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A new species of Leptopontiidae Lang, 1948 (Copepoda: Harpacticoida) from the Ría de Ferrol (north-west Iberian Peninsula)

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The family Leptopontiidae comprises a group of harpacticoid copepods typically inhabiting marine interstitial habitats, but some species are known from brackish water, and other species are found in freshwater interstitial habitats. To date, seven species of *Leptopontia* Scott, 1902 have been described from North European coasts, the Mediterranean Sea, Galapagos and the Atlantic shelf of North America. In the present contribution, a new species of *Leptopontia* is described from the coast of Galicia (north-west Iberian Peninsula), *Leptopontia ferrolensis* sp. nov. The new species can easily be distinguished from its congeners by: the presence in the telson of a median spinous process that is flanked by two large processes (exceeding in size the median one), its large body size as compared with the other species of the genus, a pointed triangular rostrum with postero-lateral margins protruding near the base, the dense pattern of integumental pits, the setation of A1 and maxilla, and the ornamentation of P1–P4. The new species of *Leptopontia* described herein is also the first record of the genus in Spain.

http://www.zoobank.org/urn:lsid:zoobank.org:pub:28433822-1E97-4057-842A-7077247FE89C

Keywords: Harpacticoida; meiobenthos; taxonomy; north-west Iberian Peninsula; *Leptopontia ferrolensis* sp. nov.

Introduction

The north-west coast of the Iberian Peninsula is characterized by the presence of fluvial valleys flooded by the sea, each with a variable length, depth and width. These geographical features, locally known as *rías*, are common along the coast of Galicia (north-west Spain). The Ría de Ferrol harbours one of the largest biological diversities among the Galician *rías* because of its particular hydrodynamics and sedimentary conditions. Its benthic fauna is well-known and different taxa have been surveyed over the last 30 years, including: Polychaeta (Parapar et al. 1994, 1996), Ascidiacea (Vázquez 1993; Vázquez and Ramos-Esplá 1993), Isopoda (Reboreda and Otero 1989; Nolting et al. 1998), Phyllocarida (Moreira et al. 2009), Mollusca (Urgorri et al. 1991; Olabarría et al. 1998) and Bryozoa (Reverter and Fernández 1996). Unfortunately, there is only limited knowledge about the meiofaunal taxa (Besteiro and Urgorri 1987; Besteiro et al. 1990).

Harpacticoid copepods are the second most abundant metazoans in marine sediments, only outnumbered by nematodes (Giere 2009). They occur in every marine

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habitat, in every depth and salinity, and colonize a wide range of sediment types (Huys and Conroy-Dalton 2006). Although there are descriptive studies of harpacticoid copepods since the beginning of the twentieth century (Sars 1903), intensive investigation of marine interstitial harpacticoids did not start until the 1930s (Nicholls 1935; Wilson 1935).

Lang (1948) included Leptopontiinae as a subfamily of the Cylindropsyllidae Sars, 1909, together with Cylindropsyllinae and Leptastacinae. Krishnaswamy (1956) subsequently added the Psammopsyllinae to this family. Later, the subfamily Leptastacinae was elevated to family rank by Huys (1992). Martínez Arbizu and Moura (1994) raised Leptopontiinae to family status to include the subtaxa Leptopontiinae, Psammopsyllinae and the newly created Arenopontiinae. They also included the Cylindropsyllinae within the Canthocamptidae on the basis of the male P3 endopod and the female genital field. Huys and Conroy-Dalton (2006) did not consider these characters as synapomorphies and raised the Cyllindropsyllinae to family rank; this fact has been accepted by Wells (2007), who also included in his work the Psammopsyllinae and Arenopontiinae as families, based on Huys and Conroy-Dalton (2006) and Cottarelli et al. (1999). Sak et al. (2008) published a new generic classification of the Arenopontiidae. In contrast, *Notopontia* and *Syrticola* (included in Psammopsyllinae by Martínez Arbizu and Moura 1994) were included in Well's work within the family Leptopontiidae (Wells 2007).

The monophyletic status of Leptopontiidae is based on the following autapomorphies (Martínez Arbizu and Moura 1994): rostrum with a narrow base, *corpus mandibulae* thin and long, precoxal arthrite of maxilulla with slender setae, P1 endopod twice as long as exopod, inner seta on the last or single segment of P2 endopod very long and often modified in different taxa, and thorn-like process on the outer margin of the furcal ramus, so that the apical setae of the furca insert on the inner margin. The aim of this work is the description of a new species of the genus *Leptopontia* Scott, 1902 from the north-west Iberian Peninsula coast; it is as a member of the Leptopontiidae *sensu* Martínez Arbizu and Moura, 1994. The type species of the genus is *Leptopontia curvicauda* Scott, 1902, and it was originally described from St Monans in the Firth of Forth, Scotland. So far seven species of *Leptopontia* have been described; except for the type species, the remaining six were described by Huys and Conroy-Dalton (1996) from different geographic areas: *Leptopontia dovpori* (England), *L. curvicauda* (Scotland), *Leptopontia punctata* (Sweden), *Leptopontia flandrica* (North Sea), *Leptopontia mediterranea* (Corsica), *Leptopontia breviarticulata* (Galápagos Islands), and *Leptopontia americana* (South Carolina).

Material and methods

The Ría de Ferrol (Figure 1) is located in north-west Galicia (Spain), between 43°27′ and 43°30′ N and between 08°09′ and 08°21′ W. It is a fully marine environment (salinity 32–35‰); it is 15 km long and comprises an area of 25 km^2, with maximum depths of about 35–40 m (Moreira et al. 2009). Samples were collected between 2008 and 2010 by means of a Van Veen grab and scuba diving, and kept in the laboratory in buckets with circulating marine water (temperature 19.2°C; salinity 35.3‰). In the laboratory, the meiofauna was separated *in vivo* by decanting. Adult specimens were fixed in 4% formaldehyde, rinsed with fresh water and then preserved in 70% ethanol.

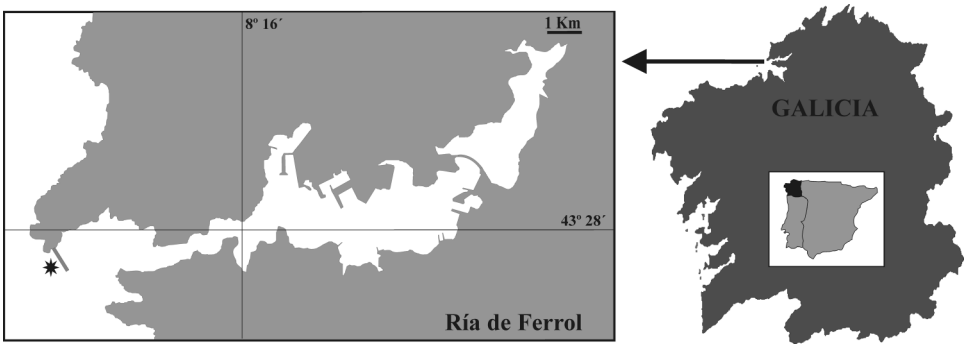

Figure 1. Sampling location. Sampling site is indicated with an asterisk.

Others were directly preserved in DESS (dimethyl sulphoxide, disodium EDTA and saturated NaCl; Yoder et al. 2006) for subsequent DNA analysis.

Specimens were dissected in glycerine under a stereomicroscope Leica MZ12 (Leica Microsystems GmbH, Wetzlar, Germany), and the dissected parts were mounted on several slides using glycerine as mounting medium. All drawings have been prepared using a Leica DMR microscope (Leica Microsystems GmbH) equipped with a drawing tube and a Normarsky interference contrast.

The male and female paratypes (listed in Type material) were used for confocal laser scanning microscopy (CLSM). The female specimen was stained with Congo Red, as described by Michels and Büntzow (2010). The male specimen was not stained, and its cuticular autofluorescence was visualized by means of the CLSM. Animals were embedded in glycerine, and mounted as described by Kihara and Falavigna da Rocha (2009). The specimens were viewed on a Leica TCS SP5 (Leica Microsystems GmbH) equipped with an upright microscope Leica DM5000 B (Leica Microsystems GmbH) and three visible lasers (argon 100 mW 458 nm, 476 nm, 488 nm and 514 nm; diode-pumped solid state 10 mW 561 nm; helium/neon 10 mW 633 nm). Moreover, both specimens were viewed on a Leica TCS SP5 X (Leica Microsystems GmbH) equipped with an inverted microscope Leica CTR6500 (Leica Microsystems GmbH), and one ultraviolet laser (blue diode 405 nm). The lenses and settings used to visualize each specimen are given in Table 1. The amplitude offset and detector gain were manually adjusted for each preparation. The image stacks were collected as described by Michels (2007). The maximum intensity projections, based on the image stacks, were created with the Leica LAS software (Leica Microsystems GmbH). The final images were arranged for contrast and brightness with the software CorelDRAW X3 (Corel Corporation, Ottawa, ON, Canada).

The terminology follows Huys and Boxshall (1991), except for the terms telson and furca, used according to Schminke (1976) instead of anal somite and caudal rami, respectively. Abbreviations used in the text and figures are: A1, antennule; P1–P6, leg 1 to 6; exp, exopod; enp, endopod; exp(enp)-1(-2, -3), to denote the proximal (middle, distal) segment of a ramus. The type material of *L. ferrolensis* was deposited in the collections of the Museo de Historia Natural "Luis Iglesias" of the Universidade de Santiago de Compostela (Spain).

Table 1. Overview of the microscope lenses, and confical laser scanning laser microscopy settings used for the visualization of *Leptopontia ferrolensis* sp. nov. ch1, ch2: detection channels 1 and 2 (when more than one channel was used).

Preparations	Lens/numerical aperture/immersion	Excitation wavelength (nm)	Detected emission wavelength (nm)	Image format (pixels)
Male habitus, lateral (Figure 7A)	20 ×/0.70	488 561	ch1: 494–554 ch2: 566–671	4048 × 800
Male habitus, dorsal (Figure 7B)	20 ×/0.70	488 561	ch1: 494–554 ch2: 566–671	4048 × 800
Female A1 and cephalothorax (Figure 8A)	40 ×/1.25/oil	405 470–670	416–728	1024 × 1024
Male A1 and cephalothorax (Figure 8B)	40 ×/1.25/oil	405 470–670	416–728	1024 × 1024
Male telson and furca (Figure 8C)	63 ×/1.40/oil	488 561	ch1: 494–554 ch2: 566–671	1800 × 800

Systematics

Order **HARPACTICOIDA** Sars, 1903
Family **LEPTOPONTIIDAE** Lang, 1948 *sensu* Martínez Arbizu and Moura, 1994
Genus ***Leptopontia*** Scott, 1902
Leptopontia ferrolensis sp. nov.
(Figures 2–8)

Material examined

Holotype ♀ (dissected on five slides) and paratype ♂ (dissected on seven slides), coll. no. 10035 and 10036 respectively. Collected in 2008 and 2010 from the type locality. Undissected paratypes 1 ♂ and 1 ♀ (coll. no. 10037) on one slide each, from Ría de Ferrol (north-west Iberian Peninsula; 43°27.555′ N, 008°20.199′ W; 11 m depth; coarse sand). Collected in 2010 from the type locality. Paratype ♀ was stained with Congo Red for CLSM.

Additional material: 1 ♀ from Ría de Ferrol (north-west Iberian Peninsula; 43°27.555′ N, 008°20.199′ W; 11 m depth; coarse sand). Collected in 2010 from type locality, slide, collection of the Estación de Bioloxía Mariña da Graña.

Description of female

Total body length from tip of rostrum to posterior rim of anal operculum: 600 μm (including furca: 670 μm) (Figure 2B). Maximum width 90 μm measured at cephalothorax. Body somites with plain hyaline frill on posterior margin. Individual

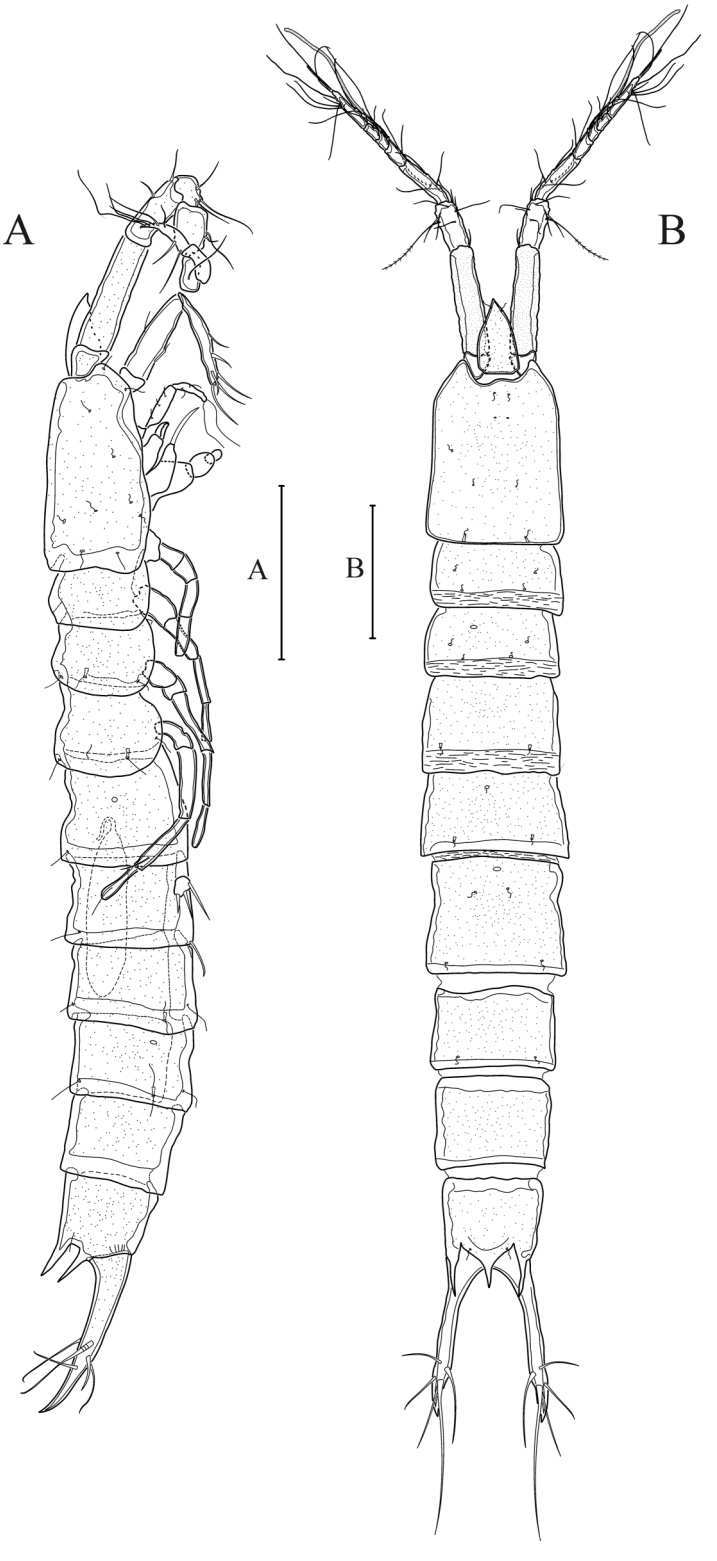

Figure 2. *Leptopontia ferrolensis* sp. nov. from the north-west Iberian Peninsula (A) Male habitus, lateral; (B), female habitus, dorsal. Scale bars: 100 μm.

somites connected by well-developed intersomitic membranes. With dense pattern of integumental pits, present dorsally and ventrally on thoracic and abdominal somites; even present on first segment of A1, coxae and bases of P1–P4. Ornamentation consisting of sensilla and pores, as figured. Rostrum (Figures 2B, 3A) triangular, elongated, pointed. Posterolateral margins protruding near base. About 0.7 times the length of first antennulary segment; with two sensilla. Telson (Figures 2B, 6A) with dorsal operculum drawn out into median, posteriorly directed, thick, acute spinous process flanked by two large processes, longer than median one. Furca (Figures 2B, 6A) slightly divergent; outer distal corner prolonged as a posteriorly directed, dorsally recurved spinous process. Process about six times as long as basal width (measured in lateral view). With seven setae.

Genital double-somite (Figure 6E) longer than wide, with dense pattern of integumental pits. Gonopores covered by two small plates derived from P6, each with two setae. Median copulatory pore located anteriorly between gonopores. Seminal receptacles paired.

Antennule (Figures 2B, 3A, 8A) slender, seven-segmented, segment 1 longest, about 4.25 times as long as wide. With aesthetasc (about 115 μm) on segment 4, fused basally with two setae. With apical acrothek consisting of short aesthetasc (about 40 μm) fused basally with two setae. All setae bare except for plumose seta on segment 2. Armature formula:1-[1], 2-[8 + 1 plumose], 3-[5], 4-[2 + ae], 5-[1], 6-[2], 7-[6 + acrothek].

Antenna as in *L. dovpori* (Huys and Conroy-Dalton 1996): "coxa with two spinular rows. Allobasis elongate, about 3.8 times as long as maximum width; with three spinular rows and one backwardly directed seta. Exopod represented by small segment in transverse membranous area marking fusion plane of basis and proximal endopod segment; exopodal seta short, about as long as segment. Free endopod with three spinular rows along outer margin; two pinnate spines along inner margin; distal margin with one pinnate spine, three geniculate setae, and one spinulose seta fused basally to a small seta".

Mandible as in *L. dovpori* (Huys and Conroy-Dalton 1996): "coxa elongate and curved, expanding distally into gnathobase provided with a series of small, curved teeth and recurved pinnate seta on the dorsal corner; with spinular row near implantation site of palp. Palp two-segmented; basis represented by swollen elongate segment, unarmed, with two spinular rows; endopod elongate, with one pinnate lateral seta and four naked setae (one with long setule) apically".

Maxillule as in *L. dovpori* (Huys and Conroy-Dalton 1996): "praecoxa with rectangular, elongate arthrite; arthrite with one small seta on the outer margin, two long setae and one spinular row on anterior surface, and five setae plus a distally serrate spine around the distal margin. Coxa partly fused to basis; with small endite bearing one long seta. Basis with rami entirely incorporated; exopod represented by one small and one long seta; endopod represented by two setae; proximal and distal endites of basis with two and four setae, respectively".

Maxilla (Figure 3C): syncoxa with cylindrical endite bearing one apical seta and one subapical backwardly directed seta. Allobasis with two setae, one seta fused basally to one spine, and one tube-pore; prolonged like a claw-like, unipinnate endite.

Maxilliped as in *L. dovpori* (Huys and Conroy-Dalton 1996): "syncoxa squarish; unarmed; with three spinular rows. Basis unarmed, with spinular row on palmar margin. Endopod represented by stout, distally pinnate claw bearing small seta proximally".

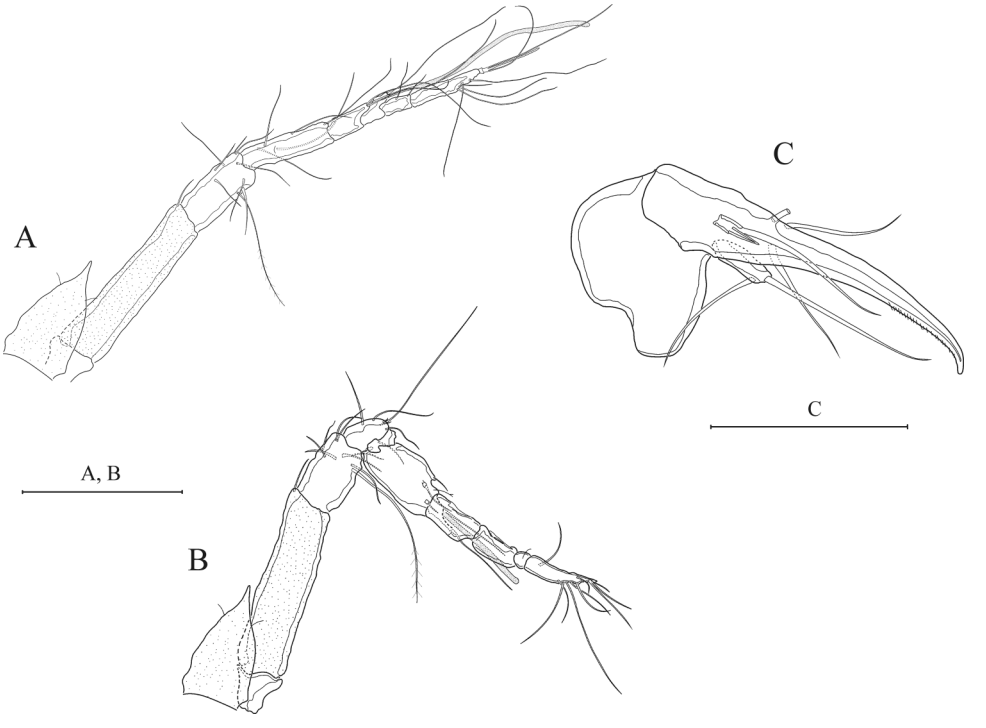

Figure 3. *Leptopontia ferrolensis* sp. nov. from the north-west Iberian Peninsula (A) Female rostrum and antennule; (B) male rostrum and antennule; (C) male maxilla. Scale bars: A, B, 100 μm; C, 25 μm.

P1 (Figure 4A): intercoxal sclerite small, transversely elongate. Coxa and basis with dispersed pattern of integumental pits. Basis with short, slender inner seta, and a short outer seta; with one spinular row near insertion of exopod. Exopod distinctly three-segmented; exp-1 with one spinular row, and a unipinnate seta; exp-2 naked; exp-3 with three geniculate unipinnate setae, increasing in length adaxially. Endopod two-segmented; enp-1 5.8 times as long as wide, and about 1.2 times as long as exopod; enp-1 with long serrate seta near proximal margin; enp-2 with one minute setule, two geniculate unipinnate setae, one about twice as long as the other. Length ratio enp-1/enp-2 about 3. Exp-1, exp-2 and enp-1 with well-developed hyaline frills.

P2 (Figure 4B): intercoxal sclerite rectangular. Coxa and basis with dispersed pattern of integumental pits. Basis with one naked outer seta. Exopod distinctly three-segmented; exp-2 and exp-3 with hyaline frill; exp-1 with bipinnate seta; exp-2 with bipinnate seta; exp-3 with three bipinnate setae, increasing in length adaxially. Endopod two-segmented; enp-2 with hyaline frill; enp-1 with unipinnate seta; enp-2 with one serrate inner seta, one short unipinnate spine and one larger, recurved, bipinnate spine.

P3 (Figure 4C): intercoxal sclerite rectangular, distinctly concave. Coxa with widely scattered pattern of integumental pits. Basis with a long plumose outer seta. Exopod distinctly three-segmented; exp-1 and exp-2 with hyaline frills; exp-1 with sparse

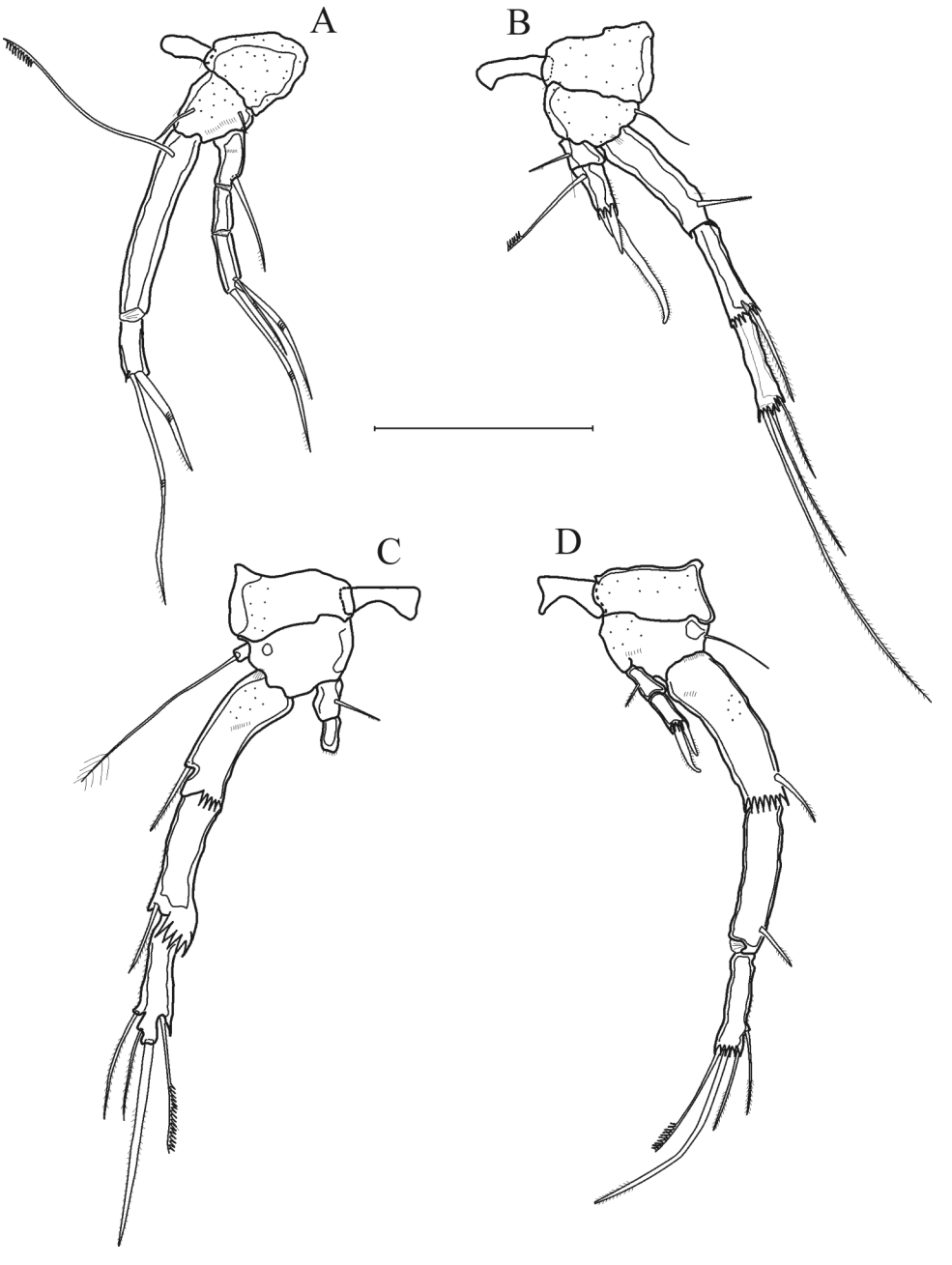

Figure 4. *Leptopontia ferrolensis* sp. nov. from the north-west Iberian Peninsula. Female. (A) P1; (B) P2; (C) P3; (D) P4. Scale bars: 50 μm.

pattern of integumental pits; with bipinnate seta and one spinular row; exp-2 with bipinnate seta; exp-3 with two bipinnate outer setae, one stronger bipinnate seta and one serrate inner seta. Endopod two-segmented; enp-1 with unipinnate seta; enp-2 bare.

Table 2. Armature formula of female swimming legs of *Leptopontia ferrolensis* sp. nov.

Exopod	Endopod	
P1	0.0.021	1.120
P2	0.0.021	1.120
P3	0.0.112	1.000
P4	0.0.112	1.020

P4 (Figure 4D): intercoxal sclerite rectangular, distinctly concave. Coxa and basis with scattered pattern of integumental pits. Basis with spinular row near insertion of endopod; with slender naked outer seta. Exopod distinctly three-segmented; all exopod segments with hyaline frill; exp-1 with widely dispersed pattern of integumental pits, one spinular row and one bipinnate seta; exp-2 with bipinnate seta; exp-3 with three bipinnate setae increasing in length adaxially, and a serrate inner seta. Endopod two-segmented; enp-1 with bipinnate spiniform seta; enp-2 with hyaline frill; with one short unipinnate spine and one larger, recurved bipinnate spine.

Armature formula of female swimming legs is shown in Table 2.

P5 (Figure 6E): closely set together, without intercoxal sclerite. With dense pattern of integumental pits on anterior half of basoendopod. Baseoendopod not fused medially, with moderately developed endopodal lobe, extending to distal margin of exopod, with two long setae. Exopod consisting of a small segment with one outer, one inner and one apical seta. Outer basal seta long and plumose.

Description of male

Male differs from female as follows. Total body length from tip of rostrum to posterior rim of anal operculum: 550 μm (including furca: 620 μm) (Figures 2A, 7). Maximum width 80 μm measured at cephalothorax. Spermatophore (Figures 2A, 7) about 95 μm in length. Antennule (Figure 2A, 3B, 7, 8B) slender, nine-segmented, segment 1 longest, about 3.8 times as long as wide. Major geniculation between segments 6 and 7. With short aesthetasc (about 60 μm) on segment 5, fused basally with one seta. With apical acrothek consisting of short aesthetasc (50 μm) fused basally with two setae. All setae bare except for one plumose seta on segment 2. Armature formula:1-[1], 2-[8 + plumose], 3-[6], 4-[1], 5-[5 + ae], 6-[1 modified], 7-[1 modified], 8-[1], 9-[7 + acrothek].

P2 (Figure 5A): enp-1 with naked seta. P3 (Figure 5B): exp-3 with two unipinnate outer setae, one stronger bipinnate seta and one serrate inner seta. Endopod two-segmented; enp-1 with one spinular row; enp-2 represented by a barbed spine. P4 (Figure 5C): enp-1 unarmed.

Armature formula of male swimming legs is shown in Table 3.

P5 (Figure 6C): baseoendopods unfused medially. Baseoendopod with moderately developed endopodal lobe, unarmed; with long, plumose outer basal seta. Exopod represented by small segment with one outer, one inner and one apical short seta.

Sixth pair of legs (Figure 6D): asymmetrical, with one segment fused to genital somite. Armature consisting of two slender setae.

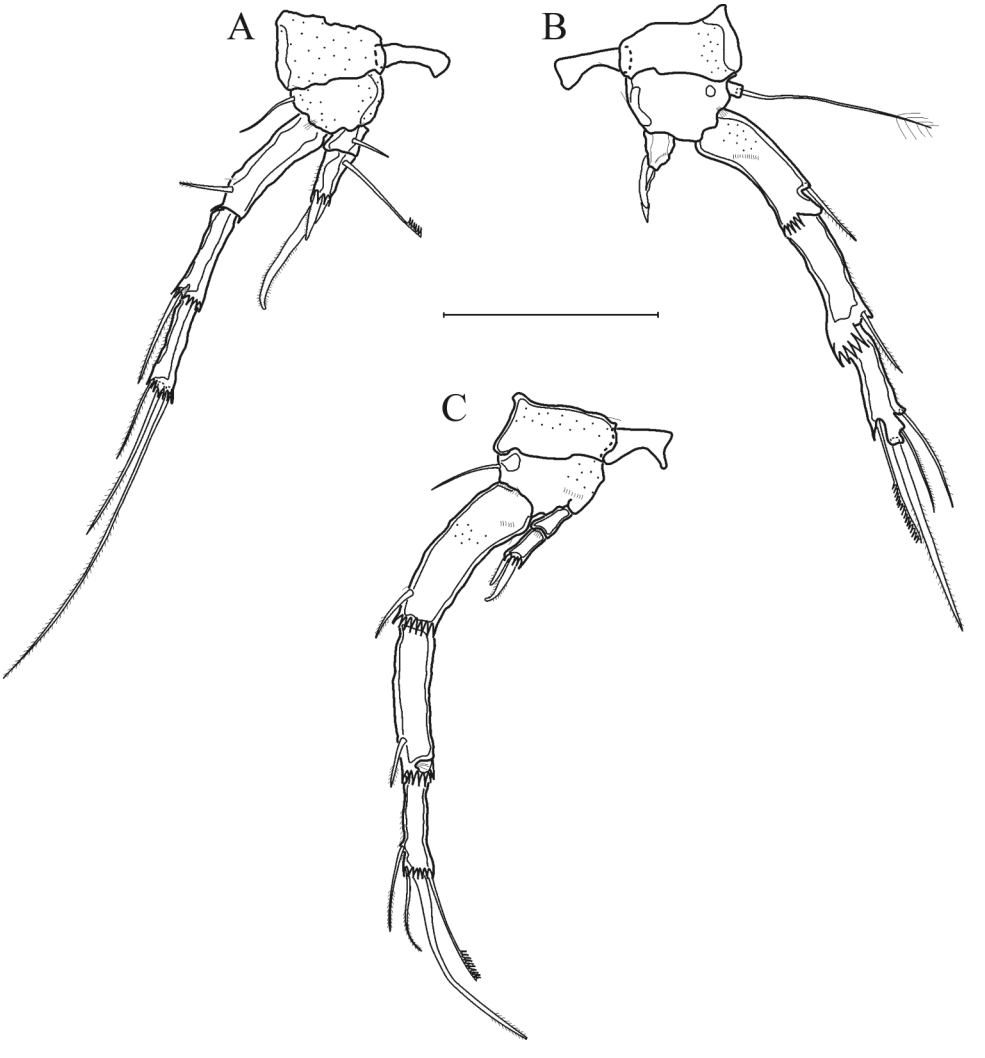

Figure 5. *Leptopontia ferrolensis* sp. nov. from the north-west Iberian Peninsula. Male. (A) P2; (B) P3; (C) P4. Scale bars: 50 μm.

Table 3. Armature formula of male swimming legs of *Leptopontia ferrolensis* sp. nov.

Exopod	Endopod	
P1	0.0.021	1.120
P2	0.0.021	1.120
P3	0.0.112	Modified
P4	0.0.112	0.020

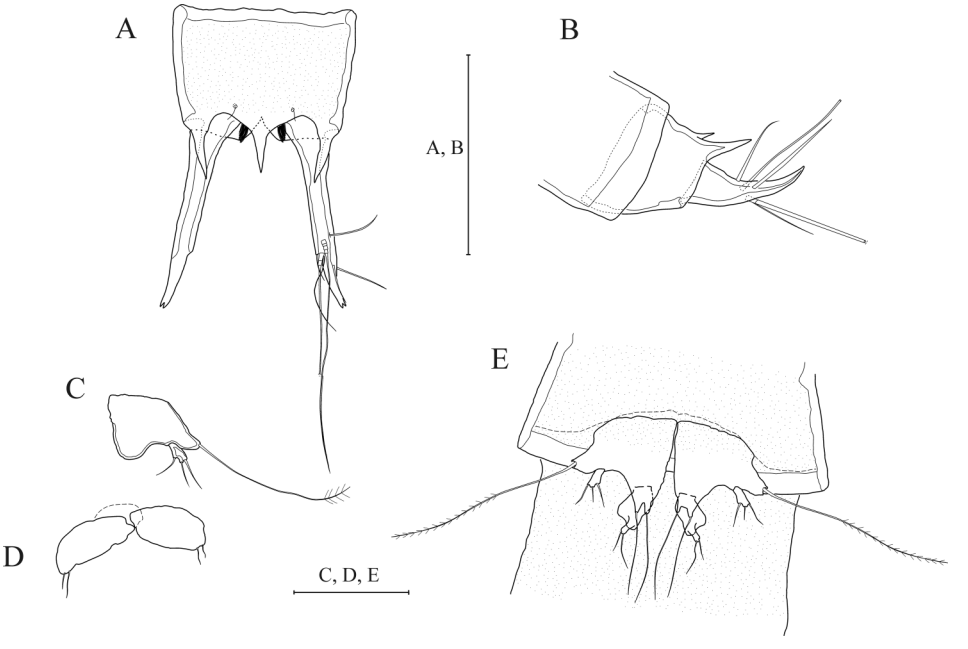

Figure 6. (A) *Leptopontia ferrolensis* sp. nov. from the north-west Iberian Peninsula. Female furca, dorsal; (B) *Leptopontia mediterranea* female furca, lateral; (C) *Leptopontia ferrolensis* sp. nov. male P5; (D) *Leptopontia ferrolensis* sp. nov. male P6; (E) *Leptopontia ferrolensis* sp. nov. female genital field, P5 and P6. Scale bars: A, B, 100 μm; C–E, 50 μm.

Type locality

Ría de Ferrol (north-west Iberian Peninsula); 43°27.530′ N, 008°20.192′ W; 11 m depth, coarse sand.

Etymology

The species epithet is the feminine singular Latin genitive of the type locality, meaning "from Ferrol".

Remarks

Leptopontia ferrolensis sp. nov. differs from the other species of the genus mainly in: (1) the presence in the telson of a median, posteriorly directed, thick and sharpened spinous process that is flanked by two large processes (exceeding in size the median one), (2) its large body size, (3) a pointed triangular rostrum with posterolateral margins protruding near the base, (4) the dense pattern of integumental pits, (5) the setation of A1, (6) the setation of the maxilla, and (7) the setation and ornamentation of P1–P4.

The median and lateral processes of the telson of *L. ferrolensis* sp. nov. differ from the other species of *Leptopontia* not only in the presence, shape, length and strength of the lateral processes, but also in the thickness and length of the median spinous

process. This character could lead to confusion between *L. ferrolensis* sp. nov. and *L. mediterranea*, described from a copepodid V male collected in Calvi, Corsica (Huys and Conroy-Dalton 1996), which also has two strongly marked lateral processes as in *L. ferrolensis*. This fact led Huys and Conroy-Dalton (1996) to consider it as a different species. Hence, *L. ferrolensis* could be confused with adults of *L. mediterranea*; however, adult female specimens of *L. mediterranea* collected near the type locality (Pianosa, only 40 km away from Corsica) prove that it is a different species. The median spinous process of the telson of *L. ferrolensis* sp. nov. is longer, thicker and sharper, and the lateral processes are much longer (Figures 2, 6A, B, 7, 8C). Moreover, the furca of *L. ferrolensis* sp. nov. is clearly longer than in *L. mediterranea* (Figures 2, 6A, B, 7, 8C). These characters clearly indicate that *L. ferrolensis* sp. nov. cannot be considered as the adult of *L. mediterranea*. A more thorough comparison between these two species should be made in a redescription of the latter, for which adult males of this species should be found. For this reason, *L. mediterranea* will not be further considered in the following discussion.

The body of *L. ferrolensis* sp. nov. (including furca) is larger than in other species of *Leptopontia*: 670 μm in females and 620 μm in males, whereas the size of other species ranges between 300 and 600 μm in females, and between 330 and 600 μm in males. We have compared *L. ferrolensis* with individuals of other species of *Leptopontia* collected in the type locality (*L.* cf. *punctata* and *L.* cf. *dovpori*) and were able to confirm this size difference. In addition, we have also compared them with the specimens of *L. mediterranea* collected on Pianosa and the size difference between the females of these two species can be clearly corroborated.

Leptopontia americana and *L. flandrica* have a rostrum with concave lateral margins in its distal half. This shape differs from that found in the new species, which has posterolateral margins protruding near the base of the rostrum (Figure 3A, B). The other species of *Leptopontia* lack concave lateral margins in the rostrum. Furthermore, the rostrum of *L. ferrolensis* seems to be more pointed than in its congeners.

All species of *Leptopontia* have a distinct pattern of subsurface integumental pits on the thoracic and abdominal somites, but at different densities. In *L. punctata* and *L. mediterranea* the pattern is dense; in the former, pits are also present on segments 1 and 2 of A1, on the maxillules and maxillae, and on P1–P4 (Huys and Conroy-Dalton 1996). This pattern is similar to that found in *L. ferrolensis* sp. nov., which is present not only dorsally and ventrally on the thoracic and abdominal somites, but also on the first segment of A1, coxae and bases of P1–P4, and on the female P5. Therefore, this pattern seems to be more extended along the body in *L. ferrolensis* sp. nov. than in other species of the genus.

The female A1 of *L. ferrolensis* sp. nov. differs from that of *L. dovpori*, *L. punctata* and *L. flandrica* in the number of setae on segments 6 and 7 (two and six setae, respectively in the new species, but three and seven setae, respectively in *L. dovpori*, *L. punctata* and *L. flandrica*). The new species differs from *L. breviarticulata* in the number of setae on segments 3, 6 and 7 (five, two and six setae, respectively in *L. ferrolensis* sp. nov., but four, three and seven setae in *L. breviarticulata*); moreover, in *L. breviarticulata* all setae are naked, but the other species of *Leptopontia* have a plumose seta on segment 2. *Leptopontia americana* was described only with males, so it cannot be compared. There is no type material of *L. curvicauda*, and the descriptions of the female given by Scott (1902), Mielke (1975) and Huys and Conroy-Dalton (1996) do not provide enough information about the female A1, so it cannot be compared either.

Figure 7. *Leptopontia ferrolensis* sp. nov. from the north-west Iberian Peninsula. Maximum intensity projections. (A) Male habitus, lateral; (B) male habitus, dorsal. Scale bar: 100 μm.

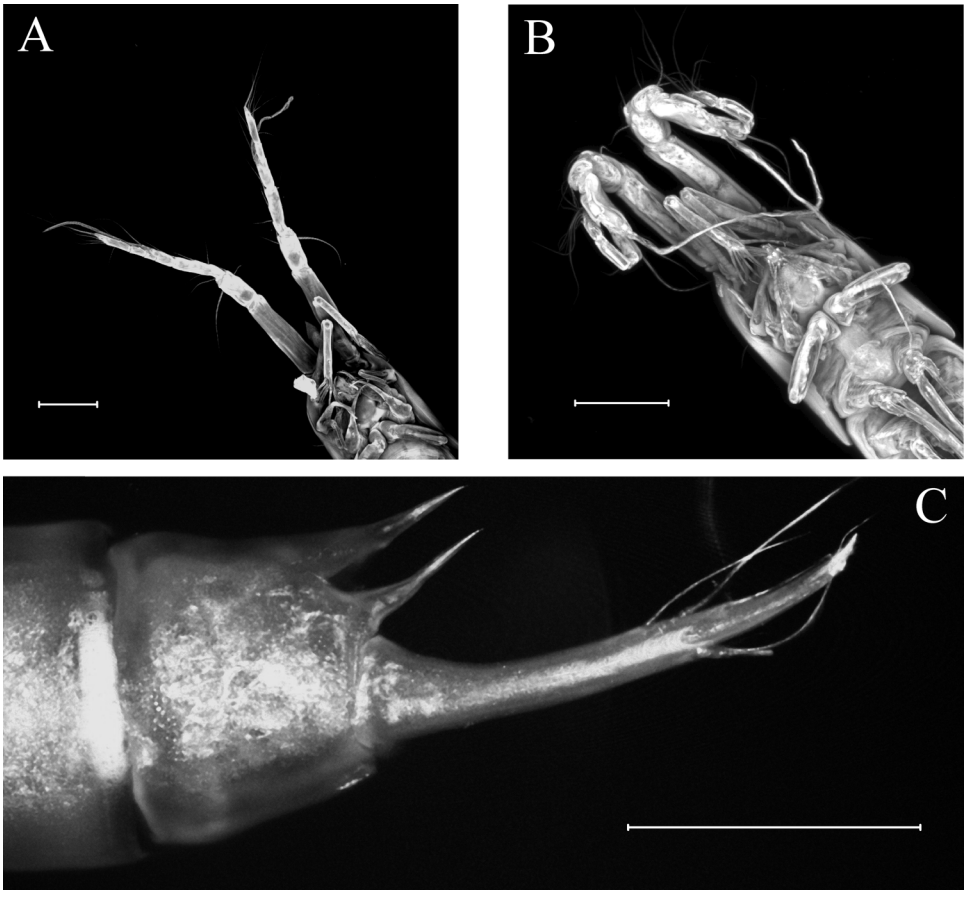

Figure 8. *Leptopontia ferrolensis* sp. nov. from the north-west Iberian Peninsula. Maximum intensity projections. (A) Female A1 and cephalothorax, ventral; (B) male A1 and cephalothorax, ventral; (C) male telson and furca, lateral. Scale bars: 100 μm.

The male A1 of *L. ferrolensis* sp. nov. resembles that of *L. dovpori* and *L. americana* but segment 5 has five setae in the new species whereas *L. dovpori* and *L. americana* have six setae and two modified setae. Also, the new species has a single modified seta on segment 6, whereas *L. dovpori* and *L. americana* have four setae on this segment. In addition, *L. ferrolensis* sp. nov. has one modified seta on segment 7, whereas both *L. dovpori* and *L. americana* have three setae on the corresponding segment.

The male A1 of the new species differs from *L. punctata* and *L. curvicauda* in: the number of setae on segment 3 (the new species has six setae, *L. punctata* and *L. curvicauda* have seven setae), the number of setae on segment 4 (one seta versus two in *L. punctata* and *L. curvicauda*), the number of setae on segment 5 (five setae versus six setae and two modified setae in *L. punctata* and *L. curvicauda*, respectively), the number of setae on segment 6 (one modified seta versus two setae and three modified setae in *L. punctata* and four setae in *L. curvicauda*), and the number of setae on segment 7 (one modified seta versus three modified setae in *L. punctata* and three setae

in *L. curvicauda*). *Leptopontia breviarticulata* was described only from females, so it cannot be compared.

The antenna, mandible and maxillule of *L. ferrolensis* sp. nov. are as in *L. dovpori*, *L. punctata*, *L. flandrica* and *L. americana*. The maxilliped of the new species is as in *L. dovpori*, *L. punctata* and *L. americana*; however, the maxilliped of *L. flandrica* differs in the absence of spinular rows on the syncoxa and the basis (Huys and Conroy-Dalton 1996). The antenna, mandible, maxillule and maxilliped of *L. breviarticulata* show a different setation and ornamentation pattern when compared with the new species, *L. dovpori*, *L. punctata*, *L. americana* and *L. flandrica* (Huys and Conroy-Dalton 1996). The type material no longer exists and the descriptions given by Scott (1902), Mielke (1975) and Huys and Conroy-Dalton (1996) are insufficient, so *L. curvicauda* cannot be compared. The main difference among the maxilla from *L. ferrolensis* sp. nov. and its congeners is the presence of one seta fused basally to a spine on the allobasis. This character distinguishes it from the other *Leptopontia* species, and can be considered as an apomorphy for *L. ferrolensis* sp. nov.

The main differences of the new species and its congeners in terms of the morphology of legs 1–4 are related to the type of setae (unipinnate or bipinnate) and in the number of spinular rows. A male P3 enp-2 represented by a barbed spine as it occurs in *L. ferrolensis* sp. nov. is also present in *L. dovpori*, *L. punctata* and *L. flandrica*. The male P3 enp-2 is represented by a bifid apex in *L. curvicauda*, while in *L. americana* it is a bifid spine. The male of *L. breviarticulata* is unknown.

The presence of an inner bipinnate seta in P4 enp-1 is a common feature in females of *Leptopontia*. The absence of this element in males (except in *L. americana*, which presents a pinnate seta) is a sexual dimorphism. In the same way, another common feature in females of the other species of *Leptopontia* is the presence of a bipinnate spiniform seta on P3 enp-2. Examination of an additional female specimen of *L. ferrolensis* sp. nov. revealed the presence of a seta on P3 enp-2, hence the absence of that seta on the holotype needs to be considered as an accidental loss.

The genus is widely distributed, records include the North European coasts, the Mediterranean Sea, the Pacific Ocean and the Atlantic Shelf of North America. With *L. ferrolensis* sp. nov. there are five species of *Leptopontia* described from the European coasts of the North Atlantic Ocean (*L. dovpori*, *L. curvicauda*, *L. punctata* and *L. flandrica*). This is the first species described from the Ría de Ferrol and the first record of the genus in Spain. The accompanying interstitial fauna includes two additional species of *Leptopontia* (*L.* cf. *punctata* and *L.* cf. *dovpori*), one species of *Stenocaropsis* Apostolov, 1982 (Cylindropsyllidae) (to be described separately) and *Meloriastacus ctenidis* Huys and Todaro, 1997 (Leptastacidae Lang, 1948).

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