



## New subgenus and new species of marine benthic ostracods of genus *Doloria* (Ostracoda; Myodocopina) from the Southern Ocean

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### Abstract

The project ANDEEP was designed to fill gaps in the knowledge of the biodiversity of the Southern Ocean deep sea. Three oceanographic cruises (ANDEEP I, II and III) were undertaken in 2002 and 2005 in the Atlantic Sector of the Southern Ocean. Hundreds of samples were collected from 40 stations with water depths ranging from 748 to 6,348 m. Investigations were carried out on a broad range of taxa, including bacteria, meio-, macro- and megafauna. Approximately 5000 ostracods were collected, which included 29 specimens of *Doloria (Dolorietta)* subgen. nov.

The subdivision of the genus *Doloria* Skogsberg, 1920 into two subgenera, *Doloria (Doloria)* and the novel subgenus *Doloria (Dolorietta)*, is based on differences in the structures of the fifth limb, the armature of the sensory bristle on the 5<sup>th</sup> segment of the antennula, and the number of bristles on the 4<sup>th</sup> endite of the sixth limb. Four new species in the new subgenus were identified from the ANDEEP samples. The new subgenus and the four novel species are described and illustrated. Two of these new species are named *Doloria (Dolorietta) antarctica* sp. nov. and *Doloria (Dolorietta) sextafiliformis* sp. nov., but the other two species are left in open nomenclature (i.e. *Doloria (Dolorietta)* sp. nov. 1 and *Doloria*

(*Dolorietta*) **sp. nov.** 2) because only juveniles were found in our material. Keys to the subgenera and species of *Doloria* are provided.

**Key words:** benthos, Myodocopina, Cypridinidae, taxonomy, morphology, ANDEEP Project, Antarctica

## Introduction

The genus *Doloria* was initially described by Skogsberg (1920) as a subgenus of *Cypridina*, and later elevated to full generic rank by Kornicker (1975). Before the present paper, it included seven species: *D. levis* Skogsberg, 1920, *D. pectinata* Skogsberg, 1920, *D. levinsoni* Kornicker, 1975, *D. septenaria* Kornicker, 1975, *D. isaacsi* Kornicker, 1975, *D. mawsoni* Kornicker, 1975, and *D. sarsi* Kornicker, 1987. Almost all the members of this genus are known from the Southern Ocean (Kornicker, 1975), the one exception being *D. sarsi* from the west coast of Sweden (Kornicker, 1987). These seven species of the *Doloria* inhabit cold, polar and temperate waters on depths ranging from 5 to 2818 m.

The specimens studied herein were collected from the Atlantic sector of the Southern Ocean during the ANDEEP (Antarctic benthic deep-sea biodiversity: colonization history and recent community patterns) I, II and III expeditions on board of the R.V. Polarstern in 2002 and 2005 (see Brandt *et al.* 2004, 2007 for details on the ANDEEP project). The 40 stations sampled during the ANDEEP cruises were located in the Weddell Sea and adjacent areas, and include diverse environmental settings including continental slope and rise, abyssal plains, trench floors, channel levees and areas adjacent to fracture zones at depths ranging between 774 and 6,348 m. *Doloria* specimens occurred at seven stations in bathyal and abyssal regions of the Weddell and Scotia Seas, and the slope off the South Sandwich Islands (Tab. 1, Fig. 1).

Here we describe a new subgenus *D. (Dolorietta)* subgen. nov. and four new species: *D. (Dolorietta) antarctica* **sp. nov.**, *D. (Dolorietta) sextafiliformis* **sp. nov.**, *D. (Dolorietta)* **sp. nov.** 1 and *D. (Dolorietta)* **sp. nov.** 2. and compare them with closely related species. The bathymetric range of the genus *Doloria* is extended by over 2,000 m.

## Material and methods

Specimens of *Doloria (Dolorietta)* were collected at seven stations which ranged from 58° 24.40' S to 71° 18.42' S, from 13° 57.31' W to 60° 4.27' W, and depths of 1040 to 4931 meters (Tab. 1, Fig. 1). Two sampling gears were used: an epibenthic sledge (EBS, mesh 500 µm) (Brenke 2005), and an Agassiz trawl (AGT, mesh 1000 µm). The start and finish positions and depth ranges of each sample are the ship's positions when the sledge landed and got off the ocean bottom. The samples were fixed in pre-cooled (0°C) 96% ethanol and kept at 0°C for at least 48h. The complete samples were sorted under a stereoscopic microscope either on board or in the Zoologisches Museum Hamburg. The empty valves were transferred to micropalaeontological slides and specimens containing appendages were kept in 96% ethanol. For the study under the optical microscope, specimens were dissected in Hydromatrix permanent medium; their valves were transferred to micropalaeontological slides.

The drawings were made with the aid of a camera lucida attached to a Zeiss microscope, and were manually inked.

The valves selected for scanning electron microscopy were coated with carbon or gold in an evaporation unit PD170AZ from Leybold-Heraeus, and were observed in a LEO 1525 scanning electron microscope (Carl Zeiss SMT) in the Zoological Museum of the University of Hamburg.

Identification of specimens was based on descriptions and illustrations of the species of *Doloria* (Kornicker 1971; 1975; 1987).

For the limbs, we use the terms suggested by Horne *et al.* (2002): (1) antennula, (2) antenna, (3) mandibula; (4) maxillula; (5) fifth limb; (6) sixth limb; (7) seventh limb; (8) male copulatory limb; (9) furca. Additionally, we used 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup> for segments of limbs, and also for endites.

All specimens are deposited in the Crustacean collection of the 'Zoologisches Museum Hamburg', Universität Hamburg, Germany under the abbreviation ZMH K-.

The following abbreviations are used in illustrations: the letters a–g designate the bristles of the antennulae and mandibulae;  $\alpha$ – $\beta$  designate the bristles on maxillulae; ab—anterior body; ap—anterior process; bas—basale;