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A new species of pencil smelt *Nansenia boreacrassicauda* (Microstomatidae, Argentiniformes) from the North Atlantic Ocean

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Abstract

A new microstomatid oceanic species, *Nansenia boreacrassicauda* spec. nov., is described from the temperate and sub-arctic Atlantic Ocean. The new species is part of the “stubby caudal peduncle” group and includes the northernmost record of any *Nansenia* species close to the Arctic Circle. The new species is putatively most similar to the Mediterranean *Nansenia iberica*, distinguished by a smaller caudal peduncle length/depth ratio, a smaller predorsal distance, more gill rakers, a different lateral line scale type and distribution. Extended *Nansenia* species distributions and specimens that show extralimital characters in relation to previous works are presented, addressing the current problematic taxonomic issues prevalent in pencil smelts and closely related genera. The new species is described due to increased collecting and taxonomic efforts off Greenland and is not necessarily related to ocean temperature changes.

Key words: oceanic, coastal, subarctic, North Atlantic, taxonomy, mitogenome, climate change

Introduction

Sixteen species prior to this study are currently included in the pencil-smelt genus *Nansenia* (Jordan & Evermann 1896) of the family Microstomatidae (Kobyliansky 1992). They are all small-mouthed elongated fishes separated primarily on continuous characters and usually found in the mesopelagic realm between 200 and 1000 m. Some species of *Nansenia* were separated into a new genus *Bathylagichthys* by Kobyliansky (1986), based on the presence of a system of dermal trunk channels, multicusped dentary teeth, a mesocoracoid, tripartite postcleithrum and a urodermal bone all present in the latter genus. However, *Bathylagichthys* is currently a genus within the family Bathylagidae and relationships of groups within these families are unclear at present (Kobyliansky 1985; 1986; 1990a; 1990b). In fact, Bathylagidae and Microstomatidae have no characters defining the two families, a testament to the taxonomic and phylogenetic problems with these fishes at present (Kawaguchi & Butler 1984). Certainly, *Nansenia* and *Bathylagichthys* show many similar traits, such as general body form, presence of an adipose fin, opercular bones, and small mouths with dentition on the dentary and vomer (Lloris & Rucabado 1985). The classification separating the two genera, also into different families, by Kobyliansky (1986) was controversial; later Kobyliansky (1990b), Johnson & Patterson (1996) and Nelson (2006) included bathylagids within the Microstomatidae. However, the classification presented by the latter studies showing Bathylaginae as a subfamily within the Microstomatidae has not generally been adopted in later literature. Regardless, the classification of *Bathylagichthys* within the Bathylaginae, a genus that shows many similarities to *Nansenia* in the Microstomatinae, remains problematic concerning taxonomy of bathylagid and microstomatid fishes.

Species of *Nansenia* can be divided into subgroups based on several different morphological characters and distributions. However, the value of these divisions is questionable concerning phylogenetic relationships, as several trends related to continuous characters seem to cross the different subgroups. Unfortunately, almost no molecular data (associated with voucher specimen data) are present at this time, characters likely to shed some light on problematic species delimitations. Recent materials are few, as many species of *Nansenia* are rare and not commonly caught from an exclusively pelagic and often oceanic distribution. The revision of *Nansenia* by