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Upper Jurassic – Lower Cretaceous hydrocarbon seep environments, Svalbard – a discussion on the absence of bryozoans.

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Bryozoans are not known to thrive in areas close to cold methane seeps, and they are only briefly mentioned from recent pock marks and/or hydrothermal vents (e.g. Jensen et al. 1992). Other faunal elements in such environments can be obligate (dependent on methane seepage) or simply benefitting on the nutrients "produced" by other organisms, or the lithified substrate (for encrusters) that the methane seepage results in. The only possible fossil seep occurrence with bryozoans was discussed by Morris et al. (2002) and von Bitter et al. (1990, 1992). This Early Carboniferous microbial/bryozoan occurrence, with brachiopods and worm tubes, from Newfoundland is debated with respect to timing of metal-rich hydrothermal mineralization, specifically early seafloor (von Bitter et al., 1990) versus late burial (Dix & Edwards, 1996), and it is unclear whether the bryozoans actually lived in a hydrothermal vent setting.

Fifteen Upper Jurassic-Lower Cretaceous hydrocarbon seep carbonate buildups are sampled in the Isfjorden area, Spitsbergen, yielding a rich benthic invertebrate fauna, but devoid of bryozoans. The analysis is based on >300 thin sections and several hand-specimens. The species-rich, well-preserved fauna includes at least 13 species of small to medium sized bivalves, some of which are abundant, as well as rarer rhynchonelliform and lingulid brachiopods, gastropods, echinoderms, sponges, and serpulid and probable vestimentiferan worm tubes. Although several bivalves (solemyids, lucinids, and probably Thyasira and Nucinella) had chemosymbionts, the Sassenfjorden seep fauna contains few, if any, seep obligate taxa. Material used in the study of large marine reptiles (ichthyosaurs, plesiosaurs and pliosaurs) has also been collected and studied, as well as surrounding shale and sandstones with a rich echinoderm and bivalve fauna. But bryozoans are so far not found in this Boreal paleogeographic province from the Jurassic-Cretaceous boundary interval.

The purpose of the current presentation is to provide an insight into this exciting location in the high Arctic, in time and space, and to discuss possible reasons for the absence of bryozoans in such environments.

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