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A rich and diverse small size gastropod fauna on Danian cold-water coral mounds, Baunekule facies, Faxe Fm

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Cold-water corals and associated gastropods are rare in the fossil record. This is due to the low preservation potential of the aragonitic shell material and to the fact that coral ecosystems of deep water are a geologically young development. Most of the few gastropods, which appear as moulds and casts in cemented hardgrounds reflecting early cementation prior to aragonite dissolution. These fossils are often difficult to identify. The common presences of gastropod borings in bivalve or brachiopod shells indicate the indirect presences of a rich gastropod fauna. The Danian 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 set in weakly consolidated coral-dominated floatstone to rudstone. A high proportion of the originally aragonite-shelled fauna is preserved by recrystallization to calcite during early burial diagenesis. A rich and well-preserved small size gastropod fauna of 194 taxa from Baunekule facies is presented in this study. This unique fauna is important in understanding the evolution and coexistence of gastropods on cold-water coral mounds. Most of the gastropods are not known from other parts of the Faxe Fm. The fauna is also very important for evolutionary comparative studies of the fossil and modern gastropods on cold-water coral mounds. Many of the genera were not known from Danian strata before. No 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 diverse and rather unusual gastropod fauna from Baunekule facies is undoubtly linked to the evolution of cold-water coral ecosystems.