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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 24,332 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 2,456 specimens of sea stars. Samples were collected between 12 January 1985 and 8 October 2017 in numerous locations along the Antarctic littoral and subantarctic islands. The spatial scope of the data set covers a significant portion of the Southern Ocean (47.717° S to 86.273° S; 127.767° W to 162.201° E; depth, 6–5,338 m). The data set 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

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progress. Overall, thanks to its large taxonomic, spatial, and temporal extent, as well as its integrative nature (combining genetic, morphological, and ecological data), this data set 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 data set, which is freely available without copyright restrictions.

KEYWORDS

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

DATA AVAILABILITY STATEMENT

The data set is available on Zenodo: <https://doi.org/10.5281/zenodo.5041317>.

SUPPORTING INFORMATION

Additional supporting information may be found in the online version of the article at the publisher's website.

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