

## **A symbiotic association of a boring polychaete and an echinoid from the Late Cretaceous of Germany**

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From the Early Maastrichtian white chalk of Rügen Island (N Germany), a specimen of the echinoid *Echinocorys ovata* featuring 27 boring traces of the ichnogenus *Caulostrepsis* is described. Individual traces are shallow to moderately deep U-shaped depressions and show distinct regeneration textures evidencing a *syn-vivo* infestation. All traces are located on the plastron between the peristome and periproct of the host echinoid, indicating an adaptation of the trace maker by choosing the most advantageous position of the specific host. The traces are attributed to the work of boring spionid polychaetes (*Polydora complex*), grounded on the close morphological resemblance with initial borings of Recent polydorids. This is the first evidence for a possible association of a boring polychaete not only with an echinoid but with an echinoderm in general. The symbiotic relationship was commensalistic in nature with the spionid probably taking advantage of organic matter resuspended by the echinoids locomotion and feeding activity and benefiting from effective shelter. For the host echinoid, the association was moderately harmful. The soft bottom environment of the chalk sea provided very limited hard substrate ecospace for settlers and bioeroders, available only in form of biogenic structures. *Echinocorys* was a dominant component of this benthic community and can be considered as a suitable host for symbiotic interactions because of its size and assumed longevity.

**Key words:** Trace fossils, Polychaeta, spionida, *Caulostrepsis*, *Polydora*, *Echinocorys*, bioerosion, commensalism, Maastrichtian.

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