Data Article

List of macrobenthic species: Data from the siberian seas and the adjacent area of the deep-sea central arctic

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ABSTRACT

An annotated species list of all macrobenthic invertebrates inhabiting the Siberian sector of the Arctic Ocean is presented. The area considered includes the Kara, Laptev and East Siberian seas and the adjacent region of the deep-sea Central Arctic. Entries on species occurrences in the database are supported by corresponding references. Species of Polychaeta, Crustacea and Echinodermata in addition contain information on bathymetric distribution. Apart from published data, 12 taxa were identified in the area for the first time. In total 1574 macrobenthic species were recorded within the considered area. The most species rich was the Kara Sea with 1184 species. The Laptev and East Siberian seas and the Central Arctic showed lower species richness with correspondingly 1105, 780 and 268 species. The much smaller numbers of species in the East Siberian Sea and in the deep-sea Central Arctic can be related to taxonomic impoverishment or/and much smaller study effort in those regions.

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Specifications Table

| Subject | Earth and Planetary Sciences |
|---------|------------------------------|
| Specific subject area | List of macrobenthic species in the Siberian area of the Arctic Ocean, with notes about horizontal and vertical distribution. |
| Type of data | Tables, Graph, Figure |
| How data were acquired | Literature analysis; identification of macrobenthic species in samples obtained in expeditions of the P.P. Shirshov Institute of Oceanology (IORAS); Ocean Data View and Microsoft Office software. |
| Data format | Raw, Analysed |
| Parameters for data collection | Analysis of literature; Species identification from benthic samples |
| Description of data collection | Data were collected by identifying macrobenthic species from samples obtained in expeditions by the Shirshov Institute of Oceanology. Analysis of previously published investigations about macrobenthic species distribution within the study area (the Kara, Laptev and East Siberian seas, and the adjacent area of the deep-sea Central Arctic). |
| Data source location | Institution: Shirshov Institute of Oceanology, Russian Academy of Sciences, Moscow, Russia |
| Data collected from the area of the Kara, Laptev and East Siberian seas, and the adjacent area of the deep-sea Central Arctic. Details on data sources are listed in Table 1 and in Mendeley Data repository, DOI: 10.17632/8fmndgj8pn.1 |
| Data accessibility | Repository name: Mendeley Data [1] |
| Data identification number | http://dx.doi.org/10.17632/8fmndgj8pn.1 |

Value of the Data

- The list of macrobenthic species occurring within a large area of the Siberian Arctic sector is presented for the first time since 2001. Over almost 20 years since this publication, many new species were described from the region and revisions of various taxa were published; those revisions were followed for the correct synonymy.
- The distribution of three macrotaxa (Polychaeta, Crustacea and Echinodermata) was analysed in details, including the bathymetric range. This is the first summarized data on the uppermost and deeper-most findings of every species of Polychaeta, Crustacea and Echinodermata within the Central Arctic and Siberian Seas. Thirty-nine new species were added to the total species list based on original examined samples. This will be important for any future research on the Arctic biodiversity.
- The data will be useful for future studies about Arctic Ocean biogeography and for different investigations about the Arctic environmental state and, possibly, Climate changing.

1. Data Description

Data reported in the present study are based on the detailed analysis of published information on macrobenthic species occurring in the Kara, Laptev and East Siberian Seas and the adjacent sector of the Central Arctic Basin (Fig. 1). The complete species list is presented in Mendeley Data [1]. In addition to published records, new unpublished occurrences are given in [1]. Polychaeta, Crustacea and Echinodermata are supplemented by information on the shallowest and the deepest findings (the depth range within the Siberian Arctic sector). All unpublished records are listed in Table 1 with information on the year and name of expedition, station.
number, coordinates and depth. The total number of species per macrotaxa within each basin and the total species number per basin are shown in Table 2. Contribution of the most diverse macrotaxa (Porifera, Cnidaria, Polychaeta, Mollusca, Arthropoda, Bryozoa and Echinodermata) to the species number is shown in Fig. 2.

2. Experimental Design, Materials and Methods

Primary data were taken from tables published by [2] listing invertebrate species known by that time from the Kara, Laptev and East-Siberian seas and the adjacent Central Arctic Ocean (Fig. 1). We built our new data set on [2] having updated it based on the species lists for the Laptev and East Siberian seas published later [3,4]. In addition, we extracted relevant information (such as descriptions of new species) from a number of taxonomic revisions of various taxa (such as Porifera, Cnidaria, Polychaeta, Oligochaeta, Crustacea, Pantopoda, Bryozoa, Echinodermata and Hemichordata). We didn’t include in our data set the information from [2] on the protozoan, pelagic and meio-benthic taxa such as Foraminifera, Kinorhyncha, Rotatoria, Copepoda and Nematoda and some Cnidaria (lacking benthic stage). The area marked as “the Central Arctic” in Fig. 1 is bordered by dashed lines since we also considered species recorded from adjacent areas owing to supposed uniformity of fauna of central Arctic basins [5]. Thus, we listed under “Central Arctic” some records e.g. from the western part of the Nansen Basin [1,6].

For Polychaeta, Mollusca and Echinodermata we analysed published information to establish the maximum species depth range within our study area, with the shallowest and the deepest
Table 1
List of stations with the expedition number, year, coordinates, depth and gear name for all the unpublished samplings listed in [1].

| Station | Expedition | Year | Latitude (N) | Longitude (E) | Depth (m) | Gear       |
|---------|------------|------|--------------|--------------|-----------|------------|
| 2186    | ARK-VIII/3 | 1991 | 88.5120      | 139.9068     | 1867      | Box-corer  |
| 2213    | ARK-VIII/3 | 1991 | 80.4730      | 8.2052       | 888       | Box-corer  |
| 4985    | AMK-54     | 2007 | 76.9200      | 70.2700      | 555       | Sigsbee trawl |
| 4985    | AMK-54     | 2007 | 76.7833      | 70.6167      | 465       | Sigsbee trawl |
| 4987    | AMK-54     | 2007 | 76.6583      | 71.0483      | 275       | Sigsbee trawl |
| 4988    | AMK-54     | 2007 | 76.5883      | 71.2567      | 160       | Sigsbee trawl |
| 5002    | AMK-54     | 2007 | 75.1645      | 72.6087      | 26        | Sigsbee trawl |
| 5020    | AMK-59     | 2011 | 73.7176      | 79.3896      | 29        | Sigsbee trawl |
| 5024    | AMK-59     | 2011 | 74.9486      | 77.9020      | 34        | Sigsbee trawl |
| 5026    | AMK-59     | 2011 | 75.9970      | 76.6741      | 63        | Sigsbee trawl |
| 5033    | AMK-59     | 2011 | 77.2100      | 78.1277      | 120       | Sigsbee trawl |
| 5034    | AMK-59     | 2011 | 77.4263      | 77.5674      | 220       | Sigsbee trawl |
| 5039    | AMK-59     | 2011 | 78.0074      | 74.8968      | 364       | Sigsbee trawl |
| 5042    | AMK-59     | 2011 | 78.4915      | 72.8047      | 472       | Sigsbee trawl |
| 5051    | AMK-59     | 2011 | 75.8272      | 68.9850      | 351       | Sigsbee trawl |
| 5054    | AMK-59     | 2011 | 72.9301      | 58.3447      | 376       | Sigsbee trawl |
| 5220    | AMK-63     | 2015 | 73.3255      | 130.4883     | 24        | Sigsbee trawl |
| 5222    | AMK-63     | 2015 | 75.8018      | 130.4882     | 49        | Sigsbee trawl |
| 5225    | AMK-63     | 2015 | 78.3747      | 130.6585     | 2390      | Sigsbee trawl |
| 5239    | AMK-63     | 2015 | 78.5908      | 88.0673      | 230       | Sigsbee trawl |
| 5258    | AMK-63     | 2015 | 72.5397      | 55.5013      | 34        | Okean grab  |
| 5263    | AMK-63     | 2015 | 71.9238      | 55.3913      | 18        | Sigsbee trawl |
| AMK-63 C-1 | AMK-63   | 2015 | 72.5587      | 55.3535      | 0         | By hand     |
| AMK-63 A-1 | AMK-63   | 2015 | 71.9396      | 55.3127      | 2         | Small ichthyological trawl |
| AMK-63 A-3 | AMK-63   | 2015 | 71.9287      | 55.2979      | 6         | Small ichthyological trawl |
| 5590/2  | AMK-69     | 2017 | 77.1668      | 114.6804     | 60        | Sigsbee trawl |
| 5635    | AMK-69     | 2017 | 78.0386      | 115.8382     | 777       | Sigsbee trawl |
| 5963    | AMK-72     | 2018 | 78.1801      | 116.6387     | 1472      | Sigsbee trawl |
| 125-30  | Psh-125    | 2013 | 76.3533      | 88.8250      | 47        | Sigsbee trawl |
| 125-32  | Psh-125    | 2013 | 77.1187      | 87.6292      | 149       | Sigsbee trawl |
| 125-34  | Psh-125    | 2013 | 78.0150      | 87.6317      | 108       | Sigsbee trawl |
| 128-44  | Psh-128    | 2014 | 79.3208      | 73.1127      | 472       | Sigsbee trawl |
| 128-45  | Psh-128    | 2014 | 76.6443      | 71.0895      | 273       | Sigsbee trawl |
| 128-B1  | Psh-128    | 2014 | 75.6766      | 63.6531      | 0         | By hand     |
| 128-Ts4 | Psh-128    | 2014 | 74.3730      | 58.6116      | 2         | Small ichthyological trawl |
| 128-63 C4 | Psh-128   | 2014 | 72.5615      | 55.4210      | 3         | Small ichthyological trawl |
| 128-66 C6 | Psh-128   | 2014 | 71.9363      | 55.3319      | 15        | Okean grab  |
| PS80/205-1 | ARK-XXVII/3 | 2012 | 81.4802      | 31.0252      | 615       | Agassiz-trawl |
| PS80/290-3 | ARK-XXVII/3 | 2012 | 79.6643      | 130.5948     | 3398      | Amphipod-trap |
| PS80/334-1 | ARK-XXVII/3 | 2012 | 85.1632      | 123.0003     | 4356      | Amphipod-trap |
| PS80/371-1 | ARK-XXVII/3 | 2012 | 88.7628      | 55.6732      | 4369      | Amphipod-trap |
| SV-IV   | ARK-XXX-1  | 2016 | 79.1308      | 4.9063       | 1540      | Box-corer   |
| HG-VI   | ARK-XXX-1  | 2016 | 79.0562      | 3.5987       | 3356      | Box-corer   |

ARK – RV “Polarstern”; AMK – RV “Akademik Mstislav Keldysh”; Psh – RV “Professor Shtokman”.

known records. The corresponding references are shown in [1]. A number of taxa were identified based on samples obtained by the IORAS expeditions; this is original not published earlier information (Table 1). Some of those taxa were new to science, whereas for others the known depth or geographic ranges were extended (in [1], marked as “our unpublished data”; Table 1). In total 12 species were identified not recorded before in the area under consideration. The station numbers for each of these taxa are reported in Table 1. The information about the depth, coordinates, sampling gear, and expedition of corresponding stations is shown in Table 1. Species names were verified according to the World Register of Marine Species (WoRMS, http://marinespecies.org/).

Overall 1574 species of macrobenthos were identified from the area of the Kara, Laptev and East Siberian seas and the adjacent part of the deep-sea Central Arctic (Table 2). The most species rich appeared the Kara Sea with 1184 species. The Laptev and East Siberian seas showed
Table 2
Number of species for each of the macrotaxa recorded in Kara, Laptev, East Siberian seas and adjacent area of the Central Arctic basin.

| Macrotaxon    | Kara Sea | Laptev Sea | East Siberian Sea | Central Arctic | Total |
|---------------|----------|------------|-------------------|----------------|-------|
| Porifera      | 69       | 56         | 18                | 31             | 88    |
| Cnidaria      | 112      | 103        | 75                | 62             | 152   |
| Polychaeta    | 181      | 191        | 150               | 43             | 253   |
| Oligochaeta   | 1        | 1          | 7                 | 1              | 9     |
| Hirudinea     | 5        | 2          | 2                 | 0              | 5     |
| Echiura       | 2        | 3          | 0                 | 2              | 3     |
| Sipuncula     | 7        | 6          | 5                 | 3              | 7     |
| Plathelminthes| 0        | 3          | 3                 | 0              | 6     |
| Nemertea      | 7        | 3          | 3                 | 0              | 7     |
| Mollusca      | 208      | 191        | 149               | 29             | 263   |
| Arthropoda    | 334      | 328        | 210               | 84             | 464   |
| Priapulida    | 3        | 3          | 3                 | 0              | 3     |
| Brachiopoda   | 2        | 1          | 2                 | 0              | 2     |
| Bryozoa       | 173      | 141        | 98                | 2              | 209   |
| Echinodermata | 53       | 45         | 39                | 10             | 63    |
| Hemichordata  | 2        | 1          | 0                 | 1              | 4     |
| Chordata (Tunicata) | 25 | 27 | 16 | 0 | 36 |
| SUM           | 1184     | 1105       | 780               | 268            | 1574  |

![Bar chart](image)

**Fig. 2.** The contribution of major macrotaxa to the species number per basin.

lower species richness with 1105 and 780 species correspondingly. In the deep-sea Central Arctic the value was the lowest – only 268 species (Table 2). The contribution of major macrotaxa to the species number per basin is shown in Fig. 2. The results for the East Siberian Sea and for the Central Arctic can be related not only to the true taxonomic impoverishment, but also to the overall diversity underestimation owing to much smaller general sampling effort in these basins.

**Ethics Statement**

This work didn’t involve human or animal experiments. All data were taken from the previously sampled collections or previously published studies.
CRediT Author Statement

Vedenin AA: Conceptualization, Methodology, Software, Investigation, Original draft preparation; Galkin SV: Data curation; Gebruk AV: Supervision, Validation, Reviewing and Editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships.

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