

Brief Communication

First record of a fossil coral (Anthozoa) from Pleistocene deposits at Terra Ceia, North Carolina

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Abstract: A fossil coral of the genus *Solenastrea* Milne Edwards & Haime (Anthozoa: Scleractinia: Faviidae) is reported from Pleistocene deposits exposed near the town of Terra Ceia in Beaufort County, North Carolina. The specimen is similar in gross and corallite morphology to *Solenastrea hyades* (Dana) which is common in Neogene and Quaternary sediments of North Carolina, but has been altered by vadose diagenesis, making confident assignment to species challenging. The specimen is the first coral recovered from the Terra Ceia locality which has, up to now, yielded only mollusks.

Key words: Cnidaria, Zoantharia, Faviina, Faviidae, Quaternary, North Carolina Coastal Plain

Introduction

In November 2021, the authors made a brief visit to a little-studied Pleistocene fossil locality at Terra Ceia in Beaufort County, North Carolina (Figure 1a,b) with the aim of collecting marine mollusks that had been documented there previously by Richards (1966). On arriving at the location, the banks of the drainage ditch described by Richards (*op. cit.*) were found to be heavily overgrown with vegetation and very little outcrop visible (Figure 1c,d). Collecting at small patches of exposed rock produced several bivalve shell fragments and a single, small but relatively well-preserved scleractinian coral. Following mechanical preparation of the latter using an air scribe and air abrasive to remove overlying matrix that obscured the corallites, the specimen was identified as belonging to the genus *Solenastrea* Milne Edwards & Haime, 1848 (Faviidae), representing the first coral reported from the Terra Ceia deposits which likely belong to the Middle Pleistocene Flanner Beach Formation (Miller 1985), confirming their marine nature.

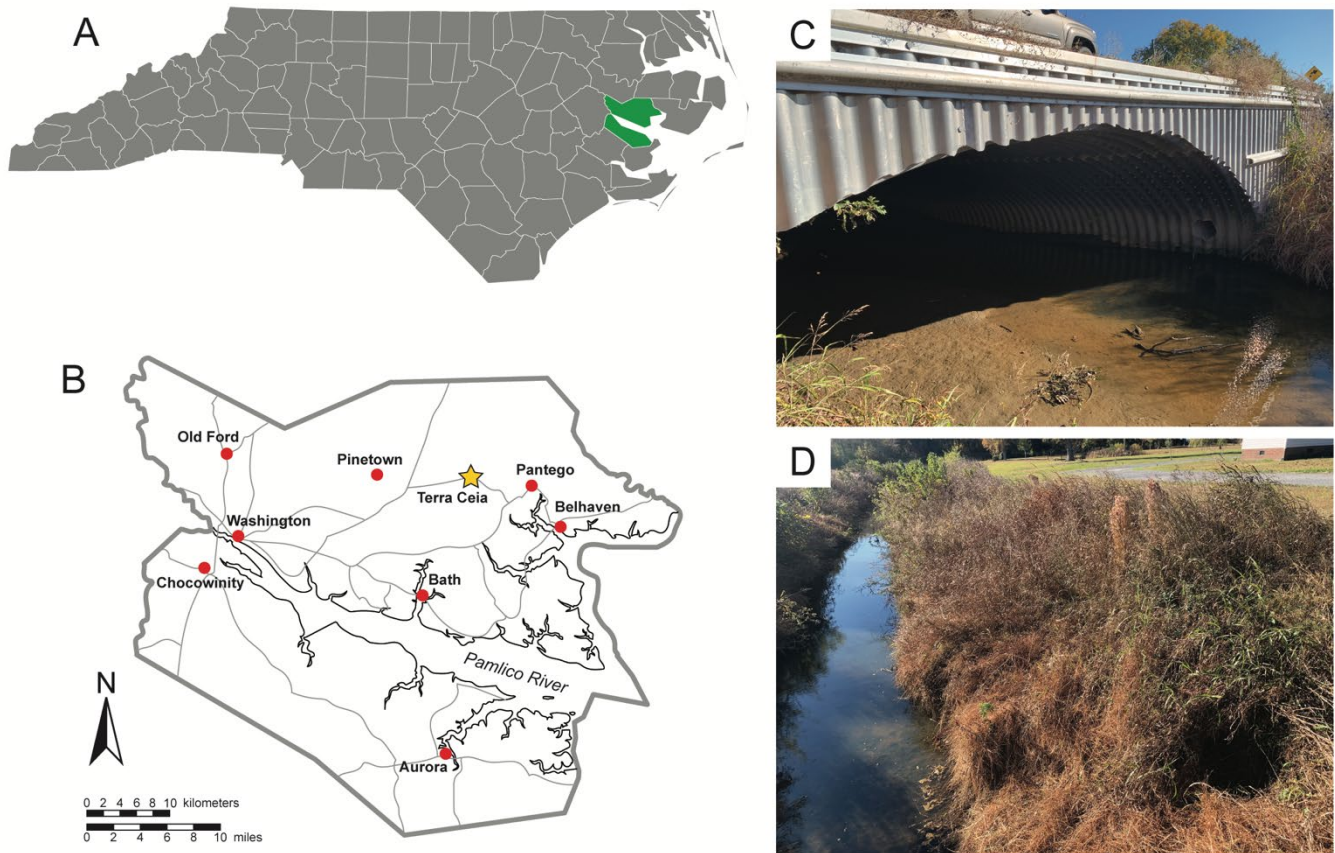


Figure 1. Maps and photographs of the Terra Ceia locality. **A**, outline map of North Carolina with Beaufort County highlighted in green (from freevectormaps.com); **B**, map of Beaufort County showing location of major towns (red circles) and the Terra Ceia locality (yellow star); **C**, photograph of culvert beneath NC State Rd 1616, looking to the northeast; **D**, photograph of heavily vegetated banks of drainage ditch immediately south of culvert, looking to the south. Photographs were taken by SJT on 15 November 2021.

Material and Methods

The specimen was collected from the western bank of a drainage ditch immediately south of a culvert running beneath NC State Road 1616, approximately 1.5 km east of Terra Ceia. Matrix obscuring most of the corallum and filling the corallites was removed mechanically, first using an air scribe, and then an air abrasive with 100μ NaHCO_3 powder in a blasting cabinet. Part of the corallum was then polished to better reveal the structure of the corallites. Photographs were taken with a Canon 5D Mark IV DSLR and macro lenses mounted on a copy stand.

Description

Order Scleractinia Bourne, 1900
 Family Faviidae Milne Edwards & Haime, 1857
 Genus *Solenastrea* Milne Edwards & Haime, 1848
Solenastrea sp. indet.

Figure 2

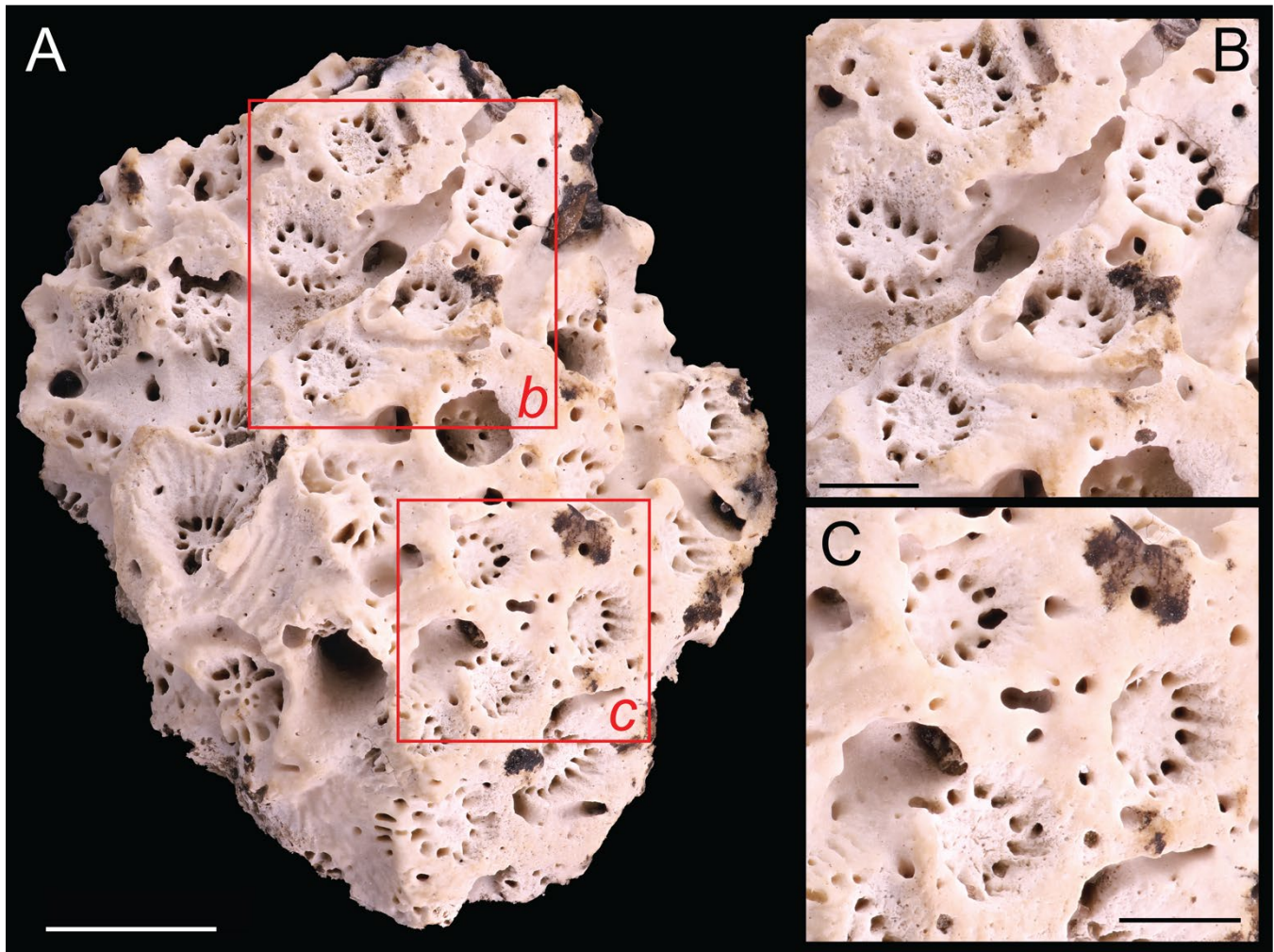


Figure 2. *Solenastrea* sp. indet. (Scleractinia: Faviidae): specimen no. INHS-P5040 (ex. SWH 2021-34) from Pleistocene marine deposits (likely Flanner Beach Formation) at Terra Ceia, Beaufort County, NC. **A**, photograph showing overall habitus of entire corallum; red squares indicate areas shown in close-ups in **B** and **C** [scale bar = 5.0 mm]. **B**, Close-up photograph of corallites seen in the red square marked “b” in **A** [scale bar = 2.0 mm]. **C**, Close-up photograph of corallites seen in the red square marked “c” in **A** [scale bar = 2.0 mm].

Material examined. INHS-P5040: a single corallum from Pleistocene marine deposits (likely of the Flanner Beach Formation) exposed in the western bank of a drainage ditch immediately south of a culvert beneath NC State Road 1616, east of Terra Ceia, NC. Coordinates: 35.6032158, -76.7359158. Collected by S.W. Heads & S.J. Taylor, 15 November 2021.

Description. Plocoid in form. Corallum rather small, measuring approximately 26 mm long and 19 mm wide (Figure 1a). The specimen has been heavily altered by vadose diagenesis so while individual corallites are visible and distinct, fine details of their morphology are wanting. Corallites (Figures 2b,c) generally circular, ranging in diameter from 1.8 mm to 2.9 mm, with an average diameter of 2.2 mm ($n = 16$). Collumellae trabecular and discontinuous, very thick, ranging in width from 0.9 mm to 1.3 mm, with an average width of 1.1 mm ($n = 16$). Septa arranged evenly around collumnellae, numbering between 9 and

12, but usually 11 in most (~80%) corallites. The corallites are separated from one another by 0.5–2.0 mm of coenosteum.

Remarks. The specimen is here assigned to *Solenastrea* based on its plocoid form, medium-sized corallites, and trabecular and discontinuous columella. A septothecal wall structure would be further support for its inclusion in *Solenastrea*, though this is not visible in this specimen. Of the three species in this genus, the specimen described here most closely resembles *S. hyades* (Dana, 1846) in that it possesses a porous and wide coenosteum [the coenosteum of *S. fairbanksi* (Vaughan, 1900) is very dense and narrow, and while porous in *S. bournoni* Milne Edwards & Haime, 1849, is still far narrower]. *Solenastrea hyades* is perhaps the most commonly encountered fossil coral in Neogene and Quaternary deposits in coastal North Carolina. While it's possible that our specimen belongs to *S. hyades*, significant diagenetic alteration makes it impossible to assign it to this species with absolute certainty.

Acknowledgments

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