

## 8 MONITORING OF BIODIVERSITY

### 8.2 Invertebrate biodiversity

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#### 8.2.1 Megabenthos bycatch in bottom trawls

In 2014, the bycatch recording of megabenthos in bottom trawls were only made on two out of four research vessels "Vilnius" and "Helmer Hanssen". The two Norwegian ships "Johan Hjort" and "G. O. Sars" participated in the ecosystem survey, using bottom trawl, but did not have benthic experts onboard to identify the trawl catch due to reduced funding. A total of 181 trawl stations (137 "Vilnius" and 44 "Helmer Hanssen") were covered. This resulted in 349 taxa of benthic invertebrates, of which 227 taxa were identified to species (Appendix 3). Some larger animal-groups included 201 genera, 174 families, 87 orders, 28 classes, and 13 phylum (Table 8.2.1.1).

Table 8.2.1.1 Amount of benthic taxa identified during the ecosystem survey in August-October 2014.

Taxon	RV «Vilnius»	RV «G.O. Sars»	RV "Helmer Hansen"	RV "Johan Hjort"
Phylum	12	-	9	-
Class	18	-	21	-
Order	54	-	68	-
Family	113	-	124	-
Genus	146	-	150	-
Species	211	-	203	-
Total taxons:	237	-	349	-

Mollusca had the highest number of taxa (93 taxa) (Figure 8.2.1.1). The second highest was Arthropoda (62 taxa), the third Echinodermata (59 taxa). The lowest number of taxa was represented by a phylum Nemertini (1 taxon). The most common species and taxa in 2014 were: *Sabinea septemcarinata* (identified in 138 trawl-catches), *Strongylocentrotus pallidus* (117 catches), and *Ctenodiscus crispatus* (114 catches).

ECOSYSTEM SURVEY OF THE BARENTS SEA AUTUMN 2014

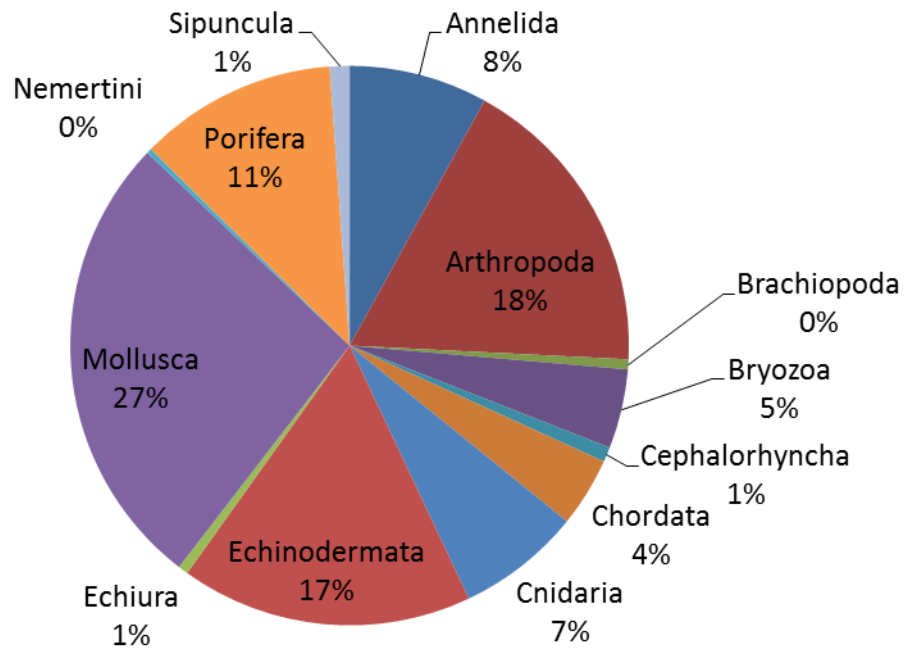


Figure 8.2.1.1 The total mean distribution of taxa per invertebrate group (%) in the bottom trawl by-catch of the ecosystem survey in August-October 2014.

**8.2.2 Biodiversity (number of taxa)**

The number of taxa in trawl samples ranged from 4 to 64 with an average of  $24 \pm 1$  taxon per trawl-catch. The maximum taxonomic diversity was observed north and west of the Spitsbergen archipelago (more than 60 taxa) (RV “Helmer Hanssen”) (Figure 8.2.2.2).

In the Russian Economic Zone the taxonomic diversity ranged from 4 to 50 taxa per trawling. This resulted in a reduction of taxonomic diversity from the North to the East with the lowest values in the area of the Kanin shallow water (average number of  $20 \pm 1$  taxa per trawling).

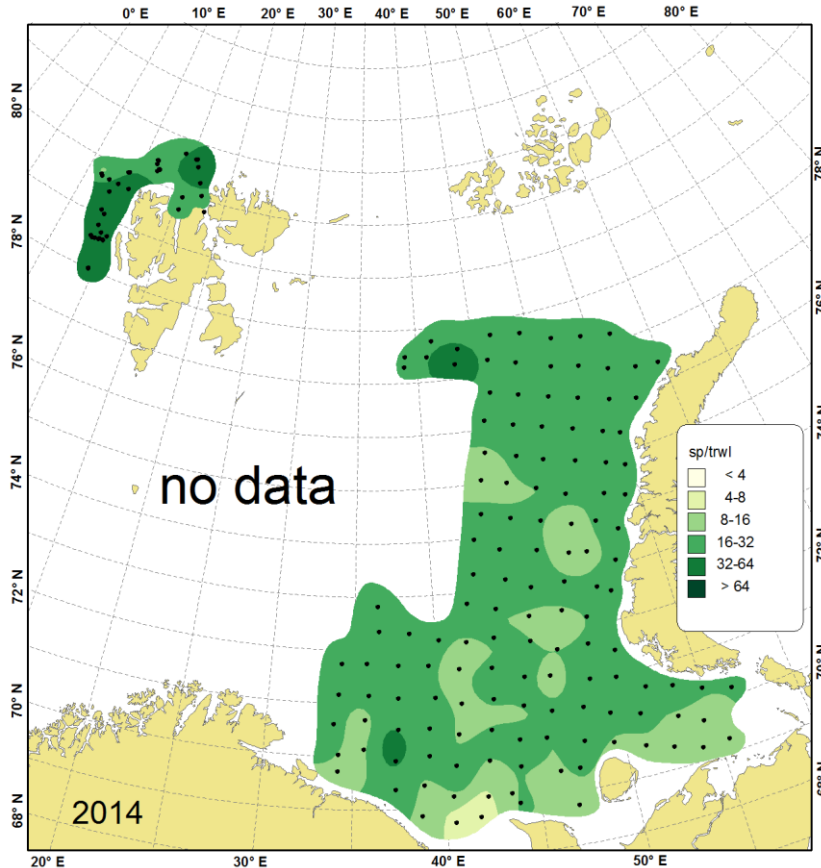


Figure 8.2.2.2 The number of taxa per trawl-catch in the Barents Sea in August-October 2014.

### 8.2.3 Abundance (number of individuals)

The average number of invertebrate organisms encountered in the catches was  $2888 \pm 276$  specimens per mile trawling (Figure 8.2.3.1). The minimum catch was recorded northwest of the Spitsbergen archipelago ("Helmer Hansen") with 17 individuals per mile trawling. The maximum number of specimens was observed in the central part of the Barents Sea with 17.6 thousand individuals ("Vilnius") and 1/3 of the catch was represented by one species - *Ctenodiscus crispatus* (4466 individuals per mile of trawling). In the southern and southeastern regions there is a decrease in the number of benthos specimens (maximum 1000 individuals per mile of trawling).

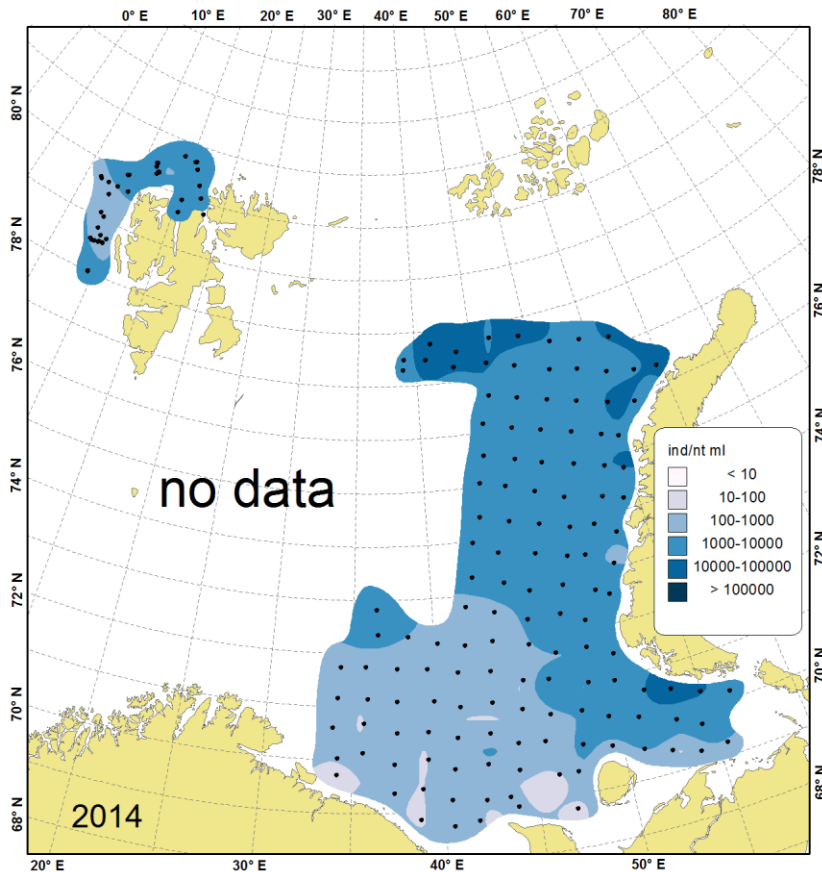


Figure 8.2.3.1 The extrapolated number of individuals of megabenthos in the Barents Sea in August-October 2014.

## 8.2.4 Biomass

The maximum bycatch of benthos (487 kg) was observed in the southern part of the study area at a depth of 87 (Figure 8.2.4.1). The sponge *Myxilla incrustans* (317 kg) and the crab *Paralithodes camtschaticus* (171 kg) were dominating there. Lowest catch (76 g) were taken in the northwest of Spitsbergen, at a depth of 539 m. In average, the biomass of benthos was  $36 \pm 5$  kg per mile.

Compared to the ecosystem survey in 2013, as well as the results of the previous years, there are an increasing trend of dominance of echinoderms (Echinodermata) of the total by-catch-biomass from southwest to northeast (Figure 8.2.4.2). At the same time, there has been a significant increase of crustaceans caused by the spreading and the high abundances of large *Chionoecetes opilio* specimens (snow crab). Large colonies of sponges were recorded in the southern part of the Barents Sea and in the area of the continental slope to the northwest of Spitsbergen,.

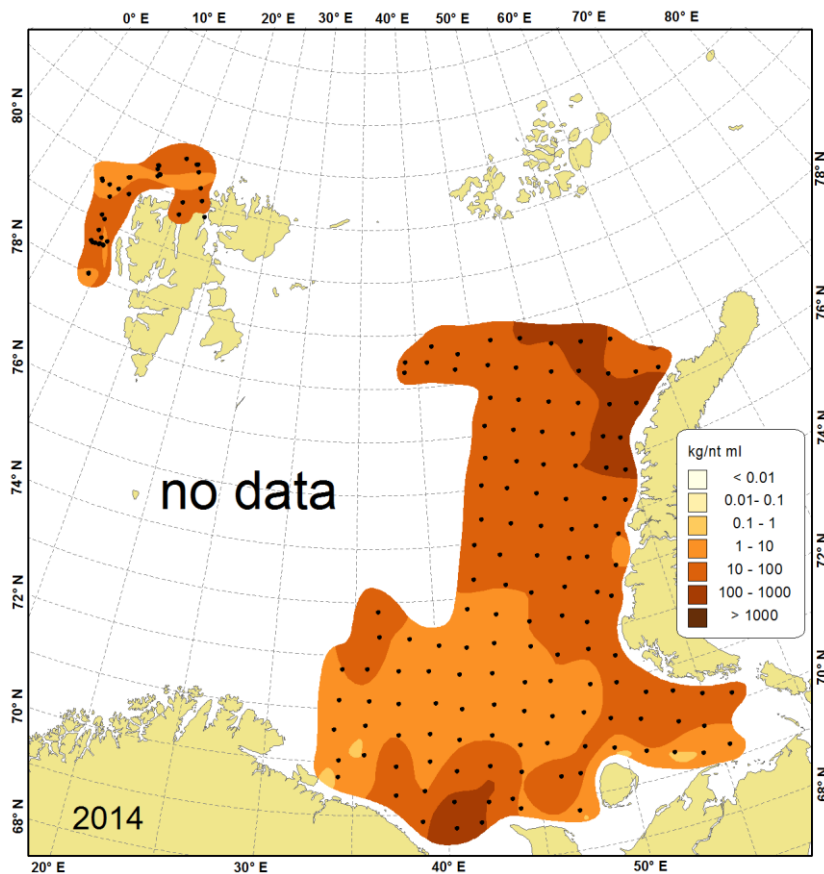


Figure 8.2.4.1 Biomass distribution of megabenthos in the Barents Sea in August-October 2014.

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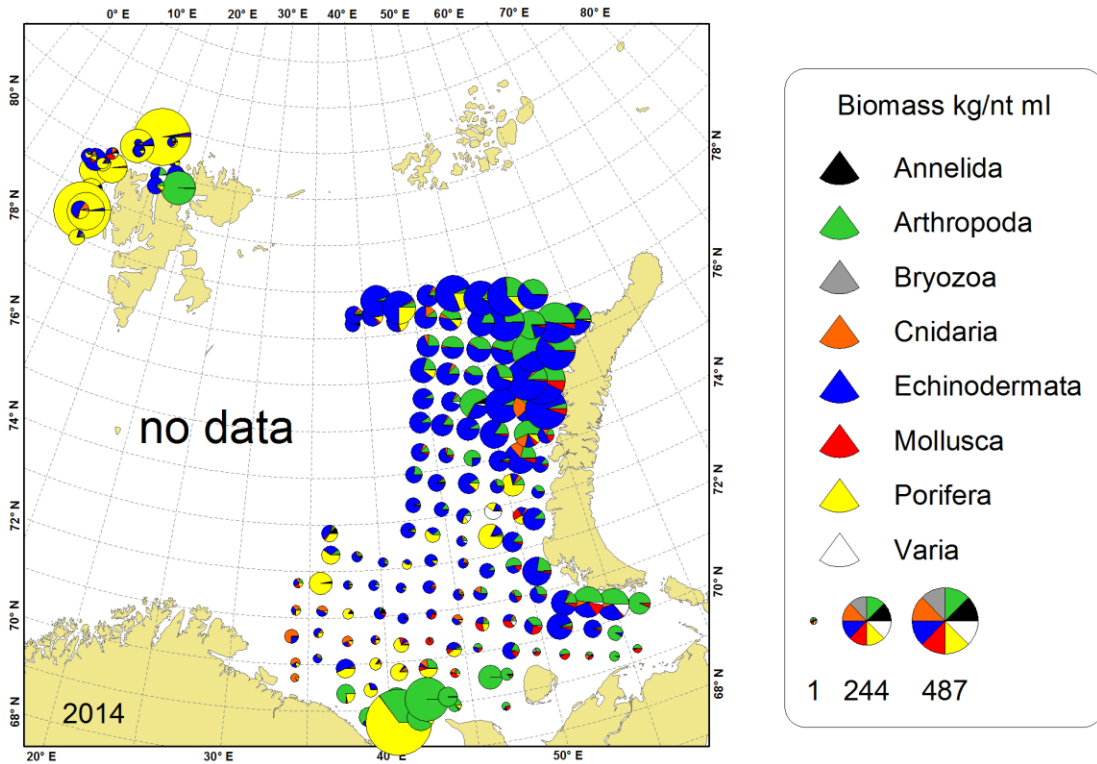


Figure 8.2.4.2 Biomass distribution of main taxonomic groups per station in the Barents Sea during in August-October 2014.