

Poster

PREDATION SCARS ON CHEMOSYMBIOTIC BIVALVES: A NEW TOOL TO INFER SULFIDE TOLERANCES OF SEEP INHABITANTS IN THE GEOLOGIC RECORD

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Three species of chemosymbiotic bivalves with different inferred sulfide tolerances and life habits from a lower Oligocene seep deposit in eastern Hokkaido, Japan, were investigated for drill holes and scars of durophagous predation. The thyasirid *Conchocele bisecta* had the lowest inferred sulfide tolerance and showed the highest frequencies of repair scars (0.4). The bathymodiolin *Bathymodiolus inouei* and the vesicomid *Hubertschenckia ezoensis* most likely lived at higher sulfide concentrations than *C. bisecta* and show lower repair frequencies (0.24 in *B. inouei* and 0.17 in *H. ezoensis*). Based on the assumption that increased sulfide concentrations are increasingly toxic to predators, we conclude that the frequency of repair scars in the three investigated species is inversely related to the sulfide concentrations that these species are able to tolerate. Thus when applied carefully, the frequency of shell injuries among shelled invertebrates at fossil seeps may be used to infer their relative tolerances toward sulfide, and may thus represent a tool to assess the life habits of extinct invertebrates that inhabited methane seeps in the geologic past.

