

# First record of the whip-lash squid, *Mastigoteuthis agassizii* verrill, 1881 (Mollusca: Cephalopoda: Mastigoteuthidae) in the subarctic atlantic, with notes on its morphology and biology

Golikov A., Sabirov R., Blicher M., Gudmundson G., Zimina O., Zakharov D.  
*Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia*

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## Abstract

© 2018 Informa UK Limited, trading as Taylor & Francis Group. Cephalopods are an important, abundant and taxonomically diverse component of the bathypelagic realm. However, their biology, ecology and distribution are poorly known. Specimens of *Mastigoteuthis agassizii* (Mastigoteuthidae) have been captured in the southern part of the Denmark Strait, which is at approximately 65°N. This site is approximately 550 km north of the previously most northern known border of the Mastigoteuthidae range. The main goal of this paper is to provide an extended morphological description and biological analysis of *M. agassizii*, the first species of the Mastigoteuthidae caught in the Subarctic Atlantic. Despite sample collection at 534 deep-water stations in the area, only two specimens were captured, indicating the rarity of this species in the northern part of its range. We suggest that the typical range of this species is bathyal depths throughout the North Atlantic to the Subarctic, but not through the Denmark and Davis Straits to the Arctic. These findings coincide with the geographic border of the Northern Atlantic boreal bathyal province, which is warmer and more saline compared to the Arctic province further to the north. We also provide the first descriptions of the radula and reproductive system of *M. agassizii*. The female had synchronous ovulation, fecundity of approximately 23,000 oocytes, oocyte resorption having not been found, most likely due to the early maturity stage of the female. The males, as proven by our sample and additional photo in other source, were found to have the distal part of the penis enlarged, divided into two valves and pigmented, possibly indicating they can protrude outside the mantle cavity. This enlarged valved part, as it is supposed in the literature for other deep-water squid families having it, may be used as an analogue to the lacking hectocotylus.

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## Keywords

Cephalopoda, Deep-sea, Mastigoteuthidae, *Mastigoteuthis agassizii*, Reproductive system

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