976). According to PEREL (1976) the species should be classified into the genus *Nicodrilus* BOUCHE 1972, however, this is just a synonym of the genus *Aporrectodea*.

***Aporrectodea pannoniella* sp. n. (Fig. 4)**

Jankovac on Papuk highland, Croatia, April 14, 1987, 2 ex., leg. Mršić, No. 3817

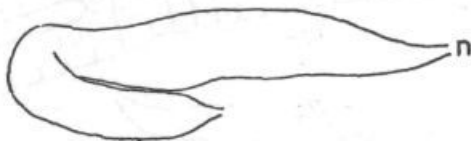


Fig. 4 Nephridial bladder in the species *Aporrectodea pannoniella*.
Sl. 4. Nefridialni kanal pri vrsti *Aporrectodea pannoniella*.

Diagnosis: In its morphological characteristics the species does not resemble any other species of the genus *Aporrectodea*. This is particularly true of the position of the clitellum and the tuberculae pubertatis which in fact are spread on the same segments. In the other species of this genus the clitellum is much longer than the tuberculae pubertatis.

Description of the Species: The body is pigmentless, from 67 to 74 mm long, consisting of 156 to 158 segments. The prostomium is epilobous 1/3 and the first dorsal pore is in the intersegmental furrow 9/10. The male aperture, devoid of a glandular atrium, is on the 15th segment. The glandular papillae are situated around setae ab on the 16th, the 24th, the 26th or the 10th segment.

The clitellum extends from the 25th to the 34th segment, while the tuberculae pubertatis from the 25th to the 33rd segment.

They have four pairs of seminal vesicles from the 9th to the 12th segment and two pairs of spermathecae in the 10th the 11th segment. The seminal vesicles are small. The calciferous glands are in the 10th and the 11th segment without diverticula. The gizzard occupies the 15th and the 16th segment, and the crop the 17th and the 18th segment. The nephridial bladder is hooked, its glandular (bent) part being oriented towards the back of the body. The longitudinal musculature is arranged in fascicles.

Material: holotypus: 1 ex., coll. Mršić, No. 3817a

paratypus: 1 ex., coll. Mršić, No. 3817b

Distribution: The species is known only in connection with the type locality.

Derivatio nominis: As the locality is situated in the Pannonian lowlands, the species was named after the latter.

Notes: Taking into account the structure of the nephridial bladder I classified the species into the genus *Aporrectodea*.

***Aporrectodea bohiniana* sp. n. (Fig. 5)**

Banks of Bohinjsko jezero (Lake of Bohinj), Slovenia, ?, 2 ex., leg.?, No. 3805

Diagnosis: With respect to its external morphology and anatomy the species significantly differs from the other species of the genus *Aporrectodea* so that hardly any similarity to the species of this genus can be observed.

Description of the Species: The body is pigmentless, from 42 to 44 mm long, consisting of 132 to 134 segments. The prostomium is epilobous 1/2. The first dorsal pore is in the intersegmental furrow 4/5. The male aperture with a small glandular field lies on the 15th segment. The glandular papillae surround setae ab and cd on the 9th and the 12th segment.

The clitellum extends from the 32nd to the 40th segment, while the tuberculae pubertatis appear from the 34th to the 39th segment.

It has three pairs of seminal vesicles in the 9th, the 11th and the 12th segment. Two pairs of spermathecae are in the 10th and the 11th segment.

The nephridial bladder is hooked, its glandular (bent) part being oriented towards the back of the body. The calciferous glands, having diverticula in the 10th segment, are situated in the 10th and the 12th segment. The gizzard occupies the 15th and the 16th segment, and the crop the 17th and the 18th segment. The intersegmental septa are thickened from 6/7 to 9/10. The longitudinal musculature is arranged in fascicles.

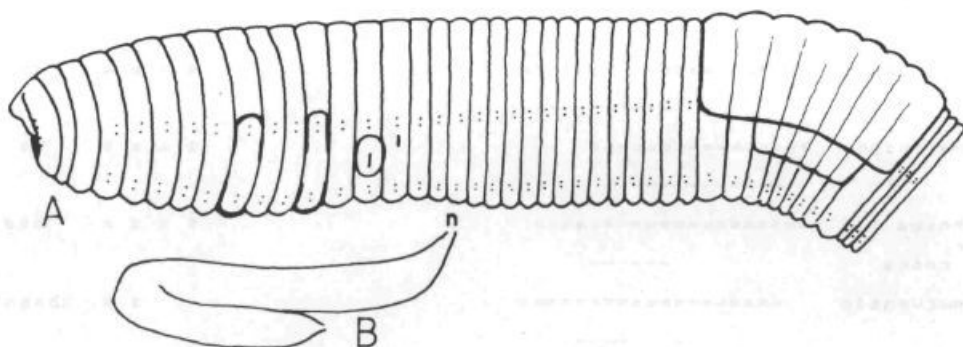


Fig. 5 Body laterally (A) and nephridial bladder (B) in the species *Aporrectodea bohiniiana*.
Sl. 5. Telo z bočne strani (A) in nefridialni Kanal (B) pri vrsti *Aporrectodea bohiniiana*

Material: holotypus: 1 ex., coll. Mršić, No. 3805a
paratypus: 1 ex., coll. Mršić, No. 3805b

Distribution: The species is known only in connection with the typical locality.

Derivatio nominis: It was named after Bohinj.

Notes: The species is classified into the genus *Aporrectodea* due to the structure of the nephridial bladder.

Survey of the Yugoslav Taxa from the Genera *Alpodinaridella* and *Aporrectodea*

Genus *Aporrectodea* OERLEY 1885 (emend. PEREL 1976) (Table 1)
syn. *Nicodrilus* BOUCHE 1972, PEREL 1976, 1979

The setae are arranged in closely set pairs. The nephridial bladder is »U«-shaped or hooked, its bent (glandular) part being oriented towards the back of the body. They have two or four pairs of seminal vesicles in the 11th and the 12th or the 9th to the 12th segment, and two or three pairs of spermathecae. The first pair of spermathecae appears in the 9th or the 10th segment. The longitudinal musculature is of a fascicular or pennate type. The prostomium is epilobous or tanilobous. The male aperture is on the 15th segment. The pigmentation is brown, very rarely purple or absent altogether.

Type Species: *Enterion caliginosum* SAVIGNY 1826 = *Aporrectodea caliginosa*

Other Species: *Alolobophora smaragdina* ROSA 1892 = *Aporrectodea smaragdina*

Aporrectodea papukiana sp. n.

Enterion roseum SAVIGNY 1826 = *Aporrectodea rosea rosea*

Eisenia rosea v. *balcanica* ČERNOSVITOV 1942 = *Aporrectodea rosea balcanica*

Eisenia rosea f. *bimastoides* COGNETTI 1901 = *Aporrectodea rosea bimastoides*

Aporrectodea pannoniella sp. n.

Allolobophora jassyensis MICHAELSEN 1891 = *Aporrectodea jassyensis*

Allolobophora longa UDE 1885 = *Aporrectodea longa*

Allolobophora georgii MICHAELSEN 1890 = *Aporrectodea georgii*

Aporrectodea bohiniana sp. n.

Criodrilus dubius OERLEY 1881 = *Aporrectodea dubiosa*

Eiseniella balcanica f. *sine-poris* OMODEO 1952 = *Aporrectodea* cf. *sine-poris*

Notes: Some of the above-mentioned taxa will either have to be eliminated from this genus or else be classified into single subgenera. As evident also from the table (Table 1), not all of the taxa are related to one another. This applies particularly to the species *A. pannoniella*, *A. bohiniana*, *A. icterica*, and *A. dubiosa*.

Genus *Alpodinaridella* MRŠIĆ 1987

The setae are arranged in closely set pairs. The body is pigmentless. The nephridial bladder has the shape of a hook or a fishing-hook. In front of the entrance into the nephridiopore it has a sac-like extension which by its contracted part is connected to the rest of the nephridial bladder. The longitudinal musculature is fascicular. They have two pairs of seminal vesicles in the 11th and the 12th segment, and two or more pairs of spermathecae.

Type Species: *Helodrilus (Eophila) gestri* COGNETTI 1905

Subgenus *Alpodinaridella* MRŠIĆ 1987

The spermathecae are in the 10th and the 11th segment. The tuberculae pubertatis lie on a smaller number of segments than the clitellum.

Type Species: *Helodrilus (Eophila) gestri* COGNETTI 1905 = *Alpodinaridella (Alpodinaridella) gestroi*

Other Species: *Alpodinaridella (Alpodinaridella) lozniciana* sp. n.

Subgenus *Dinaridella* MRŠIĆ 1987

The spermathecae occupy the 7th to the 10th segment. The clitellum and the tuberculae pubertatis are of the same length.

Type Species: *Allolobophora biokovica* MRŠIĆ 1985 = *Alpodinaridella (Dinaridella) biokovica*

POVZETEK

Novi rod in novo vrsto *Meroandriella dinarica* sem našel na pobočju Stojne na Kočevskem. Pri tej vrsti so popolnoma reducirane semenske vrečke v 10. in 12. segmentu. Podobnega primera pri ostalih vrstah deževnikov ni. Do meroandrije prihaja pri nekaterih rodovih, kot so *Octodrilus*, *Octodriloides* ali *Orodrilus*, vendar se pri teh reducirajo semenske vrečke v 11. ali 9. in 11. segmentu. Ostale značilnosti roda in vrste so, da imajo nefridialni kanali kavljasto obliko z zavitim delom, obrnjenim k zadnjemu delu telesa; sedlo je na 29. do 25. segmentu in pubertetne izboklinice na 31. do 34. polovici segmenta. Imajo dva para žepov semenskih vrečk v 10. in 11. segmentu.

Novo vrsto *Alpodinaridella (Alpodinaridella) lozniciansa* smo našli na pobočju Gučeva v Srbiji. Nefridialni Kanal je v obliki trnka in ima pred vhomom v nefridioporus veliko vrečasto razširitev. Sedlo je na 25., 26. do 33. segmentu ter polovici 34. segmenta in pubertetne izboklinice na 28. do 32. segmentu. Imajo dva para semenskih vrečk v 11. in 12. in dva para žepov semenskih vrečk v 10. in 11. segmentu.

Novo vrsto *Aporrectodea papukiana* smo našli na pobočju Papuka in Psunja na Hrvaškem. Nova vrsta ima nefridialni Kanal kavljaste oblike z zavitim delom, obrnjenim k zadnjemu delu telesa, tako kot tudi vse ostale opisane nove vrste. Sedlo je na (24.), 2. do (30), 31. in pubertetne izboklinice na (25.), 26. do (28), 29. segmentu. Imajo 4 pare semenskih vrečk in dva para žepov semenskih vrečk v 9. in 10. segmentu.

Na pobočju Papuka smo našli tudi novo vrsto *Aporrectodea pannoniella*, pri kateri je sedlo na 25. do 34. in pubertetne izboklinice na 25. do 33. segmentu in imajo 4 pare semenskih vrečk in dva para žepov semenskih vrečk v 10. in 11. segmentu.

Vrsto *Aporrectodea bohiniensis* smo našli na obali Bohinjskega jezera. Sedlo je na 3. do 40. in pubertetne izboklinice na 34. do 39. segmentu. Ima tri pare semenskih vrečk v 9., 11. in 12. in dva para žepov semenskih vrečk v 10. in 11. segmentu.

Podan je tudi celovit pregled vrst iz rodov *Alpodinaridella* in *Aporrectodea*, ki živijo na območju Jugoslavije.

Delo je tudi nadaljevanje revizije roda *Allolobophora* EISEN 1874 (emend. POP 1941) za vrste, ki živijo na območju Balkana.

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