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A new species of the genus *Lathriopyga* Caroli, 1912 (Collembola, Neanuridae, Neanurinae) from the Republic of Moldova

GALINA BUŞMACHIU[1], LOUIS DEHARVENG[2] & WANDA MARIA WEINER[3,4]

[1]*Institute of Zoology, Academy of Sciences of Moldova, Academiei str. 1, 2028 Chisinau, Republic of Moldova. E-mail: bushmakiu@yahoo.com*

[2]*Muséum National d'Histoire Naturelle, UMR 7205 CNRS, Origine, Structure et Evolution de la Biodiversité, 45, rue Buffon, F-75005 Paris, France. E-mail: deharven@mnhn.fr*

[3]*Institute of Systematics and Evolution of Animals, Polish Academy of Sciences, Sławkowska 17, Pl–31 - 016 Kraków, Poland. E-mail: weiner@isez.pan.krakow.pl*

[4]*Corresponding author*

Abstract

A new species of the genus *Lathriopyga* Caroli, from the Republic of Moldova is described and figured. It differs from its closest relative, *Lathriopyga bulgarica* Smolis, Skarżyński & Pomorski, by the presence of 3+3 chaetae Di on Abd. V, Di1 as a long macrochaeta, Di2, Di3 as short macrochaetae, presence of three chaetae Oc on head and the form of mandible (with 6–7 denticles appearing as a fringe between apical and basal teeth).

Key words: *L. nistru* **sp. nov.**, chaetotaxy, key, Dniester River, Europe

Introduction

The genus *Lathriopyga* Caroli, 1912 was described without designating a type species (Caroli 1910). The genus was validated by Caroli (1912) when he designated as type species *Achorutes (Lathriopyga) longisetus.* The genus so far comprises nine species distributed across Southern Europe from the Crimea to southern England (including Madeira). During the course of a study of the collembolan fauna in Moldova one species cited was *Lathriopyga bulgarica* Smolis, Skarżyński & Pomorski, 2004 (Buşmachiu & Deharveng 2008). Re-examination of these specimens and of additional material collected in different localities indicates that these *Lathriopyga* specimens belong to a new species, the tenth species of the genus. We describe the species here and provide a key to all species of *Lathriopyga* with comments on biogeography.

Terminology used in description

The terminology used in the text and table are derived from Deharveng (1983), Deharveng and Weiner (1984) and Smolis and Deharveng (2006).

Abbreviations. Body parts: Abd.—abdomen, Ant.—antenna, Cx—coxa, Fe—femur, Scx2—subcoxa 2, Ti—tibiotarsus, Th.—thorax, Tr—–trochanter, VT—ventral tube. Groups of chaetae: Ag—antegenital, An—anal, Fu—furcal, Ve—ventroexternal, Vi—ventrointernal, Vl—ventrolateral. Tubercles: Af—antenno-frontal, Cl—clypeal, De—dorsoexternal, Di–-dorsointernal, Dl–-dorsolateral, L—lateral, Oc—ocular, So—subocular. Types of chaetae: Ml—long macrochaeta, Mc—short macrochaeta, Mcc—very short macrochaeta, me—mesochaeta, mi—microchaeta, ms—microsensillum, s—sensory chaeta s, or–-subapical organite of Ant. IV, mou—dorsal chaetae on Ant. IV ("soies à apex mousse" of Ant. IV), x—labial organite.

Material deposition: IZM—Institute of Zoology, Academy of Sciences of Moldova, Chisinau, Republic of Moldova; ISEA—Institute of Systematics and Evolution of Animals, Polish Academy of Sciences, Kraków, Poland, MNHN—Muséum National d'Histoire Naturelle, Paris, France.

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Taxonomy

***Lathriopyga nistru* sp. nov.**
Figs 1–8, Table 1

Type material. Republic of Moldova: holotype female (MDA–07–1), 25.iii.2007, village Orheiul Vechi (N 47°18´, E 28°57´), riverside of Răut, tributary of Dniester River, calcareous litter, under low shrubs; paratypes male (MDA–07–2), female (MDA–07–7), 25.iii.2007, female (MDA–04–06), 22.iv.2008, the same locality as holotype; juvenile male (MDA–04–4), 25.vii.2004, village Tipova (N 47°37´, E 28°57´), riverside of Dniester, calcareous litter, under low shrubs; subadult female (MDA–05–8), 1.v.2005 village Sipoteni (N 47°20´, E 28°04´), wild apple orchard near the forest, litter with soil; juvenile male (MDA–06–5), 2.v.2006, village Rascova, riverside of Dniester calcareous litter, under low shrubs; 2 males (MDA–09–3, 9), 14.v.2009, village Rascaeti (N 46°34´, E 29°45´) steppe, under low shrubs; coll. G. Buşmachiu. Holotype and one paratype in ISEA, four paratypes in IZM and one paratype in MNHN.

Etymology. The species name refers to the Nistru River, local name of the Dniester River.

Description. Body length (without antennae): 0.98–1.43 mm. Habitus typical for *Lathriopyga* genus. Colour: dark blue-violet to grey-blue. Ocelli pigmented, large and subequal.

Tubercles. All dorsal tubercles well developed, some fused—Cl, Af and both Oc, Di and De, L and So on head; Di and De on Th. I; Di + Di on Abd. IV and V; De, Dl and L on Abd. V tergum; Di, De, Dl and L on Abd.VI (Fig. 1). Tubercle (Cl+Af+2Oc) on head with 4 granular areas. Strong cryptopygy (Figs 1 and 8, Tab. 1).

Types of chaetae. (i) Five kinds of ordinary chaetae: thick subcylindrical, feebly scaled, narrowly sheathed, rounded (strongly or slightly) apically, long (Ml), medium (Mc) and short macrochaetae (Mcc) (Fig. 6); thin, acuminate, smooth, long to rather short mesochaetae (me) ventrally on the lateral tubercles and on appendages (Fig. 7); Oca on head and An on anal valves as very short, acuminate microchaetae (mi) (Fig. 8). (ii) Dorsal chaetae (mou) on Ant. IV (”soies à apex mousse”). (iii) Four kinds of s-chaetae: long but shorter than nearest macrochaetae on Th. II–Abd. V tergites (sensory chaetae s) (Fig. 1); thick, rather long, bent sensilla on Ant. IV (S1–S8, Fig. 2) and guard sensilla of Ant. III (dorsal Sgd and ventral Sgv, Figs 2 and 3); short internal sensilla on Ant. III (S3 and S4); microsensillum on Ant. III (ms) and on Th. II (in Dl) (Fig. 1).

Antennae. Shorter than head (about 3/4 of its length). Antennal segment I with 7 chaetae, antennal segment II with 11 chaetae (one specimen with 12). Antennae III and IV fused dorsally, ventral separation well marked (Figs 2 and 3). Sensory organ of antennal segment III consisting of: two small internal sensilla bent in same direction, two subcylindrical guard sensilla (Sgv longer than Sgd), ventral microsensillum present. Antennal segment IV with mou-chaetae, 8 sensilla, one ordinary chaeta i, subapical organite and trilobed apical vesicle, lacking microsensillum (Figs 2 and 3).

Ocelli 2+2. Buccal cone short and wide. Labrum short with 4/2,4 chaetae, labium with 11 chaetae (without chaetae B, b, e, with one long lateral chaeta between labrum and labium) and with two labial organites (Fig. 5). Maxilla styliform with two subapical teeth and lamella with two small denticles at the apex, mandible strong with two apical fork-like teeth, two large basal teeth and 6–7 denticles as fringes visible between apical and basal teeth (Fig. 4).

Head chaetotaxy (Tab. 1, Fig. 1). Chaetae Oca as microchaetae (present asymmetrically as mesochaeta on one specimen).

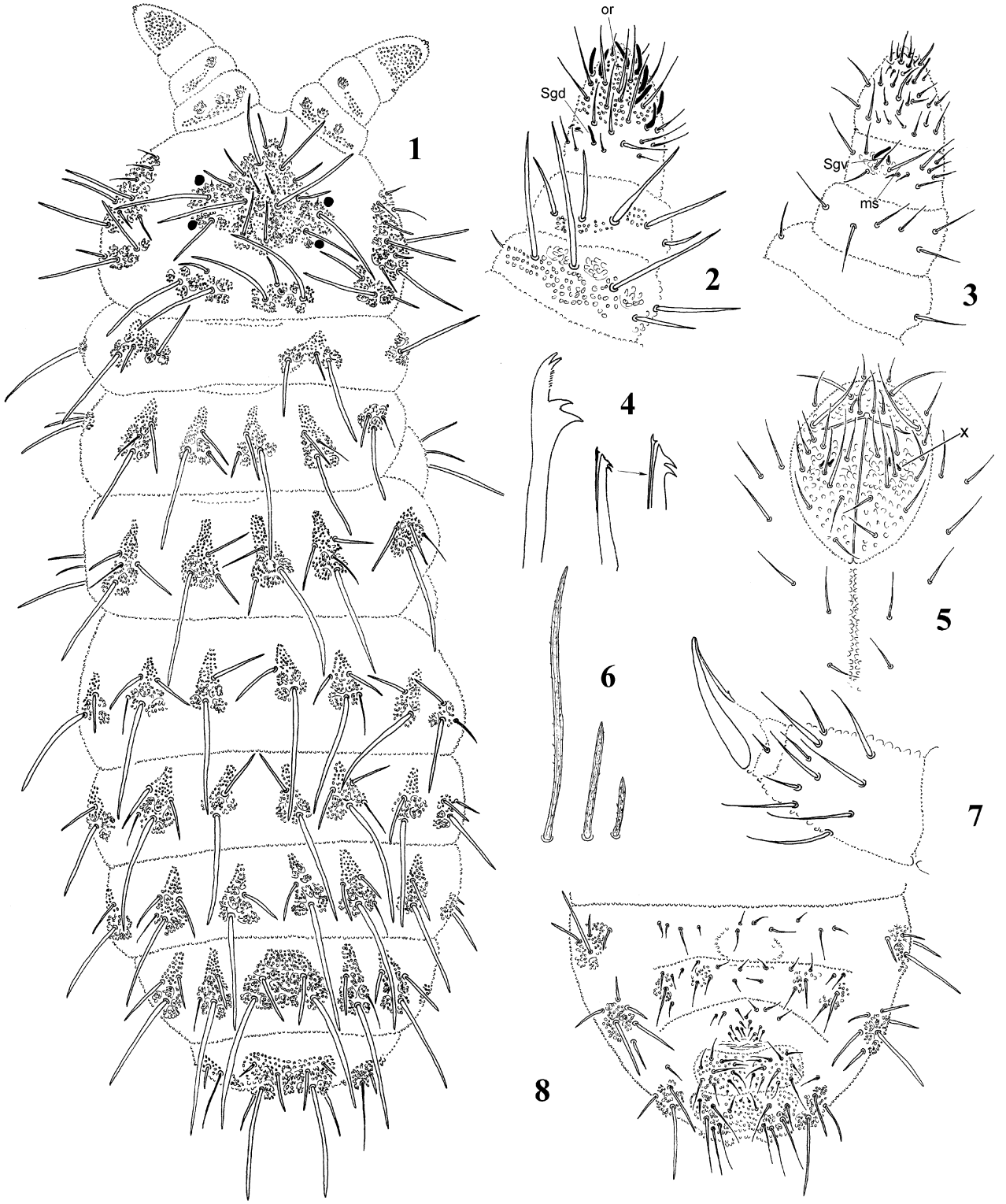
Dorsal chaetotaxy as in Fig. 1 and Tab. 1. Sensory chaetae s formula per half tergum 022/11111.

Ventral chaetotaxy as in Fig. 8 and in Tab. 1. Thoracic sterna without chaetae. Ventral tube with 4+4 chaetae. No modified ventral chaetae in the male.

Appendages. Chaetotaxy as in Tab. 1 and Fig. 7. Claw with very small inner tooth.

Discussion. *Lathriopyga nistru* **sp. nov.** is the second species (after *L. bulgarica* Smolis, Skarżyński & Pomorski, 2004 from neighbourhood of Zvezdets in Strandzha, Bulgaria) of the genus with tubercules Di and De fused on Th. I. Both species are similar in most chaetotaxic characters, but the new species differs from *L. bulgarica* by the presence of 3+3 chaetae Di on Abd. V, Di1 as a long macrochaeta and Di2 and Di3 as short macrochaetae, the form of mandible (with 6–7 denticles as a fringe between apical and basal teeth), and the

presence of microchaetae Oca (absent in the holotype and paratype of *L. bulgarica*). The labral formula of the new species is 4/2,4. The most lateral long chaeta of the labium is intermediate between labrum and labium, and could be the most lateral of the proximal row of labrum, which would give a labral formula 4/4,4 as given by Smolis *et al.* (2004) for *L. bulgarica*.



FIGURES 1–8. *Lathriopyga nistru* **sp. nov.**: 1, dorsal chaetotaxy; 2, antenna dorsally; 3, antenna ventrally; 4, mandible and maxilla; 5, labrum and labium, 6, type of dorsal ordinary chaetae from left: Ml, Mc and Mcc; 7, tibiotarsus III; 8, Abd. III–VI ventrally.

TABLE 1. Chaetotaxy of *Lathriopyga nistru* **sp. nov.**
Cephalic chaetotaxy

	Tubercle	Number of chaetae	Type of chaetae	Chaetae
Cl+Af+2Oc	+	20	Ml	B, F, Ocm, Ocp
			Mc	A, G
			Mcc or mi	C, D, E, Oca
Di+De	+	3	Ml	Di1, De1
			Mc	De2
Dl	+	3	Mc	Dl1,Dl2,
			Mcc	Dl4
L+So	+	10	Ml	L1, So1, So6
			Mc	L2, L4, So2, So5
			Mcc or me	L3, So3, So4

Vi	6
Ve	9
Labrum	4/2,4
Labium	11, 2x
Ant. I-II	7, 11 (12)
Ant. III	18 + 5s
Ant. IV	8s+ i+or+12 mou

Postcephalic chaetotaxy

	Di	De	Dl	L	Scx2	Cx	Tr	Fe	Ti
Th. I	---------3---------		1	-	0	3	6	13	19
Th. II	3	2+s	3+s+ms	3	2	7–8	6	12	19
Th. III	3	3+s	3+s	3	2	8–9	6	11	18
Abd. I	2	3+s	2	3	VT=4+4				
Abd. II	2	3+s	2	3	Ve=4 (Ve1 present)				
Abd. III	2	3+s	2	4	Fu=4–5me, 0mi		Ve=3–6		
Abd. IV	(2+2)	2+s	3	6	Ve=7–8		Vl=4		
Abd. V	(3+3)	----------4+s----------			Ag=3		Vl=1		
Abd. VI	----------6----------				Ve=11		An=2		

Key to species of *Lathriopyga*

1 Di and De tubercles fused on Th. I 2
- Di and De tubercles separate on Th. I 3
2 Di tubercles on Abd. V with Di1 as long macrochaeta, Di2 as microchaeta, Di3 absent, Oca absent..... ..... *L. bulgarica* Smolis, Skarżyński & Pomorski, 2004; Bulgaria
- Di tubercles on Abd. V with Di1 as long macrochaeta, Di2 and Di3 as short macrochaetae; Oca as microchaeta..... ..... *L. nistru* **sp. nov.**; Republic of Moldova
3 Di separate on Abd. IV, Ant. I with 8 chaetae ..... *L. montana* Deharveng, 1985; France
- Di fused axially on Abd. IV 4
4 Chaetotaxy of lateral tubercles very reduced, 2,2/1,1,1,1 from Th. II to Abd. IV .... *L. krizevacensis* Barra, 1993; Bosnia and Herzegovina
- Chaetotaxy of lateral tubercles at least 3,3/3,3,4,5 from Th. II to Abd. IV 5

5 Body colour white, ocelli inconspicuous or absent ..... *L. belisaria* Cassagnau & Peja, 1979; Greece
- Body colour blue or dark blue, 2+2 conspicuous ocelli 6
6 Dorsal macrochaetae very thick, bent, cylindrical, Dl on head with 3 chaetae .....
..... *L. willemi* Deharveng, 1985; Greece (Lesbos Is.)
- Dorsal macrochaeta thickened, subcylindrical to fusiform. Dl on head with 6 chaetae 7
7 Granular areas on Af tubercle of head absent..... *L. hellenica* Ellis, 1974; Greece (Rhodes Is.)
- Four granular areas on Af tubercle of head 8
8 Mandible tridentate..... *L. microchaeta* Cassagnau & Peja, 1979; Greece
- Mandible with at least five teeth..... 9
9 Maxilla styliform ..... *L. longiseta* Caroli, 1912; south-western Europe
- Maxilla made of several lamellae, including one tridentate apically and one ciliated .....
.....*L. primigenia* Cassagnau & Peja, 1979; Greece

Lathriopyga longiseta flava Caroli, 1912 is a species *inquirenda* because of an inadequate original description and is not included in the key. It could be an albino form of *L. longiseta* or a good species.

Biogeography

Biogeographically, the genus *Lathriopyga* comprises nine short range species, as well as the widespread species, *L. longiseta*. The former are found from French southwestern Alps to Dniester River in Black Sea basin, but are rare. The main centre of diversification appears to be Greece, where five species, as well as *L. longiseta*, occur (Ellis 1974, Cassagnau & Peja 1979, Deharveng 1985), while many species remain to be described. In contrast, *L. longiseta*, described from Italy, has a wide distributional range, being found in south-western England, the Italian Peninsula, Sardinia, Corsica, Germany, Croatia, Albania, Greece (including Crete), Romania and Madeira (Deharveng 2004). However, several of these records, Germany in particular, need confirmation. The presence of this species in several localities on Madeira (Gama 1964), apparently not in disturbed areas, is anomalous.

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