

## ***Ischnomesus harrietae* sp. nov., a new benthic asellote (Crustacea: Isopoda: Ischnomesidae) from bathyal bottoms of the southern Bay of Biscay**

FIONA A. KAVANAGH<sup>1,4</sup>, INMACULADA FRUTOS<sup>2</sup> & JEAN CLAUDE SORBE<sup>3</sup>

<sup>1</sup>Ryan Institute, National University of Ireland, Galway, Ireland. E-mail: kavfiona@gmail.com

<sup>2</sup>Departamento Ciencias de la Vida, EU-US Marine Biodiversity Group, Universidad de Alcalá, 28871 Alcalá de Henares, Spain.  
E-mail: inmafparralejo@gmail.com

<sup>3</sup>Station Marine, 2 rue Jolyet, 33120, Arcachon, France. E-mail: sorbejc@gmail.com

<sup>4</sup>Corresponding author

### **Abstract**

A new species of Ischnomesidae (Crustacea: Isopoda: Asellota), *Ischnomesus harrietae* sp. nov. is described from the southern Bay of Biscay. This new species is distinctive due to the presence of numerous pedestal setae arranged in longitudinal rows on pereonite 5. Because of this morphological peculiarity, it can be easily distinguished from the four other *Ischnomesus* species previously reported from bathyal/abyssal bottoms of the European continental margin. Within its known distributional area, the new species inhabits sandy and muddy bottoms between 619 and 1099 m, with a maximum abundance of 41.8 individuals per 100 m<sup>2</sup> recorded at approximately 700 m on the Arcachon Plateau. Another new species is also reported, *Ischnomesus* sp.1, represented by one specimen only and briefly described. An identification key to European species of *Ischnomesus* is provided.

**Key words:** Isopoda, Asellota, Ischnomesidae, *Ischnomesus*, new species, Bay of Biscay, deep-sea

### **Introduction**

*Ischnomesus* is one of the nine genera belonging to the family Ischnomesidae (Crustacea: Isopoda), comprising marine species from bathyal, abyssal and hadal depths (Wolff 1956, 1962). This genus was established by Richardson in 1908 to replace the invalid preoccupied name *Ischnosoma* G.O. Sars, 1868, with *Ischnomesus bispinosus* (G.O. Sars, 1868) retained as the type species by monotypy. It is the most speciose in the family, to date containing 36 species described from the Atlantic, Pacific and Southern Oceans as well as from Northern Polar and Caribbean Seas. Some changes were made after creating this genus. Three species placed in the former genus *Rhabdomesus* Richardson, 1908 (*R. bacilloides* Beddard, 1886, *R. bacillus* Beddard, 1886 and *R. bacillopsis* Barnard, 1920) and one species primarily placed in the genus *Stylomesus* Wolff, 1956 (*S. gracilis* Birstein, 1960) were transferred to *Ischnomesus* (see Hansen 1916, Wolff 1956 and Birstein 1971). *I. gracilis* Chardy, 1974 was renamed *I. chardyi* by Kussakin (1988) because the initial species name was preoccupied (*Stylomesus gracilis* Birstein, 1960 transferred to *Ischnomesus* by Birstein in 1971). *I. hessleri* Kussakin, 1988 was synonymized with *I. norvegicus* Svavarsson, 1984 by Malyutina & Kussakin (1996). This paper describes a new *Ischnomesus* species, *Ischnomesus harrietae* sp. nov., from the southern Bay of Biscay, mentioned as ‘*Ischnomesus* sp. A’ (Elizalde *et al.* 1993; Sorbe & Weber 1995; Frutos & Sorbe 2014) or ‘*Ischnomesus* sp.’ (Dauvin *et al.* 1995) in previous studies on suprabenthic assemblages from that area. This paper also reports on another new species, *Ischnomesus* sp.1, co-occurring with *I. harrietae* sp. nov. at one station of the southern Bay of Biscay. However, as there is just one representative specimen in poor condition, this species is only briefly described and it is referred to throughout the text as *Ischnomesus* sp. 1. An identification key is provided for *Ischnomesus* species recorded within the area corresponding to the ‘European Register of Marine Species’ (ERMS). Furthermore, some ecological data on *I. harrietae* sp. nov. are also given.

## Acknowledgements

We thank the crew of the RV *Côte d'Aquitaine* (ESSAIS, CAPBRETON, SUPRABATH and ECOMARGE cruises), RV *Le Noroît* (ECOFER cruise), RV *Côtes de la Manche* (OXYBENT and SEDICAN cruises), RV *Vizconde de Eza* and RV *Cornide de Saavedra* (ECOMARG cruises) and all participants for helpful assistance at sea during samplings. Special thanks to P. Anschutz, J.M. Jouanneau and O. Weber (DGO, Talence, France), C. González-Pola (IEO, Gijón, Spain), F. Sánchez (IEO, Santander, Spain) and S. Parra (IEO, La Coruña, Spain) for the communication of environmental data, to A.M. Power and G. McCormack (NUI, Galway, Ireland) for the use of facilities and for supporting this research (FK). The authors would like to thank G.D.F. Wilson (Saugatuck Natural History Laboratory, USA) and an anonymous reviewer for their helpful comments which greatly improved this manuscript. This study was partially funded (oceanographic cruises) by the French CNRS-INSU and by the Spanish Science and Technology Ministry (ECOMARG project REN2002-00916/MAR).

## References

- Birstein, J.A. (1971) Fauna of the Kurile-Kamchatka Trench. Additions to the fauna of isopods (Crustacea, Isopoda) of the Kurile-Kamchatka Trench. Part II. Asellota 2. *Trudy Instituta Okeanogiya, Akademiya Nauk SSSR, Moscow*, 92, 162–238.
- Brandt, A. (1993) Composition, abundance, and diversity of peracarid crustaceans on a transect of the Kolbeinsey Ridge, north of Iceland. *Polar Biology*, 13, 565–576.  
<http://dx.doi.org/10.1007/bf00236399>
- Brandt, A. (1997) Abundance, diversity and community patterns of epibenthic- and benthic-boundary layer peracarid crustaceans at 75°N off East Greenland. *Polar Biology*, 17, 159–174.  
<http://dx.doi.org/10.1007/s003000050118>
- Brandt, A., Vassilenko, S., Piepenburg, D. & Thurston, M. (1996) The species composition of the peracarid fauna (Crustacea, Malacostraca) of the Northeast Water Polynya (Greenland). *Meddelelser om Grönland, Bioscience*, 44, 1–30.
- Cartes, J.E. & Sorbe, J.C. (1993) Les communautés suprabenthiques bathyales de la mer catalane (Méditerranée occidentale): données préliminaires sur la répartition bathymétrique et l'abondance des crustacés péracarides. *Crustaceana*, 64 (2), 155–171.  
<http://dx.doi.org/10.1163/156854093x00216>
- Chardy, P. (1974) Compléments à l'étude systématique des Ischnomesidae (Isopodes Asellotes) de l'Atlantique. Description de quatre espèces nouvelles. *Bulletin du Muséum National d'Histoire Naturelle*, 257, 1537–1552.
- Cunha M.R. & Wilson, G.D.F. (2006). The north Atlantic genus *Heteromesus* (Crustacea: Isopoda: Asellota: Ischnomesidae). *Zootaxa*, 1192, 1–76.
- Damkaer, D.M. (2000) Harriet Richardson (1874–1958), First Lady of isopods. *Journal of Crustacean Biology*, 20 (4), 803–811.  
<http://dx.doi.org/10.1163/20021975-99990102>
- Dauvin, J.C., Sorbe, J.C. & Lörgeré, J.C. (1995) Benthic boundary layer macrofauna from the upper continental slope and the Cap Ferret canyon (Bay of Biscay). *Oceanologica Acta*, 18, 113–122.
- Dewicke, A. (2002) *Hyperbenthic communities of the North Sea*. PhD thesis, University of Gent, Belgium, 219 pp.
- Durieu de Madron, X., Castaing, P., Nyffeler, F. & Courp, T. (1999) Slope transport of suspended particulate matter on the Aquitanian margin of the Bay of Biscay. *Deep-Sea Research II*, 46, 2003–2027.  
[http://dx.doi.org/10.1016/s0967-0645\(99\)00053-3](http://dx.doi.org/10.1016/s0967-0645(99)00053-3)
- Elizalde, M., Sorbe, J.C. & Dauvin, J.C. (1993) Las comunidades suprabentónicas batiales del golfo de Vizcaya (margen sur del cañón de Cap-Ferret): composición faunística y estructura. *Publicaciones Especiales del Instituto Español de Oceanografía*, 11, 247–258.
- Frutos, I. (2006) *Las comunidades suprabentónicas submareales de la ría de La Coruña y plataforma continental adyacente (NW península Ibérica)*. PhD thesis, Universidad de Alcalá, Spain, 402 pp.
- Frutos, I. & Sorbe, J.C. (2014) Bathyal suprabenthic assemblages from the southern margin of the Capbreton Canyon (“Kostarrenkala” area), SE Bay of Biscay. *Deep-Sea Research II*, 104, 291–309.  
<http://dx.doi.org/10.1016/j.dsrr.2013.09.010>
- Gage, J. (1975) A comparison of the deep-sea epibenthic sledge and anchor-box dredge samplers with the van Veen grab and hand coring by diver. *Deep-Sea Research*, 22, 693–702.  
[http://dx.doi.org/10.1016/0011-7471\(75\)90008-x](http://dx.doi.org/10.1016/0011-7471(75)90008-x)
- Gage, J.D. & Tyler, P.A. (1991) *Deep-sea biology. A natural history of organisms at the deep-sea floor*. Cambridge University Press, Cambridge, 504 pp.
- Gurjanova, E. (1932) ‘Tableaux analytiques de la faune de l'URSS, publiés par l'Institut Zoologique de l'Académie des Sciences. Les isopodes des mers arctiques’. Leningrad, 181 pp.
- Hansen, H.J. (1916) Crustacea Malacostraca III. The order Isopoda. *The Danish Ingolf Expedition*, 3 (5), 1–262.

- Harrison, K. (1989) Are deep-sea asellote isopods infaunal or epifaunal? *Crustaceana*, 56, 317–319.  
<http://dx.doi.org/10.1163/156854089x00284>
- Hessler, R.R. & Strömberg, J.-O. (1989) Behaviour of janiroidean isopods (Asellota), with special reference to deep-sea genera. *Sarsia*, 74, 145–159.
- Kavanagh, F.A. (2009) A catalogue of the Asellota (Crustacea: Isopoda) off the west coast of Ireland and Britain, from 100–5000 m. *Bulletin of the Irish Biogeographical Society*, 33, 14–75.
- Kavanagh, F.A. & Sorbe, J.C. (2006) *Haplomesus longiramus* sp. nov. (Crustacea: Isopoda: Asellota), a new ischnomesid species from the Bay of Biscay, North East Atlantic Ocean. *Zootaxa*, 1300, 51–68.
- Kavanagh, F.A. & Wilson, G.D.F. (2007) Revision of the genus *Haplomesus* (Isopoda: Asellota: Ischnomesidae) with erection of four new genera. *Invertebrate Systematics*, 21, 487–535.  
<http://dx.doi.org/10.1071/is06031>
- Kavanagh, F.A., Wilson, G.D.F. & Power, A.M. (2006) Heterochrony in *Haplomesus* (Crustacea: Isopoda: Ischnomesidae): revision of two species and descriptions of two new species. *Zootaxa*, 1120, 1–33.
- Kussakin, O.G. (1988) Marine and brackish-water Crustacea (Isopoda) of cold and temperate waters of the Northern Hemisphere. 3. Suborder Asellota 1. Janiridae, Santiidae, Dendroctionidae, Munnidae, Haplomunnidae, Mesosignidae, Haploniscidae, Mictosomatidae, Ischnomesidae. *Opredeliteli po Faune SSR, Akademiya Nauk, SSR*, 152, 1–501.
- Lagardère, J.P. (1977) Recherches sur la distribution verticale et sur l'alimentation des crustacés décapodes benthiques de la pente continentale du golfe de Gascogne. Analyse des groupements carcinologiques. *Bulletin du Centre d'Etude et de Recherche Scientifique, Biarritz*, 11 (4), 367–440.
- Lo Bianco, S. (1903) Le pesche abissali eseguite da F. A. Krupp col yacht Puritan nelle adiacenze di Capri ed in altre località del Mediterraneo. *Mittheilungen aus der Zoologischen Station zu Neapel*, 16, 109–279.
- Mahaut, M.-L. (1991) *Modélisation à l'état stable du cycle du carbone dans le réseau trophique profond de la Terrasse de Meriadzek (golfe de Gascogne)*. PhD thesis, Université de Paris VI, Paris, 259 pp.
- Malyutina, M.V. & Kussakin, O.G. (1996) Addition to the Polar Sea bathyal and abyssal Isopoda (Crustacea). Part I. Anthuridea, Valvifera, Asellota (Ischnomesidae, Macrostyliidae, Nannoniscidae). *Zoosystematica Rossica*, 4, 49–62.
- Menzies, R.J. (1962) On the food and feeding habits of abyssal organisms as exemplified by the Isopoda. *Internationale Revue der Gesamten Hydrobiologie*, 47 (3), 339–358.  
<http://dx.doi.org/10.1002/iroh.19620470303>
- Menzies, R.J. (1962) The isopods of abyssal depths in the Atlantic Ocean. *Véma Research Series*, 1, 79–206.
- Menzies, R.J. & George, R.Y. (1972) Isopod Crustacea of the Peru–Chile Trench. *Anton Bruun Report*, 9, 1–124.
- Merrin, K. & Poore, G.C.B. (2003) Four new species of Ischnomesidae (Crustacea: Isopoda: Asellota) from off south-eastern Australia. *Memoirs of Museum Victoria*, 60, 285–307.
- Ólafsdóttir S.H. & Svavarsson, J. (2002) Ciliate (Protozoa) epibionts of deep-water asellote isopods (Crustacea): pattern and diversity. *Journal of Crustacean Biology*, 22 (3), 607–618.  
<http://dx.doi.org/10.1163/20021975-99990273>
- Rhoads, D.C. (1974) Organism-sediment relations on the muddy sea floor. *Oceanography and Marine Biology Annual Review*, 273, 1–22.
- Rhoads, D.C. & Young, D.K. (1970) The influence of deposit-feeding organisms on sediment stability and community trophic structure. *Journal of Marine Research*, 28, 150–178.
- Richardson, H. (1908) Some new Isopoda of the superfamily Aselloidea from the Atlantic coast of North America. *Proceedings of the U.S. National Museum*, 35, 71–86.  
<http://dx.doi.org/10.5479/si.00963801.35-1633.71>
- Sars, G.O. (1868) Beretning om en i Sommeren 1865 foretagen zoologisk Reise ved Kysterne af Christianias of Christiansands Stifter. *Nyt Magazin for Naturvidenskaberne, Christiania*, 15, 84–128.
- Sars, G.O. (1899) *An account of the Crustacea of Norway with short descriptions and figures of all the species. Vol. II. Isopoda*. Bergen Museum, Bergen, 270 pp.  
<http://dx.doi.org/10.5962/bhl.title.1164>
- Sokolova, M.N. (1958) The food of the invertebrates on the deep-sea bottom. *Trudy Instituta Okeanogiya, Akademiya Nauk SSSR, Moscow*, 27, 123–153.
- Sorbe, J.C. (1983) Description d'un traîneau destiné à l'échantillonnage quantitatif étaged de la faune suprabenthique nérétique. *Annales de l'Institut Océanographique, Paris*, 59, 117–126.
- Sorbe, J.C. & Elizalde, M. (2014) Temporal changes in the structure of a slope suprabenthic community from the Bay of Biscay (NE Atlantic Ocean). *Deep-Sea Research II*, 106, 179–191.  
<http://dx.doi.org/10.1016/j.dsri.2013.09.041>
- Sorbe, J.C. & Weber, O. (1995) Influence de la profondeur et des sédiments superficiels sur la structure des communautés suprabenthiques bathyales sud-Gascogne. *Actas del IV Coloquio Internacional sobre Oceanografía del Golfo de Vizcaya*, 183–194.
- Svavarsson, J. (1984) Ischnomesidae (Isopoda) from bathyal and abyssal depths in the Norwegian and North Polar Seas. *Sarsia*, 69, 25–36.
- Svavarsson, J., Brattegard, T. & Strömberg, J.-O. (1990) Distribution and diversity pattern of asellote isopods (Crustacea) in the deep Norwegian and Greenland Seas. *Progress in Oceanography*, 24, 297–310.

- [http://dx.doi.org/10.1016/0079-6611\(90\)90039-5](http://dx.doi.org/10.1016/0079-6611(90)90039-5)
- Svavarsson, J., Strömberg, J.-O. & Brattegard, T. (1993) The deep-sea asellota (Isopoda, Crustacea) fauna of the Northern Seas: species composition, distributional patterns and origin. *Journal of Biogeography*, 20, 537–555.  
<http://dx.doi.org/10.2307/2845725>
- Thistle, D. & Wilson, G.D.F. (1987) A hydrodynamically modified, abyssal isopod fauna. *Deep-Sea Research*, 34, 73–87.  
[http://dx.doi.org/10.1016/0198-0149\(87\)90123-3](http://dx.doi.org/10.1016/0198-0149(87)90123-3)
- Thistle, D. & Wilson, G.D.F. (1996) Is the HEBBLE isopod fauna hydrodynamically modified? A second test. *Deep-Sea Research I*, 43 (4), 545–554.  
[http://dx.doi.org/10.1016/0967-0637\(96\)00014-3](http://dx.doi.org/10.1016/0967-0637(96)00014-3)
- Vanquickenbergh, V. (2005) *Spatial distribution and biodiversity patterns of the hyperbenthos along NE Atlantic continental margins*. PhD thesis, University of Gent, Belgium, 240 pp.
- Wolff, T. (1956) Isopoda from depths exceeding 6000 metres. *Galathea Report*, 2, 85–157.
- Wolff, T. (1962) The systematics and biology of bathyal and abyssal Isopoda Asellota. *Galathea Report*, 6, 7–320.