



Bayerische
Staatssammlung
für Paläontologie und Geologie

- Zitteliana A 55, 121 – 122
- München, 15.12.2015
- Manuscript received
27.11.2015; revision
accepted 30.11.2015
- ISSN 1612 - 412X

Short communication

Supplement 2 to: “How many species of fossil holothurians are there?”

Mike Reich*^{1,2,3}

¹SNSB - Bayerische Staatssammlung für Paläontologie und Geologie, Richard-Wagner-Straße 10, 80333 Munich, Germany

²Ludwig-Maximilians-Universität München, Department für Geo- und Umweltwissenschaften, Paläontologie und Geobiologie, Richard-Wagner-Straße 10, 80333 Munich, Germany

³GeoBio-Center der Ludwig-Maximilians-Universität München, Richard-Wagner-Straße 10, 80333 Munich, Germany

*E-mail: m.reich@lrz.uni-muenchen.de

Keywords: fossil Holothuroidea; biodiversity; species list

Schüsselwörter: fossile Holothuroidea; Biodiversität; Artenliste

The holothuroids have a long fossil record, extending back to the Middle Ordovician (Reich 1999, 2001, 2010; Lefebvre et al. 2013), however, in comparison to other modern echinoderm groups (e.g., Pawson 2007), the geologic and evolutionary history of sea cucumbers is poorly understood (Gilliland 1993; Reich 2010; Smith & Reich 2013). Also the fossil holothuroid species diversity is meagre (nearly 1,000; Reich 2013), compared with other echinoderm groups today, like echinoids (>10,000; Smith & Kroh 2013) or crinoids (>6,000; Rouse et al. 2013). This apparently minimal diversity has led many authors to suggest that the palaeontologic record of Holothuroidea is unimportant and non-existent. However, detailed analysis has shown that this is clearly due to a lack of systematic sampling and work on fossil material (cf. Reich 2013). Also the scientific literature on fossil Holothuroidea turned out to be very heterogeneous and worldwide often been published in rather obscure journals or books. Therefore, the access to this knowledge remains limited, which is why the author compiled a short annotated list of named fossil holothurians (Reich 2013, 2014). In this ‘Supplement 2’ I add 9 new taxa missing from the former compilations.

Additional taxa described since the last checklist

Following Reich (2013: 32ff.), the detailed list includes the species, original genus, author(s), type stratum and locality. A few fossil species are designated in part as follows: * sclerite assemblage, ** body fossil, *** non-Holothuroidea or very probably non-Holothuroidea

The numbering of species/paraspecies from (Reich 2013) is continued here.

Addendum

- 960 *asymmetrica* Gao, Ding, Zhang, Wang & Sun, 2012; *Tetravirga* [Carboniferous: Moscovian; P.R. of China: Shanxi]
- 961 *circularia* Soodan, 1991; *Eocaudina* [Quaternary: sub-Recent; Indian Ocean: Arabian Sea]
- 962 *cudgela* Gao, Ding, Zhang, Wang & Sun, 2012; *Eocaudina* [Carboniferous: Moscovian; P.R. of China: Shanxi]
- 963 *encentrica* Gao, Ding, Zhang, Wang & Sun, 2012; *Eocaudina* [Carboniferous: Moscovian; P.R. of China: Shanxi]
- 964 *indicus* Soodan, 1991; *Costigerites* [Quaternary: sub-Recent; Indian Ocean: Arabian Sea]
- 965 *indicus* Soodan, 1991; *Elgerius* [Quaternary: sub-Recent; Indian Ocean: Arabian Sea]
- 966 *lowspiris* Gao, Ding, Zhang, Wang & Sun, 2012; *Priscopedatus* [Carboniferous: Moscovian; P.R. of China: Shanxi]
- 967 *pentagona* Soodan, 1991; *Eocaudina* [Quaternary: sub-Recent; Indian Ocean: Arabian Sea]

968 *thicka* Gao, Ding, Zhang, Wang & Sun, 2012; *Eocaudina* [Carboniferous: Moscovian; P.R. of China: Shanxi]

Acknowledgements

I acknowledge Tanja R. Stegemann (Göttingen) for technical assistance.

References

- Gao Lianfeng, Ding Hui, Zhang Peng, Wang Yu, Sun Juan. 2012. Discovery of Carboniferous holothurian sclerites from the Benxi Formation, Pingshuo Mining Area, Shanxi Province. *Acta Micropalaeontologica Sinica* [Weiti-gushengwu-xuebao] 29(2), 179–194.
- Gilliland PM. 1993. The skeletal morphology, systematics and evolutionary history of holothurians. *Special Papers in Palaeontology* 47, 1–147.
- Lefebvre B, Sumrall CD, Shroat-Lewis RA, Reich M, Webster GD, Hunter AW, Nardin E, Rozhnov SV, Guensburg TE, Touzeau A, Noailles F, Sprinkle J. 2013. Chapter 14: Palaeobiogeography of Ordovician Echinoderms. In: DAT Harper, T Servais (Eds), *Early Palaeozoic Biogeography and Palaeogeography*. Geological Society of London, *Memoirs* 38, 173–198. <http://dx.doi.org/10.1144/M38.14>
- Pawson DL. 2007. Phylum Echinodermata. In: ZQ Zhang, WA Shear (Eds), *Linnaeus Tercentenary: Progress in Invertebrate Taxonomy*. *Zootaxa* 1668, 749–764.
- Reich M. 1999. Ordovizische und silurische Holothurien (Echinodermata). *Greifswalder Geowissenschaftliche Beiträge* 6, 479–488.
- Reich M. 2001. Ordovician holothurians from the Baltic Sea area. In: M Barker (Ed), *Echinoderms 2000*. Proceedings of the 10th International Echinoderm Conference, Dunedin, 31 January - 4 February 2000. Lisse/Abingdon/Exton, PA/Tokyo, AA Balkema Publishers, pp. 93–96.
- Reich M. 2010. The early evolution and diversification of holothurians (Echinozoa). In: LG Harris, SA Böttger, CW Walker, MP Lesser (Eds), *Echinoderms: Durham*. Proceedings of the 12th International Echinoderm Conference, Durham, New Hampshire, USA, 7–11 August 2006. Boca Raton/London/New York/Leiden, CRC Press/Taylor & Francis Group, pp. 55–59. <http://dx.doi.org/10.1201/9780203869543-c9>
- Reich M. 2013. How many species of fossil holothurians are there?. In: C Johnson (Ed), *Echinoderms in a Changing World*. Proceedings of the 13th International Echinoderm Conference, University of Tasmania, Hobart Tasmania, Australia, 5–9 January 2009. Boca Raton/London/New York/Leiden, CRC Press, Taylor & Francis Group, pp. 23–51. <http://dx.doi.org/10.1201/b13769-5>
- Reich M. 2014. Supplement to: „How many species of fossil holothurians are there?“. In: F Wiese, M Reich, G Arp (Eds), „Spongy, slimy, cosy & more...“. Commemorative volume in celebration of the 60th birthday of Professor Joachim Reitner. *Göttingen Contributions to Geosciences* 77, 161–162. <http://dx.doi.org/10.3249/webdoc-3926>
- Rouse GW, Jermin LS, Wilson NG, Eeckhaut I, Lanterbecq D, Oji Tatsuo, Young CM, Browning T, Cisternas P, Helgen LE, Stuckey M, Messing CG. 2013. Fixed, free, and fixed: The fickle phylogeny of extant Crinoidea (Echinodermata) and their Permian-Triassic origin. *Molecular Phylogenetics and Evolution* 66(1), 161–181.
- Smith AB, Kroh A. 2013. Phylogeny of Sea Urchins. In: JM Lawrence (Ed), *Sea Urchins: Biology and Ecology*. 3rd edition. Amsterdam/Boston/Heidelberg/London/New York/Oxford/Paris/San Diego/San Francisco/Singapore/Sydney/Tokyo, Elsevier & Academic Press [= *Developments in Aquaculture and Fisheries Science* 38], pp. 1–14.
- Smith AB, Reich M. 2013. Tracing the evolution of the holothurian body plan through stem group fossils. *Biological Journal of the Linnean Society* 109(3), 670–681.
- Soodan KS. 1991. Holothurian sclerites from the Western Indian Shelf sediments, Arabian Sea. *Geoscience Journal* 12(1), 1–11.
-

ZOBODAT - www.zobodat.at

Zoologisch-Botanische Datenbank/Zoological-Botanical Database

Digitale Literatur/Digital Literature

Zeitschrift/Journal: [Zitteliana Serie A](#)

Jahr/Year: 2015

Band/Volume: [55](#)

Autor(en)/Author(s): Reich Mike

Artikel/Article: [Short communication Supplement 2 to: "How many species of fossil holothurians are there?" 121-122](#)