Michel Loïc N. (Orcid ID: 0000-0003-0988-7050)

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Trophic markers and biometric measurements in Southern Ocean sea stars (1985–2017)

C. Moreau[1,*], B. Le Bourg[2,*], P. Balazy[3], B. Danis[1], M. Eléaume[4], Q. Jossart[1,5], P. Kuklinski[3], G. Lepoint[2], T. Saucède[6], A. Van de Putte[1,7] & L. N. Michel[2,8,**]

[1] Marine Biology Lab, Université Libre de Bruxelles (ULB), 1050 Brussels, Belgium
[2] Laboratory of Oceanology, Freshwater and Oceanic Sciences Unit of reSearch (FOCUS), University of Liège, 4000 Liège, Belgium
[3] Institute of Oceanology, Polish Academy of Sciences (IOPAN), 81-712 Sopot, Poland
[4] Institut de Systématique, Evolution, Biodiversité (ISYEB), Muséum national d'Histoire naturelle (MNHN), CNRS, Sorbonne Université, EPHE, 75005 Paris, France
[5] Marine Biology, Vrije Universiteit Brussel (VUB), 1050 Brussels, Belgium
[6] Biogéosciences, UMR CNRS 6282, Université Bourgogne Franche-Comté, 21000 Dijon, France
[7] OD Nature, Royal Belgian Institute of Natural Sciences, 1000 Brussels, Belgium
[8] Ifremer, Centre de Bretagne, REM/EEP, Laboratoire Environnement Profond, 29280 Plouzané, France

* These authors contributed equally to the manuscript and database elaboration and are co-first authors.
** Corresponding author. Contact: loicnmichel@gmail.com

Abstract

Sea stars (Echinodermata: Asteroidea) are a key component of Southern Ocean benthos, with 16% of the known sea star species living there. In temperate marine environments, sea stars commonly play an important role in food webs, acting as keystone species. However, trophic ecology and functional role of Southern Ocean sea stars are still poorly known, notably due to the scarcity of large-scale studies. Here, we report 24332 trophic marker (stable isotopes and elemental contents of C, N and S of tegument and/or tube feet) and biometric (arm length, disk radius, arm to disk ratio) measurements in 2456 specimens of sea stars. Samples were collected between 12/01/1985 and 08/10/2017 in numerous locations along the Antarctic littoral and Subantarctic islands. The spatial scope of the dataset covers a significant portion of the Southern Ocean (Latitude: 47.717° South to 86.273° South; longitude: 127.767° West to 162.201° East; depth: 6 to 5338 m). The dataset contains 133 distinct taxa, including 72 currently accepted species spanning 51 genera, 20 families and multiple feeding

guilds / functional groups (suspension feeders, sediment feeders, omnivores, predators of mobile or sessile prey). For 505 specimens, mitochondrial CO1 genes were sequenced to confirm and/or refine taxonomic identifications, and those sequences are already publicly available through the Barcode of Life Data System. This number will grow in the future, as molecular analyses are still in progress. Overall, thanks to its large taxonomic, spatial, and temporal extent, as well as its integrative nature (combining genetic, morphological and ecological data), this dataset can be of wide interest to Southern Ocean ecologists, invertebrate zoologists, benthic ecologists, and environmental managers dealing with associated areas. Please cite this data paper in research products derived from the dataset, which is freely available without copyright restrictions.

Key Words

Antarctica, Asteroidea, benthos, biometric measurements, Echinodermata, elemental contents, invertebrates, marine ecosystems, sea stars, Southern Ocean, stable isotopes, Subantarctic Islands.

Supporting Information

The dataset is freely available as supplementary material.

Open Research

The dataset is available on Zenodo: https://doi.org/10.5281/zenodo.5041317.

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