Paleocene wood-fall communities from eastern Hokkaido, northern Japan

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Deep-water sediments across the Cretaceous-Paleocene boundary, which saw the extinction of dinosaurs, ammonites and many other animals, are exposed in eastern Hokkaido, northern Japan. The Paleocene deep-water deposits of the Katsuhira Formation above the boundary include many fossilized wood fragments which are often bored by wood-boring bivalves and are associated with other invertebrates. We recovered 42 such associations preserved in small carbonate concretions within dark gray mudstones. The associations show a high diversity and consist of many small mollusks, corals and brachiopods. Most common are detritus feeders as the aporrhaid gastropod Kangilioptera inouei and deposit feeding protobranch bivalves. Several associations include chemosymbiotic bivalves, namely Thyasira sp. and the lucinid Myrtea ezoensis, as well as limpets which are known to feed on wood and/or wood-associated microbes. Minor faunal elements are deep-sea suspension feeders such as Bentharca, Propeamussium, and Astarte, and predatory gastropods including buccinids, cancellariids, naticids, turrids, cylichnids and ringiculids. On the family level, these Paleocene wood-fall communities have a similar taxonomic composition and high diversity as associations from the Paleocene Basilika Formation in Spitsbergen Island. They also resemble wood-fall associations from Upper Cretaceous strata in Hokkaido, Japan and from Eocene to Oligocene strata in Washington State, USA, by sharing nuculanid bivalves, Thyasira, and limpets. Interestingly, provannid gastropods are absent from the Paleocene communities in Japan and Spitsbergen, despite their presence in the above mentioned older and younger examples. Bathymodiolin mussel such as Idas has also not been found in the Paleocene communities reported here.