

## A late Paleocene fauna from shallow-water chemosynthesis-based ecosystems, Spitsbergen, Svalbard

Krzysztof Hryniewicz, Kazutaka Amano, Maria Aleksandra Bitner, Jonas Hagström, Steffen Kiel, Adiël A. Klompmaker, Thomas Mörs, Cristina M. Robins, and Andrzej Kaim

*Acta Palaeontologica Polonica* 64 (1), 2019: 101-141 doi:<https://doi.org/10.4202/app.00554.2018>

We present a systematic study of late Paleocene macrofauna from methane seep carbonates and associated driftwood in the shallow marine Basilika Formation, Spitsbergen, Svalbard. The fauna is composed of 22 taxa, comprising one brachiopod, 14 bivalves, three gastropods, three crustaceans, and one bony fish. The reported fish remains are among the first vertebrate body fossils from the Paleogene of Spitsbergen. One genus is new: the munidid decapod *Valamunida* Klompmaker and Robins gen. nov. Four new species are described: the terebratulide brachiopod *Neoliothyrida nakremi* Bitner sp. nov., the protobranch bivalve *Yoldiella spitsbergensis* Amano sp. nov., the xylophagain bivalve *Xylophagella littlei* Hryniewicz sp. nov., and the munidid decapod *Valamunida haeggi* Klompmaker and Robins gen. et sp. nov. New combinations are provided for the mytilid bivalve *Inoperna plenicosata*, the thyasirid bivalve *Rhacothyas spitzbergensis*, the ampullinid gastropod *Globularia isfjordensis*, and the munidid decapod *Protomunida spitzbergica*. Thirteen taxa are left in open nomenclature. The fauna contains a few last occurrences of Cretaceous survivors into the Paleocene, as well as first occurrences of Cenozoic taxa. It is composed of chemosymbiotic thyasirid bivalves and background species common in the northern Atlantic and Arctic during the Paleocene. Our results provide no evidence for a Paleocene origin of vesicomylid and bathymodiolin bivalves typical for Eocene and younger seep environments; instead, the Paleocene seeps of the Basilika Formation are more similar to their Late Cretaceous equivalents rich in thyasirids.

**Key words:** Mollusca, Brachiopoda, Arthropoda, methane seeps, sunken wood, palaeoecology, Cenozoic, Basilika Formation, Spitsbergen.

Krzysztof Hryniewicz [[krzyszth@twarda.pan.pl](mailto:krzyszth@twarda.pan.pl)], Maria Aleksandra Bitner [[bitner@twarda.pan.pl](mailto:bitner@twarda.pan.pl)], and Andrzej Kaim [[kaim@twarda.pan.pl](mailto:kaim@twarda.pan.pl)], Institute of Paleobiology, Polish Academy of Sciences, ul. Twarda 51/55, 00-818 Warszawa, Poland. Kazutaka Amano [[amano@juen.ac.jp](mailto:amano@juen.ac.jp)], Department of Geoscience, Joetsu University of Education, 1 Yamayashiki, Joetsu City, Niigata 943-8512, Japan. Steffen Kiel [[steffen.kiel@nrm.se](mailto:steffen.kiel@nrm.se)], Jonas Hagström [[jonas.hagstrom@nrm.se](mailto:jonas.hagstrom@nrm.se)], and Thomas Mörs [[thomas.mors@nrm.se](mailto:thomas.mors@nrm.se)]

], Swedish Museum of Natural History, Department of Palaeobiology,  
Box 50007, 104 05 Stockholm, Sweden. Adiël A. Klompmaker [[adielklompmaker@gmail.com](mailto:adielklompmaker@gmail.com)]  
], Department of Integrative Biology & Museum of Paleontology, University  
of California, Berkeley, 1005 Valley Life Sciences Building #3140,  
Berkeley, CA 94720, USA. Cristina M. Robins [[cristina.robins@gmail.com](mailto:cristina.robins@gmail.com)], Museum of Paleontology,  
University of California, Berkeley, 1101 Valley Life Science Building, Berkeley, CA 94720, USA.

This is an open-access article distributed under the terms of the Creative Commons  
Attribution License (for details please see [creativecommons.org](https://creativecommons.org)), which permits unrestricted use,  
distribution, and reproduction in any medium, provided the original author and source are credited.

 [Full text \(2,700.1 kB\)](#)