

# Systematics of the *Mesocletodes abyssicola*-group (Argestidae, Harpacticoida, Copepoda)

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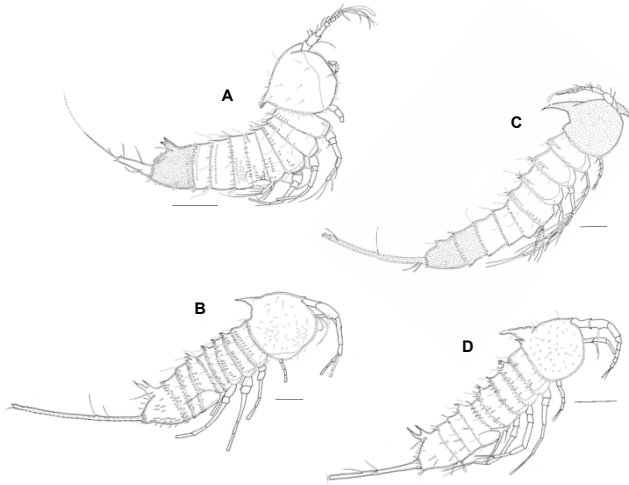


Fig. 1: New species from the Angola Basin. A *Mesocletodes meteorensis* sp. nov., ♂; B *Mesocletodes dorsiproessus* sp. nov., ♀; C *Mesocletodes spinulosus* sp. nov., ♀; D *Mesocletodes bicornis* sp. nov., ♀; scale bars 100µm

## Methods:

The phylogenetic analysis according to Hennig (1982) is based on 32 morphological characters.

In order to undertake the polarization of characters (differentiate between the primitive and advanced character states), the outgroup-comparison was used.

The choice of outgroup-specimens was geared to literature, hence genera that are seen to be closely related to the *Mesocletodes abyssicola*-group such as the "*Mesocletodes inermis*-group" (Sars 1921, Soyer 1964, Bodin 1997) and rather remote specimens such as other genera belonging to the Argestidae and even *Ametropsis angulifera* Sars, 1911 (Ameiridae, Harpacticoida) as a member of a rather distant group were considered.

Except of two species from the Angola Basin, whose exclusive representatives are one male each, only the females are known from the remaining species of the *Mesocletodes abyssicola*-group. Thus, this phylogenetic analysis is only based on females in order to avoid feasible influence on sexual dimorphisms.

## Introduction

Belonging to the Argestidae Por, 1986, the genus *Mesocletodes* Sars, 1909 is known as a typical, but not exclusive deep-sea taxon (see fig. 2) (Menzel 2006, George 2004). Within this genus, species belonging to the *Mesocletodes abyssicola*-group (Bodin 1997) have dorsal cuticular processes at the cephalothorax and the last abdominal somite and extremely elongated furcal rami. Up to date, 10 species of this group are described. During the expedition Diva 1 of RV "Meteor" in August 2000 to the Angola Basin (Martinez and Schminke 2005), 20 specimens of the *Mesocletodes abyssicola*-group were sampled. Distributed over 11 species, all 20 specimens are new to science (Menzel 2006).

The aim of this project was to elucidate the phylogenetic status of the *Mesocletodes abyssicola*-group. Altogether 14 species (included 4 new described species from the Angola Basin) of the *Mesocletodes abyssicola*-group were used for a phylogenetic analysis based on morphological characters.

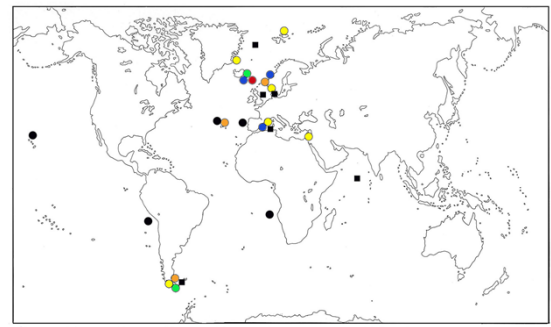


Fig. 2: Geographical distribution of the genus *Mesocletodes* including the depth range according to literature

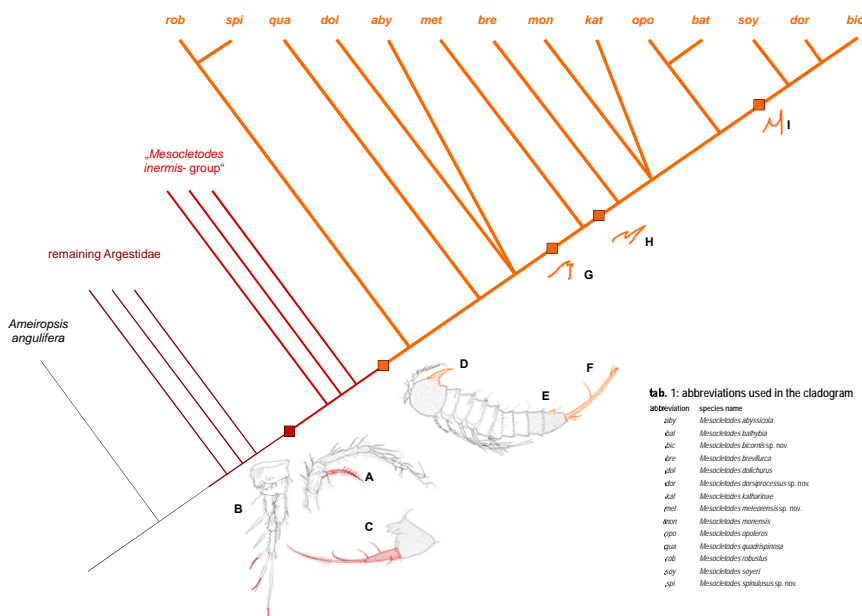


Fig. 3: Phylogenetic tree of the *Mesocletodes abyssicola*-group. Abbreviations of species names according to tab. 1. Apomorphies A-I pointed out in colour.

tab. 1: abbreviations used in the cladogram

abbreviation	species name
aby	<i>Mesocletodes abyssicola</i>
bat	<i>Mesocletodes bathybia</i>
bic	<i>Mesocletodes bicornis</i> sp. nov.
bre	<i>Mesocletodes brevitarsis</i>
dol	<i>Mesocletodes dolifurca</i>
dor	<i>Mesocletodes dorsiproessus</i> sp. nov.
met	<i>Mesocletodes meteorensis</i> sp. nov.
mon	<i>Mesocletodes monensis</i>
opo	<i>Mesocletodes oposteros</i>
qua	<i>Mesocletodes quadrigona</i>
rob	<i>Mesocletodes robustus</i>
soy	<i>Mesocletodes soyeri</i>
spi	<i>Mesocletodes spinulosus</i> sp. nov.

## Results and Discussion:

The phylogenetic tree (fig. 3) visualizes the character state discussion, whereas only selected apomorphies are mentioned (fig. 3: A-I). Due to the choice and number of characters, the *Mesocletodes abyssicola*-group is highly resolved, the remaining Argestidae as well as the "*Mesocletodes inermis*-group" appear as unresolved groups.

Characteristic to the genus *Mesocletodes* are a strongly protruding setal base at the second antennula segment (fig. 3: A), tube pores at the outer and terminal setae of P1 Exp3 (fig. 3: B), and furthermore furcal rami whose length is always greater than their broadness at the base (fig. 3: C). Besides extremely elongated furcal rami (fig. 3: F), apomorphies characterizing the *Mesocletodes abyssicola*-group are cuticular processes at the cephalothorax and telson (fig. 3: D, E). The phylogenetic relationship between species of this group is determined by the expression of the cuticular processes at the telson (fig. 3: G, H, I).

Analysis confirms the monophyly of the genus *Mesocletodes* as well as of the *Mesocletodes abyssicola*-group.

## References

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