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Erpobdellopsis graacki n. gen., n. sp. – a peculiar leech from Spain (Annelida, Hirudinida: Erpobdellidae)

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With 16 figures and 4 tables

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Leeches, similar to small individuals of *Erpobdella testacea* Savigny, 1822 or *E. nigricollis* (Brandes, 1900) in their external morphology were reported from some little streams and springs in Andalusia, Spain. These leeches are separated from all other European Erpobdellids by lacking of the praeatrial loops of the vasa deferentia. The combination of external and internal characteristics (eigth eyes, homonomous annulation, lacking of praeatrial loops) justified the description as new species *Erpobdellopsis graacki* n. sp. in the new genus *Erpobdellopsis* n. gen. The new leech species lives isolated in a small area in the Sierra de Aracena.

1 Introduction

Some Erpobdellidae, collected in 2002 by Wolfgang Graack (Wedemark/Germany,† 2011) and his wife Brigitte, were classified as a representative of the genus *Erpobdella* R. Blanchard, 1894 in the past (Jueg 2008a, 2008b). The individuals are apparently similar to *Erpobdella testacea* Savigny, 1822. Which is a very rare species in the remotest north of the Iberian peninsula (Jueg 2008b). On the basis of some diverged characteristics in the Andalusian leeches, the presumption was obvious, that they could be a new species. Nesemann (1993) expected already on account of little data acquisition, that new species could be find in Spain and Portugal. In 2008 *Alboglossiphonia iberica* Jueg, 2008 could be described as a new species from the same region.

Eight species of the family Erpobdellidae in four genera are known from the Iberian peninsula: *Erpobdella octoculata* (Linnaeus, 1758), *E. vilnensis* (Liskiewicz, 1925), *E. testacea* (Savigny, 1820), *Dina punctata* Johansson, 1927, *Trocheta bykowskii* Gedroyć, 1913 (a younger synonym of *T. cylindrica* Örley, 1886 from the Carpathians with an unclearly taxonomical status of the Iberian populations. German populations were separated and described as *Trocheta taunensis* Grosser, 2015), *T. subviridis* Dutrochet, 1817, *Trocheta* sp. and *Erpobdellopsis graacki* n. gen., n. sp.

Erpobdella octoculata and *E. testacea* are only known from the remotest north of the Iberian peninsula (Blanchard 1893, Johansson 1926, Jueg 2008b). However *E. vilnensis* is reported from North and Central Spain (Casado et al. 1989, García Más et Jiménez 1981 et 1984, García Más et al. 1989 & Jueg 2008b). The new described species in this paper was already published as *Erpobdella* sp. by Jueg (2008b). Furthermore *Dina punctata* is the only species of the genus, which is distributed about the whole Iberian peninsula in a high frequency. This Erpobdellid has a wide ecological amplitude (e.g. Jueg 2008b). The genus *Trocheta* is represented on the Iberian peninsula by three species. *T. bykowskii* and *T. subviridis* are up to now only known from the northern Central Spain (García Más et Jiménez 1981 et 1984). The Iberian populations of both species have an unclearly taxonomical status.

The same is correct for a third species of the genus, known from South Portugal and the province Huelva in Spain (Jueg 2008b). It is very probable, that these leeches are also representatives of a new, undescribed species.

The authors know besides the two works by Jueg (2008a, 2008b) only the publication by Garcia Más et al. (2008) about the leeches oft Andalusia. These specialists collected four leech-species in waterbodies of a naturereserve. *Dina punctata* (named as *D. lineata* in Más et al. 2008) was the single species of Erpobdellidae in the studyarea.

Progressive studies about the taxonomy of European Erpobdellidae resulted in the description of a lot of new species from Central and South East Europe in the last 25 years: *Trocheta riparia* Nesemann, 1993, *T. falkneri* Nesemann & Neubert, 1996, *T. haskonis* Grosser, 2000, *Dina minuoculata* Grosser, Moritz & Pesic, 2007, *D. pseudotrocheta* Grosser & Eiseler, 2008, *D. sketi* Grosser & Pešić, 2014, *T. taunensis* Grosser, 2015, *D. prokletijaca* Grosser & Pesic, 2016. But the Iberian Peninsula was excluded from this development in the taxonomy of leeches. Haas collected leeches in this area nearly 100 years ago. The material was worked by Johansson (1927). This specialist could describe some new taxa by means of Haas' collection (*Dina punctata, Limnatis haasi* Johansson, 1927). But in the next nine decades the taxonomical work about leeches was not characterized by important results. First in 2008, the senior author could describe a new leech species as *Alboglossiphonia iberica* Jueg, 2008.

Now, a small species of Erpobdellid-like leeches was collected on three places in South Spain (Andalusia). In the first view, the leeches remind of *Erpobdella testacea* (Savigny, 1822) in the colour, size and position of genital pores. But careful studies of the external and internal morphology and a morphometrical analysis of the body form show the independent character of this taxon as a new species in a new genus, described in this paper as *Erpobdellopsis graacki* n. gen., n. sp.

2 Material and methods

2.1 Investigation area

E. graacki n. gen., n. sp. was reported only from a small area in the north west of Sevilla (Sierra de Aracena/province Huelva). It is the most western small mountain of the Sierra Morena. This small part of the Sierra Morena has an altitude of 400 to 900 m over NN and consists of slate, gneiss and quartz. The vegetation is characterized by woods of *Quercus suber* or *Quercus ilex*. The climate is influenced by the Atlantic with cool yearly average of temperature for southern Spain from 14 to 15 °C and a high amount of precipitation (1.100 mm annual) in the winter months. This western part of the Sierra Morena is important for the running waters in south Spain. Here is the headwaters of the Rio Odiel. The Río Guadiana and Guadalquivir are getting filled from their tributaries. The Sierra Morena as a whole extend about 400 km from the Portuguese border over the north of Sevilla to East.

Although W. und B. Graack collected at numerous localities in Spain, especially in Andalusia, in 2007, 2008 and 2010 also together with the senior author in the Spanish provinces Huelva, Sevilla and Cadiz as well as in the Portuguese Algarve, no more records could be reported. Therefore it is possible, that the new leech is an endemic species in the here described area.

Leeches in this study were collected by hand or with pincers from the underside of roots and stones in water, as well on the banks. The material was prepared for examination as follows: first anaeasthetized in 10 % ethanol, second straightened and fixed in 80 % ethanol.

2.2 Studying external morphology and morphometric analysis

The external morphology (number and position of eyes, annulation, colouration, papillation and the position of genital pores, size) was examined on several specimens.

The used method of characterization the external morphometry based on Bielecki & Epshtein (1994) and Bielecki (1997). Only specimens were measured, which were prepared as above-mentioned. Body measurements for the new leech species and ten other Erpobdellidae (Tab. 1) were performed using a stereoscopic microscope. The following explanations of the model were published by Cichocka et al. (2015). The model presents the leech body on a plane, as two ellipses (suckers) and six trapeziums situated between them (anterior body part – trachelosome – two trapeziums; posterior body part – urosome – four trapeziums) (Fig. 1). In addition, transverse sections through the trachelosome and urosome are considered as two ellipses (Fig. 1, B, C).

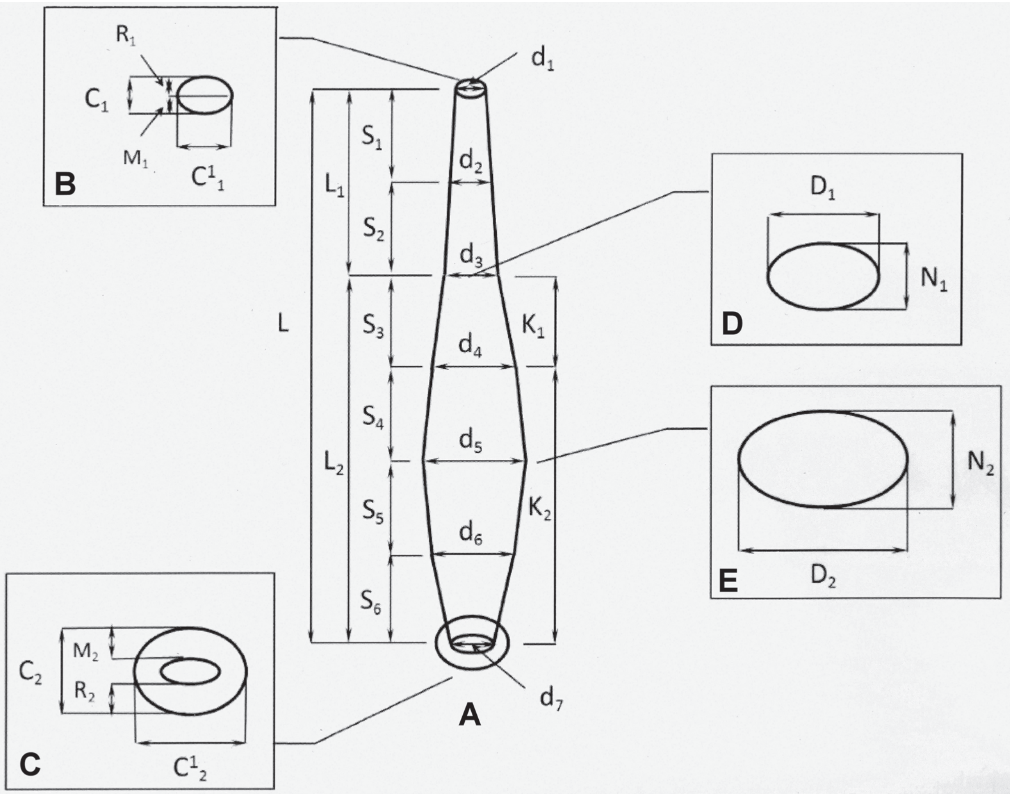


Fig. 1. The geometric model used in this stuy to quantify the body forms of Erpobdellidae (Cichocka et al. 2015). A. Model of the body. B. Dorsal view of the oral sucker. C. Dorsal view of the caudal sucker. D. Transverse section through the trachelosom. E. Transverse section through the urosom. For detailed description of symbols see Bielecki et al. (2012), Cichocka et al. (2015) and "External morphology with morphometric analysis" in this article

The following characterization of the parameters shows Fig. 1.
Parameters describing the form of the anterior sucker: C_1 = vertical diameter; C^1_1 = horizontal diameter; R_1 = lengh of anterior part of sucker; M_1 = lengh of posterior part of sucker.
Parameters describing the form of the trachelosome: d_1 = width at sucker junction; d_2 = width at outline narrowing; d_3 = width at border with urosome [Note: d_3 is at level of male gonopore in erpobdellid and other non-piscicolid leeches]; D_1 = largest width of trachelosome; N_1 = largest height of trachelosome; S_1 = height of first trapezium; S_2 = height of second trapezium; $L_1 = (S_1 + S_2)$ = lenght of trachelosome.
Parameters describing the form of the urosome: width at placea of outline distortion (base of consecutive trapeziums); d_4 = base of the first trapezium; d_5 = base of the secund trapezium; d_6 = base of the third trapezium; d_7 = base of the fourth trapezium; D_2 = largest width of urosome; N_2 = largest height of urosome; $L_2 = (S_3 + S_4 + S_5 + S_6)$ = lenght of urosome (height of consecutive trapezium); S_3 = height of first trapezium; S_4 = height of second trapezium; S_5 = height of third trapezium; S_6 = height of fourth trapezium; K_1 = distance from d_3 to D_2; K_2 = distance from D_2 to d_7.
Parameters describing the form of the posterior sucker: C_2 = vertical diameter; C^1_2 = horizontal diameter; M_2 = lengh of anterior part of sucker; R_2 = lengh of posterior part of sucker.

2.3 The 19 body proportion indices (Tab. 2, 3)

Index describing relative body length: L/D_2 = ratio of total body length to its greatest width.
Index describing the anterior sucker: C^1_1/d_1 = ratio of horizontal diameter of sucker to trachelosome width at sucker junction; C^1_1/D_1 = ratio of horizontal diameter of sucker to greatest width of trachelosome; R_1/M_1 = ratio of dorsal part of sucker to its ventral part; C^1_1/C_1 = ratio of horizontal diameter of its vertical diameter.
Index describing trachelosome: L_1/D_1 = ratio of trachelosome length to its greatest width; D_1/N_1 = ratio of greatest trachelosome width to its greatest height; S_1/S_2 = index descibing position of greatest width of trachelosom.
Index describing urosome: L_2/D_2 = ratio of urosome length to its greatest width; D_2/N_2 = ratio of greatest urosome width to its greatest height; K_1/K_2 = ratio descibing the position of greatest width of urosome.
Index describing the anterior sucker: C^1_2/d_7 = ratio of horizontal diameter of sucker to urosome width at sucker junction; C^1_2/D_2 = ratio of horizontal diameter of sucker to greatest body height; R_2/M_2 = ratio of dorsal part of sucker to its ventral part; C^1_2/C_2 = ratio of horizontal diameter of its vertical diameter.
Index describing relations between urosome and trachelosome: L_2/L_1 = ratio of urosome length to trachelosome length; D_2/D_1 = ratio of greatest width of urosome to greatest width of trachelosome; N_2/N_1 = ratio of greatest height of urosome to greatest height of trachelosome.
Index describing proportions of suckers: C^1_2/C^1_1 = ratio of horizontal diameter of posterior sucker to horizontal diameter of anterior sucker.
Multivariate analysis was conducted by superimposing the results of group averaged hierarchical clustering based on Bray-Curtis similarities of not transformed morphological features using the software programme PRIMER (19 body proportion).

Tab. 1. List of taxa used in the study (Cichocka et al. 2015), without *Erpobdellopsis graacki* n. gen., n. sp. - from this study

Taxon	Number of specimens	Source of material
Erpobdella De Blainville, 1818		
Erpobdella monostriata (Lindenfeld & Pietruszyn-ski, 1890)	28	Poland, Lake Ukiel in Olsztyn
Erpobdella nigricollis (Brandes, 1899)	27	Poland, Lake Ukiel in Olsztyn
Erpobdella octoculata (Linnaeus, 1758)	37	Poland, Lake Ukiel in Olsztyn
Erpobdella testacea Savigny, 1820	35	Poland, Lakes Ukiel and Redykajny in Olsztyn
Erpobdella vilnensis Liskiewicz, 1925	31	Poland, the stone pits in Lower Silesia
Dina R. Blanchard, 1892		
Dina lineata (O. F. Müller, 1774)	27	Poland, Lakes Skanda and Redykajny in Olsztyn
Dina stschegolewi (Lukin & Epshtein, 1960)	32	Poland, Lake Jamno
Dina borisi (Cichocka, Bielecki, Kur, Pikula, Ki-likowska & Biernacka, 2015)	3	Iran, Sahoolan cave, West Azerbaijan
Trocheta Dutrochet, 1817		
Trocheta cylindrica (Örley, 1886)	8	Poland, Stream flowing into the Skawa River near Wadowice
Trocheta pseudodina Nesemann, 1990	7	Germany, Saxony, Folgenbach bei Rußdorf/ Limbach Oberfrohna, near Laubenheim
***Erpobdellopsis* Grosser n. gen.**		
***Erpobdellopsis graacki* Jueg & Grosser n. sp.**	55	Spain, Andalusia, Province Huelva, Sierra de Aracena

Tab 2. Parameters describing the body form of *Erpobdellopsis graacki* n. gen., n. sp. For explanation of parameters see text

	L	d_1	d_2	d_3	d_4	d_5	d_6	d_7	S_1	S_2	S_3	S_4	S_5	S_6	C_1	C^1_1	R_1	M_1	C_2	C^1_2	R_2	M_2	N_1	N_2
Rio Odiel, locus typicus (06.02.2008)																								
Holotypus	21,6	0,8	1,7	2,3	2,8	2,8	2,8	2,0	2,8	2,8	4,2	4,2	4,2	4,2	0,6	0,8	0,3	0,3	2,0	2,0	0,4	0,8	1,7	2,0
Paratypus 1	26,2	1,1	2,1	2,3	2,5	2,7	2,5	2,1	3,5	3,5	4,8	4,8	4,8	4,8	0,6	0,9	0,3	0,3	2,2	2,0	0,4	0,5	1,8	2,1
Paratypus 2	27,5	1,0	2,3	2,5	2,5	2,7	2,8	2,3	3,5	3,5	5,0	5,0	5,0	5,0	0,9	1,0	0,3	0,3	2,1	2,2	0,5	0,7	1,9	2,0
Paratypus 3	23,0	0,9	1,9	2,4	3,1	2,9	3,1	2,3	3,4	3,4	4,3	4,3	4,3	4,3	0,8	0,9	0,3	0,3	2,0	2,2	0,4	0,5	2,2	2,3
Paratypus 4	23,0	1,0	1,8	2,0	2,3	2,7	2,7	2,0	2,9	2,9	4,4	4,4	4,4	4,4	0,8	1,0	0,4	0,3	2,0	2,1	0,5	0,9	1,7	2,2
Paratypus 5	26,1	0,9	1,7	2,3	2,6	2,8	2,8	2,2	4,0	4,0	4,5	4,5	4,5	4,5	0,8	0,8	0,4	0,3	2,1	2,2	0,5	0,9	1,9	2,1
Paratypus 6	22,6	1,2	1,9	2,6	3,0	3,2	2,8	2,1	2,8	2,8	4,5	4,5	4,5	4,5	0,5	0,9	0,3	0,3	2,4	2,3	0,8	0,9	1,7	2,0
Paratypus 7	20,8	0,8	2,0	2,5	3,0	3,2	3,2	2,2	2,5	2,5	3,8	3,8	3,8	3,8	0,6	0,7	0,3	0,3	2,1	2,0	0,6	0,9	2,3	2,3
Paratypus 8	21,9	1,3	2,0	2,4	2,6	2,8	2,5	2,1	3,4	3,4	3,9	3,9	3,9	3,9	0,5	1,3	0,3	0,3	0,2	2,0	0,4	1,0	1,7	2,1
Paratypus 9	20,8	1,0	1,6	1,8	2,2	2,3	2,5	1,8	2,7	2,7	3,9	3,9	3,9	3,9	0,8	0,9	0,4	0,3	1,8	1,6	0,4	0,8	1,5	1,9
Paratypus 10	21,8	0,9	1,7	2,1	2,8	2,9	3,1	2,2	3,1	3,1	3,9	3,9	3,9	3,9	0,9	1,0	0,5	0,3	1,8	2,2	0,4	0,6	1,8	2,2
Paratypus 11	24,2	0,9	1,8	2,3	2,6	2,6	2,8	2,0	3,2	3,2	4,5	4,5	4,5	4,5	0,6	0,8	0,3	0,3	1,8	1,8	0,5	0,7	1,9	2,0
Paratypus 12	22,0	0,8	2,0	2,3	2,8	3,0	3,2	2,2	2,9	2,9	4,1	4,1	4,1	4,1	0,5	0,7	0,3	0,2	1,9	1,9	0,4	0,5	2,0	2,3
Paratypus 13	23,0	1,0	1,8	2,4	2,8	3,0	2,8	2,0	2,5	2,5	4,4	4,4	4,4	4,4	0,9	0,8	0,3	0,3	1,6	2,0	0,3	0,7	1,8	2,4
Paratypus 14	22,5	0,8	1,6	2,2	2,5	2,8	2,8	1,8	3,2	3,2	4,3	4,3	4,3	4,3	0,9	0,8	0,4	0,3	1,9	1,8	0,4	0,9	1,5	2,0
Paratypus 15	22,0	1,1	1,8	2,2	2,8	2,8	2,7	2,2	2,8	2,8	4,0	4,0	4,0	4,0	0,8	1,0	0,3	0,2	2,3	2,2	0,7	1,0	1,9	2,2
Paratypus 16	23,2	0,9	2,3	2,8	3,4	3,6	3,4	2,0	3,4	3,4	4,2	4,2	4,2	4,2	0,7	0,8	0,3	0,2	2,1	2,0	0,4	0,5	2,3	2,3
Paratypus 17	25,2	1,0	2,3	2,6	3,1	2,8	2,7	2,2	3,3	3,3	4,5	4,5	4,5	4,5	0,9	0,9	0,3	0,3	2,2	2,2	0,5	0,9	2,2	2,0
Paratypus 18	24,0	1,0	1,8	2,3	2,4	2,5	2,7	1,9	3,4	3,4	4,5	4,5	4,5	4,5	0,6	1,0	0,2	0,2	2,0	1,9	0,5	0,8	1,6	1,9
Paratypus 19	24,0	0,9	1,6	2,2	2,7	2,8	2,7	2,0	3,1	3,1	4,2	4,2	4,2	4,2	0,5	0,9	0,2	0,2	2,1	1,9	0,6	0,5	1,9	2,0
Paratypus 20	22,4	1,1	2,0	2,3	2,5	2,5	2,6	2,0	2,9	2,9	4,2	4,2	4,2	4,2	0,5	0,8	0,2	0,2	2,0	2,0	0,6	0,6	1,8	1,9
Paratypus 21	21,5	0,9	1,8	2,1	2,5	2,8	2,5	1,8	2,9	2,9	4,1	4,1	4,1	4,1	0,8	0,9	0,2	0,2	1,9	1,9	0,6	1,1	1,9	2,0
Paratypus 22	21,6	0,9	1,6	2,0	2,3	2,4	2,5	1,8	3,0	3,0	3,9	3,9	3,9	3,9	1,1	0,8	0,3	0,4	1,7	1,8	0,5	0,5	1,6	2,1
Paratypus 23	22,4	1,1	1,9	2,3	3,0	3,1	3,1	2,3	2,8	2,8	4,1	4,1	4,1	4,1	0,9	1,0	0,4	0,3	2,3	2,2	0,6	0,6	1,9	2,2

	L	d_1	d_2	d_3	d_4	d_5	d_6	d_7	S_1	S_2	S_3	S_4	S_5	S_6	C_1	C^1_1	R_1	M_1	C_2	C^1_2	R_2	M_2	N_1	N_2
Paratypus 24	21,0	0,8	1,6	2,0	2,5	2,5	2,5	1,9	2,8	2,8	3,8	3,8	3,8	3,8	0,9	0,7	0,3	0,4	2,0	2,1	0,7	0,8	1,8	1,8
Paratypus 25	21,8	1,0	1,9	2,1	2,2	2,5	2,5	1,9	3,0	3,0	4,0	4,0	4,0	4,0	0,7	0,8	0,3	0,3	2,0	2,0	0,6	0,8	1,7	2,1
Cortelasur (06.02.2008)																								
26	27,0	1,1	1,8	2,2	2,4	2,5	2,5	2,0	3,2	3,2	5,4	5,4	5,4	5,4	0,7	1,0	0,3	0,3	2,1	2,1	0,7	0,7	1,4	1,5
27	21,2	0,9	1,6	1,7	1,7	2,1	1,8	1,6	3,0	3,0	3,7	3,7	3,7	3,7	0,6	0,9	0,3	0,3	1,5	1,6	0,5	0,4	1,3	1,5
28	26,5	0,9	1,8	2,2	2,6	2,6	2,6	2,0	3,4	3,4	4,9	4,9	4,9	4,9	1,0	1,0	0,2	0,3	2,0	2,0	0,6	0,4	1,9	2,0
29	24,5	1,2	1,9	2,2	2,5	2,6	2,6	1,8	3,1	3,1	4,5	4,5	4,5	4,5	0,6	1,1	0,3	0,3	2,0	1,9	0,7	0,5	2,1	2,1
30	23,8	1,1	2,1	2,3	2,5	2,4	2,6	2,0	3,2	3,2	4,4	4,4	4,4	4,4	1,0	0,8	0,4	0,3	2,1	2,0	0,8	0,7	1,8	2,2
31	22,0	1,0	2,0	2,3	2,5	2,8	2,5	2,0	3,0	3,0	4,0	4,0	4,0	4,0	0,7	1,0	0,2	0,3	2,0	2,0	0,7	0,7	1,8	2,3
32	26,5	1,0	2,0	2,3	2,4	2,5	2,4	2,0	3,5	3,5	4,9	4,9	4,9	4,9	0,8	1,1	0,3	0,3	2,1	2,1	1	0,6	2,1	2,4
33	24,0	0,9	1,7	2,2	2,8	2,8	2,5	2,0	3,4	3,4	4,5	4,5	4,5	4,5	0,7	0,9	0,3	0,3	1,8	1,9	0,7	0,4	1,8	2,1
34	23,8	1,0	1,5	2,1	2,5	2,6	2,4	1,8	3,4	3,4	4,2	4,2	4,2	4,2	1,0	0,6	0,2	0,3	1,7	1,6	0,8	0,4	1,8	1,8
35	24,0	1,1	1,8	2,3	2,5	2,8	2,7	2,1	3,4	3,4	4,3	4,3	4,3	4,3	0,9	0,8	0,2	0,3	2,0	2,1	0,9	0,6	1,9	2,1
36	26,0	1,1	1,7	2,1	2,0	2,1	2,1	1,8	3,6	3,6	4,7	4,7	4,7	4,7	0,8	1,1	0,2	0,3	1,9	1,9	0,8	0,4	1,8	1,8
37	21,0	0,9	1,8	2,0	2,4	2,6	2,6	1,8	2,8	2,8	3,9	3,9	3,9	3,9	1,0	1,0	0,3	0,5	1,9	2,0	0,8	0,6	1,8	2,0
38	23,8	1,0	1,5	1,8	1,9	1,9	2	1,9	3,5	3,5	4,3	4,3	4,3	4,3	0,8	1,1	0,2	0,3	2,0	2,0	0,8	0,8	1,6	1,8
39	24,2	1,1	2,2	2,3	2,9	3,0	2,3	2,1	3,1	3,1	4,5	4,5	4,5	4,5	0,8	1,1	0,3	0,2	2,1	2,1	0,9	0,6	2,0	2,3
40	25,0	1,2	1,8	2,1	2,4	2,5	2,4	1,8	3,6	3,6	4,5	4,5	4,5	4,5	0,8	1,0	0,3	0,4	2,0	1,9	0,9	0,5	1,9	2,0
41	24,0	1,3	1,8	2,1	2,6	2,6	2,5	1,8	3,1	3,1	4,6	4,6	4,6	4,6	0,6	1,0	0,2	0,3	2,0	2,0	0,8	0,7	1,8	2,0
42	26,5	1,2	2,0	2,3	2,3	2,7	2,5	2,0	3,4	3,4	5,0	5,0	5,0	5,0	1,0	0,8	0,3	0,2	2,1	2,1	0,8	0,5	1,8	1,9
43	26,5	1,4	1,7	2,1	2,2	2,3	2,3	1,8	3,5	3,5	5,0	5,0	5,0	5,0	0,7	1,1	0,3	0,2	1,9	2,0	0,6	0,6	1,7	2,0
44	23,2	1,1	1,9	1,9	2,4	2,6	2,3	1,6	3,0	3,0	4,4	4,4	4,4	4,4	0,7	1,0	0,3	0,3	1,9	1,9	0,7	0,6	1,6	1,8
45	23,6	1,0	1,6	2,0	2,3	2,5	2,3	1,8	3,2	3,2	4,4	4,4	4,4	4,4	0,6	0,9	0,3	0,3	1,9	1,9	0,7	0,5	1,7	2,1
46	21,8	1,1	1,7	2,1	2,7	2,8	2,6	1,9	3,1	3,1	4,0	4,0	4,0	4,0	0,6	1,0	0,3	0,3	2,1	2,1	0,8	0,7	1,9	2,1
47	20,0	1,0	1,6	2,1	2,6	2,7	2,6	2,0	2,8	2,8	3,6	3,6	3,6	3,6	0,6	1,1	0,3	0,3	1,9	2,0	0,9	0,4	1,6	2,1
48	18,8	0,9	1,5	1,7	2,2	2,5	2,0	1,6	2,4	2,4	3,5	3,5	3,5	3,5	0,7	1,0	0,3	0,3	1,8	1,9	0,6	0,5	1,6	1,9
49	21,4	1,1	1,7	2,0	2,1	2,1	2,2	1,7	2,4	2,4	4,2	4,2	4,2	4,2	0,7	1,0	0,3	0,3	1,9	2,0	0,6	0,5	1,7	1,8
50	21,0	1,0	1,5	2,1	2,5	2,6	2,4	1,8	2,8	2,8	3,8	3,8	3,8	3,8	0,6	1,0	0,4	0,3	1,6	1,7	0,5	0,4	1,5	1,7
51	22,8	1,0	1,8	2,1	2,5	2,5	2,4	2,0	3,0	3,0	4,2	4,2	4,2	4,2	0,8	0,9	0,3	0,3	2,1	2,0	0,6	0,4	1,7	2,0
Fuenteheridos (07.02.2008)																								
52	18,5	0,9	1,5	1,6	2,0	2,0	1,9	1,4	2,6	2,6	3,3	3,3	3,3	3,3	0,6	1,0	0,3	0,2	1,7	1,5	0,7	0,4	0,9	1,5
53	15,8	0,8	1,3	1,4	1,8	1,8	1,8	1,3	2,2	2,2	2,8	2,8	2,8	2,8	0,6	0,7	0,3	0,3	1,4	1,5	0,4	0,3	1,1	1,2
54	29,4	1,1	2,0	2,3	2,6	3,0	2,8	2,1	4,1	4,1	5,3	5,3	5,3	5,3	0,9	1,3	0,4	0,4	2,5	2,4	0,8	0,5	2,2	2,4
n= 55	**22,9**	**1,0**	**1,9**	**2,3**	**2,7**	**2,8**	**2,8**	**2,1**	**3,1**	**3,1**	**4,2**	**4,2**	**4,2**	**4,2**	**0,7**	**0,9**	**0,3**	**0,3**	**1,9**	**2,0**	**0,5**	**0,7**	**1,8**	**2,1**

Tab. 3. Main values of 19 body proportion indicies in 11 species of Erpobdellidae. For explanation of indicies see text.

	L/D_2	C^1_1/d_1	C^1_1/D_1	R_1/M_1	C^1_1/C_1	$L1/D_1$	D_1/N_1	S_1/S_2	L_2/D_2	D_2/N_2	K_1/K_2	C^1_2/d_7	C^1_2/D_2	R_2/M_2	C^1_2/C_2	L_2/L_1	D_2/D_1	N_2/N_1	C^1_2/C^1_1
Erpobdella octoculata	7,8	1,0	0,3	1,0	1,2	3,3	1,4	1,4	3,8	1,5	0,4	1,2	0,6	1,2	1,0	1,5	1,2	1,1	3,1
Erpobdella monostriata	7,3	1,0	0,4	1,0	1,1	3,8	1,5	1,5	4,0	1,4	0,4	1,3	0,6	1,3	1,0	1,2	1,2	1,1	3,0
Erpobdella nigricollis	6,7	1,0	0,4	1,0	1,2	3,5	1,0	1,3	3,4	1,5	0,4	1,3	0,6	1,2	1,0	1,2	1,2	1,1	2,3
Erpobdella vilnensis	7,3	1,0	0,3	1,0	1,1	3,4	1,1	1,3	3,9	1,5	0,4	1,3	0,6	1,2	1,0	1,4	1,2	1,1	2,6
Erpobdella testacea	6,7	1,0	0,3	1,0	1,0	2,9	1,4	1,5	3,1	1,5	0,4	1,0	0,6	1,1	1,0	1,3	1,2	1,1	3,2
Dina lineata	6,6	1,1	0,4	1,0	1,3	3,2	2,0	1,6	5,1	1,6	0,4	0,6	0,7	1,4	1,1	1,5	1,2	1,1	3,0
Dina stschegolewi	8,3	1,1	0,4	1,0	1,5	3,1	2,0	1,6	5,6	1,6	0,4	0,5	0,7	1,5	1,1	1,5	1,2	1,2	2,8
Dina borisi	5,9	1,1	0,5	1,0	1,4	3	2,2	1,0	5,4	1,8	0,3	0,4	0,8	1,6	1,1	2,4	1,6	1,2	2,4
Trocheta cylindrica	7,8	1,0	0,7	3,7	1,2	3,4	1,7	1,0	5,8	2,1	0,4	0,4	0,8	1,1	1,2	3,0	1,5	1,3	1,7
Trocheta pseudodina	13,3	1,0	0,7	4,0	1,1	3,9	1,2	1,0	6,3	1,8	0,4	0,4	0,7	1,1	1,1	3,1	1,5	1,3	1,6
Erpobdellopsis graacki n. gen., n. sp.	8,8	0,9	0,4	1,0	1,3	2,8	1,2	1,0	6,6	1,3	0,3	1,0	0,8	1,0	1,0	2,8	1,2	1,1	2,2

2.4 Internal morphology

The characters of sexual organs of *Erpobdellopsis graacki* n. gen. n. sp. (shape and extension of the genital atrium with the cornua, of the ovarian sacks and vasa deferentia), were checked on three adult specimens, which show well developed sexual organs with visible oocytes inside the ovisacs. Material was examined using a stereomicroscope (Novex).

3 Description of *Erpobdellopsis* Grosser n. gen

Taxonomy

Family Erpobdellidae R. Blanchard, 1894
Subfamily Erpobdellinae R. Blanchard, 1894
Genus *Erpobdellopsis* Grosser n. gen.

Type species	*Erpobdellopsis graacki* n. sp.
Congenitor	*Erpobdellopsis quaternaria* n. comb.
	= *Dina quaternaria* Moore, 1930,
	= *Erpobdella quaternaria*, Soós,1968,
	= *Herpobdella* (*Herpobdella*) *quaternaria*, Lukin 1976,
	= *Mooreobdella quaternaria* Sawyer 1986

Diagnosis. Leeches of the family Erpobdellidae. Midbody somites are homonomously quinqueannulate: each somite is subdividid into five annuli of equal width. The vasa deferentia without praeatrial loops (Fig. 2 and 3). The atrial cornua are short. Eight eyes, four eyes in one front cross-row (two pairs of labial eyes) behind it in each case two eyes left and right in two slanting rows (two pairs of buccal eyes).

Etymology. *Erpobdellopsis* n. gen. is named after his similar external morphology of annulation and position of eyes to the genus *Erpobdella* De Blainville, 1818.

Differential diagnosis. *Erpobdellopsis* n. gen. differs from the European genera *Dina* R. Blanchard, 1892, *Trocheta* Dutrochet, 1817 and *Archaeobdella* Grimm, 1876 in the annulation. The last three genera have a heteronomous annulation. The annulation of *Erpobdellopsis* n. gen., *Erpobdella* and *Croatobranchus* Kerovec, Kučinić & Jalžić, 1999 is homonomous. The monotypical genus *Fadejewobdella* Lukin, 1962 is represented by the large species *Fadejewobdella quinqueannulata* (Lukin, 1929). This species has also a homonomously annulation of the quinqueannulate somites with annuli of same width (Lukin 1976). But the cornua of the atrium are very long and strong coiled. Contrary to some publications (Sawyer 1986, Nesemann 1993), the vasa deferentia have praeatrial loops (Fig. 4; Lukin 1976, Fig. 271). Therefore the classification of *Fadejewobdella* in the subfamily *Mooreobdellinae* Nesemann, 1993 is not correct. Nesemann (1993) defined the subfamily Mooreobdellinae as: „Erpobdellidae with completely heterenomous five- to six-annulate segment, primary to tertiary annuli, annulus b6 widened, lacking pharyngeal stylets, gonopores in somite XII, lacking preatrial loop of male paired ducts. Holarctis: Nearctic (*Mooreobdella*), Palearctic Ponto-Caspian (*Fadejewobdella*).“

Erpobdellopsis n. gen. differs from all European genera in the lacking of the praeatrial loops of the vasa deferentia. Actual *Erpobdellopsis* n. gen. is similar to *Mooreobdella* Pawlowski, 1955 in this characteristic. But *Mooreobdella* has a heteronomously annulation with annulus b6 broadened. The number of eyes is reduced in relation to *Erpobdellopsis* n. gen. *Mooreobdella* has neither or only one pair of labial eyes (Klemm 1982, Siddall 2002, Hovingh 2016).

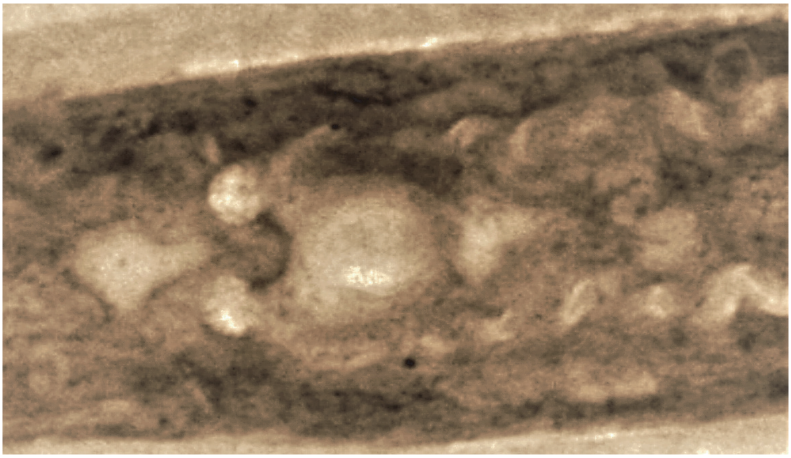


Fig. 2. ***Erpobdellopsis graacki*** **n. gen., n. sp. Paratypus, genital atrium without praeatrial loops of the vasa deferentia**

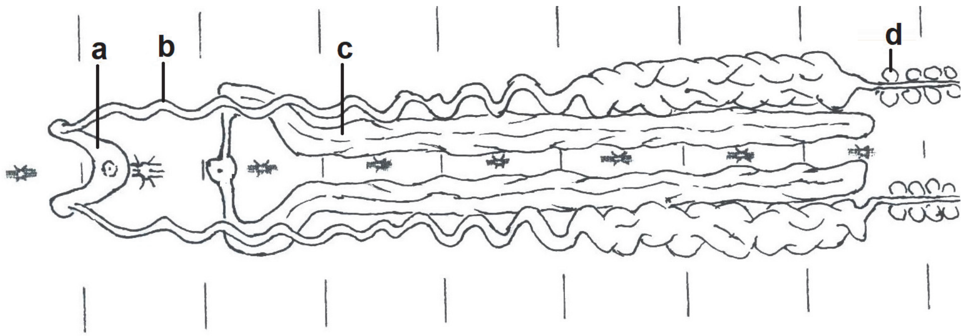


Fig. 3. ***Erpobdellopsis graacki*** **n. gen., n. sp. Paratypus, reproductive system: a = atrium, b= vas deferens, c = ovisac, d= testicles**

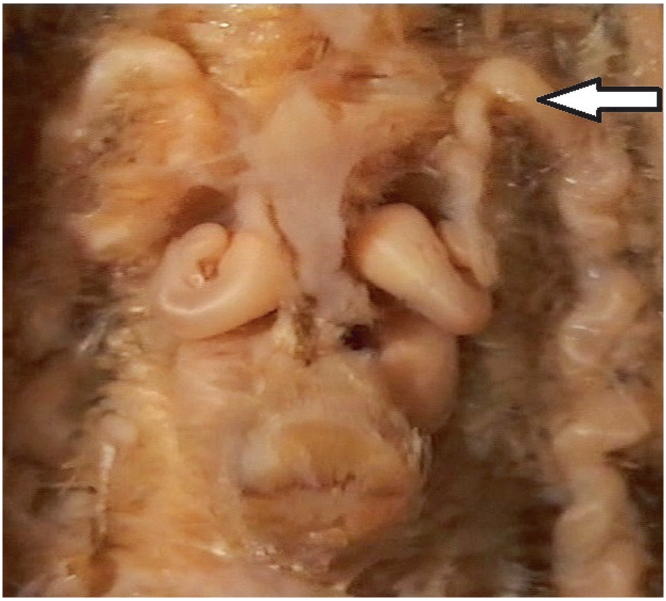


Fig. 4. *Fadejewobdella quinqueannulata*. Genital atrium and the praeatrial loops of the vasa deferentia (arrow in the picture) from Kharkiv, Ukraine

The existence of two pairs of labial eyes is a well characteristic of European Erpobdellidae (Siddall 2002, Hovingh 2016). The quinqueannulate homonomously annulation is typical for the subfamily Erpobdellinae. The morphometric analysis demonstrates also the independence of *Erpobdellopsis* n. gen. from *Erpobdella* (Fig. 16). Based on these morphological characteristics and the geographical distribution, it seems appropriate to classify *Erpobdellopsis* n. gen. in the subfamily Erpobdellinae. Without the genus *Fadejewobdella* is the subfamily Moreobdellinae exclusively distributed in the Nearctic. The new genus *Erpobdellopsis* is disjunct distributed with two species in the Palaearctic, *Erpobdellopsis quaternaria* n. comb. in the East (Amurbasin, possibly from the western Mongolia to the East, Lukin 1976) and *Erpobdellopsis graacki* n. gen, n. sp. in the West (Spain).

4 Despription of *Erpobdellopsis graacki* Jueg & Grosser n. sp.

Type locality. Spain, Andalusia, Provinz Huelva, Municipio Aracena, spring and headstream of the Rio Odiel (Arroyo de Mari Mateo O de Jabuguillo, catchment area of the Rio Odiel) at the N 433 near campsite Aracena (1-3 m wide, stony, finely sand in parts, a lot of *Berula erecta* and *Ranunculus ficaria*), UTM: N: 4195524, E: 718050, 560 m NN, 06.02.2008, leg. Graack & Jueg, det. Jueg & Grosser (Fig. 5)
Holotype. Specimen collected on 06-02-2008 from the type locality, body length 21,6 mm, maximale width 4,2 mm; deposited at the Museum of Natural History in Berlin (Germany), Coll.-Nr. 11579 (in „Generalkatalog freilebende Würmer").
Paratypes. 75 specimens
Paratypes 1-10 and further 10 paratypes: Germany, Museum of Natural History Berlin, Coll.-Nr. 11580 (in „Generalkatalog freilebende Würmer").
Paratypes 11-15 and further 5 paratypes: Germany, Natureum Ludwigslust, Coll.-Nr.: ZW-6827 and ZW-6836

Fig. 5. Spring and headstream of the Rio Odiel (Type locality)

Paratypes 16-20 and further 5 paratypes: Germany, Zoological Museum and Institut of the University of Greifswald, Coll.-Nr. ZIMG II-28316 to ZIMG II-28325
Paratypes 21-25 and further 5 paratypes: Germany, Zoological Museum of the University of Hamburg, Coll.-Nr.: Hi 13016 - Hi 13021
Further paratypes: Coll. Jueg & Coll. Grosser

Further records. More material exists from the type locality, collected in 2002, and from two further places, collected in 2008.

1. Type locality, 22-02-2002, leg. Graack, det. Jueg & Grosser (25 specimens, contracted during the fixing, not suitable for morphometric measurements)
2. Spain, Andalusia, Provinz Huelva, Municipio Cortelazor ca. 7 km as the crow flies north-western of Aracena, headstream of the spring Fuente Lavadora at the local rim, with a washhouse and rallying point (catchment area of the Rio Guadalquivir), rich in structure, stream with quickly running and stagnant sections, 621 m NN, UTM: N: 4201400, E: 408450, 06-02-2008, leg. Graack & Jueg, det. Jueg & Grosser (99 individuals in all, 93 of them used for this study) (Fig. 6)
3. Spain, Andalusia, Provinz Huelva, Municipio Fuenteheridos, spring Fuente de los doce canos in the downtown of Fuenteheridos with a concreted rallying point and sewer (catchment area of the Rio Guadalquivir), stones and watermosses on the ground, UTM: N: 4197566, E: 705646, 07.02.2008, 710 m NN, leg. Graack & Jueg, det. Jueg & Grosser (3 specimens) (Fig. 7)

The individuals of the named places are deposited in the author's collections.

Etymology. Named after Mr. Wolfgang Graack (†, Germany, Wedemark) in appreciation of his faunistical work as collector of numerous invertebrates of the Iberian Peninsula and in honour of collecting this new species.

Fig. 6. Spring and headstream Fuente Lavadora of Cortelazor

Fig. 7. Concreted ditch of the spring Fuente de los doce canos in the centre of Fuenteheridos

External morphology

Body form. All metrical data in the following description based on the average of 55 measured specimens. They are small to medium Erpobdellidae with an average length of 22.8 mm (18–30). The maximum body width amount to 2.6 mm, the high in the clitellum is 1.8 mm and in the posterior part 2 mm. Therefore the leeches are nearly cylindrical and only slightly flattened. Lateral keels are absent.

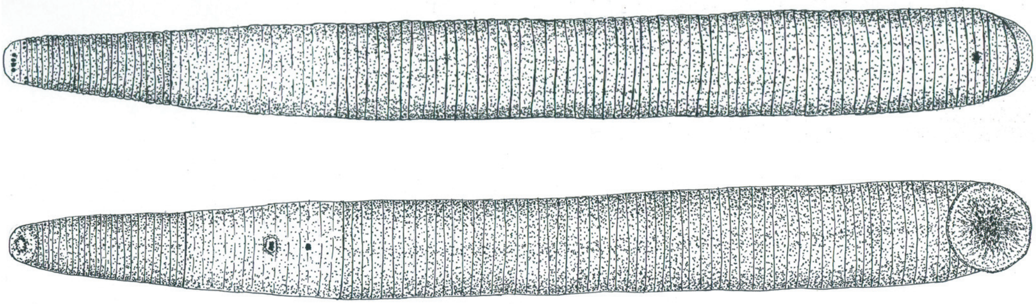


Fig. 8. *Erpobdellopsis graacki* n. gen. n. sp., dorsal and ventral

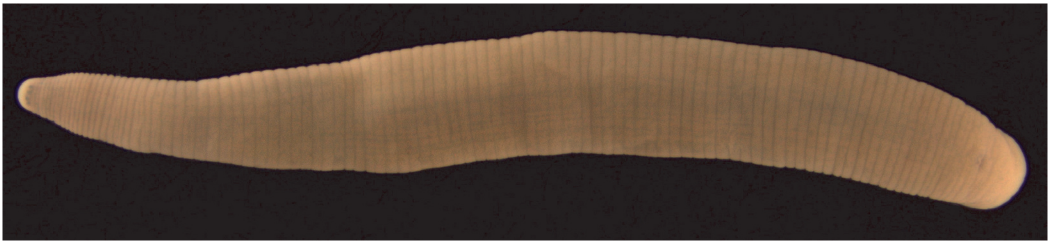


Fig. 9. *Erpobdellopsis graacki* n. gen., n. sp. Holotypus, dorsal; Photo B. Neuhaus

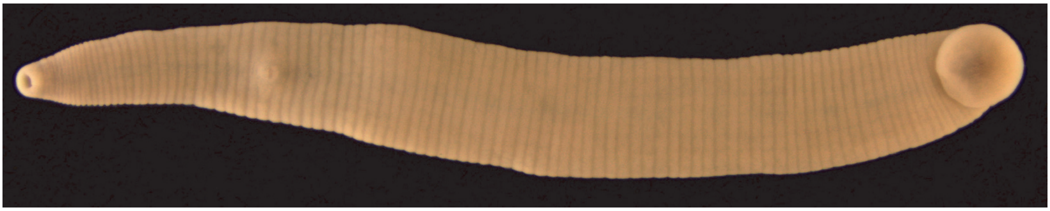


Fig. 10. ***Erpobdellopsis graacki*** **n. gen., n. sp. Holotypus, ventral; Photo B. Neuhaus**

Annulation. The midbody somites are basically homonomous quinqueannulate; a somite is subdivided in five annuli of same width. The annuli are not more subdivided, also without sligthly furrows.

Colour. The leeches are unicolor grubby light brown to grayish brown, sometimes also reddish brown; stripes, lines or pattern are absent. The dorsal site is slightly darker than the ventral site.

Eyes. The leeches show the eyes in the typical number and position of European Erpobdellidae. The eight eyes are arranged in two pairs of labial eyes and two pairs of buccal eyes (one pair left and right). 130 leeches (76%) of the 172 studied specimens possess this typical position of eyes. A reduction, addition or shift of single eyes is rarely visible. The figure 11 illustrates the diversity of position of eyes.

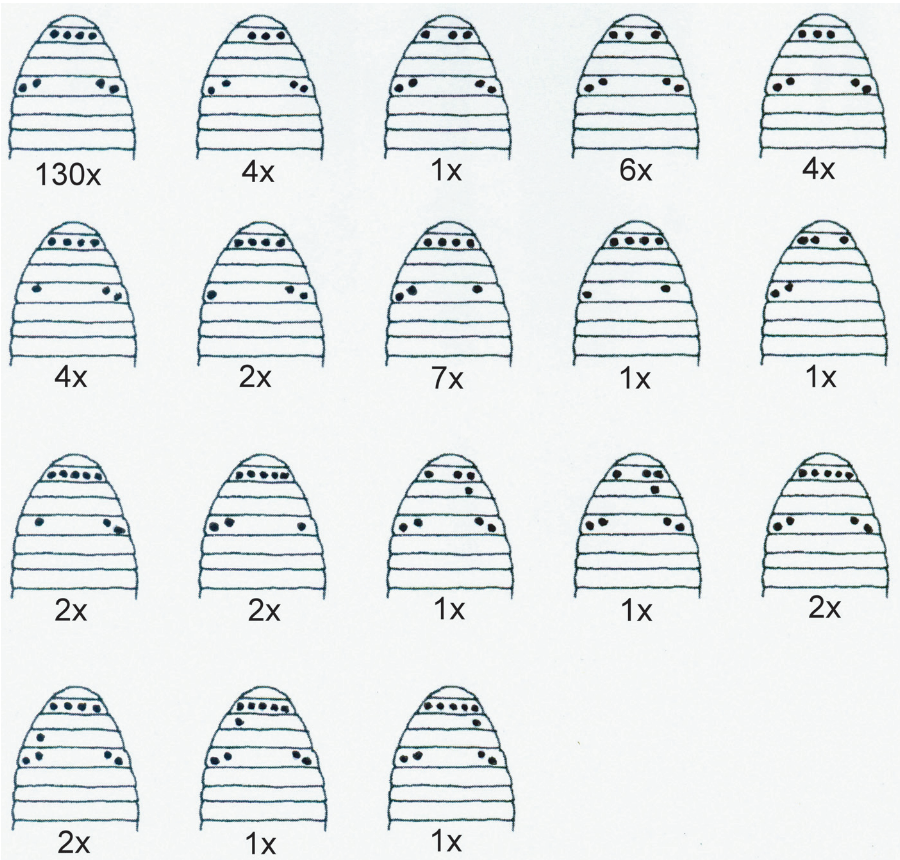


Fig. 11. Diversity of eye positions of ***Erpobdellopsis graacki*** **n. gen., n. sp.**

Gonopores. The male gonopore is situated on the annulus, the female in the furrow. Both gonopores are separated by 3.5 annuli (Fig. 12). Only 11 of the 197 studied specimens showed differences, all from the type locality: four specimens had a separation of gonopores by 3 (respectively 3.2) annuli, also four specimens by 4.5 annuli and three specimens by 4 annuli.

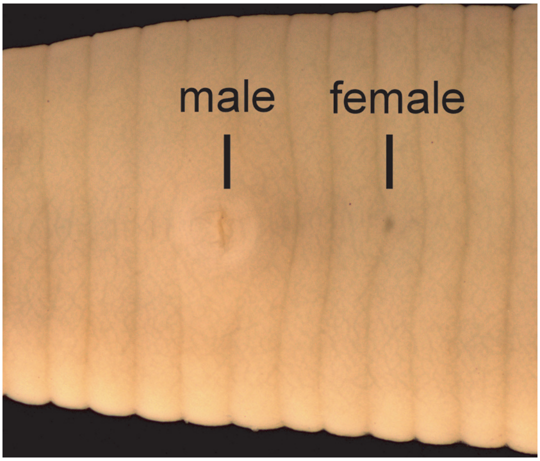
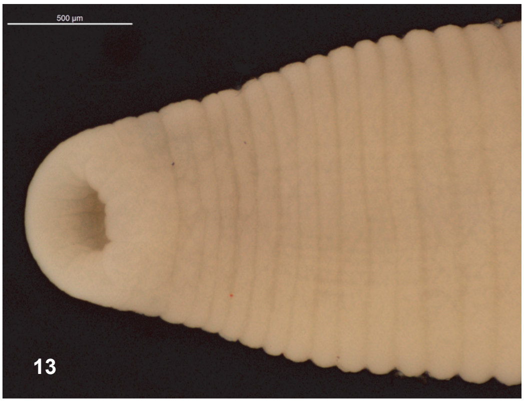


Fig. 12. ***Erpobdellopsis graacki*** **n. gen., n. sp. Holotypus, Gonopores; Photo B. Neuhaus**

Sucker. The cranial suckeris crosswise oval: 0.7mm in the length and 0.9 mm in the width (Fig. 13). The caudal sucker is more circular (1.9 mm in the length and 2.0 mm in the width) and not wider than the maximum body width (Fig. 14).



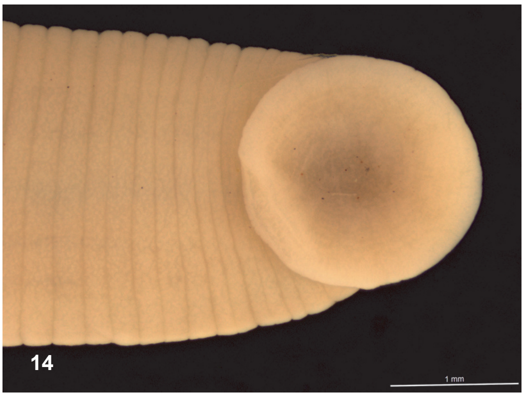


Fig. 13. ***Erpobdellopsis graacki*** **n. gen., n. sp. Holotypus, cranialsucker; Photo B. Neuhaus**
Fig. 14. ***Erpobdellopsis graacki*** **n. gen., n. sp., Holotypus, caudalsucker; Photo B. Neuhaus**

Reproductive system. The genital atrium body is large with short cornua. These cornua are strong curved in one plane surface within each case a very robust basis. The apical part of the cornua is slightly coiled.

The vasa deferentia lead into the cornua direct from caudal and do not form praeatrial loops (Fig. 4 and 5). They are strong winded from the second ganglion after the female genital pore, before only slightly. The broadened part of the vasa deferentia beginns at the fourth ganglion and extends to the sixth ganglion after the female genital pore. Here is the start of the testicles.

The ovarian sacks extend also to the sixth ganglion after the female genital pore, therefore touch seven somites. They are only few winded in their total run and not curled. Usually, the ovarian sacks run dorsally to the first ganglion, sometimes to the second ganglion, after the female genitalpore and cross here the vasa deferentia to ventrally. The ends of the vasa deferentia and the ovarian sacks are the same.

5 Habitat and ecology

E. graacki n. gen., n. sp. was only found up to now in springs and headstreams with cold water. Obvious headstreams and mountain streams will only populated. The leeches were located under stones. Cocons are unknown. The new species lives sympatricly with four other leech species (Tab. 4). One of them is *Alboglossiphonia iberica*, also a characteristical leech of cold springs and streams of the southern Iberian peninsula. *Dina punctata* is with distance the most common species in Spain with a very wide ecological amplitude. The both other species have adispersed distribution in the Iberian peninsula in difficult kinds of waters. *Arganiella tartessica* under the molluscs has also ahigh affinity for springs.
E. graacki n. gen., n. sp. was found between 560 to 710 m over NN in the colline zone.

Tab. 4: Fauna of places where found *E. graacki* n. gen., n. sp. In bracket the number of individuals

Species	headstream of Rio Odiel	headstream in Cortelazor	spring in Fuenteheridos
HIRUDINIDA			
Glossiphonia complanata (Linnaeus, 1758)	X (20)		X (33)
Batracobdella algira (Moquin-Tandon, 1846)		X (2)	
Alboglossiphonia iberica Jueg, 2008	X (26)	X (54)	
Dina punctata Johansson, 1927	X (4)	X (2)	
Erpobdellopsis graacki n. gen., n. sp.	X (76)	X (99)	X (3)
MOLLUSCA			
Arganiella tartessica Arconada & Ramos, 2007	X		X
Ancylus fluviatilis O. F. Müller, 1774	X	X	
Physa acuta (Draparnaud, 1805)	X		X
Radix sp.		X	X
Amphibia			
Lissotriton boscai(Lataste, 1879)		X	

Distribution. Only the Sierra de Aracena (Spain, Andalusia, province Huelva), the most western foothills of the Sierra Morena, was located as distribution area so far (Fig. 15). It is probable, that more places of finds follow, especially in the neighbouring eastern parts of the Sierra Morena. With high probability is the new leech an endemic species of the southern Iberian peninsula. An incidence in the northern Atlas mountains (Morocco) is also possible. Occasionally, other endemites of south Spain with similar ecological demands are also distributed here (e.g. *Alboglossiphonia iberica* Jueg, 2008).

Fig. 15. Distribution of *Erpobdellopsis graacki* n. gen., n. sp.

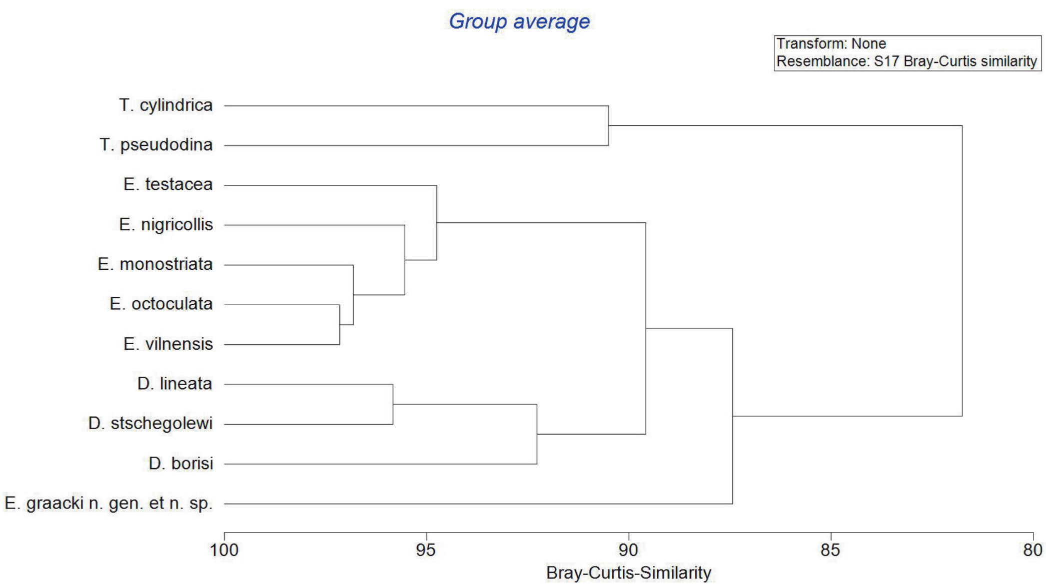


Fig. 16. Diagram for 11 species of Erpobdellidae based on Bray-Curtis similarity of 19 body proportion indicies according to the geometric model of leech body form

6 Differential diagnosis

Erpobdellopsis graacki n. sp. differs from all European Erpobdellids in the lacking of the praeatrial loops of the vasa deferentia (Fig. 2 and 3). The new leech species is into external morphology most similar to *Erpobdella testacea*, *E. nigricollis* and *E. monostriata* in the European leech fauna. The relatively cylindrical shape in the urosom is more similar to *E. nigricollis* than all other *Erpobdella*-species. The preclitellar region is not narrow in contrast to *E. testacea* or *E. monostriata*. In the colour markings are present in all European *Erpobdella*-species in form of stripes, pattern or spots, in a slightly extent even in *E. testacea* (slightly median stripe) and *E. nigricollis* (black neck band). *Erpobdellopsis graacki* n. gen., n. sp. is complete without these. Further differences to the European *Erpobdella*-species are the position and distance of the genital pores. The male gonopore is situated on the annulus in *Erpobdellopsis graacki* n. gen, n. sp., male and female genital pores are separated by 3.5 annuli (Fig. 12). The male gonopore is situated in the furrow of the annuli in *Erpobdella testacea*, *E.nigricollis* und *E. monostriata*, male and female genital pores are separated by 4 (or 5) full annuli. *Erpobdellopsis graacki* n. gen, n. sp. is a rheophilic species with a strong bond with crenal and rhithral unlike all other species of the subfamily Erpobdellinae. If other Erpobdellids populate in springs, they are also found in different waterbodies (e.g. lakes, rivers, swamps). A further peculiarity is the geographical isolation of the new species in south Spain (Sierra de Aracena). Other representatives of the Erpobdellinae are only recorded from the Pyrenees and north Spain (only *E. vilnensis* also in central Spain).

In the palaearctic fauna *Erpobdellopsis graacki* n. gen, n. sp. is most similar to *Erpobdellopsis quaternaria* n. comb. in their sexual organs. The characteristics of *E. quaternaria* n. comb. in this study follow Moor 1930. The vasa deferentia of both species are without praeatrial loops. A slight difference exists in the extension of the ovarian sacks. In the first species the ovisacs extend to the ganglion of the sixth somite after the female genital pore, in the second species to the end of the same somite. Both species are also similar in their same small size. But *E. graacki* n. gen, n. sp. differs from *E. quaternaria* n. comb. in the position of the male genital pore. This opening is in the last species in the furrow. The genital pores are usually separated by 4 annuli, only sometimes the female genital pore is shifted to caudal and the gonopores are separated by 5 annuli (Lukin 1976). *E. graacki* n. gen., n. sp. shows rarely also a variability in the distance of gonopores. The gonopores are separated by 3 annuli in one specimen. In this case, the male genital pore is shifted to caudal. In two cases the genitalpores are separated by 4.5 annuli. A separation by 4 or 5 annuli could not be observed in *E. graacki* n. gen., n. sp. Furthermore *E. quaternaria* n. comb. differs also from *E. graacki* n. gen., n. sp. in the colour. The last species has an unicoloured dorsal site. In *E. quaternaria* n. comb. the dorsal site is characterized by dark spots of variable number and size. Always the spots are most numerous in the hind part of the body.

7 Discussion

The taxonomy of the genera in the family Erpobdellidae was unclear and often submited alterations in the past (e.g. Soós 1966, Lukin 1976, Siddall 2002, Trontelj & Sket 2000). Traditional the Palaearctic genera were distinguished in the basis of their annulation. The genera *Erpobdella*, *Fadejewobdella* and *Croatobranchus* were characterized by a homonomous annulation. In comparison to the genera *Trocheta*, *Dina* and *Archaeobdella* Grimm, 1876 were classified by a heteronomous annulation (e.g. Soós 1966, Sawyer 1986). By that, *Dina* and *Archaeobdella* were characterized by quinqueannulate somites with only one annulus broadened. Against it, leeches with eight to eleven annuli in one somite (usually two or three consecutive annuli are broadened) were classified to the genus *Trocheta*. But genetical studies in the younger past show, that this classification is not more up to date. In the results of these studies *Trocheta bykowskii krasense* Sket, 1968, *Croatobranchus* and *Trocheta dalmatina* Sket, 1968 are close to the representatives of the genus *Dina* (Trontelj 1997, Trontelj & Sket 2000, Sket et al. 2001, Lokovšek 2008). The annulation is one but not the only one characteristic for classification. Furthermore suitable characteristics are the shape of the ovisacs and the extension of the atrial cornua. Very short cornua and strong windened ovisacs are typical of genus *Dina*: e.g. *D. lineata* (O. F. Müller, 1774), *D. latestriata* Neubert & Nesemann, 1995, *D. orientalis* Grosser, Nesemann & Pešić, 2011 but also *D. krasensis* (Sket, 1968) = Syn. *Trocheta bykowskii krasense* Sket, 1968 and *Trocheta dalmatina* Sket, 1968 (see descriptions and figures by Sket 1968, Lukin 1976, Grosser et al. 2011, Grosser 2015). The genus *Trocheta* is marked by long cornua, clear extended on the previous somite, and not or only slightly windened ovarian sacks: e.g. *T. danastrica* Stschegolew, 1938, *T. haskonis* Grosser, 2000 or *T. taunensis* Grosser, 2015 (see characterization and figures by Grosser & Epshtein 2009, Grosser 2000, Grosser 2015). Therefore *Dina apathyi* Gedroyc, 1916, *D. pseudotrocheta* and *D. stschegolewi* Lukin & Epshtein, 1960 are more similar to genus *Trocheta* in their internal morphology (Grosser 2015). The taxonomic position of these species is unclear now. Their classification in the genus *Dina* is doubtful.

The taxonomic status of *Erpobdellopsis quaternaria* n. comb. was also very questionable in the past. First, Moore (1930) classified the species because of short cornua in the genus *Dina*. Later, Soós (1968) gave the leech a new place in the genus *Erpobdella* (also *Herpobdella* Agassiz, 1846 subgenus *Herpobdella* Lukin, 1976 by Lukin 1976) on the basis of the homonomouse annulation. The midbody somites are subdivided into five homonomouse annuli. Sawyer (1986) after all classified the species because of the lacking praeatrial loops of the vasa deferentia in the genus *Mooreobdella*, but with a question mark. The controversial taxonomic status could clearified now with the classification in the new genus *Erpobdellopsis*. The differentiation of the genus *Erpobdellopsis* n. gen. from the other Palearctic genera of the *Erpobdellidae* is also supported by the morphometric analysis. The studied individuals of the new genus are separated by an own cluster from *Erpobdella*, *Dina* and *Trocheta* (Fig. 16). Researches of the morphometry as well as external and internal morphology justify contrary to Siddall (2002) the differentiation of well distinguishable genera in the Holarctic Erpobdellidae.

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