

Abstract

This catalogue of 194 gastropod taxa is based on the collection of Danian gastropods from the Baunekule facies, Faxe Formation in eastern Denmark. The gastropod fauna is extremely rich and well preserved. Most of the gastropods (106 species) are referred to genus level only, 9 morphotypes to even higher taxonomical levels and 79 gastropods are referred to species level. The gastropods are classified following Bouchet & Rocroi (2005) as 4 different clades: Vetigastropoda (represented by 26 species and 10 superfamilies); Caenogastropoda (represented by 142 species and 17 superfamilies); Heterobranchia (represented by 23 species and 5 superfamilies) and Opisthobranchia (represented by 1 species and 1 superfamily). The new species *Zaclys? nuetzeli* n. sp. is introduced.

The Faxe Formation is recognized as a cold-water coral ecosystem with interfingering smaller bryozoan mounds. The Baunekule facies is found in the upper part of the coral mound complex of the Faxe Formation, where it forms isolated lensoidal bodies in the flanks of some of the coral mounds. It is characterized by a high diversity invertebrate fauna that occurs in weakly consolidated coral-dominated floatstone to rudstone. The diagenesis of the Baunekule facies is of special significance because a high proportion of the originally aragonite-shelled fauna is preserved by recrystallization to calcite during early burial diagenesis. Most of the gastropods are not known from other parts of the Faxe Fm. The fauna is very important for evolutionary comparative studies of the fossil and modern gastropods on cold-water coral mounds. Many of the genera have not previously been recorded from Danian strata. None of the gastropod species found in the Baunekule facies are known for certain to have passed the K/Pg boundary. The fauna is comparable to gastropods found on modern cold-water coral mounds in the North Atlantic.

The gastropod fauna from Baunekule facies is characterized by a very high diversity of rather small millimeter sized gastropods having a preference for hard substrates; more than 63.9% belonging to the browsing carnivore trophic group, feeding mainly on sedentary animals. Surprisingly, the fauna contains some common occurrence of typically warm water species. The fauna consists mostly of Cenozoic genera and up to 87% of the species could be endemic to the cold-water coral ecosystem of the Faxe Fm. The diverse and rather unusual gastropod fauna from Baunekule facies is undoubtedly linked to the evolution of cold-water coral ecosystems.