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FIRST EVIDENCE OF A LATE CRETACEOUS MARINE TURTLE (TESTUDINES: CHELONIOIDEA) FROM DENMARK

[Primer hallazgo de una tortuga marina (Testudines: Chelonioidea) del Cretácico Superior en Dinamarca]

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RESUMEN: Se describe el primer hallazgo de un fragmento de tortuga marina del Maastrichtiense de Dinamarca y del área del Báltico.

Palabras clave: Testudines, Cheloniidae, Maastrichtiense, Stevns Klint, Dinamarca.

ABSTRACT: A fragment of carapace represents the first published marine turtle specimen from the Maastrichtian of Denmark and the Baltic area.

Key words: Testudines, Cheloniidae, Maastrichtian, Stevns Klint, Denmark.

INTRODUCTION

Fossil turtle remains from latest Cretaceous of the Baltic area are hitherto unknown; for example, none have been described from deposits like the "Rügener Schreibkreide" in North Germany. This paper describes the first record of a marine turtle from the Upper Maastrichtian White Chalk of Stevns Klint, Denmark; a cheloniid.

INSTITUTIONAL ABBREVIATIONS

MGUH: Palaeontological type collection of Geological Museum, University of Copenhagen, Denmark.

MATERIAL AND METHODS

Overall photo of the specimen was made using a Canon® Powershot A75 digital camera (figures 2, 3).

LOCALITY AND HORIZON

MGUH 29128 derives from the White Chalk at Stevns Klint, Denmark. The white chalk is Upper Maastrichtian in age (Rosenkrantz, 1937; Surlyk & Håkansson, 1999).

TERMINOLOGY

Carapace plates: nuchal = nu, neurals = n I to n VIII, pleurals = pl I to VIII, peripherals = pe I to pe XI, metaneurals = mn I to II, pygal = py.

Carapace scutes: cervical = ce, centrals = c 1 to c 5, laterals = l 1 to l4, caudal = ca.

SYSTEMATIC PALAEONTOLOGY

Order Testudines Linnaeus, 1758

Infraorder Cryptodira Cope, 1868

Superfamily Chelonioidea Baur, 1893

Family Cheloniidae Gray, 1825

Gen. et spec. indet.

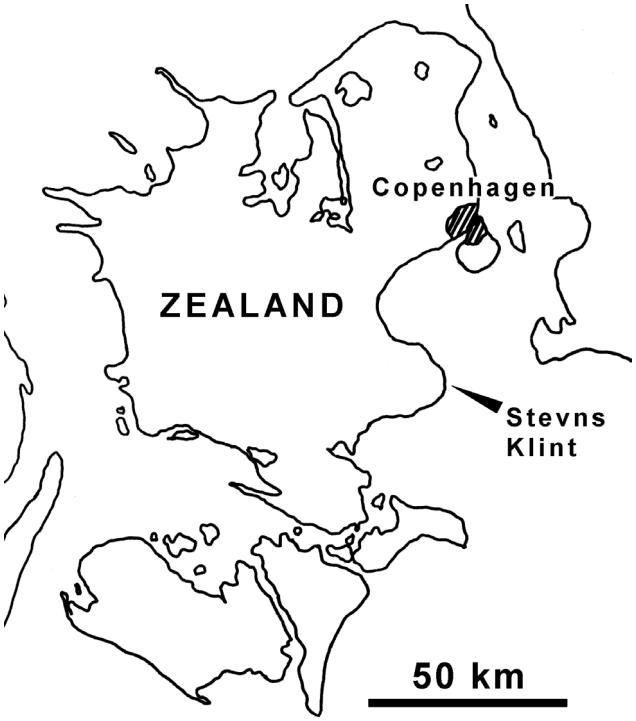

Figure 1. Map sketch of the great Danish Island Zealand with the position Stevns Klint site.

REFERRED SPECIMEN: MGUH 29128, three peripheral shell elements preserved on a small block of chalk (figures 2, 3).

DESCRIPTION: Units of peripherals are preserved; one of the fragments shows the characteristic suture between the two peripherals (figure 3-1). The shape of the shell elements compare closely with the anterolateral peripherals before the bridge (figure 2); as opposed to along the bridge, where such plates are angled in cross section and posterior where they are elongated triangular in cross section. The surface of the present peripheral bones is smooth, not roofed or rough. Only one of they shows a longitudinal sulcus of horny scutes, between marginals and submarginal at the visceral side (figure 3-3). The additional groove in figure 3-2 may be not a sulcus, because it is not continous.

SYSTEMATIC PLACEMENT: Fragmentary or separated bone remains of sea turtles is generally problematic (Diedrich & Hirayama, 2003), and the specimen is too poorly preserved for a genus or species-level determination. The structure of the single peripheral plates of MGUH 29128 may be compared to a relatively advanced sea turtle like *Chelonia*. However, based on the current material, such an identification would be high speculative. Comparison with the anterolateral peripherals of other taxa show the following differences to other late Cretaceous sea turtle taxa (see also Zangerl, 1980):

– Desmatochelyidae possess broader peripherals.
– Osteopygidae possess emydine-like peripherals in this area.
– Protostegidae possess much shorter, asteroid-like peripherals and.
– Dermochelyidae possess reduced peripherals of the thecal shell.

The only group comparable with the new material is the Cheloniidae.

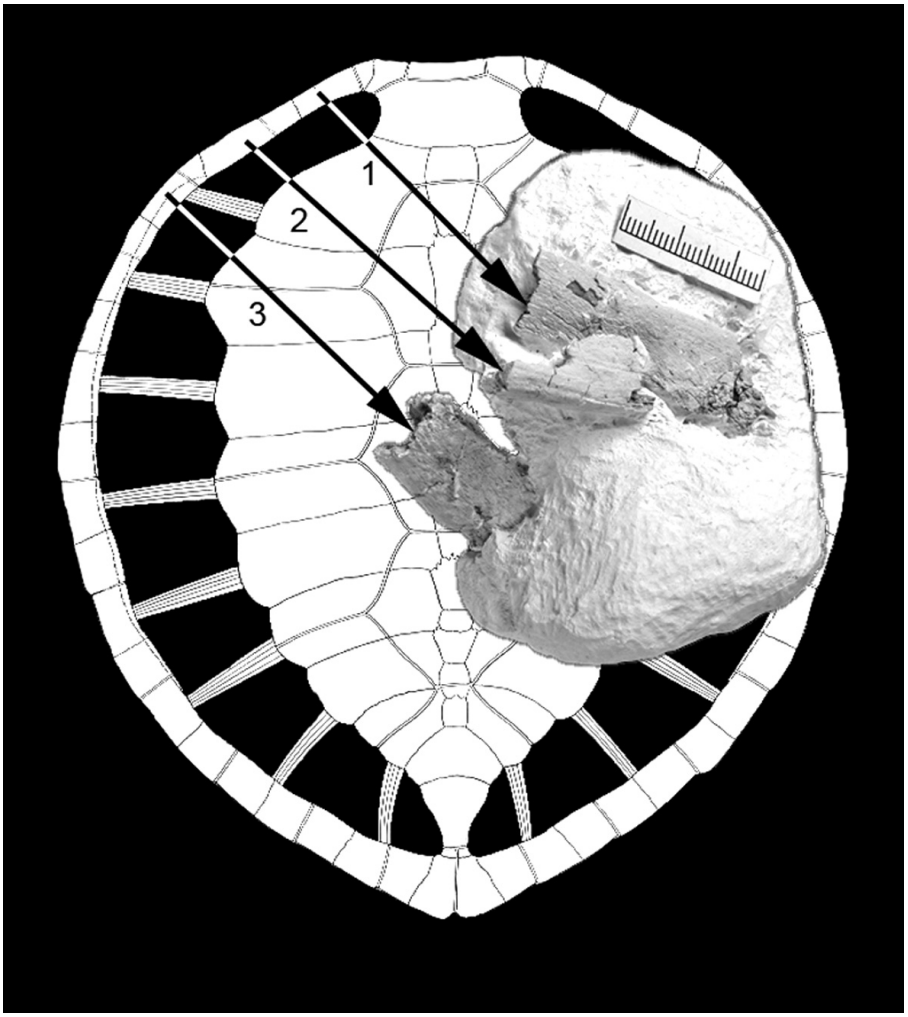

Figure 2. Schematic reconstruction of the carapace of an advanced marine turtle (e. g. Chelonia *adapted to* Zangerl & Turnbull, 1955*), no scale. With comparison to the peripheral shell elements of MGUH 29128, with their possibly position. 1 = peripheral 1 (pe 1), 2 = peripheral 2 (pe 2) and 3 = peripheral 3 (pe 3). Scale bar in mm.*

CONCLUSION

The newly-recognised fragmentary specimen from Stevns Klint represents the first known occurrence of fossil sea-turtle material from the Maastrichtian chalk deposits of the Baltic area.

A number of fossil sea-turtles have been described from the latest Cretaceous of Northwest Europe; MOODY (1993) listed the species *Allopleuron hoffmanni* and *Protosphargis veronensis*, but neither of these is comparable to the Danish material. According to ZANGERL (1980) the following species are characteristic for the Maastrichtian:

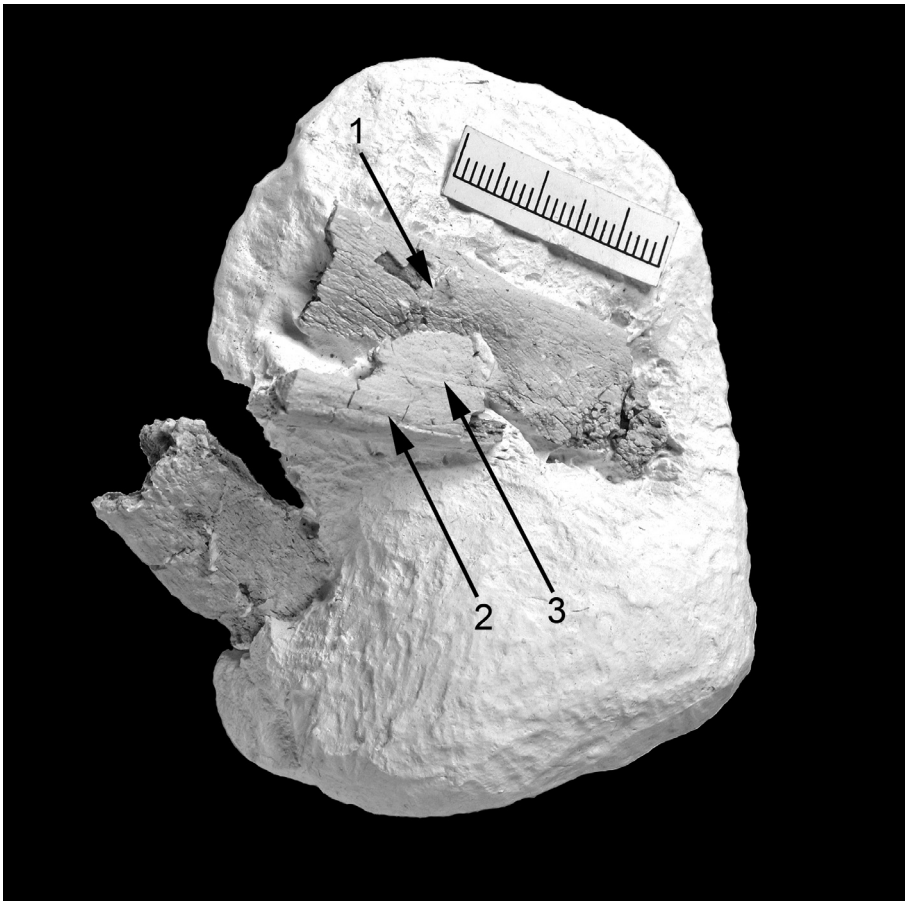

Figure 3. Cheloniidae gen. et spec. indet. from the Maastrichtian white chalk of Denmark, MGUH 29128, as in figure 2. 1 = Bony suture between two peripherals at the pleural 1, 2 = distal sulcus of horny shield and 3 = proximate sulcus of horny shields at the pleural 2. Scale bar in mm.

1) *Toxochelys weeksi*; the last member of the genus, which lived from the Aptian (KARL, 2002) through the Coniacian, Santonian (Niobrara chalk), Campanian and oldest Maastrichtian, and possesses broader anterolateral peripherals than the Danish specimen.

2) *Peritresius ornatus* which existed throughout the entire Maastrichtian and possesses a characteristic pit-like ornament of the shell surface, unlike the Danish material.

3) *Osteopygys emarginatus* with emydid-like peripherals in this area.

From the Cretaceous of central Europe further taxa have been recognised, including *Ctenochelys procax* (syn. *Toxochelys gigantea*); *Dollochelys atlantica* (syn. *Chelone carusiana* in part. =? *Desmatochelys*); *Rhinochelys cantabrigiensis* (syn. *Chelone carusiana* in part.) and *Archelon copei* (syn. *Iserosaurus litoralis*) (KARL, 2002). Again, none of these are comparable to the Danish material.

The only hitherto known Danish Maastrichtian turtle remain is best classified as Cheloniidae indet.

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