

Rhabdobelus biodiversity from the Toarcian of Crimea and the problem of *Rhabdobelus*-*Pseudobelus* relationship

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Rhabdobelus Naef, 1922 is a belemnite genus common for Upper Toarcian. Despite it is very common for this interval, their sudden appearance and dramatic disappearance do not allow to trace relationship with possible ancestors and descendants. There are no common opinion among researchers about the composition of the genus, but two species are obviously form the «nucleus» of the genus – *R. exilis* and *R. serpulatus*. They obtain peculiar rostrum cross-section, similar to «8» numeral created by deep lateral furrows, unusual among belemnites. These rostra were erected to a family Rhabdobelidae by Nalnjaeva in 1967.

In Upper Jurassic - Lower Cretaceous (Tithonian - Hauterivian), similar belemnite rostra can be found, attributed to genus *Pseudobelus* and family Duvaliidae. There is no certain opinion about *Rhabdobelus*-*Pseudobelus* relation: early authors united both in *Pseudobelus*, A.Naef considered possible relationship between *Rhabdobelus* and Duvaliidae via *Pseudobelus*; Jeletzky shared this opinion, and these genera became a link between suborders Belemnopseina and Belemnitina of his classification. Modern authors usually separate them in different families, thus considering convergent, or consider *Rhabdobelus* to be a synonym of *Pseudobelus* (R. Combemorel). The reasons for separating *Rhabdobelus* and *Pseudobelus* in separate families are: 1) large stratigraphic gap between *Rhabdobelus* and *Pseudobelus* and 2) the presence of the dorsal furrow underlying with a split in *Pseudobelus*.

First reason is not sufficient because of its "geological" nature, plus, there are some finds of *Pseudobelus*-like rostra in the gap: «*B. coquandus*» (Callovian-Oxfordian) and some Bathonian finds mentioned by H. Pugaczewska (1961).

The second reason was the subject of our investigation. Material from a unique locality Lozovoe of Upper Toarcian in Crimea (Ukraine) showed, that morphological variety of the genus is higher than it was considered. Among numerous *R. exilis* and *R. serpulatus* rostra, there were two unusual rostrum fragments found. One of them shows a median dorsal furrow, but split presence remains uncertain. In another one, there are three parallel shallow U-shaped furrows. Each fragment represents an undescribed species. Comparative morphological study of *Rhabdobelus* and *Pseudobelus* rostra has shown that:

1. Furrows on unusual *Rhabdobelus* fragments are dorsal, like in *Pseudobelus*.
2. Lateral furrows in both genera have similar origin – from «Doppellinen».
3. *Rhabdobelus* rostra has principal arrangement of furrows approaching to *Acrocoelites* and *Pseudohastites*, and this marks its origin.

So, there are strong morphological data showing that *Rhabdobelus* and *Pseudobelus* are part of a one phyletic line. The generic separation is still possible based on angular subquadrate cross-section in *Rhabdobelus*. So, *Pseudobelus* is better to remove from Duvaliidae to Rhabdobelidae. Anyway, hypothesis of convergence based on similar ecological habitat, now cannot be completely rejected.

The research is supported by RFBR grant no.09-05-00456 and RAS Presidium Program no. 15.

8th International Symposium Cephalopods – Present and Past

August 30 – September 3, 2010

Abstracts Volume

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