Distribution of giant grenadier (*Albatrossia pectoralis*) at different stages of ontogenesis in the Bering Sea

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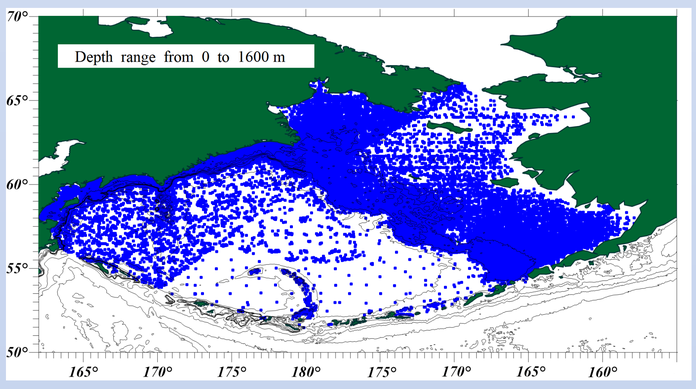
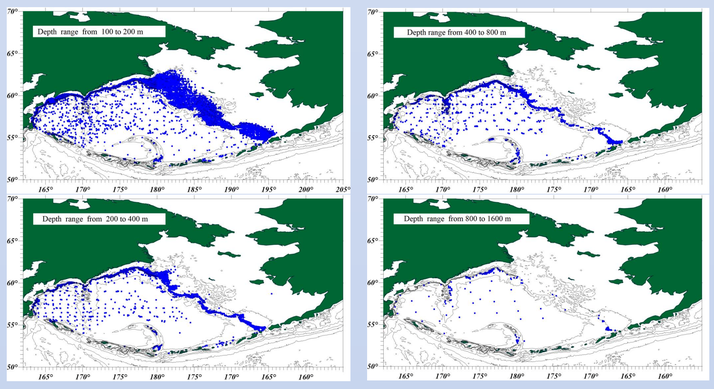
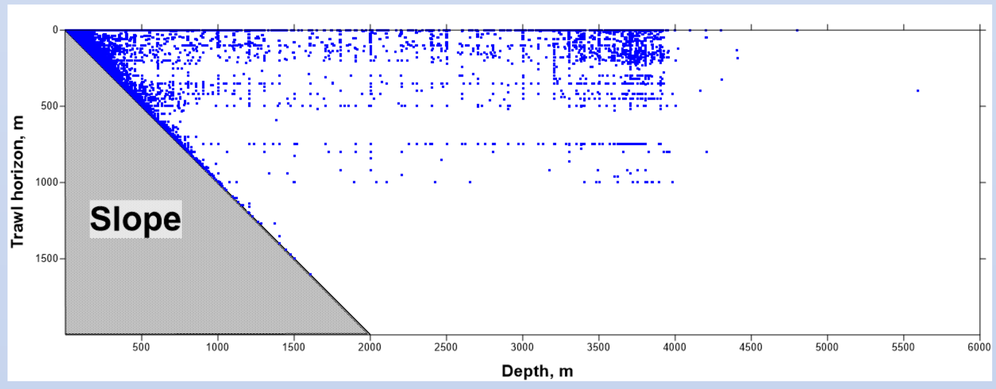
Currently, despite the increasing interest of fishermen in such deep-sea species as the giant grenadier (*Albatrossia pectoralis*) and the development of fishing technical facilities, this species remains underinvestigated. Available publication provide hypothesis about habitats of juveniles and areas and time of spawning only. Large depth of the species habitat as well as rough bottom, which does not allow to use bottom trawls in most areas, make the giant grenadier investigation even more difficult. Data from TINRO-VNIRO deep-sea research during 1963-2020 were used to study the distribution of giant grenadier at different ontogenetic stages in the Bering Sea. In total, more than 50 thousand trawl stations were analyzed, using a bottom trawl and a midwater trawl. More than 70 thousand giant grenadier specimens were used for the qualitative and quantitative analysis of catches with measurements of the length and weight of fish, sex and stage of maturity of the gonads. The obtained data on catches were converted into standard values for comparison (individuals per km^2).



Trawl map for the entire period of research



Trawl maps in different depth ranges

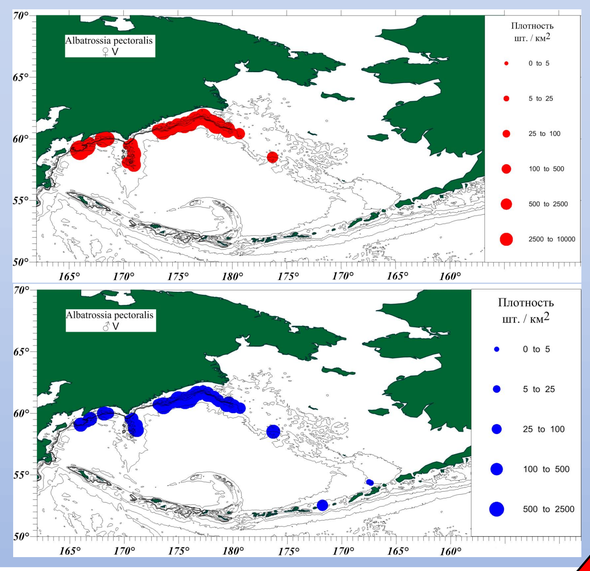


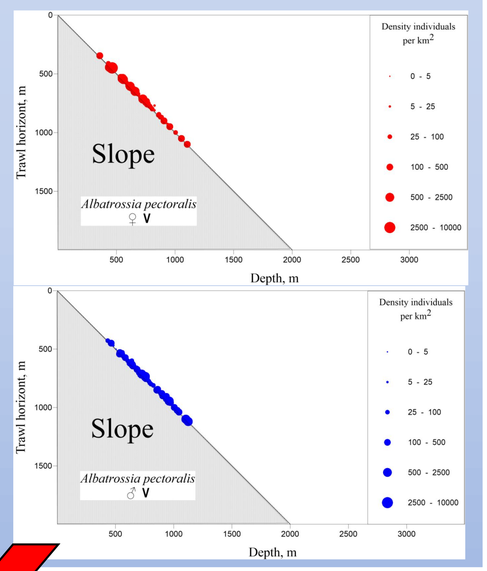
Scheme of trawling for the entire period of research

Spawning

Individuals *Albatrossia pectoralis* from 40 cm in size are found in the western part of the sea along the continental slope, at a depth of 350 to 1600 m. Females become sexually mature at a body size of more than 75 cm, males become sexually mature at a body size of more than 65 cm.

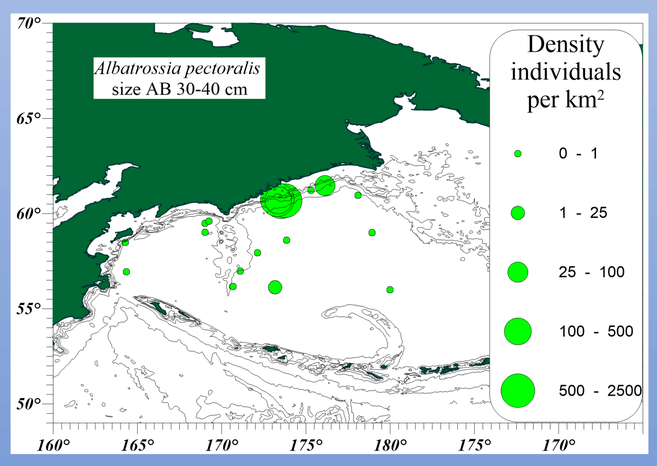
Spawning in the Bering Sea takes place from mid-spring to mid-autumn. Males and females with gonads ready for spawning in trawl catches begin to be found from a depth of 500 m and up to a depth of 1200 m (at a greater depth, a bottom trawl cannot catch fish effectively).

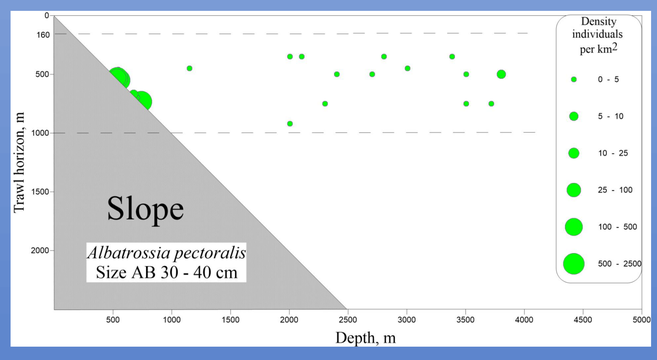




Juveniles

Reaching sizes from 30 to 40 cm, juveniles begin to transition to a near-bottom way of life, which is clearly seen on the map and trawling scheme. Some individuals of this size are found singly in the mesopelagic and bathypelagic zones. Individuals larger than 40 cm are rare in the mesopelagic and bathypelagic zones, during vertical migrations over the continental slope.



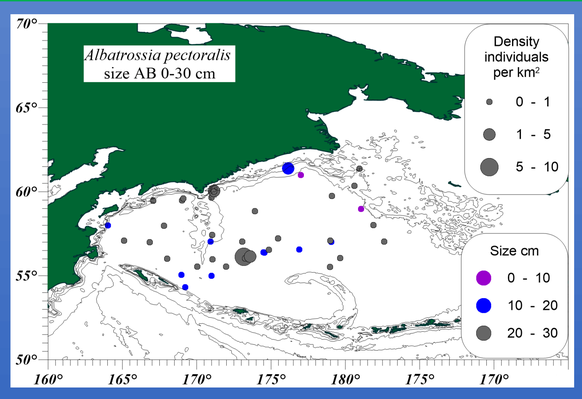


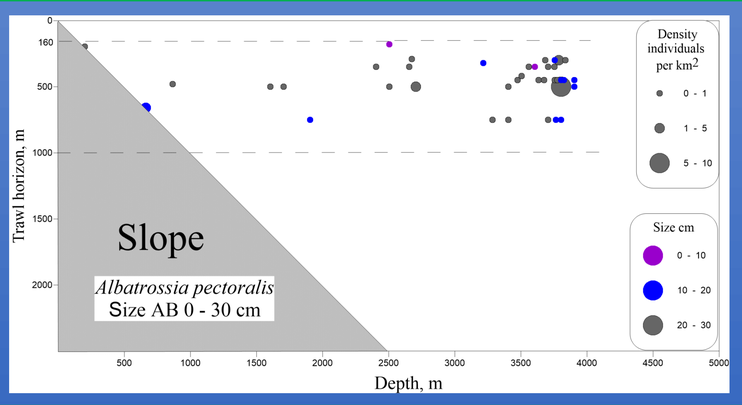
Eggs

Data on the occurrence of macrourid eggs are rarely found in articles on ichthyoplankton studies.

So (A.V. Buslov et al., 2006) noted that, starting from the third decade of April, macrourid eggs were common in the catches of the ichthyoplankton trap above deep-sea areas, their concentration here reached 20 specimens under m2. In May, the catches increased, and the eggs were present at almost all stations located above a depth of more than 400 m. Taking into account the spawning depth of this species of more than 500 m and the fact that in deep-water areas the lower limit of the trap submersion reached 600 m, some of the eggs did not was caught.

V.N. Tuponogov also wrote about the occurrence of macrourid eggs in catches of ichthyoplankton traps (V.N. Tuponogov 1997).





Juveniles

Further, the larvae are carried by currents throughout the Bering Sea. On the map (on the left) and the trawling scheme (on the right) are shown: Purple juveniles up to 10 cm in size - only 2 cases of catch (due to destruction during catching), Blue juveniles from 10 to 20 cm in size, Gray juveniles from 20 to 30 in size see Most of the catches of juveniles occurred in the mesopelagic and bathypelagic, and rare cases of catches in the near-bottom layer are probably accidental, and obtained when setting or hauling a trawl.