

Supporting Materials

Location and Lithology

The Fish Clay (of earliest Danian age) at Højerup belongs to one of the classic Cretaceous-Tertiary boundary deposit at Stevns Klint (Fig. S1A/B). The lithology of the Fish Clay has been in detail described by Syrluk al. (2006). The authors distinguished four distinctive layers within this boundary section: the latest Maastrichtian bryozoans-rich chalk, a 2-5 cm thick black-to-brown marl (layer III), brown-to-grey marl (layer IV) and grey marl overlain by the lower Danian Cerithium limestone Member (Fig. S2A).

Layers III and IV are here considered to constitute the main part of the Fish Clay. Schmitz (1985) and Elliott (1993) subdivided the smectite-rich layer III into the red (“impact”) layer IIIA (maximum *ca.* 2-4 mm) overlain by the black-to-brown marl layer IIIB (Fig. S2B). Layer IIIA is underlain by the latest Maastrichtian chalk. Lithological units of the Fish Clay appear to be remarkably persistent over the length (*ca.* 14.5 km) from Bøgeskov (in the north) to Rødvig (in the south).

Sample and Methodology

Dr. Helle Schummel collected bulk rock sample of the black-to-brown marl (layer III) from an outcrop 200 m south of the old church of Højerup. The rock sample (*ca.* 1 g) was treated was demineralized by treatment with cold HCl (6 M, room

temperature, up to 5 minutes). This treatment removes (biogenic/abiogenic) carbonates and metal oxides.

Individual Ag microparticles in the demineralized (carbonate-free) fraction were handpicked under a binocular stereomicroscope. Selection criteria were a black-to-brown color and smooth surface.

All Scanning Electron Microscopy/Energy Dispersive Spectrometry works were carried out using a Jeol JSM-35 electron microscope equipped with a Tracor TN-2000 energy dispersive X-ray spectrometer. Operating conditions for energy-dispersive analyses were at 25 keV accelerating voltage, 0.1 μ A beam current and a beam spot diameter of approximately 3 μ m.

References

- F. Surlyk, T. Damholt, M. Bjerager, *Bull. Geol. Soc. Denmark* **54**, 1–48 (2006).
- Schmitz B. “Metal precipitation in the Cretaceous-Tertiary boundary clay at Stevns Klint, Denmark,” *Geochim. Cosmochim. Acta* **49**, 2361–2370 (1985).
- Elliott W.C. “Origin of the Mg-smectite at the Cretaceous/Tertiary (K/T) boundary at Stevns Klint, Denmark,” *Clay Clay Miner.* **41**, 442–452 (1993).

Figure Captions

Fig. S1A. Geographic locations of Chicxulub and Stevns Klint.

Fig. S1B. Geographic location of Stevns Klint in Denmark.

Fig. S2: (A) Expanded lithological log of the Fish Clay at Højerup. These logs are based on Surlyk et al. (2006) and (B) the red layer specimen studied enriched with silver microparticles.

Fig. S1A

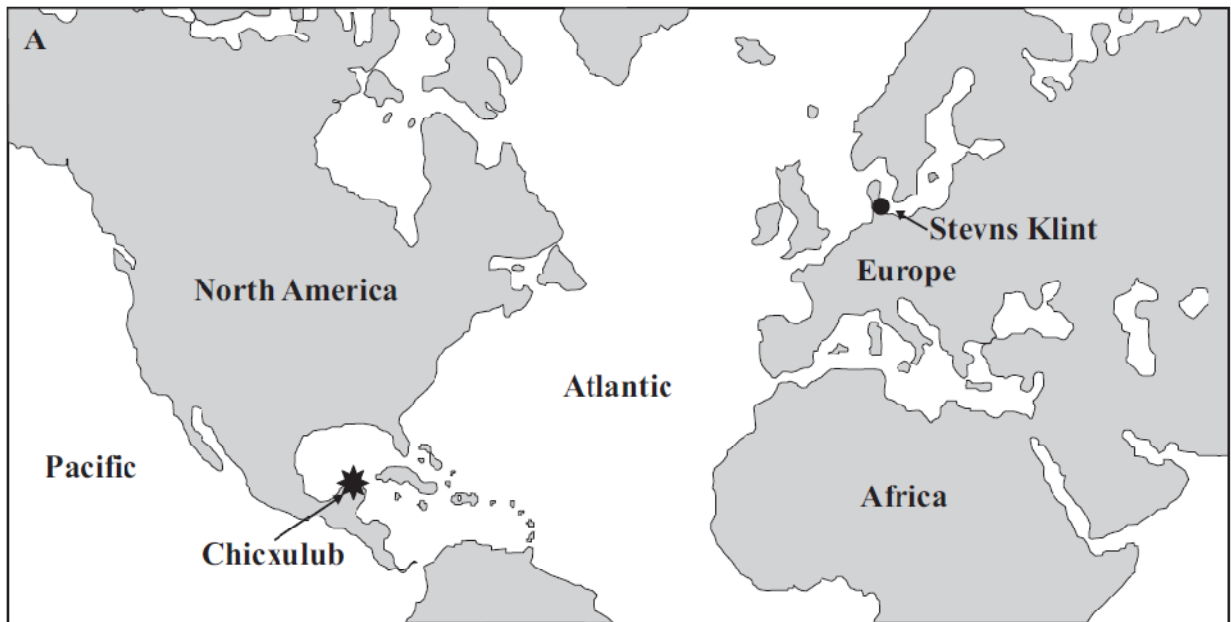


Fig. S1B

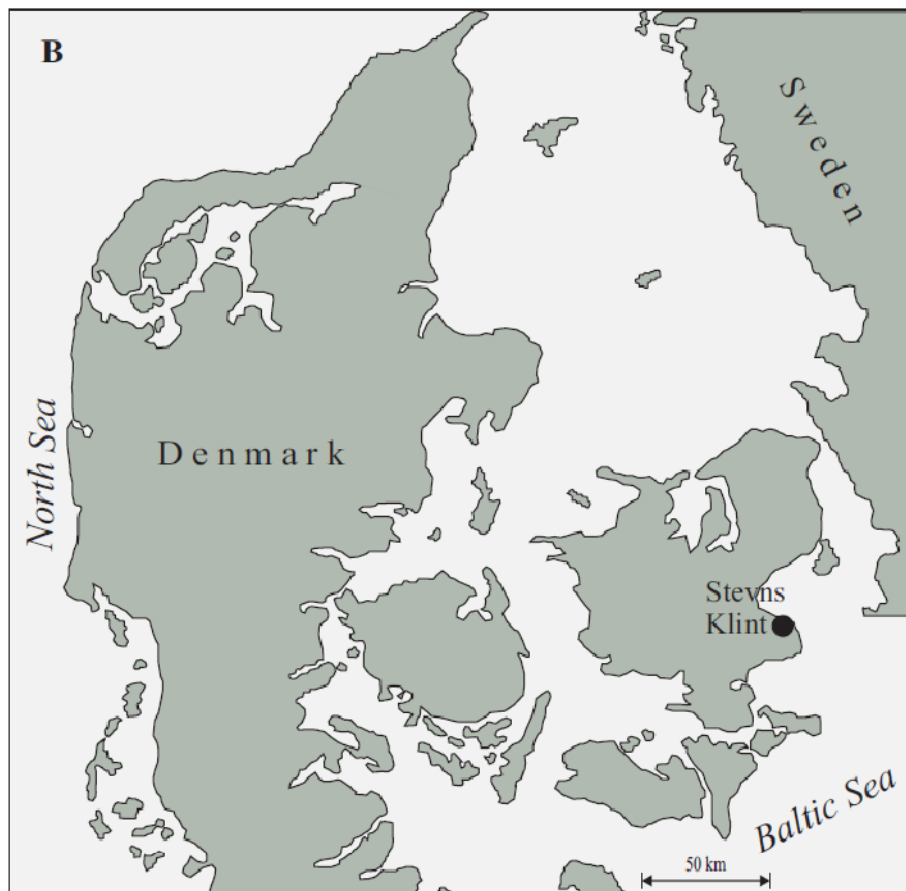


Fig. S2

