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Changes in distribution and range structure of Arctic cephalopods due to climatic changes of the last decades

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Abstract

The warming of Arctic waters over the last decades has been confirmed by the results of numerous studies. New data on distribution of cephalopods in the Arctic were obtained from the research cruises of PINRO (Russia) and IMR (Norway) during 2006-2011. *Teuthowenia megalops* and *Todaropsis eblanae* were found in the Arctic for the first time, at distances of more than 1000 km and 2500 km outside of their ranges, respectively. The demersal species *T. eblanae* inhabiting the lower shelf and upper continental slope has presumably spread into the Barents Sea by the eastern branch of the Norwegian Current, and further by the southern branch of the North Cape coastal current, as far as the Murman shelf. The bathypelagic species *T. megalops* is carried to the Arctic evidently by the deep-water warm Atlantic Currents. The new spreading areas of both species are obviously the non-reproductive zones of their ranges. Foraging shoals of *Todarodes sagittatus* were recorded in the Arctic in 2010 for the first time in the last 25 years, which can be related to not only the warming of Arctic waters, but also the fluctuation of *Todarodes* levels in the main part of the range in the Northern Atlantic. The native Arctic species *Gonatus fabricii* has expanded its range to the eastern part of the Barents Sea and to the adjacent part of the Kara Sea. In these areas of Arctic waters, warming is particularly noticeable and the ongoing climatic changes are leading to boreal cephalopods spreading into the Polar Basin. This may impact species relations in vulnerable Arctic ecosystems. © 2013 Copyright Taylor and Francis Group, LLC.

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Keywords

Cephalopoda, *Gonatus fabricii*, *Teuthowenia megalops*, *Todarodes sagittatus*, *Todaropsis eblanae*, warming of Arctic waters