

Crab invasions in the Barents Sea: consequences and opportunities

Bakanev Sergey and Natalia Anisimova

Polar Research Institute of Marine Fisheries and Oceanography (PINRO)

6 Knipovich Street, Murmansk, 183038, Russia

E-mail: bakanev@pinro.ru

Two invasive crab species currently play a significant role in the Barents Sea ecosystem: red king crab (*Paralithodes camtschaticus*) and snow crab opilio (*Chionoecetes opilio*). The first crab species was introduced deliberately from the Pacific Region in the second half of the XX century. The reasons for the second crab species invasion are still unclear and may be associated either with an incidental transport of larvae in the ballast water or with the migration of adult species under the influence of natural environmental factors.

Despite the fact that crabs have formed self-reproducing populations in the Barents Sea, occupying huge aquatic areas, the process of acclimatization of these species has not been completed yet. Furthermore, ecological features of the species don't cause competitive interactions between them and the geographical distribution of the populations differs significantly. The population of red king crab occupies the southern part of the Barents Sea and it is distributed southwestward and southeastward. Snow crab opilio occupies the central part of the Barents Sea and migrates actively northeastward and northwestward.

The results of studies on the impact of red king crab showed that consumption of benthos by red king crab represents a small part of the total estimated benthos production and this doesn't provide any basis to assert that there is a significant impact and that undermining of food supply for bottom fish species takes place. Analysis of the impact of red king crab on the state of the benthic communities in some areas of the Barents Sea showed structural changes. However, these changes didn't affect the total benthic biomass and benthic biodiversity. Ecological consequences of later invasion of snow crab opilio are studied to a far lesser extent but similar to red king crab food spectrum and similar estimates of abundance suggest a similar adaptation in the ecosystem.

Moreover, by this time red king crab and snow crab opilio have become commercial species in the Barents Sea and the predictions for their fisheries remain quite optimistic. Exploitation of red king crab has been carried out by Russia and Norway since 1994 with the total catch about 8 – 10 thousand tons in some years. According to the predictions annual catch of red king crab in the coming years may be around 6–8 thousand tons. In 2013 experimental fishery of snow crab opilio was carried out in the international waters of the Barents Sea for the first time. The total catch didn't exceed 500 tons but according to the forecasts for abundance dynamics of snow crab opilio its annual catch in the coming years may be about 20–50 thousand tons.

Thus, despite the risk of negative effects on the Barents Sea ecosystem there are quite obvious positive aspects in introduction of alien species for the economic prosperity of the region.