

### 8.3 Fish biodiversity

#### 8.3.1 Small non-target fish species

No results available. Take contact with responsible scientific group at IMR and PINRO.

#### 8.3.2 Species-indicators

by T. Prokhorova, E. Johannesen, A. Dolgov and R. Wienerroither

Figures by P. Krivosheya

Thorny skate (*Amblyraja radiata*) and Arctic skate (*Amblyraja hyperborea*) were selected as indicator species to study how fishes from different zoogeographic groups respond to changes of their environment. Thorny skate belongs to the boreal zoogeographic group and are widely distributed in the Barents Sea except the most north-eastern areas, while Arctic skate belongs to the arctic zoogeographic group and are distributed in the coldwater northern area.

In 2014 thorny skate are distributed in the wide area from the southwest to the northwest where warm Atlantic and Coastal Water have influenced (Figure 8.3.2.1, see Figure 4.1.8 in the section 4.1 “Hydrography”). Thorny skate was found at the same area as in 2013 but their biomass in the Hinlopen Strait and in the central part of the sea in 2014 was higher than in 2013. This species was observed in the 36.5 % of the bottom stations. Thorny skate are distributed within a depth of 20-813 m, but the highest biomass was observed at depth 20-150 m (43.6 % of total biomass). The mean catch (1.2 kg per nautical mile) was higher than in 2013 (0.5 kg per nautical mile), but the mean catch was approximately the same (1.4 individuals per nautical mile in 2014 and 1.3 individuals per nautical mile in 2013). The estimated total biomass and the abundance of thorny skate in 2014 (30.0 thousand tones and 34.4 million individuals) was lower than in 2013 (34.2 thousand tones and 38 million individuals). The reason for this fact is insufficient coverage of the northern area of the thorny skate distribution due to ice coverage in this region. Mean weight of this species in 2014 (0.82 kg) was little lower than in 2013 (0.84 kg).

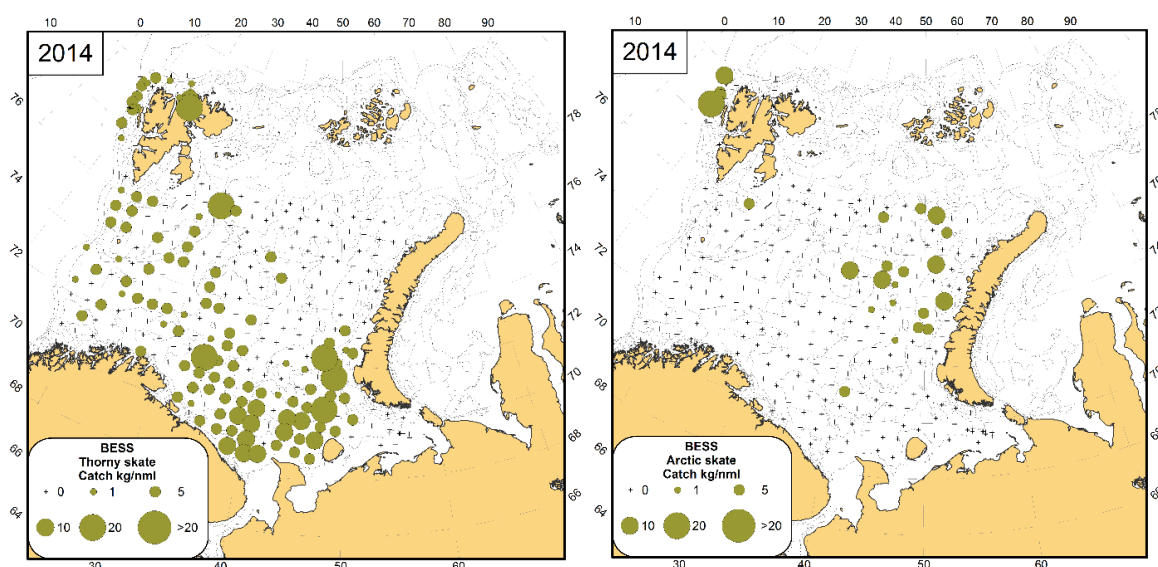


Figure 8.3.2.1 Distribution of thorny skate (*Amblyraja radiata*) and arctic skate (*Amblyraja hyperborea*), August-October 2014

Arctic skate was chiefly found in deep trenches at sub-zero temperatures in the northwest and central Barents Sea, as in previous year (Figure 8.3.2.1, see also Figure 4.1.8 in the section 4.1

“Hydrography”). The most biomass of this species was distributed north-west for Spitsbergen/Svalbard, unlike the 2013. Arctic skate was found in the 7.9 % of the bottom stations. This species was distributed within a depth 100-1023 m and the highest biomass was observed at 200-350 m (35.6 %) and 800-1023 m (50.9 %). The mean catch of arctic skate in 2014 (0.3 kg per nautical mile and 0.2 individuals per nautical mile) was higher than in 2013 (0.1 kg per nautical mile and 0.07 individuals per nm) and the same as in 2012. The estimated total biomass and abundance of arctic skate in 2014 (6.7 thousand tons and 3.7 million individuals) was also higher than in 2013 (4 thousand tons and 2.9 million individuals). Mean weight of this species in 2014 was higher than in 2013 (1.66 kg opposite 1.45 kg).

### 8.3.3 Zoogeographic groups

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During the 2014 ecosystem survey 92 fish species from 29 families were recorded in the catches, and 9 species were identified up to the level higher than species (genus or family level) (Appendix 2). All recorded species belonged to the 7 zoogeographic groups: **widely distributed, south boreal, boreal, mainly boreal, arctic-boreal, mainly arctic** and **arctic** according to the Andriashev and Chernova (1994) and Mecklenburg et al. (2010). Table 8.2.3.1 represents average and maximum catches of species from different zoogeographic groups in the survey. Only bottom trawl data were used. Only non-commercial species were included into the analysis. Both demersal (including benthopelagic) and pelagic (neritopelagic, epipelagic, bethyalpelagic) species were reviewed (Andriashev and Chernova, 1994, Parin, 1968, 1988).

**Widely distributed** (only ribbon barracudina *Arctozenus risso* represents this group), **south boreal** (e.g. whiting silvery pout *Gadiculus argenteus*, grey gurnard *Eutrigla gurnardus*) and **boreal** (e.g. moustache sculpin *Triglops murrayi*, fourbeard rockling *Enchelyopus cimbrius*) species were mostly distributed over the south western and western part of the survey area where warm Atlantic and Coastal Water have influenced (Figure 8.2.3.1). The maximum catch of the species from these groups (479 individuals per nautical mile) was higher than in 2013 (259 individuals per nautical mile) (Table 8.3.3.1).

**Mainly boreal** species (e.g. lumpfish *Cyclopterus lumpus*, sandeel *Ammodytes marinus*) were widely distributed over the entire survey area in 2014 (Figure 8.3.3.1). The south boreal, boreal and mainly boreal species were widely distributed due to positive temperature anomalies near the bottom throughout the Barents Sea in 2014 as in 2013. The average catch of species from the mainly boreal group was little less in 2014 (33.0 individuals per nautical mile) than in 2013 (38.5 individuals per nautical mile), but the maximum catch in 2014 (3841.4 individuals per nautical mile) was two times lower than in 2013 (6282.7 individuals per nautical mile) (Table 8.3.3.1). We analysed non-commercial species only but most of the Barents Sea commercial species (cod, haddock, capelin, herring, wolffishes etc.) also belong to this group. Therefore, the catch of mainly boreal group fish would greatly increase if the commercial species were included.

**Arctic-boreal** (e.g. ribbed sculpin *Triglops pingelii*, atlantic poacher *Leptagonus decagonus*), **mainly arctic** (e.g. atlantic spiny lumpsucker *Eumicrotremus spinosus*, arctic flounder *Liopsetta glacialis*, variegated snailfish *Liparis bathyarticus*) and **arctic** (e.g. arctic cod *Arctogadus glacialis*, threadfin seasnail *Rhodichthys regina*, black seasnail *Paraliparis*

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*bathybius*) species were distributed west off Svalbard/ Spitsbergen, south and west off Novaya Zemlya Archipelago (Figure 8.3.3.1). They mostly occur in areas influenced by cold Arctic Water, Spitsbergen Bank Water, Novaya Zemlya Coastal Water and Pechora Coastal Water. Catches of species from these groups was in many times less than in 2013 due to lack of coverage north area during the survey in 2014 (Table 8.3.3.1).

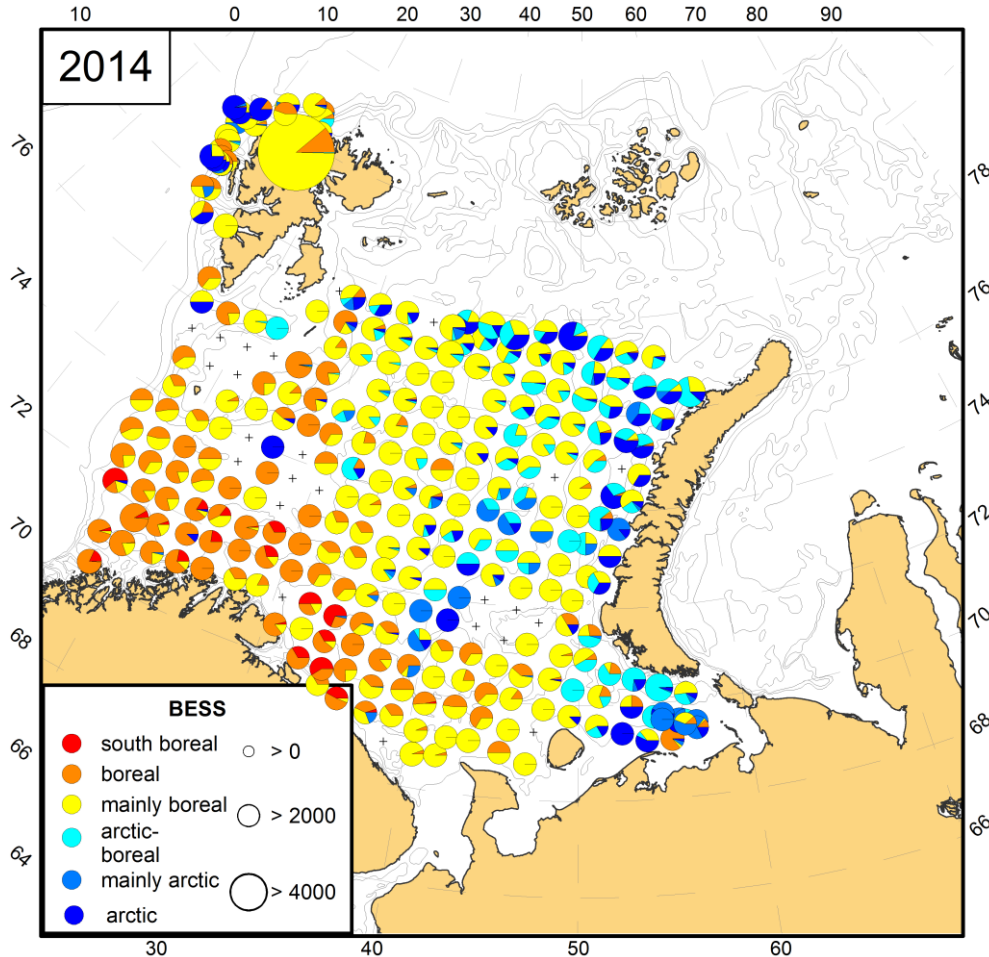


Figure 8.3.3.1 Distribution of non-commercial fish species from different zoogeographic groups during the ecosystem survey 2014. Size of circle corresponds to abundance (thousand individuals per nautical mile, only bottom trawl were used, both pelagic and demersal species are included)

Table 8.3.3.1 Average and maximum catch (individuals per nautical mile) of non-commercial fish from different zoogeographic groups (only bottom trawl data were used, both pelagic and demersal species are included)

Zoogeographic group	Average catch		Maximum catch	
	2013	2014	2013	2014
Widely distributed	0.2	0.1	45	4.3
South boreal	0.5	0.9	171.4	105.7
Boreal	5.95	10.6	258.6	478.6
Mainly boreal	38.5	33.0	6282.7	3841.4
Arctic-boreal	14.2	8.6	3326.9	371.6
Mainly arctic	5.9	1.7	656.3	60.9
Arctic	52.2	7.2	3822.7	385.2

**8.3.4 Rarely found species**

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 Figures by P. Krivosheya

Some uncommon species were observed in the Barents Sea during the ecosystem survey in 2014 (Figure 8.3.4.1). Most of these species usually occur in adjacent areas of the Barents Sea and therefore occurred mainly along the border of the surveyed area (e.g. black seasnail *Paraliparis bathybius* and threadfin seasnail *Rhodichthys regina* which are distributed in the Arctic polar basin, arctic flounder *Liopsetta glacialis* and arctic lamprey *Lethenteron camchaticum* which are distributed eastwards from the Barents Sea).

Some species are common for the ecosystem survey area but due to lack of coverage north area were few in number in 2014 (e.g. arctic cod *Arctogadus glacialis*).

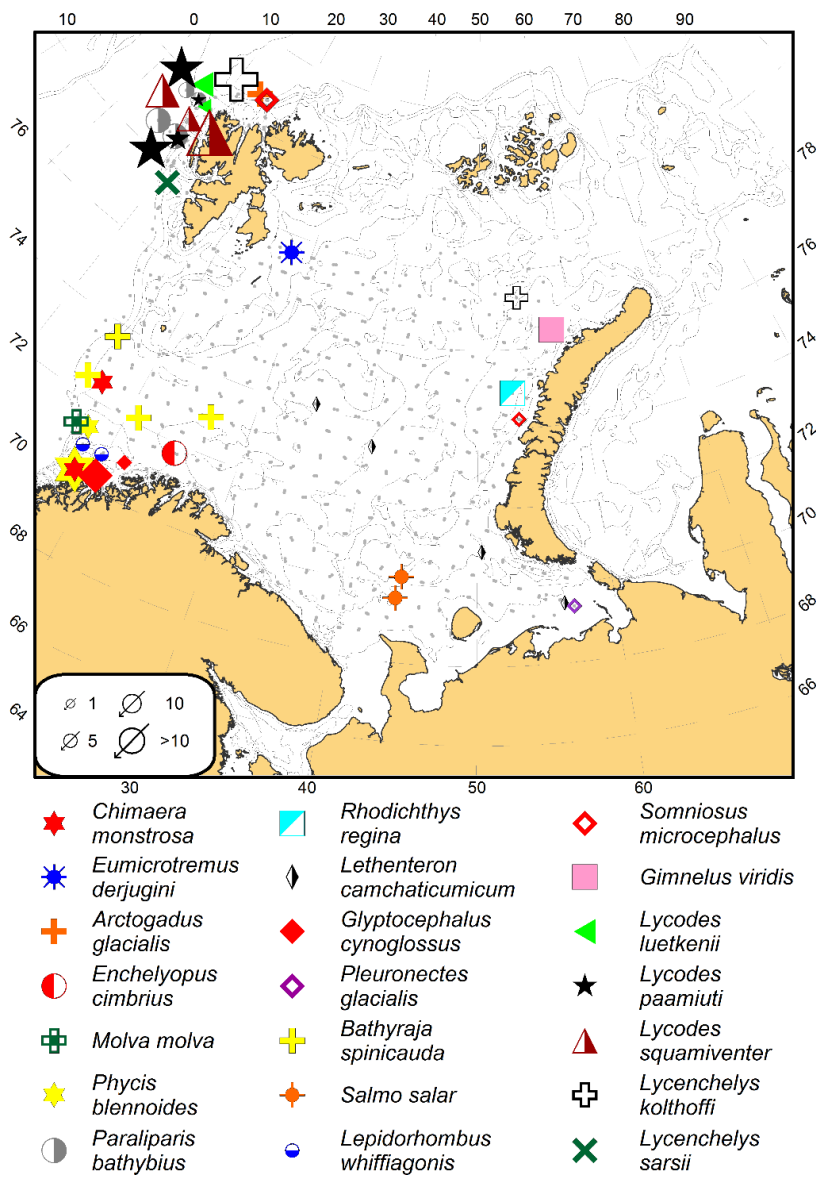


Figure 8.3.4.1 Distribution of species that are rare in the Barents that were found in the survey area in 2014. Size of circle corresponds to abundance (thousand individuals per nautical mile, both bottom and pelagic trawls were used)